

Answers to Questions on Notice Legislative Council Inquiry on Regional Development and a Global Sydney

JULY 2017

Questions on Notice taken during the hearing of 19 June 2017

Cost-Benefit Analyses (CBAs) and Benefit-Cost Ratios (BCRs) [transcript pages 2-4]

- a. Can the Committee be provided with the BCR and the CBA that would have been used for the Goulburn project? We would like to know what sort of inputs are involved.**

Benefit-Cost Ratio (BCR) is an output of a Cost-Benefit Analysis (CBA). The inputs to a CBA depend upon the project being analysed. Perhaps the most appropriate description of CBA and related inputs are contained in NSW Treasury's NSW Government Guide to Cost-Benefit Analysis, which can be found at:

<https://www.treasury.nsw.gov.au/sites/default/files/2017-03/TPP17-03%20NSW%20Government%20Guide%20to%20Cost-Benefit%20Analysis%20-%20pdf.pdf>

- b. It would help the Committee if Treasury were to explain what changes were made to the previous guidelines. And why. A brief explanation would be sufficient; the Committee does not need great detail.**

The NSW Government Guide to Cost-Benefit Analysis contains a two-page "what's new" section (beginning page ii). NSW Treasury is best placed to answer more detailed questions on differences between the new and former guidelines.

Provide a bit of a summary of the guidelines for assessing this sort of proposal... in particular addressing the question of how potential movement interstate is looked at and also detailing the post evaluation process [transcript page 3]

Interstate movement: Section 2.2 on page 9 of the NSW Government Guide to Cost-Benefit Analysis outlines the approach to determining the 'base case' for a CBA (which may be a 'do nothing' scenario). The base case is the situation against which the benefits and costs of a project (such as providing assistance to a business to remain in NSW) is compared (see also the box on page 20). Under the Guide, if the movement of jobs interstate is accepted as the 'base case', providing assistance for the relocation of those jobs to a NSW regional location is essentially treated the same as providing assistance for the creation of new jobs.

Post evaluation process: The NSW Government Evaluation Guidelines articulate program evaluation obligations, available at the link below:

http://arp.nsw.gov.au/sites/default/files/NSW%20Government%20Program%20Evaluation%20Guideline%20January%202016_1.pdf

An outline of the locations of the 10 offices we now have overseas and your seven offices (in regional New South Wales) [transcript page 9]

NSW Offices

1. Central Coast and Hunter Regions - Ourimbah
2. Central West & Orana Region - Orange
3. Illawarra-Shoalhaven and South East & Tablelands Regions - Nowra
4. New England & North West Region - Tamworth

5. North Coast Region - Port Macquarie
6. Riverina-Murray Region - Wagga Wagga
7. Sydney Metropolitan

International Offices

1. China - Guangzhou
2. China - Shanghai
3. India - Mumbai
4. Indonesia - Jakarta
5. Japan - Tokyo
6. Malaysia - Kuala Lumpur
7. Singapore
8. South Korea - Seoul
9. United Arab Emirates - Abu Dhabi
10. United Kingdom - London
11. United States of America - San Francisco

A copy of the enablers report [transcript page 12]

A copy of the Regional Economic Growth Enablers report is provided separately.

Answers to Supplementary Questions Legislative Council Inquiry on Regional Development and a Global Sydney

JULY 2017

Answers to Supplementary Questions taken during the hearing of 19 June 2017

1. In the *Jobs for the Future* report: [transcript page 5]

a. Of the 925,000 jobs that are referred to,

i. How many were part time?

At the time the *Jobs for the Future* report was drafted there would only have been data for a nineteen year period from 1996 to 2015, during which time 925,000 jobs were created (table 1). With subsequent data releases the time horizon can be extended from 1996 to 2016. Doing so gives a result of 1,016,000 jobs created over the twenty years (table 2).

From 1996 to 2015 49.6% of jobs created were part time. This rises to a 52.5% share over the period from 1996 to 2016.

Table 1:

	Employment 1996 ('000)	Employment 2015 ('000)	Change ('000)	Change (%)	Change (% p.a.)
Total Employment	2,786.9	3,712.1	925.1	33.2%	1.5%
Full-Time	2,141.1	2,607.5	466.4	21.8%	1.0%
Part-Time	645.8	1,104.5	458.7	71.0%	2.9%

Data are calendar year averages.

Total employment and full-time employment are seasonally adjusted. Part-time employment is calculated as the difference.

Source: ABS cat. No. 6202.0 Labour Force, Australia, May 2017

Table 2:

	Employment 1996 ('000)	Employment 2016 ('000)	Change ('000)	Change (%)	Change (% p.a.)
Total Employment	2,786.9	3,803.5	1,016.6	36.5%	1.7%
Full-Time	2,141.1	2,623.6	482.5	22.5%	1.1%
Part-Time	645.8	1,179.9	534.1	82.7%	3.2%

Data are calendar year averages.

Total employment and full-time employment are seasonally adjusted. Part-time employment is calculated as the difference.

Source: ABS cat. No. 6202.0 Labour Force, Australia, May 2017

ii. How many were in regional NSW?

In order to construct the results in the *Jobs for the Future* report an annual average of Australian Bureau of Statistics (ABS) seasonally adjusted data was taken. ABS seasonally adjusted data is not available at a regional level, so the shares have been constructed using an annual average of original data. While similar, this is a different measure, so the headline NSW result will be different from the *Jobs for the Future* report figure (tables 3 and 4).

Due to the very strong employment results for Regional NSW in the calendar year 2016 the share of employment growth in Regional NSW does differ depending on the time horizon. Over the period 1996-2015, as in the *Jobs for the Future* report, the share of jobs created in Regional NSW was 26.2%, rising to 27.8% when the 1996 to 2016 time horizon is considered. Here, Regional NSW is considered as non-metropolitan areas and therefore excludes the Newcastle & Lake Macquarie and Illawarra Statistical Area Level 4 (SA4) areas. If only Sydney is excluded from the NSW total, the non-Sydney shares of NSW job creation rise to 34.5% for 1996-2015 and 37.0% for 1996-2016.

Table 3:

	Employment 1996 ('000)	Employment 2015 ('000)	Change ('000)	Change (%)	Change (% p.a.)
Regional NSW	844.3	1,056.8	212.5	25.2%	1.4%
Sydney	1,808.7	2,340.4	531.7	29.4%	1.6%
Newcastle & Lake Macquarie and Illawarra	248.4	316.6	68.1	27.4%	1.5%
NSW	2,901.5	3,713.8	812.3	28.0%	1.6%
<i>Regional NSW share of all NSW</i>	<i>29.1%</i>	<i>28.5%</i>	<i>26.2%</i>		
Data are calendar year averages.					
Source: ABS cat. No. 6291.0.55.001 Labour Force, Australia, Detailed - Electronic Delivery May 2017					

Table 4:

	Employment 1996 ('000)	Employment 2016 ('000)	Change ('000)	Change (%)	Change (% p.a.)
Regional NSW	844.3	1,095.5	251.2	29.8%	1.6%
Sydney	1,808.7	2,377.6	568.9	31.5%	1.7%
Newcastle & Lake Macquarie and Illawarra	248.4	332.0	83.6	33.6%	1.8%
NSW	2,901.5	3,805.1	903.7	31.1%	1.7%
<i>Regional NSW share of all NSW</i>	<i>29.1%</i>	<i>28.8%</i>	<i>27.8%</i>		
Data are calendar year averages.					
Source: ABS cat. No. 6291.0.55.001 Labour Force, Australia, Detailed - Electronic Delivery May 2017					

b. Of the 1,000,000 job target contained in the report, how many are projected to be in regional NSW? (by region)

The Jobs for the Future report provides an aspiration of 1 million new jobs by 2036 to ensure that everyone in NSW has the opportunity for meaningful working life. As it is an aspiration, rather than a projection, Jobs for NSW aspires to regional NSW having an unemployment rate that is competitive with metropolitan regions. The 2016 Intergenerational Report produced by NSW Treasury indicates that it is expected that, over the period 2015-16 to 2055-56, more than half a million of the 1.6 million jobs created in NSW will be in the regions.¹ Projections for the period 2016-2036 or by region are not available.

2. Comparing Sydney and regional NSW, over the period considered in the Jobs for the Future report: [transcript pages 5]

a. What was the growth in wages in each year in Sydney and in regional NSW?

Over the period 1996 to 2016 Regional NSW saw slightly stronger wages growth than Sydney with average annual wages growth being 4.1% in Regional NSW and 3.5% in Sydney (table 5). Here Regional NSW is considered as non-metropolitan areas and therefore excludes the Newcastle & Lake Macquarie and Illawarra SA4 areas.

Table 5:

Region	Median Weekly Income, 1996	Median Weekly Income, 2016	Change (%)	Change (% p.a.)
Regional NSW	\$249.1	\$554.8	122.7%	4.1%
Sydney	\$350.9	\$702.2	100.1%	3.5%
Newcastle & Lake Macquarie and Illawarra	\$249.5	\$572.4	129.4%	4.2%
NSW	\$298.7	\$659.2	120.7%	4.0%

For 1996 Sydney is comprised of the Sydney major region, based on the Australian Standard Geographical Classification (ASGC), excluding Gosford-Wyong Statistical Division (SD).

For 2016 Sydney is comprised of the following SA4s: Baulkham Hills and Hawkesbury, Blacktown, City and Inner South, Eastern Suburbs, Inner South West, Inner West, North Sydney and Hornsby, Northern Beaches, Outer South West, Outer West and Blue Mountains, Parramatta, Ryde, South West, Sutherland.

For 1996 Regional NSW is comprised of all NSW regions excluding those in Sydney, Newcastle Statistical Subdivision (SSD), and Illawarra SD.

For 2016 Regional NSW is comprised of the following SA4s: Central Coast, Capital Region, Central West, Coffs Harbour – Grafton, Far West and Orana, Hunter Valley excluding Newcastle, Mid North Coast, Murray, New England and North West, Richmond – Tweed, Riverina, and Southern Highlands and Shoalhaven.

Sources: ABS Census 1996; ABS Census 2016, place of enumeration, Weekly Individual Income.

¹ <https://www.treasury.nsw.gov.au/nsw-economy/intergenerational-report>

b. What was the growth in Gross State Product (or GRP) for Sydney and for regional NSW in each year?

GRP estimates are not available for the entirety of the *Jobs for the Future* report period. For the period from 2005-06 to 2013-14, for which data compiled on a consistent basis is available, annual average GRP growth in Regional NSW was 1.2% compared with 2.3% for Sydney (table 6). More recent data has not been acquired as the Office of the Chief Economist within the Commonwealth Department of Industry now produces GRP estimates which are made publicly available. However, as GRP estimates are made based on models with underlying assumptions and these may be different for the Office of the Chief Economist estimates than for previously acquired estimates, these are not compared directly here. See table 7 for the Office of the Chief Economist estimates.

Table 6:

Region	GRP, 2005-06 (\$m)	GRP, 2013-14 (\$m)	Change (%)	Change (% p.a.)
Regional NSW	\$94,974.6	\$104,849.1	10.4%	1.2%
Sydney	\$288,526.9	\$345,918.1	19.9%	2.3%
Newcastle & Lake Macquarie and Illawarra	\$30,320.9	\$33,267.7	9.7%	1.2%
NSW	\$413,822.4	\$484,034.9	17.0%	2.0%

Regional NSW is comprised of the following SA4s: Central Coast, Capital Region, Central West, Coffs Harbour – Grafton, Far West and Orana, Hunter Valley exc Newcastle, Mid North Coast, Murray, New England and North West, Richmond – Tweed, Riverina, and Southern Highlands and Shoalhaven.

Sydney is comprised of the following SA4s: Baulkham Hills and Hawkesbury, Blacktown, City and Inner South, Eastern Suburbs, Inner South West, Inner West, North Sydney and Hornsby, Northern Beaches, Outer South West, Outer West and Blue Mountains, Parramatta, Ryde, South West, Sutherland.

Source: NIEIR 2015, Headline GRP data for SA4s in NSW

Note: GRP data are in 2012-13 dollars.

Table 7:

Region	GRP, 2014-15 (\$m)
Regional NSW	\$115,220
Sydney	\$360,160
Newcastle & Lake Macquarie and Illawarra	\$38,250
NSW	\$513,630

Regional NSW is comprised of the following SA4s: Central Coast, Capital Region, Central West, Coffs Harbour – Grafton, Far West and Orana, Hunter Valley exc Newcastle, Mid North Coast, Murray, New England and North West, Richmond – Tweed, Riverina, and Southern Highlands and Shoalhaven.

Sydney is comprised of the following SA4s: Baulkham Hills and Hawkesbury, Blacktown, City and Inner South, Eastern Suburbs, Inner South West, Inner West, North Sydney and Hornsby, Northern Beaches, Outer South West, Outer West and Blue Mountains, Parramatta, Ryde, South West, Sutherland.

Source: Department of Industry 2017, Australian Industry Report

Note : GRP data are in 2013-14 dollars

c. What was the growth in persons employed for Sydney and for regional NSW in each year?

Table 8:

Change in employment ('000)	Regional NSW	Sydney	Newcastle and Illawarra	NSW
Dec-1996	15.7	20.0	0.1	37.4
Dec-1997	-16.4	28.4	4.6	13.8
Dec-1998	21.0	41.7	-7.0	50.9
Dec-1999*	182.9	12.5	-163.3	32.2
Dec-2000	40.9	50.4	-0.1	91.2
Dec-2001	-0.1	25.4	6.5	31.8
Dec-2002	7.3	29.8	1.6	38.8
Dec-2003	45.5	10.6	-5.3	50.7
Dec-2004	-5.0	18.8	7.3	21.1
Dec-2005	3.1	46.3	8.2	57.6
Dec-2006	38.1	13.8	1.2	53.1
Dec-2007	20.9	40.4	6.6	67.9
Dec-2008	18.5	58.9	7.7	85.2
Dec-2009	-6.2	21.9	-15.2	0.5
Dec-2010	26.4	20.0	10.3	56.6
Dec-2011	7.1	50.2	-1.4	55.8
Dec-2012	2.9	26.7	2.1	31.7
Dec-2013	18.8	28.3	4.3	51.4
Dec-2014	-22.6	38.9	6.3	22.6
Dec-2015	34.2	51.3	10.8	96.2
Dec-2016	42.1	37.2	12.0	91.3

* Structural break in 1999 due to the changes in regional boundaries by the ABS. This is due to the ABS changing its regional classification from the ASGC to the ASGS. Under the previous classification the population of Illawarra was 438,900 in 2011, compared to 288,000 under the new classification. Likewise, under the previous classification the population of Newcastle was 552,800 in 2011, compared to 356,000 under the new classification. Consequently, employment numbers reduced accordingly and were reallocated to surrounding regions. Also, due to the change in boundaries, regional NSW saw an increase in employment.

For 1996 Sydney is comprised of the Sydney major region, based on the ASGC, excluding Gosford-Wyong SD.

For 2016 Sydney is comprised of the following SA4s: Baulkham Hills and Hawkesbury, Blacktown, City and Inner South, Eastern Suburbs, Inner South West, Inner West, North Sydney and Hornsby, Northern Beaches, Outer South West, Outer West and Blue Mountains, Parramatta, Ryde, South West, Sutherland

For 1996 Regional NSW is comprised of all NSW regions excluding those in Sydney, Newcastle SSD, and Illawarra SD.

For 2016 Regional NSW is comprised of the following SA4s: Central Coast, Capital Region, Central West, Coffs Harbour – Grafton, Far West and Orana, Hunter Valley exc Newcastle, Mid North Coast, Murray, New England and North West, Richmond – Tweed, Riverina, and Southern Highlands and Shoalhaven.

Note: there is a structural break in Regional NSW and Newcastle & Lake Macquarie and Illawarra due to the boundaries of Newcastle and Illawarra changing in 2000.

Notes: data is presented as annual averages. Numbers may not sum to total due to rounding.

Sources: ABS cat. No. 6204.0.55.001 - Labour Force Historical Timeseries, Australia, February 2009; ABS cat. No. 6291.0.55.001 Labour Force, Australia, Detailed - Electronic Delivery May 2017

3. What are the projections for growth in the following measures for each year for Sydney and for regional NSW? [transcript pages 10-12]

- a. Gross State Product (or GRP) over five years
- b. Wages over five years

NSW Treasury produces forecasts for Gross State Product (GSP) and for wage growth that are published in the NSW Budget, but does not produce these on a regional basis.²

Table 9:

NSW	2015-16 Outcomes	2016-17 Forecasts	2017-18 Forecasts	2018-19 Forecasts	2019-20 Projections	2020-21 Projections
Real gross state product	3.5%	2.75%	3%	2.75%	2.75%	2.5%
Wage price index	2.1%	2%	2.25%	2.5%	2.75%	3%
Per cent change, year average.						
Economic forecasts are based on data available at the time they were prepared, so results to June 2016 for GSP, and to the March quarter 2017 for the wage price index.						
Source: ABS 5220.0, 6345.0 and NSW Treasury						

c. Jobs over five years

Projected employment growth in Regional NSW is 7.1% from 2015 to 2020. Over the same time period Sydney's employment is expected to grow 11.1% (table 10).

Table 10:

Region	Trend Employment Nov-2015 ('000)	Projected Employment Nov-2020 ('000)	Employment change ('000)	Change (%)
Regional NSW	1,068.0	1,144.2	76.2	7.1%
Sydney	2,360.2	2,623.0	262.8	11.1%
Newcastle & Lake Macquarie and Illawarra	317.4	346.6	29.2	9.2%
NSW	3,755.4	4,123.5	368.2	9.8%
Regional NSW is comprised of the following SA4s: Central Coast, Capital Region, Central West, Coffs Harbour – Grafton, Far West and Orana, Hunter Valley exc Newcastle, Mid North Coast, Murray, New England and North West, Richmond – Tweed, Riverina, and Southern Highlands and Shoalhaven.				
Sydney is comprised of the following SA4s: Baulkham Hills and Hawkesbury, Blacktown, City and Inner South, Eastern Suburbs, Inner South West, Inner West, North Sydney and Hornsby, Northern Beaches, Outer South West, Outer West and Blue Mountains, Parramatta, Ryde, South West, Sutherland.				
Note: regions do not sum to NSW due to use of trend data.				
Source: Department of Employment, 2016 Employment Projections				

² 2017-18 Budget Paper No. 1 - Budget Statement - Chapter 3: The Economy, available at <https://www.budget.nsw.gov.au/sites/default/files/budget-2017-06/3.%20The%20Economy.pdf>

4. What are the best available statistical measures of economic development and economic inequality in and between Sydney and regional NSW that are available to the NSW Government? How often are these measures available? [transcript pages 11-12]

One common measure of economic inequality is the Gini coefficient, which measures the share of income earned by each section of the community, i.e. what share of income is earned by the bottom 20%, then the next 20% and so on. The Gini coefficient at the state level has been published by the ABS³. The data needed to calculate Gini coefficients for small areas requires additional data from the ABS that is not publicly available.

Another simple measure of economic inequality includes percentile ratios (e.g. P90/P10, P80/P20) which are shown below. This shows the ratio of the average income of the top 10 or 20 per cent to the average income of the bottom 10 or 20 per cent. The data required for inequality measures is produced by the ABS in the Survey of Income and Housing, conducted every two years (table 11).

The most widely used measure of economic development is GDP (or GSP, GRP) per capita (table 12). Employment (and population) growth are also important indicators of economic wellbeing for an economy.

Table 11:

Region	P80/P20 Ratio	P90/P10 Ratio
Regional NSW ¹	2.6	3.9
Sydney ²	2.6	4.4
NSW	2.6	4.3
1. Regional NSW in this table is the balance of NSW excluding Sydney ² . Regional NSW includes Illawarra SA4 and Newcastle and Lake Macquarie SA4.		
2. Sydney includes Central Coast SA4.		
Source: ABS Cat, No. 6523.0 Household Income and Wealth, Australia, 2013–14, mean equivalised household income.		

Table 12:

Region	GRP per capita 2005-06	GRP per capita 2013-14
Regional NSW	\$43,624.5	\$44,769.1
Sydney	\$72,987.3	\$76,753.7
Newcastle & Lake Macquarie and Illawarra	\$49,504.8	\$50,059.4
NSW	\$61,373.5	\$64,422.7
Sources: NIEIR 2015, Headline GRP data for SA4s in NSW; ABS cat. no. 3218.0 - Regional Population Growth, Australia, 2015-16		
Note: GRP data are in 2012-13 dollars.		

5. No question listed

³ ABS cat. no. 6523.0 - Household Income and Wealth, Australia, 2013-14

6. What representations has the Government made to the Australian Bureau of Statistics for more geographically detailed or more frequent statistical reporting of economic development or inequality? [see transcript pages 11-12]

The main impediment to the measures of economic development being compiled more frequently is access to GSP/GRP data. Currently GSP is only provided annually by the ABS and they do not provide any GRP breakdown.

The NSW Government has made requests for more frequent reporting of key national accounts aggregates, such as GSP, at the state level. To our knowledge the provision of quarterly GSP estimates is on the ABS forward work plan and is expected to be delivered in the relatively near future, though no exact date has been advised.

Regarding more disaggregated data, there has not been, until recently, a publicly available source of GRP estimates. However, recently the Office of the Chief Economist in the Commonwealth Department of Industry has begun publishing GRP and GRP per capita estimates. These are available at:

<https://industry.gov.au/Office-of-the-Chief-Economist/Publications/AustralianIndustryReport/industry-map.html>

This is a robust measure and will be updated on an annual basis going forward so will address some of the need for disaggregated data.

7. What are the formal channels for consultation with the Federal Government over the rollout of the NBN? [transcript pages 9]

Consultation with the Commonwealth Government over the rollout of the NBN occurs across a number of agencies including the Department of Premier & Cabinet, the Department of Finance, Services and Innovation and the NSW Telco Authority. Future engagement and consultation with the Commonwealth Government over the rollout of the NBN in relation to opportunities for regional development in NSW will be led by the recently-established Regional NSW Group within the Department of Premier & Cabinet as part of the Connecting Country Communities initiative, which was announced as part of the \$1.3 billion Regional Growth Fund in the 2017-18 NSW Budget.

8. What discussions has the Government had about the availability of information relating to actual internet speeds achieved under the NBN rollout at individual sites? [transcript pages 9]

The NSW Government is in early-stage discussions with NBN Co about actual speeds achieved under the NBN rollout at individual sites and will continue these discussions to explore opportunities for delivery of improved broadband services for regional NSW. These discussions will be led by the recently-established Regional NSW Group within the Department of Premier & Cabinet and inform the Connecting Country Communities initiative announced as part of the \$1.3 billion Regional Growth Fund in the 2017-18 NSW Budget.

9. What information is available to the NSW Government relating to actual internet speeds achieved under the NBN rollout at individual sites? [transcript pages 9]

The NSW Government through the Department of Premier & Cabinet is commencing discussions with NBN Co to investigate actual internet speeds achieved at individual sites and consider options for improved service delivery. The NSW Government also draws on industry standard reporting such as the Akamai State of the Internet report that includes global, regional, and country-specific connection speeds, broadband adoption rates and mobile connection speeds.

10. What actions are underway in NSW to address the low level of university/industry collaboration identified in the report?

The NSW Department of Industry supports a range of actions to encourage collaboration between universities and industry. A number of examples are provided below.

Boosting Business Innovation Program

The Department of Industry is supporting greater collaboration between NSW research organisations and their business communities through the Boosting Business Innovation Program. The Program is delivered in collaboration with all 11 universities in NSW and the CSIRO.

The Department is working with the delivery partners to build a connected innovation network across the State that enhances the ability of researchers, start-ups, SMEs and business communities to work together to develop and test new ideas for products and services.

Regional projects established under the program include the following:

- / Defence Innovation Hub at Williamtown
- / Agritech Hub at Wagga Wagga
- / CenWest Innovate business growth program at Bathurst
- / SMART Region Incubators at Armidale and Tamworth
- / Advantage SME program in Wollongong
- / Southern Cross Enterprise Lab at Lismore
- / Indigenous entrepreneur outreach in Dubbo, Albury, Port Macquarie and Lismore.

The regional universities delivering projects through the Program are: Charles Sturt University, Southern Cross University, University of New England, University of Newcastle, University of Wollongong, and Western Sydney University.

Sydney School of Entrepreneurship

Sydney School of Entrepreneurship (SSE) is a not-for-profit organisation whose members are NSW-based universities and TAFE NSW. The SSE has been established with a \$25 million investment aimed at placing NSW at the epicentre of entrepreneurship in the Asia-Pacific region.

The SSE will be a joint venture between NSW universities and TAFE NSW, and is supported by some of Australia's most successful entrepreneurs. The partnership between TAFE, universities and industry experts will prepare job-ready students and ensure that students acquire skills that are central to building a workforce of the future.

This prestigious school will teach practical entrepreneurial skills to top students from a range of disciplines as part of their degree or TAFE NSW program. SSE will seek out bright, energetic, creative and committed students – up to 1,000 each year – from across Sydney as well as regional and rural areas.

As a platform for NSW's raw talent, budding entrepreneurs and entrepreneurial thinking, SSE will become a powerful hub for participants, teachers, alumni and events to access entrepreneurial training, mentoring and support.

The NSW Chief Scientist & Engineer

The Chief Scientist & Engineer has two main roles:

- / to foster and encourage a lively state innovation system, particularly by promoting productive links between business, the professions, universities and government

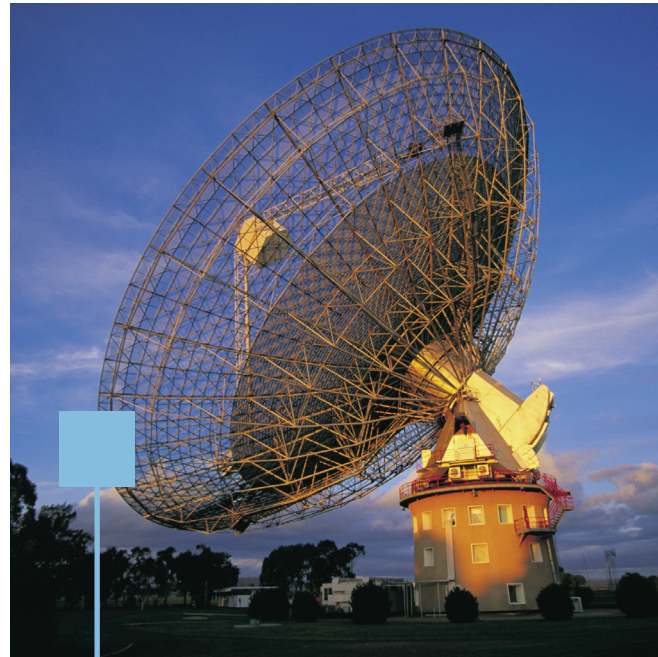
- / to provide independent advice on how to address (often wicked) policy problems that involve engineering or science. Examples include coal seam gas, sea-level rise, road tunnel air quality and coal dust emissions.

As NSW Chief Scientist & Engineer, Professor Mary O'Kane consults widely with academia, industry and government to ensure knowledge and research can be adapted and used to benefit NSW. She gives many speeches in her role promoting and encouraging innovation, research and development in NSW. Professor O'Kane also produces a large number of reports containing government-commissioned advice on various policy issues.



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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (December 2016). However, because of advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate officer of the Department of Industry, Skills and Regional Development or the user's independent advisor.

Contents

Glossary.....	3
Executive summary.....	4
About Growth Enablers	4
Regional development concepts.....	5
Findings.....	7
Conclusion	14
1. About Growth Enablers	16
1.1 Rationale	16
1.2 Methods.....	18
2. Regional economies.....	22
2.1 The regional context	22
2.2 Agglomeration and NSW's regional economies	22
2.3 Regional economies analysed	24
3. Industries of regional specialisation.....	25
3.1 Overview.....	25
3.2 Context: global trends and diversification	31
3.3 Sector-specific commentary	35
4. The role of government in regional development.....	43
4.1 When should government intervene?	43
4.2 Overcoming market failures in regional development	44
4.3 Chapter summary	49
5. Pilot project results.....	50
5.1 Purpose and methods of the pilot.....	50
5.2 Workshop results	50
5.3 Recommendations for business survey.....	53
5.4 Business survey results	54
5.5 Dominant issues raised through the pilot	66
5.6 Pilot evaluation	69
6. Investment directions	70
6.1 Dominant enablers.....	70
6.2 Key sectors to drive growth.....	71
6.3 Regional investment strategies	73
6.4 Summary	75
6.5 Conclusion	76
6.6 Future directions	76
Appendices	77
Appendix 1 Albury-Wodonga regional economy	78

Appendix 2	Armidale regional economy.....	89
Appendix 3	Bathurst regional economy	99
Appendix 4	Bega regional economy	109
Appendix 5	Broken Hill regional economy	119
Appendix 6	Coffs Harbour regional economy	129
Appendix 7	Dubbo regional economy	139
Appendix 8	Goulburn regional economy	149
Appendix 9	Griffith regional economy	159
Appendix 10	Lismore regional economy	169
Appendix 11	Moree regional economy	179
Appendix 12	Mudgee regional economy.....	189
Appendix 13	Orange regional economy	199
Appendix 14	Parkes regional economy	209
Appendix 15	Port Macquarie regional economy.....	219
Appendix 16	Tamworth regional economy.....	229
Appendix 17	Tweed regional economy.....	239
Appendix 18	Wagga Wagga regional economy	249
Appendix 19	Market failure	259
Appendix 20	Methodology for table 6.1	261
Appendix 21	Recent industry trends	266

Glossary

ANZSIC codes	The Australian and New Zealand Standard Industrial Classification (ANZSIC) is a system for the compilation and analysis of industry information in Australia. The classification has a four tiers: 19 industry divisions (level 1), 86 subdivisions (level 2), 214 groups (level 3) and 506 classes (level 4). This study uses the 2006 edition of ANZSIC.
emerging industries	Potentially emerging industries in this study are industries which do not show specialisation in the regional economy (have a location quotient lower than 1.25) but which show employment growth between 2006 and 2011 (when data used in this study was collected).
enablers of growth	Enablers of growth are investments with the greatest potential return of economic growth in an economy. Enablers may address skills needs, infrastructure needs or regulatory reform.
endowments	Endowments are features that an economy possesses and can exploit. Natural endowments include agricultural land, climate, mineral and water resources, and aesthetic appeal. Human endowments include hospitals and educational facilities that are a result of government policy, labour, and location relative to major trade routes. Economic principles suggest that only regional development policies that build on a region's endowment will succeed.
industry sector	An industry sector is the collection of companies that operate in the same large segment of the economy or share a similar business type. For example, the basic materials sector is the segment of the economy in which companies deal in the business of exploration, processing and selling basic materials such as minerals which are used by other sectors of the economy.
key sectors or engines of growth	Key sectors are 'engines of growth' - industries which drive growth in 'population serving industries' and are supported by inputs from 'enabling sectors'. An industry may be an engine of growth in one regional economy but a population serving industry in another location
market failure	Market failure occurs when a market does not independently allocate resources optimally. A market failure does not imply any failure on the part of an industry - rather, they can be opportunities for government to make investments which reduce barriers to economic growth. <i>(See Appendix 19 for further information)</i>
materiality	An industry which has a high location quotient may represent a small proportion of regional employment, and thus have low 'materiality'. Public policy decisions based on information about large industry segments (those with high materiality) may have different qualitative effects on small industry segments (those with low materiality).
regional agglomeration	Regional towns may be centres of agglomeration and grow in population as a result of prosperity in their industries of regional specialisation.
regional economies	Centres of regional agglomeration provide employment and services for residents of surrounding smaller communities, and collectively form regional economies.
regional specialisation	A regional economy is specialised in an industry when it has a larger proportion of workers in that industry than NSW as a whole. For the purpose of this study, industries of regional specialisation are defined as those with a location quotient ≥ 1.25 and providing $\geq 1\%$ of jobs in the regional economy (as a threshold for 'materiality') unless otherwise specified.

Executive summary

The Centre for Economic Development has combined contemporary economic principles, desktop research and community consultation to empirically identify potential enablers to economic growth in regional areas. The report allows non-economists to access the latest thinking and analysis pertinent to regional development and seeks to inform regional public investment and policy decisions at all levels of government. The report also provides a resource for regional communities in planning their economic development strategies.

Key Findings:

1. As with the rest of the world, the economic base of NSW's regions is 'narrowing and deepening', with fewer key sectors employing a larger proportion of the workforce.
2. These key sectors are invariably directly linked to their region's local endowments. While growth in most of these industries and the emergence of some new endowment-based industries can be expected, numerous sources of market failure may be hindering growth – policies and investments to address these problems are the 'growth enablers'.
3. The future of individual regional economies is inexorably linked to their endowments, and attempts to retain or establish industries without an underpinning endowment are unlikely to succeed.
4. A narrower industrial base in an individual regional economy implies a greater exposure to boom and bust cycles and associated social costs. Hence, public interventions aimed at increasing regional development should encourage a degree of industrial diversity, as long as each sector is endowment-based, to foster community resilience while building local leadership capacity in order to enable a region to capitalise on opportunities.

The research incorporated in this report is already being used by the NSW Government to inform its investment decisions, and it is anticipated that this report will be a useful resource for regional leadership in drawing up economic development strategies.

The Growth Enablers approach is an evolving work and will be extended by the Centre for Economic Development to guide the decisions of regional development policy makers with the aim of the best possible outcomes for the people of NSW.

About Growth Enablers

The objective of the Regional Economic Growth Enablers project (Growth Enablers) is to inform regional public investment and policy decisions by combining contemporary economic principles, desktop research and community consultation to empirically identify potential enablers to regional growth for each regional economy considered.

The methods are repeatable, transparent and intuitively understandable. The study draws on the experience of businesses in key industries, and provides robust evidence. Eighteen regional economies have been defined according to employment behaviour and economic linkages, using local government areas (LGAs) as the smallest building block. The main analytical tool was the Regional Analysis Model developed by the Centre for Economic Development within the NSW Department of Industry, Skills and Regional Development. The project results will assist the appraisal and prioritisation of project proposals for regional infrastructure and workforce skills growth by

Growth Enablers is based on data from the 2006 and 2011 Australian Census, the most recent data available at the time of the study. The analyses will not detect industry changes which have taken place since 2011.

pointing to industries, locations and investment types most likely to amplify regional investment returns.

The Growth Enablers approach provides a foundation for the NSW Government's investments aimed at delivering sustained economic growth in regional NSW, and will support initiatives such as the Regional Development Framework, skills and vocational training programs, and Infrastructure NSW regional funds.

Regional development concepts

Agglomeration

Many industries can supply their goods and services to customers at lowest cost when businesses are located in urban areas because customers are more numerous and more densely concentrated, and access to labour and other inputs is cheaper because of economies of scale. Knowledge spillovers are also more common in agglomeration centres due to the denser proximity and more regular interaction of businesses and workers with shared interests. People are attracted to urban areas because finding a suitable job is easier, and goods and services are often cheaper as competition forces businesses to pass on savings to customers.

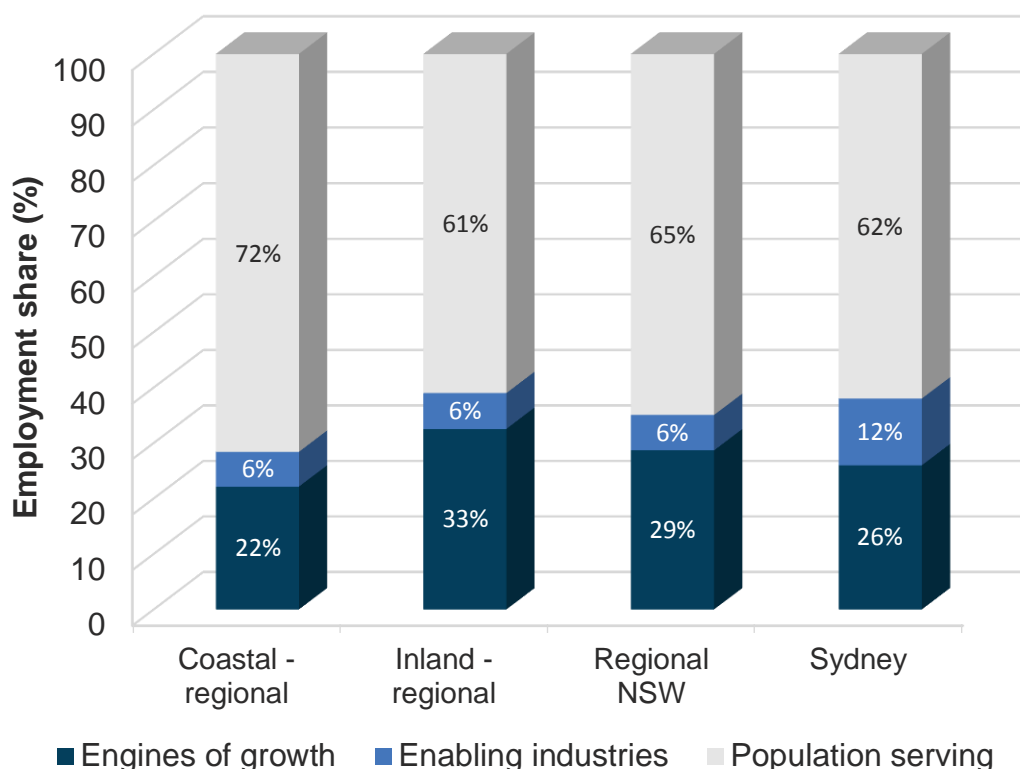
These factors make 'agglomeration' around urban areas self-reinforcing, inducing large cities to grow larger while smaller towns lose population as individuals seek work in larger centres. Some regional cities and towns are centres of agglomeration in their own right as a result of the prosperity of their key industry sectors. In being so, they provide employment and services for residents in surrounding smaller communities and collectively form 'regional economies'.

Key sectors

The focus of this analysis is primarily on the key sectors of each economy. Key sectors are defined as the significant non-population serving 'engine' or 'driving' industries within a regional economy that produce goods or services that are traded outside of the specified region. The difference between 'engine' industries and 'key sectors' is simply size: a regional economy may contain many trade exposed engine industries, but only a few (the key sectors) will be above a sensible materiality threshold. The industries which are key sectors will vary from region to region. Key sectors are often supported by 'enabling' industries that provide specialised inputs to engine industries – examples include vocational education, specialised maintenance and repair (such as for the mining sector) and utilities.

In the context of the regional economies examined here, key sectors are typically industries reliant on local endowments, such as immobile factors of production or locational advantages, with the most common key sectors being agriculture, mining, tourism, and transport. In some regions, industries that might appear to be population serving could be considered key sectors if they are geared to provide services to a wider area, such as tertiary education and specialised health services. Either way, regional economies exist because of their key sectors.

Figure ES1 Employment share in engine, enabling and population serving industries across NSW



Specialisation and diversification

Contemporary approaches to regional development suggest that only those policies that build on a region's competitive advantages will succeed. The focus of this project is to identify the types of investment that are most likely to foster regional economic growth (increase in gross regional product) based on competitive advantage.

The practical application of this approach relies on analysis of industry 'specialisation' at the regional level. A regional economy is specialised in an industry when it has a larger proportion of workers in that industry than NSW as a whole.

Specialisation in a region can arise from the location's endowments which provide competitive advantage, or be a result of government investment in regional development aimed at reducing socioeconomic inequality between cities and regional centres. For example, regional specialisation in health may be a reflection of a government decision to build a large hospital, but not indicate true competitive advantage. A regional competitive advantage will result in a specialisation being identified, but a regional specialisation does not necessarily imply a regional competitive advantage. This report uses the term regional specialisation in the analysis of regional economies.

There is strong evidence that the world economy is becoming increasingly specialised, with product value chains fragmented by production of components in different regions, countries or even continents, while the final product is later assembled centrally. This global specialisation has arisen primarily from increasing transport productivity and the ease of information dissemination, which has led to a dramatic fall in the transaction cost of disaggregating production processes to locations with the greatest competitive advantage for each process.

Increasing specialisation across the globe is 'narrowing' and 'deepening' national economies such that industrial diversification is declining but the proportion of the workforce devoted to remaining industries is rising. In the regional development context, global specialisation and value chain fragmentation suggests that individual regions can expect to operate fewer but larger industries which are networked into global supply chains. Global specialisation is likely to reduce the diversification of NSW's regional economies.

A commonly held belief is that diversified regional economies lead to stronger economic growth, but this view may be confounded with the observation that larger centres grow faster (without recognising that this may derive from the efficiency benefits of agglomeration). It is perhaps more accurate to accept that a region's specialisations will be related to their endowments, and that the number of specialisations will therefore depend on the number of endowments upon which competitive advantage can be built. Nevertheless, industrial diversification within a region is in itself a good thing in that it provides resilience against the 'boom and bust' cycles associated with dependence on a small number of industries.

Findings

NSW regional economies and their specialisations

Eighteen regional economies (Figure ES2) with moderate to large and mostly growing populations (20,000 – 151,000) were examined in this study. Regions were prioritised for analysis based on two criteria: population size and geographic representation. For convenience, the regional economies are named for the regional centre that provides the largest share of jobs and goods and services like health care, speciality retail and education to the populace of the satellite LGAs.

It is acknowledged that the sample of regional economies selected is biased and partial – this is a demonstration project and coverage of the entire State was not practical. Indeed, local government areas which are likely to be economic satellites of Greater Sydney, Newcastle, Wollongong and Canberra, such as Cessnock, Nowra and Queanbeyan, were deliberately considered out of scope to simplify the analysis.

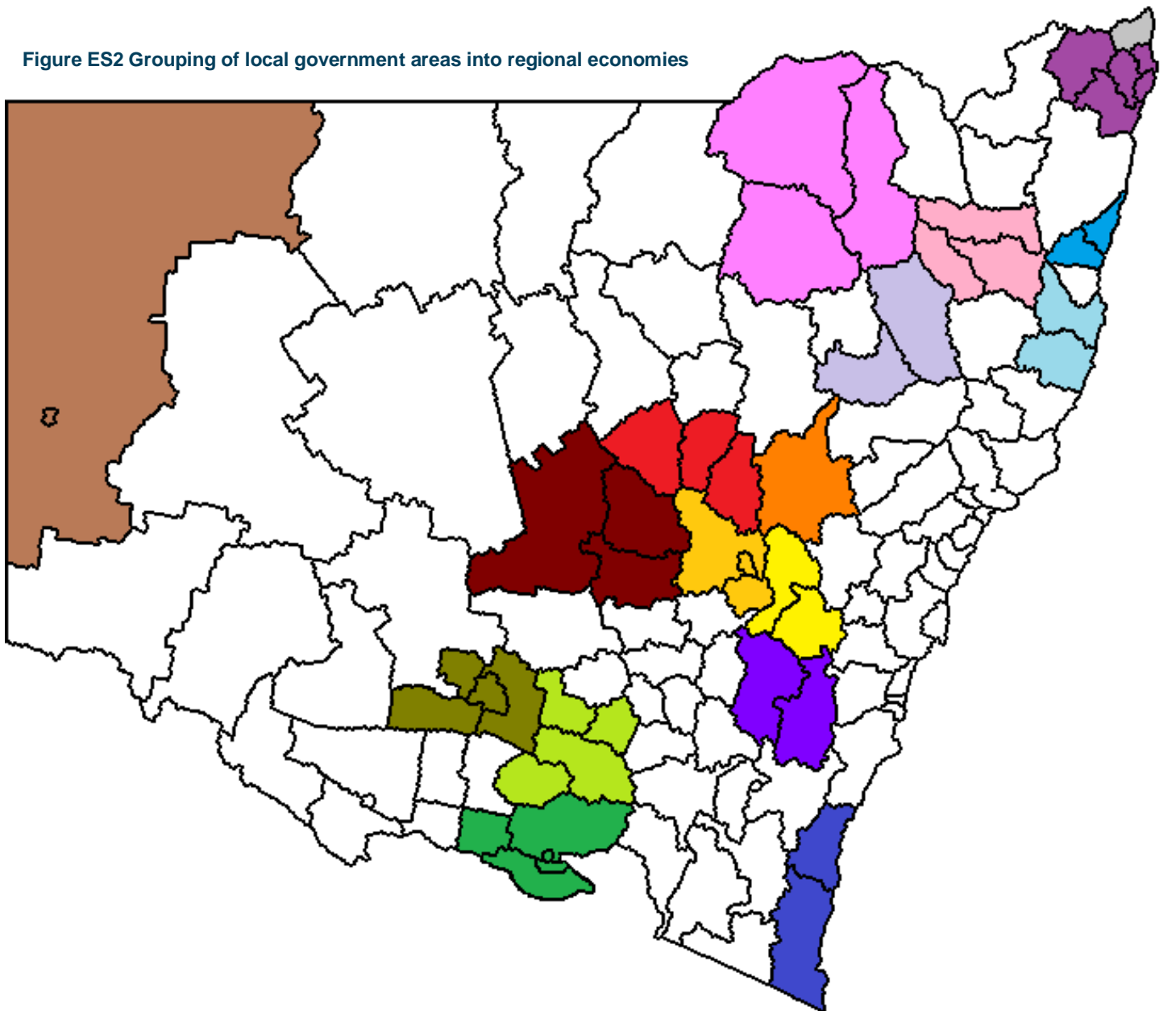
Larger constructs of regional economies (such as the broadly defined Central West) were not examined as part of this study because they may mask local specialisation. The smaller and more tractable regions adopted allow for additional precision, providing information on functional regional economies.

Analysis of industry sectors (looking only at those employing greater than or equal to 1 per cent of each regional economy's workforce) revealed that all 18 regional economies have specialisations in some form of agriculture, forestry and fishing; retail trade; education and training; and local government administration. Accommodation and food services is a specialisation at some level in 15 of 18 regional economies, as is health care and social assistance.

Key industries of specialisation (Table ES1) are almost all dependent on the natural endowments of the region, or are sectors that service populations. Existing manufacturing specialisations are all a form of natural product manufacturing, indicating that historic specialisations in other forms of manufacturing (such as machinery, clothing and footwear) are gradually being unwound in the face of global competition. This supports the contemporary view in regional development that the future prosperity of regional economies should be founded on regional economic specialisations linked to endowment.

The study also suggests that the global and national pattern of increasing specialisation leading to 'narrowing' and 'deepening' of economies is evident in regional economies also. Between 2001 and 2011, the number of regionally specialised industries declined (Figure ES3) and the average location quotient of those industries that were specialisations in 2011 had increased in most of the regional economies examined (Figure ES4).

Figure ES2 Grouping of local government areas into regional economies



Broken Hill (Broken Hill LGA and Unincorporated Far West Region)
Parkes (Parkes, Lachlan and Forbes Shire LGAs)
Dubbo (Dubbo, Narromine and Wellington LGAs)
Orange (Orange, Blayney and Cabonne LGAs)
Mudgee (Mid-Western Regional LGA)
Bathurst (Bathurst Regional and Oberon LGAs)
Griffith (Griffith, Leeton, Murrumbidgee and Narrandera Shire LGAs)
Wagga Wagga (Wagga Wagga, Coolamon, Junee, Lockhart LGAs)
Albury (Albury, Wodonga, Corowa Shire, Greater Hume, Indigo LGAs)

Tweed (Tweed Shire LGA)
Lismore (Lismore, Ballina, Byron, Kyogle, Richmond Valley LGAs)
Moree (Moree Plains, Gwydir and Narrabri Shire LGAs)
Armidale (Armidale Dumaresq, Guyra and Uralla LGAs)
Tamworth (Tamworth and Liverpool Plains LGAs)
Coffs Harbour (Coffs Harbour and Bellingen LGAs)
Port Macquarie (Port Macquarie-Hastings, Kempsey Shire LGAs)
Goulburn (Goulburn and Upper Lachlan Shire LGAs)
Bega (Bega Valley and Eurobodalla Shire LGAs)

Table ES1 Industries of specialisation in regional economies examined in this study

	ANZSIC level	Albury-Wodonga	Armidale	Bathurst	Bega	Broken Hill	Coffs Harbour	Dubbo	Goulburn	Griffith	Lismore	Moree	Mudgee	Orange	Parkes	Port Macquarie	Tamworth	Tweed	Wagga Wagga
Sheep, beef cattle and grain farming	3-4	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Fruit and nut tree growing	3						✓			✓	✓								
Other crop growing	3											✓							
Agriculture and fishing support services	3											✓							
Coal mining	3											✓	✓						
Metal ore mining	3					✓								✓	✓				
Food product manufacturing	2	✓		✓	✓			✓	✓	✓	✓						✓		✓
Beverage manufacturing	2									✓			✓						
Wood product manufacturing	2			✓															
Agricultural product wholesaling	3											✓							
Grocery, liquor & tobacco product wholesaling	3									✓	✓								
Road freight transport	3	✓						✓				✓					✓		✓
Accommodation	2	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓		✓	
Vocational education	4	✓					✓	✓	✓					✓		✓	✓		✓
Higher education	4		✓	✓							✓								✓
Hospitals	2					✓	✓	✓						✓			✓	✓	
Medical and other health care services	2					✓	✓				✓			✓		✓		✓	✓
Residential care services	3				✓	✓	✓	✓	✓		✓		✓	✓	✓	✓		✓	

Figure ES3 'Narrowing': Change in number of regionally specialised industries from 2001 to 2011

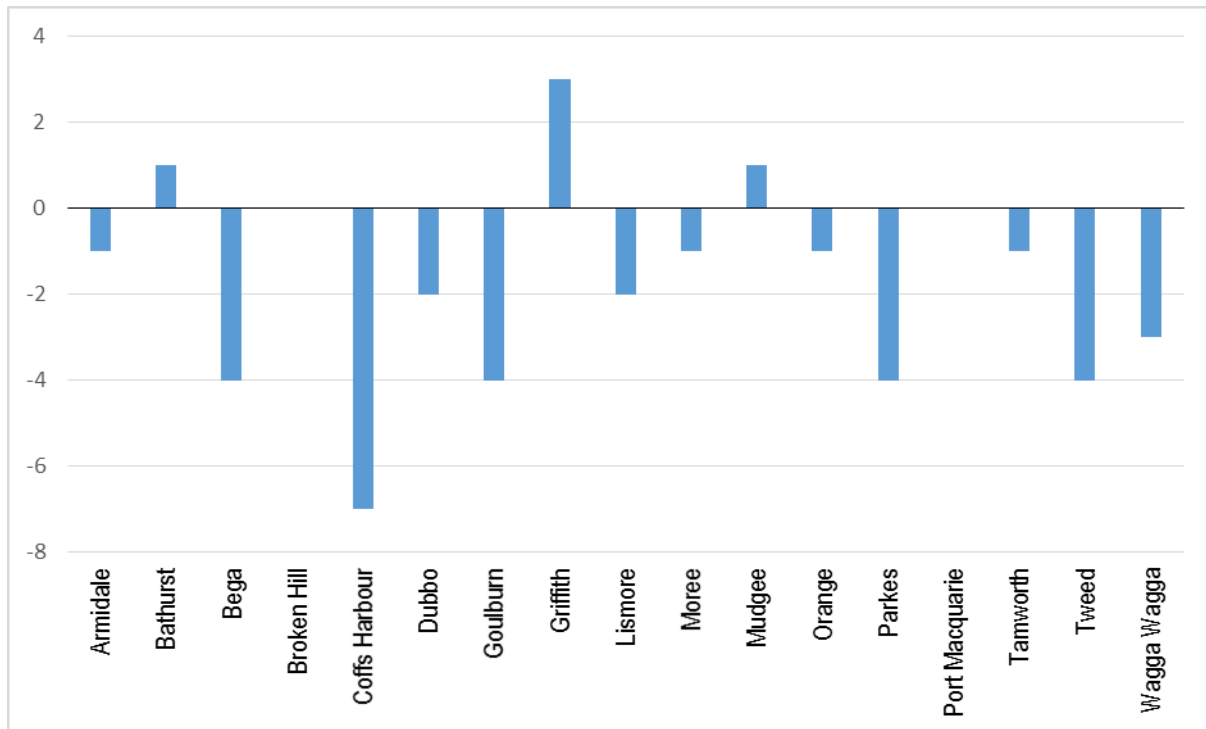
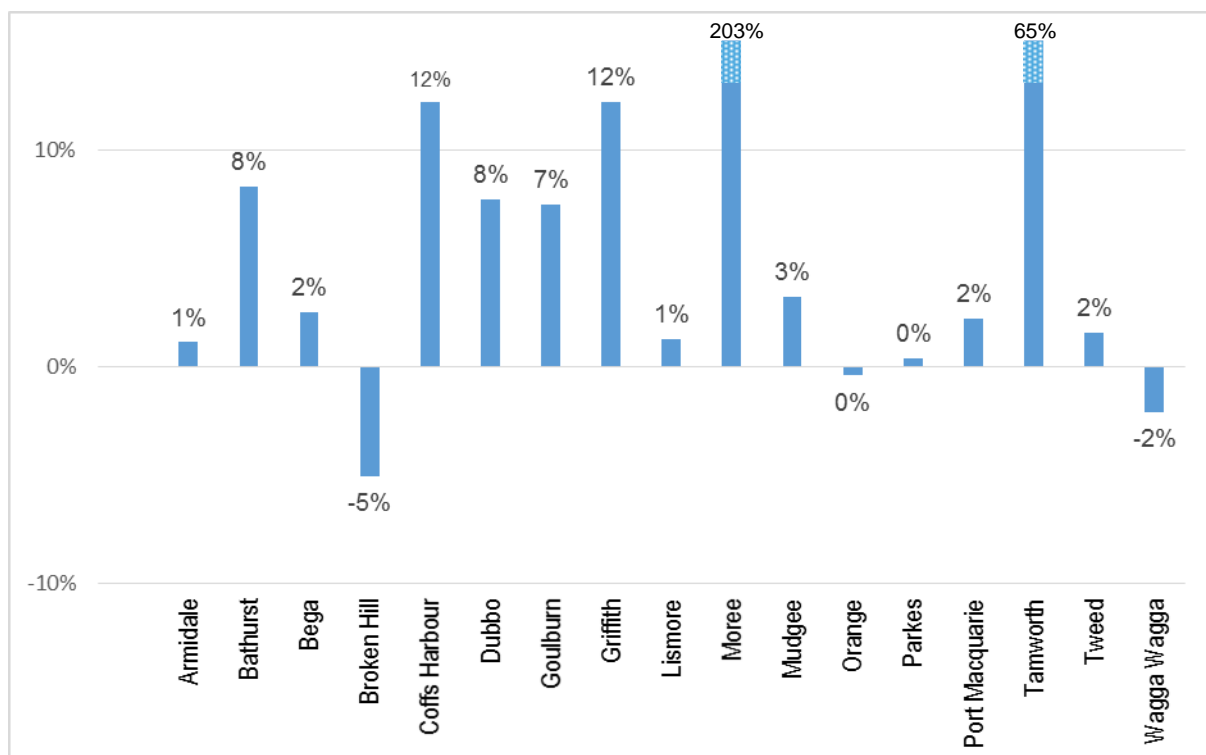


Figure ES4 'Deepening': Average percentage change in location quotient since 2001 of industries that are specialisations in 2011



Market failures

Government intervention in pursuit of greater efficiency is most valuable where a market failure is identified, and the benefits of intervention exceed the cost.

The market failures most applicable to regional development that are revealed by this study relate to skills, particularly technical and vocational training, and public infrastructure provision. The market for skills is affected by several impediments, including instances of information asymmetry (principal-agent problems and access to capital), positive externalities, and instances of natural monopoly. Investment in public infrastructure is subject to the 'first mover and free rider' problem (where businesses have an incentive to wait for another firm to invest first), natural monopoly and network externalities.

These market failures are not unique to regional economies, but are exacerbated by the unavoidable smaller economies of scale, shallower labour markets of regional areas, and partial public good nature of some investment. The consequence is generally under-investment in industries that depend on technical and vocational training and public infrastructure provision.

The market failures identified above are generic and it is in no way implied that existing government intervention is inadequate – indeed, considerable resources are presently devoted to addressing them. However, these market failures represent investment opportunities with the greatest potential to generate growth in the regional economy and are therefore worthy of regular examination. In this report, they have been found to be more or less applicable to each key industry sector depending on the reliance of each industry on technical and vocational skills, public infrastructure and industry goods (Table ES2).

Table ES2 Enablers with greatest potential for return in key industry sectors

Key													
		Greatest return potential											
Skills	General skills ^A	Agriculture	Mining	Food product manufacturing	Beverage manufacturing	Wood product manufacturing	Wholesaling	Accommodation	Road freight transport	Vocational education	Higher education	Health care	Aged care
Infrastructure	Training quality ^B												
Regulation	Training provider scale ^C												
	Road, rail & air												
	Utilities ^D												
	Other public infrastructure ^E												
	WH&S ^F												
	Environmental												
	Land use and planning												

A General skills issues arise because individuals can't capture all the benefits from training and businesses that train staff risk having them poached

B Training quality issues arise when training is not of sufficient quality to enable students to find work in that industry.

C Training provider scale issues arise where there is natural monopoly among training providers in a regional economy.

D Utilities include gas, water, electricity, waste and telecommunications infrastructure.

E Other public infrastructure includes all other infrastructure projects that are not road, rail, air or utilities related, for example hospital construction.

F WH&S refers to workplace health and safety related legislation.

The Growth Enablers pilot

The aim of the Growth Enablers pilot was to test the alignment between enablers and impediments of economic growth identified through application of economic principles and desktop industry analysis against the experience of regional business leaders and regional development experts. Workshops and surveys were conducted with business leaders and regional development experts in three locations: Orange, Wagga Wagga and Port Macquarie.

The workshops and surveys identified a wide range of issues of concern, including skills availability, infrastructure provision and regulatory burden. Many of these issues could be mapped to potential market failures.

The pilot was successful in identifying local growth enablers and confirming business behaviours. The main findings are that:

- The cost profiles of regional businesses are suggestive of smaller scale operations compared to the State average for their industries, with higher relative employee costs despite the lower wage environment that is typical of regional economies.
- Regional businesses seek to minimise costs by sourcing key inputs such as finance, insurance and specialist manufactures from metropolitan markets, often interstate. This suggests that the indirect benefits to regional economies of hosting such industries will be limited to the supply of labour and location-dependent inputs, such as primary commodities, facility rent, etc.

These findings reinforce the conclusion that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed in the long term, and unlikely to generate the degree of expected benefits in the short term.

The results of the Growth Enablers pilot suggest that it is not necessary to roll out the business survey component of the pilot to other locations at this stage, although bespoke surveys may be required to support business cases for government investment in specific regional projects. The gleanings from the pilot workshops were incorporated in the subsequent more extensive regional consultations conducted by LEK Consulting on behalf of the Department of Industry as part of the Regional Economic Opportunities and Infrastructure Priorities project.

Key sector investment in regional economies

The Growth Enablers approach tailors information to identify individual strengths of regional economies and the value of intervention in those economies. Key sectors most likely to grow in response to government investment are those that have high regional advantage or specialisation (a location quotient greater or equal to 1.25), are sufficiently large (provide greater than or equal to 1 per cent of the regional economy's jobs), and show employment growth (Figure ES5).

Figure ES5 Interpreting prospects for investment in individual regional economies

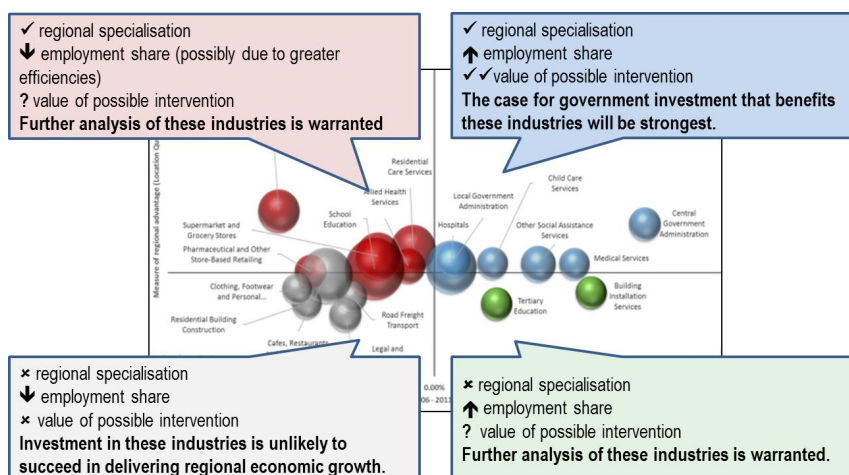


Table ES3 Key sectors, regional economies and enablers with greatest potential to produce regional growth from government investment

(Blue shading indicates recommended investment areas; numbers are % of jobs in regional economy provided by that industry in 2011)

Key sectors													
Enablers													
	Agriculture		Mining	Manufacturing			Wholesaling	Accommodation	Road freight transport	Vocational education	Higher education	Health care	Aged care
	Skills	General skills		Food product	Beverage	Wood product							
	Infrastructure		Training quality and scale*			Training quality and scale*		Training quality and scale*		General skills	General skills	General skills	
	Regulatory relief	WH&S and environmental regulation	Environmental, land use and planning regulation	Transport infrastructure	Transport and utilities infrastructure	Transport infrastructure	Transport infrastructure	Utilities infrastructure	Transport infrastructure	Other public infrastructure		Other public infrastructure	
				Environmental regulation		WH&S and land use and planning regulation			WH&S regulation			Environmental regulation	WH&S regulation
Albury-Wodonga	4.4			5.2					2.5	1.2			
Armidale	11.1										9.7		
Bathurst	4.5			6.0		3.2					4.2		
Bega	3.4			3.7		1.2		4.2					
Broken Hill	4.1	9.0						4.2				8.9	
Coffs Harbour	3.8							3.1		1.1		9.2	
Dubbo	7.1								2.4	1.1		4.8	
Goulburn	9.6									1.0			
Griffith	12.7			8.4	5.3								
Lismore	5.3			4.0								4.4	
Moree	23.5	2.9					1.9		2.2				
Mudgee	9.6	15.6			1.5			2.5					
Orange	6.7	6.8								1.3		9.9	
Parkes	17.9	3.8											
Port Macquarie						1.2		2.5		1.1		4.7	3.9
Tamworth	8.3			4.8					2.7	1.2		5.3	
Tweed												5.2	4.8
Wagga Wagga	6.3								2.2	1.2	3.6		

*Training quality issues arise when training is not of sufficient quality to enable students to find work in that industry. Training scale issues arise where there is natural monopoly among training providers in a regional economy.

When results for all regional economies considered in this study are collated, the intersection of key sectors, regional economies and investment types that are most likely to maximise the return on NSW Government investment is summarised in table ES3.

There are two major implications of these results. Firstly, it is apparent that the total number of regional specialisations across the 18 regional economies studied is relatively small. Secondly, when the specialisations that represent ‘enabling’ industries for either engine or population-serving industries are excluded (wholesaling, transport, education and health in most instances), the remaining ‘engine’ industries of significant size – that is, the key sectors – are limited to those relying on agricultural, mineral and environmental (social amenity) endowments, with tourism and aged care included in the latter.

Conclusion

Driving regional employment and regional business growth is a key goal of the NSW Government’s economic development strategy for regional NSW. The Growth Enablers project seeks to provide an evidence base for achieving that goal through identifying the areas of highest value investment, grounded in contemporary economic understanding, sound data analysis, and the experience of regional business leaders and regional development experts from councils and government. Growth Enablers has the added advantage of avoiding the pitfalls of a one-size-fits-all approach to regional development policy by tailoring information about the individual needs and strengths of regional economies.

The primary finding of this work for regional communities is that, as with the rest of the world, the economic base of NSW’s regions is ‘narrowing and deepening’, with fewer but proportionally larger ‘engine’ industries in any particular region that are directly linked to local endowments. While growth in most of these industries and the emergence of some new endowment-based industries can be expected, numerous sources of market failure may be hindering such growth. These market failures potentially provide opportunities for potentially effective government intervention – these are the ‘growth enablers’.

This work has important implications for the three levels of government and other stakeholders in their attempts to foster economic growth in regional communities, including:

1. The future of individual regional economies is inexorably linked to their natural endowments, and attempts to retain or establish industries without an underpinning endowment are unlikely to succeed.
2. ‘Engine’ industries provide a surprisingly stable proportion of total employment across all economies, and the smaller number of engine industries that remain in regional NSW will continue to provide a similar proportion of jobs in most communities.
3. However, a narrower industrial base in an individual regional economy implies a greater exposure to boom and bust cycles and the associated social costs. An industrial base comprised of an inevitably small number of relatively unrelated industries based on endowments would appear to offer the best hedge against cyclical variation in economic performance.

Hence, public interventions aimed at increasing regional development need to concentrate on the growth enablers of endowment-based industry; and build local leadership capacity in order to enable a region to capitalise on opportunities.

The research incorporated in this report is already being used by the NSW Government to inform its investment decisions, and will support initiatives such as the recently released Regional Development Framework, skills and vocational training programs, and Infrastructure NSW regional funds. It is also anticipated that this report will be a useful guide and resource for regional leadership in drawing up economic development strategies.

The project has also identified some industry perceptions of regulatory impediments, which may contribute to future government-wide or individual agency reviews of regulation and business practices aimed at improving the business environment.

The Growth Enablers approach to regional economic analysis is an evolving work and will be extended by the Centre for Economic Development to guide the decisions of regional development policy makers and the NSW Government with the aim of ensuring regional investment will deliver the best possible outcomes for the people of NSW.

1. About Growth Enablers

1.1 Rationale

1.1.1 Objective

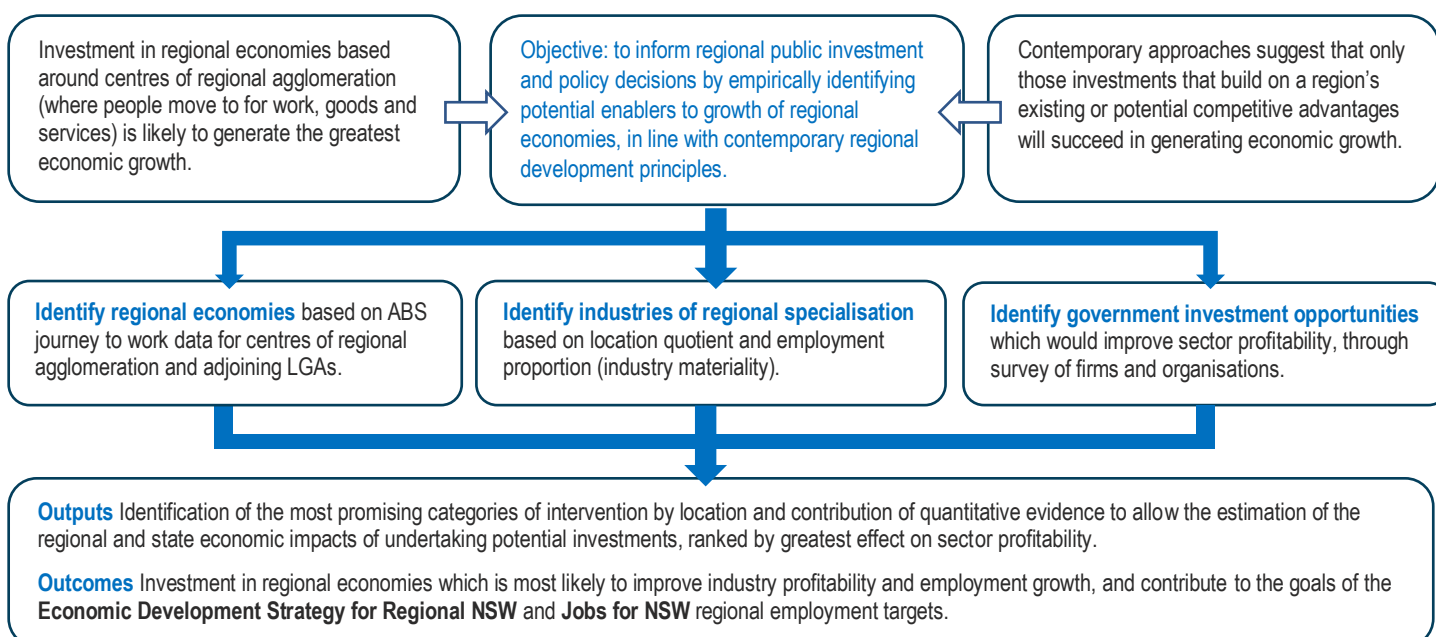
Many inland regions of NSW are experiencing long term population decline arising from the replacement of labour with capital in traditional industries, driven by a combination of technological innovation and market forces. At the same time, the benefits of agglomeration attract businesses and workers to the nation's major metropolitan cities. These forces are inevitable, and government intervention is unlikely to prevent continued population declines in areas where these forces are in operation or competitive advantage has been eroded.

However, some major regional centres of NSW have resisted this decline because they have become agglomeration centres in their own right, with an underlying competitive advantage in one or more key sectors. This report is based on contemporary approaches to regional development, which suggest that only those policies that build on a region's competitive advantages will succeed. Government has a role in strengthening local institutions and addressing factors within its control which prevent regions from making full use of their competitive advantage.

The objective of the Regional Economic Growth Enablers project (Growth Enablers) is to inform regional public investment and policy decisions by combining contemporary economic principles, desktop research and community consultation to empirically identify potential enablers to regional growth for each regional economy considered. (Figure 1.1).

The Growth Enablers approach provides a foundation to the NSW Government's decision making in relation to investments to deliver sustained economic growth in regional NSW, and will support initiatives such as the recently announced Regional Development Framework, skills and vocational training programs, and Infrastructure NSW regional funds. The project results will assist the appraisal and prioritisation of project proposals for regional infrastructure and workforce skills growth by pointing to industries, locations and investment types most likely to amplify regional investment returns.

Figure 1.1 Project logic for Growth Enablers



1.1.2 Contemporary regional economic growth theory¹

The economic growth of regions is a complex phenomenon that the economics profession has struggled to adequately explain. Early neoclassical growth models usefully explained the roles of labour and capital in economic growth per se but had little to say about spatial variation and predicted that competition and free trade would lead to ‘convergence’ of regions: a prediction that did not align with observation. Neoclassical growth theory strongly suggested that there was little role for government in promoting regional economic development.

The ‘polarization theory’ (also known as growth pole theory) beginning in the 1950s produced a model in which regional clusters of economic activity emerge due to a combination of factors encouraging both concentration and divergence. Forces that encourage concentration, such as the realisation of economies of scale when supplying larger markets and in infrastructure provision as well as positive externalities associated with large labour markets, acted to attract businesses to ‘agglomeration’ centres. At the same time, forces that encourage divergence pushed businesses to the periphery of cities or to smaller agglomeration centres as they sought cheaper rents, less congestion and proximity to natural resources. Hence, the perpetual action of these opposing forces determines the location and shape of towns and cities. Polarization models explained some of the observable divergence in regional fortunes but it was apparent that there were other forces at work.

The contemporary ‘New Growth Theory’ school of thought, also known as ‘Endogenous Growth Theory’ and often attributed to Romer², builds on the earlier spatial theories to emphasise the importance of local factors in driving regional economic development. These factors include physical and labour factor endowments, institutional and non-traditional variables such as learning, leadership and social capital. In particular, Krugman³ and others emphasise the local accumulation of knowledge as a primary driver of regional development, and suggest that regional differences in knowledge creation and imperfections in its dissemination are partly responsible for the observed spatial variation in economic development. In line with its emphasis on endogeneity (internal or local factors), the New Growth Theory shifts the policy focus from ‘master planning’, imposed from outside, to ‘bottom-up’ strategic planning.

Taking contemporary economic theory and empirical evidence into account, the OECD has recommended a regional development policy framework that includes:

- a strategic concept or development strategy that covers a wide range of direct and indirect factors that affect the performance of local firms
- a focus on regional assets and less on external investments and transfers
- an emphasis on opportunity rather than on disadvantage
- a collective/negotiated governance approach involving national, regional and local government plus other stakeholders, with the central government taking a less dominant role.⁴

1.1.3 Aspirations

The New Growth Theory implies sub-optimal outcomes are likely to arise from market imperfections. For policy this implies that there is likely to be justification for government intervention in areas characterised by market failure, particularly in the creation and dissemination of knowledge. However, globalisation has simultaneously weakened the ability of central governments to use their traditional economic and policy mechanisms, such as subsidies and transfers. Stough, Stimson and Nijkamp (2011) assert that this fact is not understood by many

¹ This section draws heavily on: Stough R. R., Stimson, R. J. and Nijkamp, P. (2011). *An endogenous perspective on regional development and growth*. in K. Kourtit, P. Nijkamp and R. R. Stough (Eds.), *Drivers of Innovation, Entrepreneurship and Regional Dynamics*, Springer, Berlin, pp.3-20.

² Romer, P.M. (1990). *Endogenous technological change*, *Journal of Political Economy*, vol 98, no. 5: S71-102.

³ Krugman, P. (1998). *What's new about the new economic geography*. *Oxford Review of Economic Policy* 14(2): 7-17

⁴ OECD (2005). *Building Competitive Regions: Strategies and Governance*. Organisation of Economic Cooperation and Development Publishing

regional leaders, and that it is “crucial for a city or region to fully understand the nature of geographical patterns of knowledge diffusion and barriers to access knowledge as they relate to creativity, innovation and entrepreneurship as catalysts for employment and wealth generation”.⁵

The importance of knowledge dissemination for the ability of NSW’s regional economies to innovate in the face of global pressures cannot be denied. However, as large cities have a competitive advantage in knowledge generation as a result of their institution, network and knowledge worker densities, it is proposed here that the future prosperity of NSW’s regional economies will be relatively more strongly related to their physical endowments than is the case for the metropolitan areas of the State.

Growth Enablers therefore attempts to empirically test and explore the endowment aspects of the New Growth Theory, while acknowledging the role of non-traditional variables such as learning, leadership and social capital, for the purpose of informing public policy at various levels of government. Specifically, an explicit attempt is made to link each regional economy’s present industrial specialisations with its endowments, as well as to identify potential areas of market failure that may provide the basis for public intervention. However, this predominantly desktop-based report cannot be definitive and is best regarded as a lay person’s guide to developing region-specific courses of action. Hence, a further aspiration for this work is that it will assist regional leadership to develop evidence-based development strategies for their economies.

1.2 Methods

1.2.1 ‘Key sectors’

While the analysis begins by examining all industries to give an accurate impression of the structure of each regional economy, attention is primarily focused on the key sectors of each economy. Key sectors are defined as the significant non-population serving ‘engine’ industries within a regional economy that produce goods or services that are traded outside of the specified region. The difference between ‘engine’ industries and ‘key sectors’ is simply size: a regional economy may contain many trade exposed engine industries, but only a few (the key sectors) will be above a sensible materiality threshold. The industries which are key sectors will vary from region to region. Key sectors are often supported by ‘enabling’ industries that provide specialised inputs to engine industries – examples include vocational education, specialised maintenance and repair (such as for the mining sector) and utilities.

In the context of the regional economies examined, key sectors are typically industries reliant on local endowments, such as immobile factors of production or locational advantages, with the most common key sectors being agriculture, mining, tourism, and transport. In some regions, industries that might appear to be population serving could be considered key sectors if they are geared to provide services to a wider area, such as tertiary education and specialised health services. Either way, regional economies exist because of their key sectors. These sectors should be providing the region’s competitive advantage and represent the best potential for generating growth as they represent the ‘endogenous’ strengths of a region.

1.2.2 Steps and tools

The project methods were founded on contemporary economic theory about regional development, and used economic modelling, stakeholder consultation and primary data collection.

The steps in the Growth Enablers analysis were to:

1. Group local government areas into regional economies (see section 1.2.3).
2. Identify industries of regional specialisation within those regional economies (see section 1.2.4).

⁵ Stough, R. R., Stimson, R. J. and Nijkamp, P. (2011). *An endogenous perspective on regional development and growth*. in K. Kourtit, P. Nijkamp and R. R. Stough (Eds.), *Drivers of Innovation, Entrepreneurship and Regional Dynamics*, Springer, Berlin, pp.3-20.

3. Identify key industry sectors ('engine industries') among regional specialisations and the local endowments upon which they are based.
4. Identify impediments to growth of key industry sectors.
5. Examine whether the impediment represents a market failure where government investment would result in efficiency benefits which would exceed the cost.

The main analytical tool for steps 1-3 was the Regional Analysis Model (RAM), developed by the Centre for Economic Development within the NSW Department of Industry, Skills and Regional Development. Stakeholder consultation and primary data collection (step 4) was undertaken through workshops and interviews with business managers in key sectors, in a pilot study in three regional economies (chapter 5). The methods were chosen for their ability to provide simple but robust evidence, transparent and intuitive analysis, and draw on the grassroots experience of industries in each regional economy.

market failure

Market failure occurs when a market does not independently allocate resources optimally. A market failure does not imply any failure on the part of an industry - rather, they can be opportunities for government to make investments which reduce barriers to economic growth. (See Appendix 19 for further information)

1.2.3 How regional economies were defined

Undertaking a regional economic analysis requires defining regions in an economically meaningful and fit-for-purpose manner. In this study, regional economies have been defined according to employment behaviour and economic linkages, using local government areas (LGAs) as the smallest building block.

In the absence of specific data, the study assumes that place of residence and place of employment (as gathered by the Australian Bureau of Statistics) is a reasonable indicator of labour market linkages between LGAs. Three measures of employment were used:

- employment self-containment (ESC), the proportion of workers in the LGA who also live within the LGA
- jobs housing balance (JHB), the ratio of jobs to workers within the LGA, with no consideration of whether these residents work locally or outside the area, or if the local jobs are filled by locals
- employment self-sufficiency (ESS), the proportion of local jobs held by local residents, as an indicator of inward flows

Local government areas with moderate to large (14,100 – 91,000) and mostly growing populations were chosen as the 'cores' of regional economies. Regional centres were prioritised for analysis based on two criteria: population size and geographic representation.

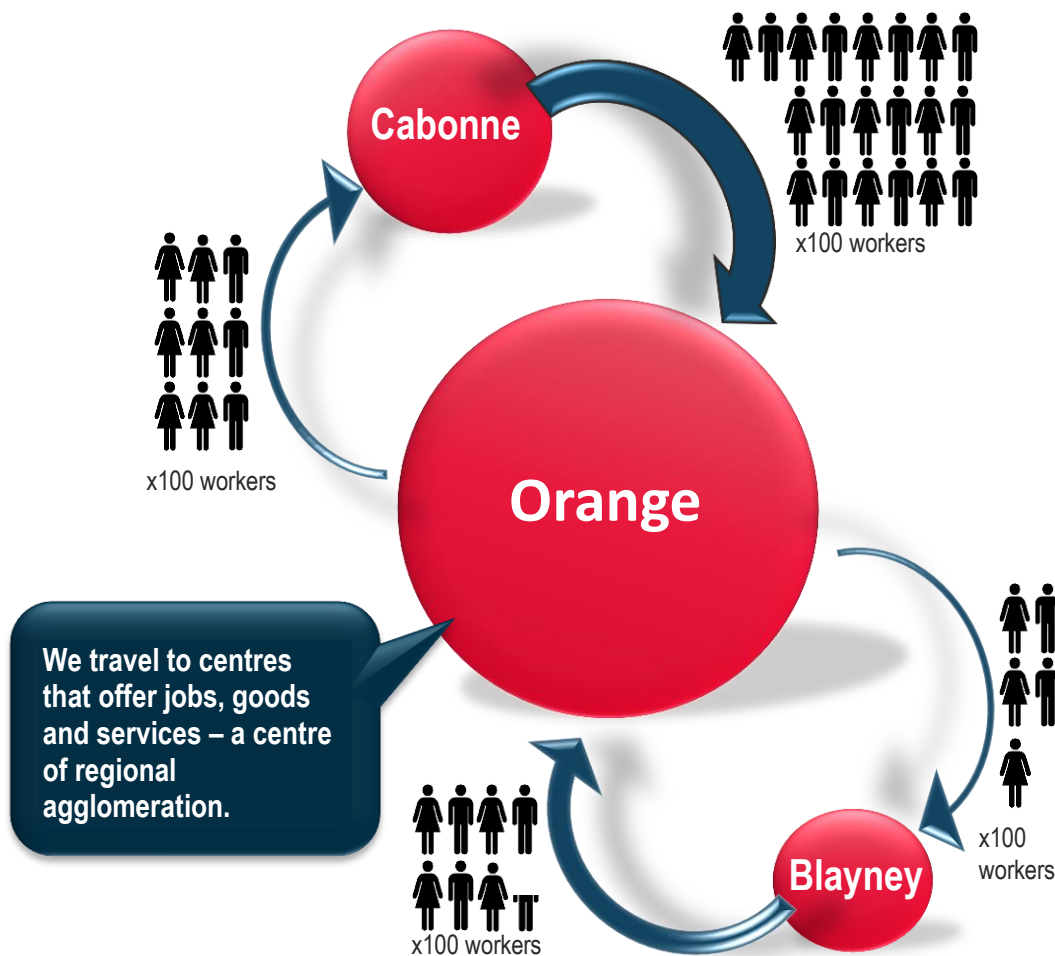
It is acknowledged that the sample of regional economies selected is biased and partial – this is a demonstration project and coverage of the entire State was not practical. Indeed, Local government areas which are likely to be economic satellites of Greater Sydney, Newcastle, Wollongong and Canberra, such as Cessnock, Nowra and Queanbeyan, were deliberately considered out of scope to simplify the analysis.

Larger constructs of regional economies (such as the broadly defined Central West) were not examined as part of this study because they may mask local specialisation. The smaller and more tractable regions adopted allow for additional precision, providing information on functional regional economies.

Figure 1.2 demonstrates the basic approach to defining regional economies using Orange as the example 'core' LGA. Using a combination of the measures outlined above (ESC, JHB and ESS), all LGAs within a two-hour drive of Orange (but not necessarily with contiguous land) were tested for affinity with the Orange LGA relative to other rival cores. It was found that both Cabonne and Blayney had much stronger links to Orange

than to cores such as Bathurst. There was also surprisingly little interaction (proportionately) between Orange and Bathurst. Hence, the Orange regional economy was defined as the Orange, Cabonne and Blayney LGAs.

Figure 1.2 Labour flow between a centre of regional agglomeration and satellites– an example



1.2.4 How regional specialisations were identified

Government has a role in identifying and addressing factors within its control which prevent regions from making full use of their competitive advantage. The practical application of this approach relies on analysis of industry specialisation at the regional level. A primary indicator of regional specialisation used within the regional development literature is employment intensity, measured by location quotient (LQ). When applied to employment and jobs over time, location quotients can highlight the significance of particular industries to the regional economy and its potential for growth.

An LQ is simply a ratio measure of relative employment for an industry within a region compared with the relative industry employment within the reference region. In this analysis, NSW is the reference region. An LQ greater than 1 indicates the industry is a specialisation within the region; and an LQ less than 1 indicates that the industry is not a specialisation for the region and is more highly represented in other parts of the State. An LQ of 1 means that the presence of the industry is approximately equal to the rest of the reference region.

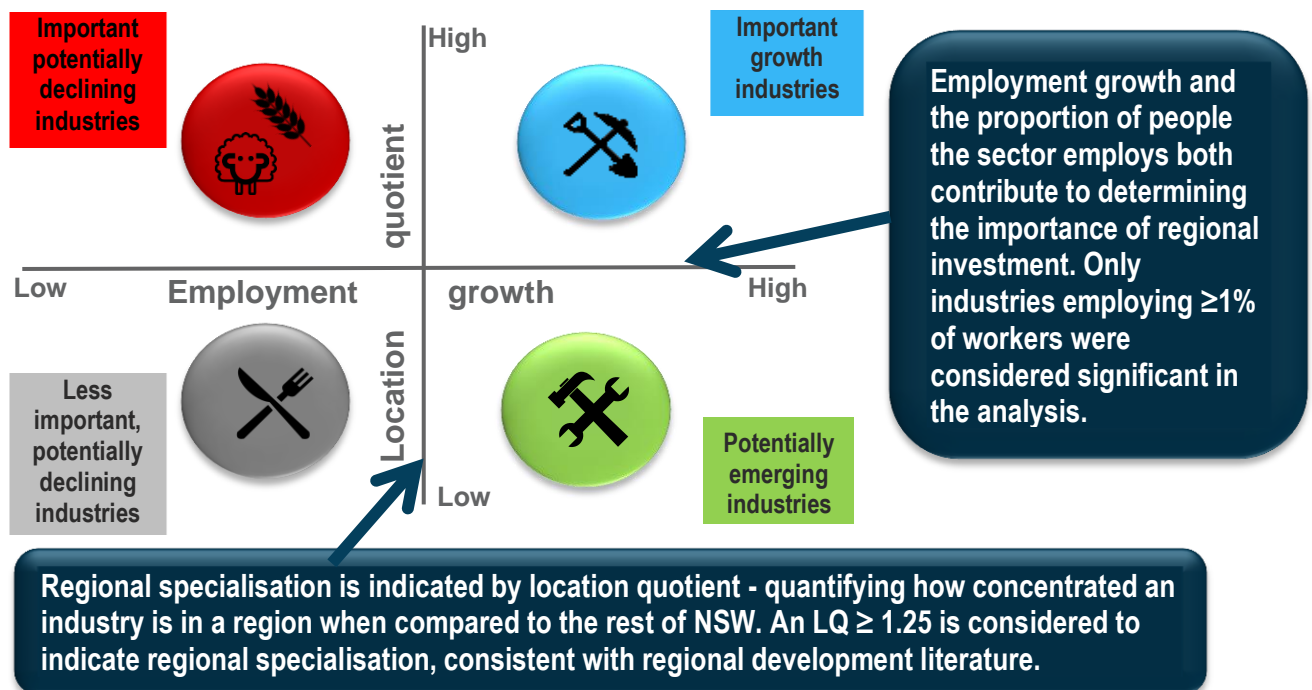
Consideration was also given to materiality. An industry which has a high LQ may also have low materiality in the region because it represents a relatively small proportion of regional employment. Actions which benefit large industry segments (those with high materiality) may have different qualitative effects on small industry segments (those with low materiality), and may mislead regional public policy decision making. To ensure that

specialisation and materiality are both considered, industries (as defined by the Australian and New Zealand Standard Industrial Classification, ANZSIC) that account for more than 1 percent of regional employment and with a location quotient greater than 1.25 (consistent with the economic development literature) were identified as regional specialisations and sectors of economic strength.

Proportions of regional employment and LQs were calculated from 2006 and 2011 Australian Census data, so the analysis will not detect industry changes after 2011. However, a further comparison of the Australian Bureau of Statistics labour force survey was undertaken to gauge more recent industry trends up to 2016 (see appendix 21).

Figure 1.3 provides an overview of how the combination of LQ and employment growth can be used to categorise sectors within a regional economy. As a general rule, greater regional employment returns can be expected from facilitating the growth of 'growth' (blue) and 'emerging' (green) industries. Declining employment in conjunction with a high LQ (red) may reflect greater business efficiencies in an otherwise strong industry.

Figure 1.3 Interpretation of location quotient and employment growth for industries



2. Regional economies

2.1 The regional context

Economic activity in NSW is unevenly spatially distributed. Some of this variation can be explained by inherent differences in physical geography across the State, for example climate or natural resources. However, it is implausible that all this spatial unevenness (i.e. concentration of economic activity in locations such as Sydney) can be fully explained by inherent natural differences given its persistence and scale. Instead, at least in part, the spatial unevenness of economic activity across the State is a result of the self-reinforcing benefits from spatial concentration of economic activity.

The benefits from spatial concentration of activity are often referred to as ‘agglomeration economies’ (or agglomeration externalities). Benefits can take the form of deeper labour markets,⁶ increased access to specialised suppliers⁷ (inputs and services), improved economies of scale⁸ and knowledge spillovers.⁹ Offsetting these benefits are costs relating to concentration, including higher land rents, greater congestion, and more pollution. The trade-off between these benefits and costs determine which areas are relatively wealthier (in terms of gross regional product per person), and which areas grow relatively faster or slower.

At the same time, technological change, opening of markets and trade, government policy and provision of new infrastructure change the costs and benefits of agglomeration and hence the nature of the trade-off. The response to these changes is not instantaneous; instead it plays out over long periods of time as people and firms slowly adjust to the new spatial paradigm.

For instance, for many firms increasing openness and trade has increased levels of competition. In some instances, firms operating in areas of NSW which did not have an obvious competitive advantage have shut down in response to greater levels of competition (particularly in some segments of manufacturing). Occurring through a process of market adjustment the displaced resources have typically been reallocated towards their next best use, which has tended to be in industries that benefit more strongly from agglomeration economies (such as the finance industry), with spatial concentration of population the end result of this adjustment. This process of economic adjustment is ongoing.

Transport costs are an additional consideration for firms weighing up the benefits and costs of spatial concentration (agglomeration) or dispersion. If additional transport costs from concentrating in one location are sufficiently large, so as to more than offset the net benefits of concentration, then agglomeration would cease and production would disperse. This may be a particular consideration for firms servicing national, or international markets, where increasing transport congestion in a major metropolitan area, such as Sydney, may encourage establishment in, or relocation to, regional areas.

2.2 Agglomeration and NSW’s regional economies

Agglomeration is a market driven phenomena that is self-re-enforcing once established. Businesses have been increasingly relocating or establishing in large regional centres or Sydney, rather than smaller towns, in direct response to the forces of agglomeration. However, because net benefits from agglomeration vary by industry and by business, it is worth examining which industries and which business types are more and less likely to establish in regional NSW.

⁶ Deeper labour markets reduce employee search costs and improve firm-employee matching.

⁷ Specialised suppliers can include financiers, lawyers and accountants for example. Specialised input suppliers are prevalent in areas of industry concentration, becoming viable only once a sufficient number of similar businesses are located in a specific area.

⁸ Improved economies of scale include where businesses are able to share a premises and/or production facilities.

⁹ Firm concentration (be it firms in the same industry, or a diverse group of businesses) facilitates the flow of ideas and knowledge, leading to greater levels of innovation, increasing firm productivity.

Industries that are unlikely to find competitive advantage in regional NSW include large portions of financial and insurance services; information media and telecommunications; professional, scientific and technical services; arts and recreation services; and rental, hiring and real estate services. Most of these industries do not rely on immobile factors of production and benefit greatly from:

- Knowledge spillovers - a large local market supports greater knowledge transfers, with improved production processes and technological developments adopted faster as collaboration becomes more viable.
- Deeper labour markets - larger pools of workers result in better, timelier, job matches and lower job search costs for both employers and job seekers.
- Access to specialised suppliers - larger pools of businesses allow for co-locating complementary specialised intermediate input suppliers and service providers.
- Economies of scale - businesses are able to benefit from larger economies of scale in large cities, through co-location and renting out excess space/equipment.
- Urbanisation economies - the benefits firms obtain from the diversity of businesses in a large economy, for example inter-industry knowledge spillovers.

Regional economies are more likely to find competitive advantage in four broad industries, which all rely on immobile factors of production, making spatial concentration difficult. These industries are:

- agriculture, forestry and fishing
- mining
- tourism
- food product manufacturing

Some regional towns, perhaps due to historical factors, unique natural endowments or strategic location, may have strong competitive advantage in additional industries.

Another consequence for regional NSW, in terms of the market forces of agglomeration, is the attraction of young adults to the deeper labour markets and education available in major centres such as Sydney. Agglomeration centres are attractive to employees because job-search costs are lower, matches are better and wages typically higher as a result of the greater productivity of firms from the spillovers associated with agglomeration.¹⁰

However, the outwards migration of young adults away from regional NSW alone is not evidence of a market failure (see Appendix 19 for definition), and is instead an efficient market outcome, reflecting individual's efforts to make themselves better off. At the same time this results in a more efficient distribution of resources (particularly labour), making citizens better off on average.

These consequences of agglomeration lead to the issue of comparative inequality between regional towns and major agglomeration centres such as Sydney. Overall NSW is better off as a result of agglomeration, with gross state product per capita having increased from \$45,701 in 1991 to \$64,859 in 2014 in chain volume measure terms.¹¹ However, while collectively all regions are better off, individually, some regions are less better off than average, with the benefits of agglomeration flowing mostly to locations of spatial concentration such as Sydney and some larger regional centres.

endowments

Endowments are features that an economy possesses and can exploit. Natural endowments include agricultural land, climate, mineral and water resources, and aesthetic appeal. Human endowments include hospitals and educational facilities that are a result of government policy, labour, and location relative to major trade routes. Economic principles suggest that only regional development policies that build on a region's endowment will succeed.

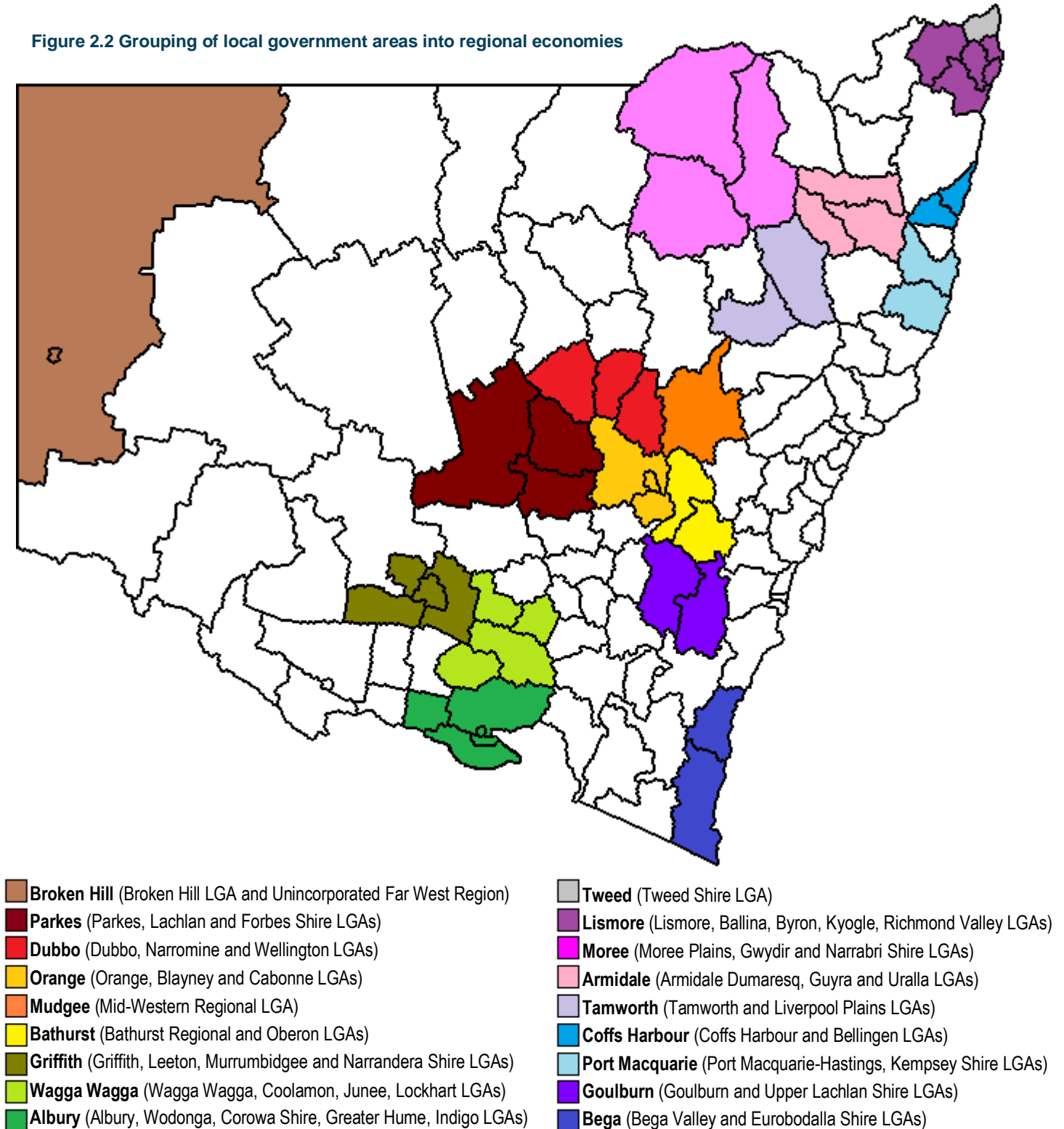
¹⁰ More productive firms tend to offer higher wages in a competitive employment market, as employees create more value for the firm per hour worked.

¹¹ Australian Bureau of Statistics (2014), Cat. No. 5220.0, Australian National Accounts: State Accounts, 2013-14

2.3 Regional economies analysed

Using the method outlined in section 1.2.1, LGAs were grouped into regional economies (Figure 2.2). For convenience, the regional economies are named for the regional centre that provides the largest share of jobs and goods and services like health care, speciality retail and education to the populace of the satellite LGAs. While satellite areas have some job opportunities, they are more strongly residential localities that are net exporters of workers to the regional centre. The regional economy can be viewed as servicing its own population as well as importing and exporting goods and services from and to other economies.

Figure 2.2 Grouping of local government areas into regional economies



3. Industries of regional specialisation

3.1 Overview

Industries which demonstrated specialisation at one or more ANZSIC level in all 18 regional economies are agriculture, forestry and fishing; retail trade; public administration and safety; and education and training (Table 3.1). Accommodation and food services demonstrated a specialisation at some level in 16 of 18 regional economies, and health care and social assistance in 14 regional economies.

Specialisations directly dependent on the natural endowments of the regional economy are in agriculture, forestry and fishing, and mining. Some regional economies with specialisation in those areas also show specialisation in a related area of manufacturing, such as food and wood product manufacturing (Table 3.2).

Where regional economies show a unique specialisation, it is generally in an industry associated with natural endowments of geology, climate and soils – such as berry fruit growing in Coffs Harbour, silver-lead-zinc ore mining in Broken Hill, log sawmilling and timber dressing in Bathurst, and dairy product manufacturing in Bega.

Specialisation in accommodation in some locations may also be dependent on natural endowments such as beaches and temperate climate in coastal economies which attract high tourist numbers. In inland regional economies such as Broken Hill and Dubbo, specialisation in accommodation may relate more to lack of spatial competition, meaning that they provide a wide range of services for very large areas.

Table 3.1 Regional economies showing specialisation at one or more level within ANZSIC divisions (level 1)

Industries at ANZSIC level 1	Albury-Wodonga	Armidale	Bathurst	Bega	Broken Hill	Coffs Harbour	Dubbo	Goulburn	Griffith	Lismore	Moree	Mudgee	Orange	Parkes	Port Macquarie	Tamworth	Tweed	Wagga Wagga	Total
A - Agriculture, forestry and fishing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	18
B - Mining					✓						✓	✓	✓	✓					6
C - Manufacturing	✓		✓	✓			✓	✓	✓	✓		✓	✓		✓	✓		✓	11
D - Electricity, Gas, Water and Waste Services			✓		✓		✓		✓						✓				5
E - Construction															✓				1
F - Wholesale Trade				✓			✓		✓	✓	✓	✓		✓		✓		✓	9
G - Retail Trade	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	18
H - Accommodation and Food Services	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓		15
I - Transport, Postal and Warehousing	✓						✓				✓					✓	✓	✓	5
J - Information Media and Telecommunications																			0
K - Financial and Insurance Services																			0
L - Rental, Hiring and Real Estate Services				✓											✓		✓		3
M – Professional, Scientific and Technical Ser.																			0
N – Administrative and Support Services					✓														1
O – Public Administration and Safety	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	18
P – Education and Training	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	18
Q – Health Care and Social Assistance		✓		✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	14
R – Arts and Recreation Services																			0
S – Other Services	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	15
Total	8	6	7	10	10	7	11	8	9	9	9	10	8	9	11	9	8	9	

Specialisations which are the result of built endowments, such as hospitals and universities, appear in health care and social assistance, and in education and training. The age structure of the regional economy may also influence specialisations in these industries. Populations with large cohorts under 18 are more likely to show specialisations in child care and school education, and those with large cohorts over 65 are more likely to show specialisations in aged care services.

Some specialisations appear to be a legacy of the historical establishment of a few large businesses in certain locations, such as white goods manufacturing in Orange and electricity distribution in Bathurst (Table 3.2). In some cases historical location decisions attract similar businesses to a region, creating self-sustaining agglomeration benefits and specialisation. However, in most circumstances the specialisation is not expected to persist due to market forces, as demonstrated by the closure of the Electrolux whitegoods plant in Orange in 2016. Wagga Wagga's specialisation in defence, resulting from the historical location of two large armed forces bases, could be expected to persist as the industry is not subject to market forces and infrastructure investment has been made over a long period.

The nature of some 'industries' implies that, despite evidence of specialisation, the government has little role in assisting growth in the industry. An example is the widespread specialisation in local council administration (a sub-industry group of public administration and safety) across the regional economies analysed, which is likely reflective of inferior economies of scale in regional compared to metropolitan areas.

Industries which are among the largest 20 employing industries across the majority of regional economies are (Table 3.3):

- sheep, beef and grain farming
- building installation services and residential building construction
- supermarkets and store-based retailing
- accommodation, cafes, restaurants and take-away food services
- road freight transport
- legal and accounting services
- local government administration
- education
- health care and social assistance
- automotive repair and maintenance

Growth Enablers is based on data from the 2006 and 2011 Australian Census, the most recent data available at the time of the study. The analyses will not detect industry changes which have taken place since 2011.

However, specialisation is not necessarily correlated with the scale of labour employment, as illustrated by Table 3.3. Industries which are among the 20 largest employers in regional economies but are mostly not specialisations include construction, clothing, footwear and personal accessory retailing, café, restaurant and takeaway food services, and legal and accounting services. This reflects the equal or greater relative weight of these industries in Sydney.



Employment growth between 2006 and 2011 appears to be most consistent in industries associated with health care and social assistance and secondary education, perhaps reflecting limited ability of these industries to replace labour with mechanisation. In contrast, agricultural, forestry and fishing industries show more labour decline despite strong specialisation across most regional economies (Table 3.2).

Regional economies on the north coast (Tweed, Coffs Harbour, Port Macquarie) show less specialisation in industries associated with mining, agriculture and manufacturing, and more specialisation in retail and health care and social assistance (Table 3.2). This may partly be due to their attractiveness to retirees and tourists.

ANZSIC codes

The Australian and New Zealand Standard Industrial Classification (ANZSIC) is a system for the compilation and analysis of industry information in Australia. The classification has a four tiers: 19 industry divisions (level 1), 86 subdivisions (level 2), 214 groups (level 3) and 506 classes (level 4). This study uses the 2006 edition of ANZSIC.

Table 3.2: All industries of specialisation at ANZSIC Levels 3 and 4





 Regional specialisation and potentially declining labour force
  Regional specialisation and growing labour force

Industry	ANZSIC Level	Albury-Wodonga	Armidale	Bathurst	Bega	Broken Hill	Coffs Harbour	Dubbo	Goulburn	Griffith	Lismore	Moree	Mudgee	Orange	Parkes	Port Macquarie	Tamworth	Tweed	Wagga Wagga	Total
AGRICULTURE, FORESTRY AND FISHING																				
Sheep, Beef Cattle and Grain Farming	3	↓	↓	↓		↑		↓	↑	↓	↓	↓	↓	↓	↓		↓		↓	14
Beef Cattle Farming (Specialised)	4	↓	↑	↓	↓			↓	↑		↓	↓	↑	↓	↓	↓	↓			13
Sheep Farming (Specialised)	4		↓	↓		↓		↓	↑				↓	↓	↑					8
Dairy Cattle Farming	3/4				↓															1
Sheep-Beef Cattle Farming	4		↓	↓		↑			↓			↓	↓				↓			7
Grain-Sheep or Grain-Beef Cattle Farming	4							↓		↓		↓			↑		↓		↓	6
Other Grain Growing	4							↓		↓		↑			↓				↑	5
Fruit and Tree Nut Growing	3						↓			↓	↓									3
Grape Growing	4									↑										1
Berry Fruit Growing	4						↑													1
Citrus Fruit Growing	4									↑										1
Other Fruit and Tree Nut Growing	4										↑									1
Other Crop Growing	3											↓								1
Cotton Growing	4											↓								1
Agriculture and Fishing Support Services	3											↓								1
Cotton Ginning	4											↓								1
Other Agriculture and Fishing Support Services	4											↓								1
MINING																				
Coal Mining	3/4											↑	↑							2
Metal Ore Mining	3					↓								↑	↓					3
Copper Ore Mining	4														↓					1
Gold Ore Mining	4													↓						1
Silver-Lead-Zinc Ore Mining	4					↓														1
MANUFACTURING																				
Beverage Manufacturing	3									↓			↓							2
Wine and Other Alcoholic Beverage Manufacturing	4									↓			↓							2
Dairy Product Manufacturing	3				↑															1
Cheese and Other Dairy Product Manufacturing	4				↑															1
Fruit and Vegetable Processing	3/4			↓																1
Grain Mill and Cereal Product Manufacturing	3									↓										1
Grain Mill Product Manufacturing	4									↓										1
Meat and Meat Product Manufacturing	3	↑		↓				↓	↓	↓	↓						↓		↓	8
Meat Processing	4	↑		↓				↓	↓	↓	↓						↓		↓	8
Poultry Processing	4									↓							↑			2
Other Food Product Manufacturing	3	↓		↓																2
Prepared Animal and Bird Feed Manufacturing	4	↓		↓																2
Log Sawmilling and Timber Dressing	3			↑																1

Industry	ANZSIC Level	Albury-Wodonga	Armidale	Bathurst	Bega	Broken Hill	Coffs Harbour	Dubbo	Goulburn	Griffith	Lismore	Moree	Mudgee	Orange	Parkes	Port Macquarie	Tamworth	Tweed	Wagga Wagga	Total
Log Sawmilling	4			↑																1
Other Wood Product Manufacturing	3			↓																1
Reconstituted Wood Product Manufacturing	4			↑																1
Domestic Appliance Manufacturing	3													↓						1
Whiteware Appliance Manufacturing	4													↑						1
ELECTRICITY, GAS, WATER & WASTE SERVICES																				
Electricity Distribution	3/4			↓		↓										↑				3
Water Supply, Sewerage and Drainage Services	3									↑										1
Water Supply	4									↓										1
CONSTRUCTION																				
Heavy and Civil Engineering Construction	3															↑				1
WHOLESALE TRADE																				
Agricultural Product Wholesaling	3											↑								1
Grocery, Liquor and Tobacco Product Wholesaling	3									↓	↓									2
RETAIL TRADE																				
Motor Vehicle Retailing	3							↓									↓			2
Car Retailing	4							↓												1
Recreational Goods Retailing	3				↓															1
Department Stores	3/4	↑				↓	↑	↓	↑						↓			↑		7
Hardware, Building and Garden Supplies Retailing	3	↑		↓		↓				↓			↓			↓		↓		7
Hardware and Building Supplies Retailing	4												↓							1
Pharmaceutical and Other Store-Based Retailing	3			↓	↓	↓				↓						↑		↓		6
Pharmaceutical, Cosmetic & Toiletry Goods Ret.	4			↓	↑					↑						↓	↑	↓		6
Specialised Food Retailing	3			↓		↓				↓			↑			↓		↓		6
Supermarket and Grocery Stores	3/4	↓			↓	↓	↓		↓	↑	↓				↑	↓		↓		10
ACCOMMODATION AND FOOD SERVICES																				
Accommodation	3/4	↓	↓	↑	↓	↑	↓	↓	↓		↑	↑	↓		↓	↑		↑		14
Cafes, Restaurants and Takeaway Food Services	3								↓											1
Cafes and Restaurants	4				↓						↓									2
Takeaway Food Services	4					↓	↓		↓							↓		↑		5
Clubs (Hospitality)	3/4	↓			↓	↓	↓			↓					↓	↑		↓		8
Pubs, Taverns and Bars	3/4		↑			↑							↑							3
TRANSPORT, POSTAL AND WAREHOUSING																				
Road Passenger Transport	3																	↓		1
Road Freight Transport	3/4	↓						↑				↑					↓		↓	5
RENTAL, HIRING AND REAL ESTATE SERVICES																				
Real Estate Services	3/4				↓											↓		↓		3
Building and Other Industrial Cleaning Services	4					↓														1
PUBLIC ADMINISTRATION AND SAFETY																				
Local Government Administration	3/4	↑	↓	↑	↓	↓	↑	↓	↓	↓	↑	↓	↓	↓	↓	↓	↓	↓	↓	18
State Government Administration	3/4			↓		↓		↓						↓	↓				↓	6
Central Government Administration	3/4	↑					↑									↑		↓		4

Industry	ANZSIC Level	Albury-Wodonga	Armidale	Bathurst	Bega	Broken Hill	Coffs Harbour	Dubbo	Goulburn	Griffith	Lismore	Moree	Mudgee	Orange	Parkes	Port Macquarie	Tamworth	Tweed	Wagga Wagga	Total
Public Order and Safety Services	3			↓		↓		↑	↓										↓	5
Defence	3/4	↓																	↓	2
Correctional and Detention Services	4			↓				↑	↓										↑	4
Police Services	4					↑			↓											2
EDUCATION AND TRAINING																				
School Education	3		↓	↓	↓	↑	↓	↓		↓	↓	↓		↑	↓	↓	↓	↓		14
Primary Education	4			↓	↓	↑	↓	↓	↓	↓	↓	↓	↑	↑	↓	↑		↓		14
Secondary Education	4		↓	↑	↑	↑	↓	↑	↓	↑	↓	↓	↑		↑	↓	↑	↑	↑	16
Combined Primary and Secondary Education	4		↓					↓				↓		↓	↓					5
Tertiary Education	3		↓	↓							↓								↓	4
Higher Education	4		↓	↓							↓								↓	4
Technical and Vocational Education and Training	4	↑					↑	↓	↓					↓		↓	↓		↓	8
HEALTH CARE AND SOCIAL ASSISTANCE																				
Hospitals	3					↓	↑	↓						↓			↓	↑		6
Hospitals (except Psychiatric Hospitals)	4					↓	↑	↓						↓			↓	↑		6
Medical Services	3					↑	↑				↑			↑		↓			↑	6
General Practice Medical Services	4					↑	↑				↑					↑				4
Other Social Assistance Services	3/4		↓		↑	↑	↑	↑	↓		↑			↓	↓	↑	↑			11
Residential Care Services	3				↓	↓	↓	↓	↑		↓		↓	↑	↓	↓		↑		11
Aged Care Residential Services	4				↓	↓	↓	↓	↑		↓		↓		↓	↓		↑		10
Allied Health Services	3						↓				↓					↑		↑		4
Other Allied Health Services	4						↓				↑									2
Child Care Services	3/4						↑	↓	↓						↓	↓		↓	↓	7
OTHER SERVICES																				
Automotive Repair and Maintenance	3	↓			↑	↑	↑	↓	↓	↓	↓	↓			↓	↓	↓		↓	13
Other Automotive Repair and Maintenance	4							↑							↓		↓		↑	4
Machinery and Equipment Repair and Maintenance	3											↓	↑	↑						3
Other Machinery Equipment Repair & Maintenance	4													↑						1
Personal Care Services	3															↓				1
Hairdressing and Beauty Services	4									↓						↓				2

Table 3.3: Largest 20 industries by labour force in each regional economy (at ANZSIC Level 3)

	Regional specialisation and potentially declining labour force		Regional specialisation and growing labour force
	Not a regional specialisation and declining labour force		Not a regional specialisation and growing labour force

Industries at ANZSIC level 3	Albury-Wodonga	Armidale	Bathurst	Bega	Broken Hill	Coffs Harbour	Dubbo	Goulburn	Griffith	Lismore	Moree	Mudgee	Orange	Parkes	Port Macquarie	Tamworth	Tweed	Wagga Wagga	Total
AGRICULTURE, FORESTRY & FISHING																			21
Fruit and Tree Nut Growing																			3
Sheep, Beef Cattle and Grain Farming																			16
Other Crop Growing																			1
Agriculture and Fishing Support Services																			1
MINING																			5
Coal Mining																			1
Metal Ore Mining																			3
MANUFACTURING																			15
Beverage Manufacturing																			2
Dairy Product Manufacturing																			1
Domestic Appliance Manufacturing																			1
Fruit and Vegetable Processing																			1
Grain Mill and Cereal Product Manufacturing																			1
Meat and Meat Product Manufacturing																			6
Other Food Product Manufacturing																			2
Other Wood Product Manufacturing																			1
ELECTRICITY, GAS, WATER & WASTE SER.																			4
Electricity Distribution																			3
Water Supply, Sewerage and Drainage Service																			1
CONSTRUCTION																			22
Building Completion Services																			1
Building Installation Services																			13
Residential Building Construction																			8
RETAIL TRADE																			47
Clothing, Footwear & Personal Accessory Ret.																			9
Department Stores																			2
Pharmaceutical and Other Store-Based Ret.																			15
Specialised Food Retailing																			2
Supermarket and Grocery Stores																			18
ACCOMMODATION AND FOOD SERVICES																			37
Accommodation																			15
Cafes, Restaurants and Takeaway Food Serv.																			18
Clubs (Hospitality)																			3
Pubs, Taverns and Bars																			1
TRANSPORT, POSTAL AND WAREHOUSING																			16
Road Freight Transport																			16

Industries at ANZSIC level 3	Albury-Wodonga	Armidale	Bathurst	Bega	Broken Hill	Coffs Harbour	Dubbo	Goulburn	Griffith	Lismore	Moree	Mudgee	Orange	Parkes	Port Macquarie	Tamworth	Tweed	Wagga Wagga	Total
FINANCIAL & INSURANCE SERVICES																			1
Depository Financial Intermediation		↑																	1
RENTAL, HIRING & REAL ESTATE SER.																			1
Real Estate Services																			1
PROFESSIONAL, SCIENTIFIC & TECH. SER.																			18
Architectural, Engineering & Technical Services													↑						1
Legal and Accounting Services		↑	↑	↑											↑			↑	17
ADMINISTRATIVE & SUPPORT SERVICES																			3
Building Cleaning, Pest Control & Gardening Ser.															↑				3
PUBLIC ADMINISTRATION & SAFETY																			42
Central Government Administration	↑					↑													3
Defence	↑																		2
Local Government Administration	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	18
Public Order and Safety Services			↑		↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	9
State Government Administration			↑		↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	10
EDUCATION & TRAINING																			28
School Education		↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	18
Tertiary Education		↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	10
HEALTH CARE & SOCIAL ASSISTANCE																			85
Allied Health Services		↑		↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	12
Child Care Services		↑			↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	13
Hospitals	↑				↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	18
Medical Services		↑			↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	7
Other Social Assistance Services	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	17
Residential Care Services				↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	18
OTHER SERVICES																			15
Automotive Repair and Maintenance	↑			↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	14
Machinery & Equipment Repair & Maintenance												↑	↑						1

3.2 Context: global trends and diversification

Strong evidence suggests that globalisation has ‘fragmented’ the supply chains of many manufactured goods, with components manufactured in highly specialised plants of enormous scale, often in developing countries. This fragmentation, which is accelerating, has been made possible by the decrease in transportation costs evident to the mid 1980s coupled with the radically lowered information transmission costs observed from that time.¹²

While the lion’s share of returns from fragmented value chains accrue to the developed-nation ‘lead firms’ that own the products intellectual property and their skilled workers^{13,14}, these firms are usually located in

¹² Baldwin, R.E. (2011). *Trade And Industrialisation After Globalisation’s 2nd Unbundling: How Building And Joining A Supply Chain Are Different And Why It Matters*. National Bureau of Economic Research Working Paper No. 17716.

¹³ Ibid; and Dedrick, J. Kraemer, K. L. and Linden, G. (2010). *Who Profits From Innovation in Global Value Chains? A Study of the iPod and Notebook PCs*. Industrial and Corporate Change 19(1): 81–116.

metropolitan areas. Hence, the degree to which NSW regional economies can share in these returns is limited while these same economies may suffer from the off-shoring of their manufacturing jobs.

Fragmentation can perhaps be viewed as extreme specialisation based on competitive advantage, made possible by the removal of much of the transaction cost that applied before the 1990s. Increasing specialisation across the globe is ‘narrowing’ and ‘deepening’ national economies such that industrial diversification is declining but the proportion of the workforce devoted to remaining industries is rising.

The global and national pattern of increasing specialisation leading to ‘narrowing’ and ‘deepening’ of economies is evident in regional economies also. Between 2001 and 2011, the number of regionally specialised industries declined (Figure 3.1) and the average location quotient of those industries that were specialisations in 2011 had increased in most of the regional economies examined (Figure 3.2).

This broad reduction in the diversification of NSW’s regional economies is also seen in Table 3.4, where the proportion of each economy’s workforce employed in the top twenty industries between 2001 and 2011 is examined. The top 20 industries are displayed here for convenience – the same ‘narrowing and deepening’ is apparent when all sectors are included in the analysis.

It is commonly held that diversified regional economies lead to stronger economic growth, but this view may be confounded with the observation that larger centres grow faster (without recognising that this may derive from the efficiency benefits of agglomeration). There is Australian evidence suggesting that industrial specialisation is associated with urban size, with two studies finding that the larger a region’s economy, the more likely it was to have a diversified industrial base. However, there is less evidence for the assertion that industrial diversity leads to stronger regional economic growth, with the pursuit of diversity better viewed as a preference for slow and steady growth over boom and bust.¹⁵ It is perhaps more accurate to accept that a region’s specialisations will be related to their endowments, and that the number of specialisations will therefore depend on the number of endowments upon which competitive advantage can be built, although industrial diversification within a region is in itself a good thing in that it provides resilience against the ‘boom and bust’ cycles associated with dependence on a small number of industries.

¹⁴ Timmer, M.P, Erumban, A.A, Los, B., Stehrer, R., and de Vries, G.J. (2014). *Slicing Up Global Value Chains*. Journal of Economic Perspectives, Volume 28, Number 2, pp 99–111.

¹⁵ See: Stimson, R. J. (2012). *Endogenous factors in regional performance: A review of research in Australia*. Ch 6 in B. Johansson, Ch. Karlsson, and R.R.Stough (Eds), Knowledge and Talent in Global Regional Contexts, Edward Elgar, Cheltenham, pp. 159-193.

Figure 3.1 'Narrowing': Change in number of regionally specialised industries from 2001 to 2011

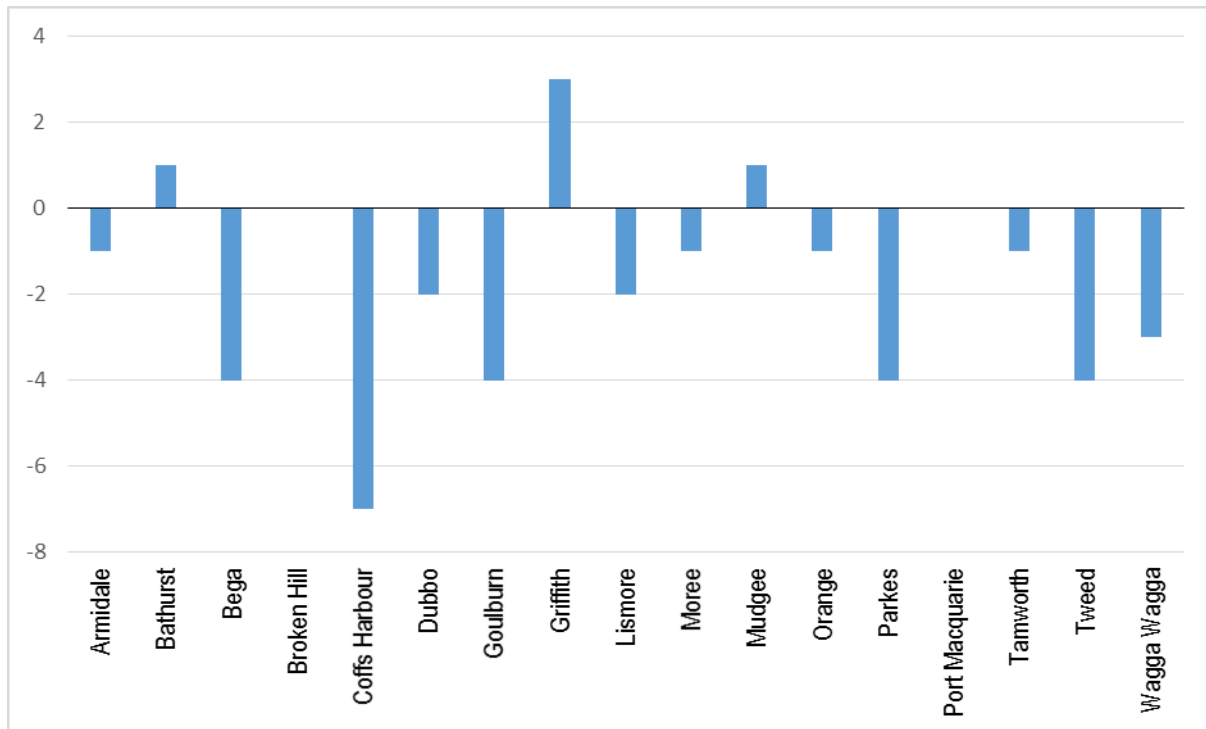


Figure 3.2 'Deepening': Average percentage change in location quotient since 2001 of industries that are specialisations in 2011

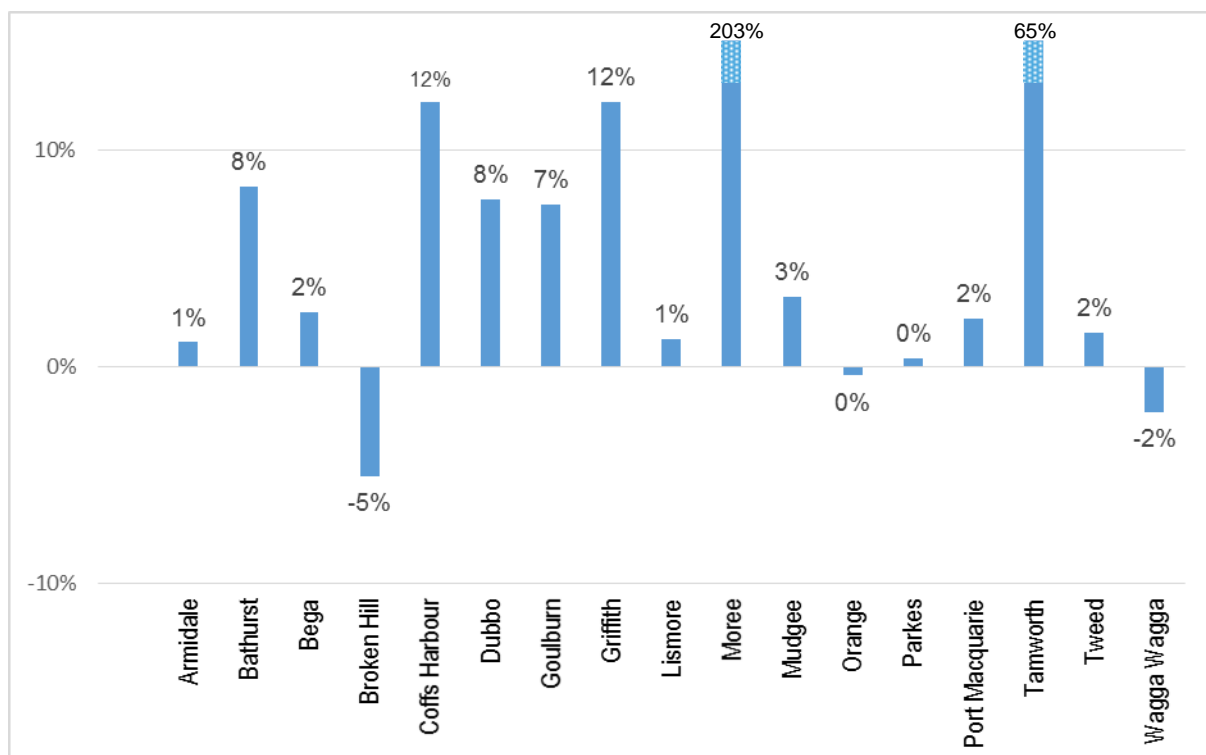


Table 3.4: Changes in the proportion of the workforce employed in the largest 20 industries in each regional economy (at ANZSIC Level 2)¹⁶

	Increased by at least 10%	Increased by less than 10%	Decreased by less than 10%	Decreased by 10% or more														
	Albury-Wodonga	Armidale	Bathurst	Bega	Broken Hill	Coffs Harbour	Dubbo	Goulburn	Griffith	Lismore	Moree	Mudgee	Orange	Parkes	Port Macquarie	Tamworth	Tweed	Wagga Wagga
Industries at ANZSIC level 2																		
AGRICULTURE, FORESTRY AND FISHING																		
Agriculture																		
Agriculture, Forestry and Fishing Support Services																		
MINING																		
Coal Mining																		
Metal Ore Mining																		
MANUFACTURING																		
Food Product Manufacturing																		
Beverage and Tobacco Product Manufacturing																		
Wood Product Manufacturing																		
Machinery and Equipment Manufacturing																		
ELECTRICITY, GAS, WATER AND WASTE SER.																		
Electricity Supply																		
Water Supply, Sewerage and Drainage Services																		
CONSTRUCTION																		
Building Construction																		
Construction Services																		
RETAIL TRADE																		
Food Retailing																		
Other Store-Based Retailing																		
ACCOMMODATION AND FOOD SERVICES																		
Accommodation																		
Food and Beverage Services																		
TRANSPORT, POSTAL AND WAREHOUSING																		
Road Transport																		
FINANCIAL AND INSURANCE SERVICES																		
Finance																		
RENTAL, HIRING AND REAL ESTATE SER.																		
Property Operators and Real Estate Services																		
PROFESSIONAL, SCIENTIFIC AND TECH. SER.																		
Professional, Scientific and Technical Services																		
ADMINISTRATIVE AND SUPPORT SERVICES																		
Building Cleaning, Pest Control and Other Support Services																		
PUBLIC ADMINISTRATION AND SAFETY																		
Public Administration																		
Defence																		
Public Order, Safety and Regulatory Services																		
EDUCATION AND TRAINING																		
Preschool and School Education																		
Tertiary Education																		
HEALTH CARE AND SOCIAL ASSISTANCE																		
Hospitals																		
Medical and Other Health Care Services																		
Residential Care Services																		
Social Assistance Services																		
OTHER SERVICES																		
Repair and Maintenance																		
Total sectors	20	20	20	20	20	20	19	20	19	20	19	19	20	18	20	20	20	20
Proportion of sectors increasing workforce	60%	50%	55%	60%	55%	58%	85%	85%	74%	75%	63%	58%	65%	78%	50%	65%	45%	65%
Proportion of sectors decreasing workforce	35%	45%	40%	35%	40%	37%	10%	21%	20%	32%	37%	30%	17%	45%	30%	50%	30%	30%

¹⁶ Analysis conducted at Level 2 due to concordance issues between the 2001 and later Censuses. Data not available for Albury-Wodonga.

3.3 Sector-specific commentary

3.3.1 Agriculture, forestry and fishing

All regional economies in this study show specialisation in agriculture (level 2). Specialisation at levels 3-4 is seen in a narrow band of industries, reflecting the narrow range of natural endowments (e.g. climate, soil type, geology) available in any one location.

Forms of broad acre farming (sheep, beef cattle and grain farming at level 3 and/or level 4) are the most common specialisations, found in all regional economies except Coffs Harbour and Tweed. The more temperate and higher rainfall regional economies of Coffs Harbour and Lismore show specialisations in fruit and nut tree growing (level 3) and berry fruit growing (level 4). Moree is the only economy to specialise in cotton, and Griffith in grape and citrus growing.

Agriculture, forestry and fishing has the highest proportion of rural and regional NSW employees (86.5%), of any level 1 industry in NSW, with the Northern Far West, North Western and Central West region (34.9%) and the Murray-Murrumbidgee region (22.7%) having the largest share. The industry's share of NSW workers is 2.4%, and agriculture (level 2) employs the largest share (84%).

Agriculture, forestry and fishing employment is in decline as the industry adjusts to the impacts of new technology (which has made agriculture more capital intensive), larger farm sizes (increasing economies of scale benefits) and increasing openness and trade. The workforce profile is much older than in other industries and has lower levels of formal education. Challenges facing the sector include increased competition for land use, a high Australian dollar, the ageing workforce and climate change. Farm land conservation management is a growing area of activity.¹⁷

Regional specialisations in agriculture, forestry and fishing industries are generally correlated with regional specialisations in industries manufacturing agricultural products.

NSW employment need projections are high for crop and livestock farmers and workers, and shearers, and medium for agriculture, forestry and horticultural operators in some regions.¹⁸

3.3.2 Mining

Mining is a regional specialisation in only five regional economies: Moree and Mudgee (coal), Broken Hill (silver-lead-zinc ore), Orange (gold) and Parkes (copper).

Metal ore mining is an uncommon industry in NSW, with very high location quotients ranging from 67 in Orange to 290 in Broken Hill, and is likely to remain a regional specialisation for as long as economically viable minerals deposits persist. Coal mining location quotients in Moree and Mudgee are a more modest 3.4 – 21, reflecting competing coal mining activity in the Hunter and Illawarra.

The very large gold and copper mine at Cadia (Newcrest Mining Ltd) near Orange is expected to shed 400 workers by the end of 2016, taking its workforce to about 890.¹⁹ However, a second gold mine has been proposed in the Orange/Bathurst area, about 40 km east of Cadia (McPhillamys Gold Project, Regis Pty Ltd), with the net effect on medium term specialisation therefore unknown.

In 2011, mining generated 3.8% of the total gross state product but was one of the smallest employing industries (1.3%) in NSW.²⁰ The bulk of employment (85.4%) is outside Sydney, concentrated in the Newcastle

¹⁷ Smart and Skilled: Industry Profile Agriculture, Forestry and Fishing, April 2013. NSW Government, Education and Communities.

¹⁸ Smart and Skilled: Industry Profile Agriculture, Forestry and Fishing, April 2013. NSW Government, Education and Communities.

¹⁹ <http://www.centralwesterndaily.com.au/story/3693604/cadia-sheds-400-jobs-mine-workers-facing-redundancies-from-next-week/>

²⁰ ABS (2012) Australian National Accounts: State Accounts, 2011-12 Cat. No. 5220.0 and Labour Force, Australia, Detailed, Quarterly, Nov 2012. Cat. No. 6291.0.55.003, cited in Smart and Skilled: Industry Profile Mining, April 2013. NSW Government, Education and Communities.

region (27.3%), the Northern Far West, North Western and Central West region (20.6%), the Hunter region (16.1%) and the Illawarra Wollongong region (12.1%).

Employment demand projections for 2014-18 were high for mining engineers, geologists and geophysicists, and a range of VET-qualified occupations, and skill shortages were identified in skilled trades such as welders, fitters, machinists, fabricators and mechanical engineers and a range of electrical trades.²¹

3.3.3 Manufacturing

Manufacturing specialisation appears in 11 of 18 economies (Table 3.1) and is almost entirely food and wood product manufacturing (Table 3.2), correlating with a specialisation in agriculture and forestry. Meat and meat product manufacturing (level 3) and meat processing (level 4) are the most common manufacturing specialisations, found in Albury-Wodonga, Bathurst, Dubbo, Goulburn, Griffith, Lismore, Tamworth and Wagga Wagga.

Bathurst also shows specialisation in fruit and vegetable processing (level 3), and in four level 3/4 wood product manufacturing industries due to the inclusion of Oberon in that regional economy. Mars Pty Ltd has large pet food factories in Albury-Wodonga and Bathurst, resulting in a specialisation in prepared animal and bird feed manufacturing.

Beverage manufacturing is a specialisation in the Griffith and Mudgee, reflecting their locations within two of the three largest wine producing regions of NSW.

Orange is the only regional economy to show specialisation in machinery and equipment manufacturing. However, the bulk of its manufacturing employment (82%) lies in domestic appliance manufacturing, which is now not expected to be a specialisation following the closure of the Orange Electrolux refrigerator factory plant in 2016.

3.3.4 Electricity, gas, water and waste services

Electricity distribution (level 3/4) is a specialisation in the Bathurst, Broken Hill and Port Macquarie regional economies. Bathurst and Port Macquarie were major operational and administrative centres for Essential Energy in 2011 when Census data was collected, but the company is reputed to have made 1,000 job cuts since 2013 and intends to cut 800-1300 jobs in 2015-2018, so this specialisation may not persist in one or more of these regional economies.

Electricity distribution is unlikely to be an area of regional industry specialisation in the future due to the deregulation of energy retailing, the introduction of smart metering, and increased local production of electricity through renewable sources.

Water supply, sewerage and drainage services (level 3) and water supply (L:4) are specialisations in the Griffith regional economy, where two of Australia's largest private irrigation companies (Murrumbidgee Irrigation and Coleambally Irrigation Co-operative Limited) operate, and where irrigated crops such as grape and citrus growing are also specialisations.

3.3.5 Construction

The only construction specialisation evident across the 18 regional economies was heavy and civil engineering construction in Port Macquarie, which is likely to be related to work on the Pacific Highway upgrade in the regional economy at the time of data collection.²²

²¹ Centre for International Economics (2013) and DEEWR (2012) Skill Shortage List, cited in Smart and Skilled: Industry Profile Mining, April 2013. NSW Government, Education and Communities.

²² See Roads and Maritime Services, Pacific Highway Upgrade six-monthly report cards available at <http://www.rms.nsw.gov.au/projects/pacific-highway/program-documents.html>

Heavy and civil engineering construction is likely to continue as an area of specialisation until late 2017, when the Pacific Highway upgrade between Port Macquarie and Coffs Harbour is scheduled for completion. In late 2015, the construction workforce for this project was 2,603,²³ about four times the number employed in heavy and civil engineering construction in the two regional economies at the time data for this study was collected in 2011. Consequently, it is very likely that the 2016 Census will also show this industry to be a major specialisation for these two economies, although the longer term future of this specialisation is uncertain.

Construction employment outside the Sydney basin (32.1%) is more evenly distributed compared to many industries. (The Richmond, Tweed and Mid-North Coast region 9.3%; the Northern Far West, North Western and Central West region 6.4%; the Illawarra-Wollongong region 5.4%; the Murray-Murrumbidgee region 5.1%; the South Eastern region 5%; the Newcastle region 3.5%; and the Hunter region 1.5%.²⁴

Construction is one of the larger contributors to the NSW economy, and one of the larger employing industries in NSW. It has a high proportion of male, full time employees and independent contractors compared to other industries. A high proportion of employees have trade qualifications, and skill shortages are reported in many occupations.²⁵

3.3.6 Wholesale trade

Basic materials wholesaling (level 2) is a specialisation in eight regional economies but when disaggregated to levels 3 and 4 is a specialisation only in Moree (as agricultural product wholesaling) and Griffith and Lismore (as grocery, liquor and tobacco product wholesaling).

Lismore is the home base of food product supply company Norco, which employs over 700 people, and Griffith is one of the major chicken meat producing regions of Australia.

3.3.7 Retail trade

Some form of retail trade is a specialisation in every regional economy.

At ANZSIC Level 2, motor vehicle and motor vehicle parts retailing is a specialisation in 15 of 18 regional economies (all but Albury, Armidale and Goulburn), but has low employment (1-1.55%) and persists at finer levels only as Motor Vehicle Retailing (level 3) in Dubbo and Tamworth.

Employment proportions at Level 2 are larger in food retailing (4.3-5.5%) and other stores based retailing (7.7-8.35%), and disaggregate to a wide range of Level 3 and 4 industries (Table 3.2). Supermarket and grocery stores is the most common (in 10 regional economies), followed by department stores; hardware, building and garden supplies retailing; and pharmaceutical and other store based retailing (6-7 regional economies).

Only Bathurst, Moree, Orange and Wagga Wagga show no form of retail specialisation at Levels 3 or 4. Bathurst has affordable daily public transport links to the larger retail options of Sydney, while Wagga Wagga is relatively close to Albury-Wodonga, so residents may be travelling for retail trade.

3.3.8 Accommodation and food services

Specialisation in accommodation and food services occurs in all five coastal regional economies (Tweed, Lismore, Coffs Harbour, Port Macquarie, Bega), where it represents 9-12.3% of total employment, and also in Broken Hill (11% of employment) and Mudgee (8.6% of employment).

When disaggregated, accommodation (level 2-4) is a specialisation of 14 regional economies (all but Griffith, Orange, Tamworth and Wagga Wagga). In coastal locations this may be a consequence of tourists attracted

²³ Roads and Maritime Services, Pacific Highway Upgrade Construction Workforce Survey Port Macquarie to Coffs Harbour. April 2016.

²⁴ ABS (2012) Labour Force, Australia, Detailed, Quarterly, Nov 2012. Cat. No. 6291.0.55.003, cited in Smart and Skilled: Industry Profile – Construction, April 2013. NSW Government, Education and Communities.

²⁵ Smart and Skilled: Industry Profile Construction, April 2013. NSW Government, Education and Communities.

by beaches and temperate climate. Some inland locations also attract high tourist numbers (for example, to Mudgee for winery tours and to Bathurst for motor racing events), although hosting the world's second-largest country music festival is not enough to make Tamworth a specialist in accommodation.

Other factors which may contribute to specialisation in accommodation are proximity to Sydney (with locations such as Bathurst, Goulburn and Mudgee receiving weekend visitors), and having a major university campus which attracts visitors for graduation ceremonies and conferences.

Specialisation in Dubbo and Broken Hill may also be linked to their location on major interstate road transport routes, where they are attractive as 'stopover' destinations.

3.3.9 Transport, postal and warehousing

Road freight transport (level 3, level 4) is a specialisation in Albury-Wodonga, Dubbo, Moree, Tamworth and Wagga Wagga. This may be a reflection of the major towns' locations at the junctions of major roads, and their driving distance from major freight terminals such as Port Botany and other major road freight nodes. For example, Wagga Wagga is equidistant by road from Melbourne, Sydney and Dubbo (4-5 hours' drive), making it a natural hub for transport companies. Dubbo is at the junction of major routes going west to Broken Hill and Adelaide, northwest to inland Queensland, northeast to Toowoomba and Brisbane, east to Newcastle, and South to Wagga Wagga, Griffith, Canberra and Melbourne. All these regional economies are on inland routes which avoid the tourist and local freight congestion of coastal roads.

Road passenger transport is a specialisation in Tweed regional economy, suggesting close economic ties to Coolangatta and the Gold Coast.

Road freight transport is among the top twenty industry sectors predicted to grow Australia-wide over the next three years.²⁶

3.3.10 Information media and telecommunications

Information media and telecommunications is not a regional specialisation, nor among the top 10 ANZSIC Level 1 employment sectors, in any regional economy considered in this study. The industry's employment is heavily concentrated in Sydney (86%, compared to the 65% average for all ANZSIC Level 1 industries).²⁷

Information media and telecommunications employment in regional areas is concentrated in the Richmond, Tweed and Mid-North Coast region (3.6%), the Newcastle region (3%), the Northern Far West, North Western and Central West region (2.9%) and the Illawarra-Wollongong region (2.1%), with the Murray-Murrumbidgee region, the South Eastern region and the Hunter region all $\leq 1\%$.²⁸

3.3.11 Financial and insurance services

Financial and insurance services is not a regional specialisation in any regional economy considered in this study, although depository financial intermediation (banks, building societies and credit unions) is among the largest 20 employers at ANZSIC Level 3 in Armidale and Moree (Table 3.3). The industry's employment is heavily concentrated in Sydney (87%, compared to the 65% average for all ANZSIC Level 1 industries).²⁹

Regional employment in financial and insurance services is concentrated in the Newcastle region (3.8%), the Richmond, Tweed and Mid-North Coast region (3.2%), the Illawarra-Wollongong region (2.8%), and the

²⁶ Employment Outlook to November 2019. Australian Government Department of Employment ISSN 2202-6916

²⁷ Smart and Skilled: Industry Profile Information Media & Telecommunications, April 2013. NSW Government, Education and Communities.

²⁸ ABS (2012) Labour Force, Australia, Detailed, Quarterly, Nov 2012. Cat. No. 6291.0.55.003, cited in Smart and Skilled: Industry Profile – Information Media & Telecommunications, April 2013. NSW Government, Education and Communities.

²⁹ Smart and Skilled: Industry Profile Financial and Insurance Services, April 2013. NSW Government, Education and Communities.

Northern Far West, North Western and Central West region (2.0%), with the Murray-Murrumbidgee region, South Eastern region and Hunter region all <1%.³⁰

3.3.12 Rental, hiring and real estate services

Bega, Port Macquarie and Tweed regional economies show specialisation in real estate services (level 3/4), perhaps reflecting a higher than average number of holiday home rentals.

Employment in rental, hiring and real estate services is concentrated in Sydney (74%, compared to the 65% average for all ANZSIC Level 1 industries).³¹

Regional employment is concentrated in the Newcastle region (8.8%), the Illawarra-Wollongong region (5.6%), the Northern Far West, North Western and Central West region (4.7%), and Richmond, Tweed and Mid-North Coast (4.6%), with the Murray-Murrumbidgee region, South Eastern region and Hunter region all ≤1.6%.³²

3.3.13 Professional, scientific and technical services

This industry includes scientific research, architecture, engineering, computer systems design, law, accountancy, advertising, market research, management and other consultancy, veterinary science and professional photography.

Professional, scientific and technical services is not an industry of regional specialisation in any regional economy considered in this study, although legal and accounting services are among the largest 20 employment industries for every regional economy other than Broken Hill (Table 3.3). Industry employment grew between 2006 and 2011 in Armidale, Bathurst, Bega, Port Macquarie and Wagga Wagga.

Architectural, engineering and technical services (level 3) is also among the largest 20 employment industries for the Orange regional economy.

The industry's employment is heavily concentrated in Sydney (81.4%, compared to the 65% average for all ANZSIC Level 1 industries).³³ Regional employment is concentrated in the Newcastle region (4.9%), Richmond, Tweed and Mid-North Coast (4.0%), the Northern Far West, North Western and Central West region (3.8%), and the Illawarra-Wollongong region (2.3%), with the Murray-Murrumbidgee region, South Eastern region and Hunter region all ≤1.6%.

Architectural, engineering and technical services and legal and accounting services are among the top twenty industry sectors predicted to grow Australia-wide over the next three years.³⁴ The availability of fast internet is likely to influence growth in these industries in regional NSW.

3.3.14 Administrative and support services

This industry includes office administration; hiring and placing personnel for others; preparing documents; taking orders for clients by telephone; providing credit reporting or collecting services; arranging travel and travel tours; building and other cleaning services; pest control services; gardening services; and packaging products for others.

Administrative and support services is not an industry of regional specialisation at levels 1-3 in any regional economy, but building cleaning, pest control and gardening services is among the largest 20 employing

³⁰ ABS (2012) Labour Force, Australia, Detailed, Quarterly, Nov 2012. Cat. No. 6291.0.55.003, cited in Smart and Skilled: Industry Profile Financial and Insurance Services, April 2013. NSW Government, Education and Communities.

³¹ Smart and Skilled: Industry Profile Rental, Hiring and Real Estate Services, April 2013. NSW Government, Education and Communities.

³² ABS (2012) Labour Force, Australia, Detailed, Quarterly, Nov 2012. Cat. No. 6291.0.55.003, cited in Smart and Skilled: Industry Profile Rental, Hiring and Real Estate Services, April 2013. NSW Government, Education and Communities.

³³ Smart and Skilled: Industry Profile Professional, Scientific and Technical Services, April 2013. NSW Government, Education and Communities.

³⁴ Employment Outlook to November 2019. Australian Government Department of Employment ISSN 2202-6916

industries in Broken Hill, Port Macquarie and Tweed. Broken Hill also shows specialisation in building and other industrial cleaning services (level 4).

The industry's employment is somewhat more concentrated in Sydney (70%, compared to the 65% average for all ANZSIC Level 1 industries) and it accounts for 3.7% of the NSW workforce.³⁵

Regional employment is concentrated in Richmond, Tweed and Mid-North Coast (7.3%), the Northern Far West, North Western and Central West region (6.4%), the Newcastle region (6.4%), and the Illawarra-Wollongong region (4.2%), with the Murray-Murrumbidgee region, South Eastern region and Hunter region all $\leq 2.3\%$.³⁶

3.3.15 Public administration and safety

Local government administration level (level 3) is an area of specialisation and among the largest 20 employers for every regional economy considered in this study. Employment grew between 2006 and 2011 in Albury-Wodonga, Bathurst, Coffs Harbour and Lismore. The proposed amalgamation of many NSW LGAs may reduce regional specialisation and employment in local government administration in the long term.

Wagga Wagga is home to two major defence force establishments, the Kapooka Army Recruit Training Base and Royal Australian Air Force Base, and Albury-Wodonga has three Australian Army barracks located within the Wodonga LGA, resulting in their specialisation in defence (level 2-4).

The bipartisan federal agreement to increase the defence budget to 2% of GDP might have some effect on the regional specialisation of Wagga Wagga in defence, although the bulk of the increase announced in the 2016 budget is expected to go towards purchase and manufacture of military craft which may have no effect on the Wagga Wagga regional economy.

Central government administration (federal government functions excluding military defence and judicial processes) is an area of specialisation and among the largest 20 employers in Albury-Wodonga, Coffs Harbour and Tweed. Civilian public service support for defence forces may contribute to this specialisation in Albury-Wodonga. The relatively high rate of welfare dependence in Coffs Harbour and Tweed (32-34% compared to the NSW average of 21%) may contribute in those locations.

State government administration (level 3) is among the largest 20 employers and a specialisation in Bathurst, Broken Hill, Dubbo, Orange, Parkes and Wagga Wagga, probably due to the presence of major departmental offices (such as Land and Property Information in Bathurst; Department of Industry in Orange; NSW Roads and Maritime's Western Regional Office in Parkes).

State and federal government policy changes are expected to have an impact on future regional specialisation and growth in this industry division. For example, the proposal to build a large new jail in south west Sydney, future changes to bail laws, and a reduction in the backlog of criminal trial cases could all act to reduce the regional specialisation in correctional and detention services (level 4) shown in Bathurst, Broken Hill, Dubbo, Goulburn and Wagga Wagga.

3.3.16 Education and training

Education and training is a specialisation at one or more ANZSIC levels in all 18 regional economies, usually as school education (level 3) or the subsets of primary education (level 4) and secondary education (level 4). Only Albury-Wodonga shows no specialisation in any form of school education, with its only educational specialisation in technical and vocational education and training (level 4).

Higher education (level 4, meaning universities but not technical and vocational education) are a specialisation in Armidale, Bathurst, Lismore and Wagga Wagga.

³⁵ Smart and Skilled: Industry Profile Administrative and Support Services, April 2013. NSW Government, Education and Communities.

³⁶ ABS (2012) Labour Force, Australia, Detailed, Quarterly, Nov 2012. Cat. No. 6291.0.55.003, cited in Smart and Skilled: Industry Profile Rental, Hiring and Real Estate Services, April 2013. NSW Government, Education and Communities.

Most regional economies in this study have university campuses but many are relatively small satellite campuses. Regional specialisation in higher education (level 4), which excludes technical and vocational education) is evident only where campuses are large and long-established: Armidale (home of University of New England) Lismore (home of Southern Cross University), and Bathurst and Wagga Wagga (two founding locations of Charles Sturt University).

Higher education employment in all four regional economies is declining, which may partially be related to an increase in on-line teaching methods. Federal government cuts to tertiary education funding since 2011 and longstanding uncertainty about further fee deregulation make it difficult to predict the direction of change for higher education specialisation in regional NSW.

The effects of a strong higher education industry in Bathurst and Wagga Wagga may result in employment flow to retail trade; health care & social assistance; and hospitality.³⁷

Technical and vocational education and training is a specialisation in Albury-Wodonga, Coffs Harbour, Dubbo, Goulburn, Orange, Port Macquarie, Tamworth and Wagga Wagga. Many market and government policy changes since 2011 may affect this sector, and make the direction of change hard to predict. For example, the number of apprentices in training Australia-wide declined by over 87,000 from June 2014 to March 2015,³⁸ which might be expected to have an impact on regional specialisation and employment in technical and vocational education and training.

School education and tertiary education are both among the top twenty industry sectors predicted to grow Australia-wide over the next three years.³⁹ No regional economy demonstrates specialisation in adult, community and other education (level 2) or any of its sub-sectors, which is also predicted to be a growth industry Australia-wide.

3.3.17 Health care and social assistance

Health care and social assistance shows specialisation at one or more industry levels in all regional economies except Albury-Wodonga, Bathurst, Griffith and Moree (Table 3.1), and is among the largest 20 employers in every regional economy (Table 3.3).

The most common specialisations at level 3 are residential care services (including aged care) and social assistance services (non-residential care in aged care, disability assistance, marriage guidance, welfare and alcoholics counselling, youth welfare, and adoption services). Other common areas of specialisation are hospitals, medical services and child care services (Table 3.2)

Regional economies with large population bases and an ageing population such as Port Macquarie and Tweed might be expected to be more likely to be centres of health care and social assistance specialisation.

Hospitals, residential care services, child care services and a range of other health and social industries are among the top twenty industry sectors predicted to grow Australia-wide over the next three years.⁴⁰

3.3.18 Arts and recreation services

Arts and recreation services is not an industry of regional specialisation nor among the top 20 employment sectors in any regional economy considered in this study. The industry's employment is more concentrated in Sydney (75%, compared to the 65% average for all ANZSIC Level 1 industries) and it accounts for 1.7% of the NSW workforce.

³⁷ Western Research Institute Ltd, Economic Impact of Charles Sturt University. February 2015. https://www.csu.edu.au/_data/assets/pdf_file/0005/1423364/Economic-Impact-of-CSU.pdf

³⁸ Parliament of Australia, Answers to Questions on Notice: Economics legislation Committee to Industry Portfolio, Budget Estimates hearing 2014-15 Question B1-204; and Senate Committee: Education and Employment Supplementary Budget Estimates 2015-16 SQ15-000807

³⁹ Employment Outlook to November 2019. Australian Government Department of Employment ISSN 2202-6916

⁴⁰ Employment Outlook to November 2019. Australian Government Department of Employment ISSN 2202-6916

While a number of LGAs have been noted as regional employment hotspots in arts and recreation services, including Byron, Port Macquarie, Coffs Harbour,⁴¹ this is potentially diluted by the inclusion of neighbouring LGAs in the definitions of these regional economies.

Regionally, employment in arts and recreation services is found in the Richmond, Tweed and Mid-North Coast (7.0%), the Murray-Murrumbidgee region (5.2%), the Newcastle region (5.2%), the Northern Far West, North Western and Central West region (3.2%), the Illawarra-Wollongong region (2.1%), the South Eastern region (1.8%) and the Hunter region (0.8%).⁴²

3.3.19 Other services

This industry includes a broad range of personal services: religious, civic, professional and other interest group services; selected repair and maintenance activities; private households employing staff; personal care services, such as hair, beauty, sex, diet, weight management and death care services.

Other services shows specialisation at one or more industry levels in all regional economies except Armidale, Bathurst and Tweed. The most common specialisation is automotive repair and maintenance (level 3, 13 regional economies) and other forms of machinery repair and maintenance.

Hairdressing and beauty services are a specialisation in Port Macquarie and Griffith.

⁴¹ NSW Creative Industries Economic Profile. Prepared by NSW Trade & Investment, June 2013.

⁴² ABS (2012) Labour Force, Australia, Detailed, Quarterly, Nov 2012. Cat. No. 6291.0.55.003, cited in Smart and Skilled: Industry Profile Arts and Recreation Services, April 2013. NSW Government, Education and Communities.

4. The role of government in regional development

4.1 When should government intervene?

4.1.1 Why markets matter

Australia has a market based economy. A market is a 'place' where goods and services are voluntarily exchanged. People encounter markets every day when they purchase basic necessities, sell their labour, purchase goods and services, and perhaps enter into investment markets to buy or sell property or shares.

Because markets are voluntary, goods and services are only bought if the value to the buyer is greater or equal to the price offered by the seller. Likewise, goods and services would only be sold into the market if the price is greater or equal to the value of the exchange to the seller.

Competitive markets, therefore, automatically coordinate individually motivated decisions across all goods and services to provide the greatest value from production or consumption, what Adam Smith referred to as the 'invisible hand'.

Properly functioning complete markets enable land, labour and capital to flow seamlessly to their highest value use, maximising economic value and our standard of living, whilst simultaneously maximising private welfare. These resource flows continue until the point where a reallocation of resources within the economy cannot make one person better off without making someone else worse off. In other words, trading will occur up to the point where the marginal benefit of the last trade is equal to its marginal cost.

When markets are functioning properly the role of government is limited to providing the minimal state services required to support such markets, including property and contract law, and their enforcement. Because raising public funds is costly, in terms of administration and market distortions, policies which interfere with efficiently functioning markets reduce the ability of these markets to allocate resources efficiently, potentially making society worse off.

Therefore, government intervention beyond what is required to establish functioning markets is only justified on economic grounds by the existence of a market failure (where government can intervene to improve market efficiency) or on social equity grounds to redistribute income.

4.1.2 Market failures relevant to regional NSW

A market failure refers to a movement away from the economically efficient outcome (i.e. where mutually beneficial trades could be made). When the actions of private individuals are not aligned with the broader interests of society, a market failure is said to exist. In this situation the efficient redistribution of resources, would make society better off. Government action (for example investment or regulation) may have the potential to improve the allocation of resources towards to make the NSW community better off. Definitions of the most common forms of market failure are presented in Appendix 19.

The market failures most relevant to regional development are:

- public goods
- externalities
- market power (natural monopoly)

4.2 Overcoming market failures in regional development

Governments often promote regional development on equity grounds, attempting to reduce the income inequality between large cities and smaller regional centres.

Government intervention in pursuit of greater efficiency should occur only where a market failure is identified and the intervention would make society better off: that is, the benefits of government intervention exceed the cost. Note that successful intervention in such circumstances is likely to increase total societal income.

In the case of regional economies, the interventions that might be expected to be necessary to overcome a market failure and improve efficiency are discussed below. These market failures are generic and it is in no way implied that existing government intervention is inadequate – indeed, considerable resources are presently devoted to addressing them. However, these market failures represent investment opportunities with the greatest potential to generate growth in the regional economy and are therefore worthy of regular examination.

Technical and vocational education training programs

Historically the NSW Government has played a significant role in the vocational education sector, where government involvement is primarily intended to address market failures that affect the functioning of the vocational education training (VET) market. The important VET market failures are:

- positive externalities
- information asymmetry (relating to training quality)
- information asymmetry (relating to capital markets)
- natural monopoly (in small education markets)

The market for vocational training and education suffers from **information asymmetry** problems because the incentives of the student (principal) are not sufficiently aligned with the educational institution (agent), who has a strong profit incentive that often diverges from the best interests of the student. In the absence of government regulation and oversight, educational institutions would have a strong incentive to provide low cost training that is likely to be of poor quality or industry relevance. Information asymmetry occurs when the student is not able to determine the quality of the education provided in advance of enrolling.

Post-secondary education generates **positive externalities** in the economy via knowledge spillovers that culminate in technological development and faster adoption of new technologies, which accelerate productivity growth and ultimately improve social welfare. Because of the nature of externalities, students don't realise the full benefit from their additional training because some of the benefits accrue to their employers. Nonetheless, firms are reluctant to provide training to workers that might switch employers afterwards (if the training has wide application). In the absence of government intervention, too few people would undertake training than is socially efficient. Therefore government intervention in encouraging training up to the socially efficient point is justified.

The federal government's Higher Education Contribution Scheme - Higher Education Loan Programme (HECS-HELP) attempts to overcome the separate **information asymmetry** market failure in higher education. HECS-HELP attempts to address capital market imperfections, which are the result of an imbalance of information between financial institutions and potential students (as borrowers). A prospective student is aware of their innate ability, and hence the expected probability of future repayment of a student loan. However, because students often do not have established credit histories (and limited access to sufficient collateral to signal credit worthiness) financial institutions are unable to sort between strong or weak candidates for loans, and as a consequence are reluctant to service the student lending market. This imbalance distorts the actions of both the informed and uninformed parties because the student lending market will either not form at all or will be smaller than socially optimal. The HECS-HELP scheme type intervention aims to negate these capital market imperfections.

Some small education markets,⁴³ defined either by population size or the nature of the training (i.e. automotive training requires substantial investment in machinery), may operate in a **natural monopoly** market. This is the case where it is more efficient for one business to supply the entire small education market (due to high fixed costs and economies of scale benefits flowing from a high sales volume) than two or more training providers. This results in the market being serviced by one provider, with a new entrant resulting in fierce competition until either the incumbent or the new entrant prevails and assumes the role of monopolist. Conditions of natural monopoly create the potential for a monopoly firm to exercise its market power by setting prices higher, and the level of output lower, than would occur under a more competitive market. This form of market failure is likely to be most prevalent in areas of regional NSW.

Where a natural monopoly exists, government would be justified in regulating providers to limit exploitation of market power and closely monitor training fees. However, in some cases more direct government control, such as ownership of the provider, may better achieve society's objectives: this is particularly the case where the aforementioned market failures affecting the vocational education sector (positive externalities and information asymmetry) are likely to be significant and regulation would be costly both in terms of administration and the resulting market distortion.

Furthermore, the trend towards deregulation of the vocational education and training sector risks eroding existing economies of scale advantages leveraged by current government owned education providers in regional NSW. This is because registered training organisations (RTOs) are 'cannibalising' the market for certain qualifications characterised by low cost of delivery and high profit margins. Meanwhile, government education providers (i.e. TAFE NSW) continue to offer lower profitability courses with significant social benefits (i.e. with non-financial benefits such as spillovers for the net benefit of the community). Private providers are therefore able to artificially reduce their average cost of provision below that of TAFE NSW by offering a mix of courses that are privately optimal, yet not necessarily in the best interests of the community. A continuation of this recently observed trend may leave the NSW Government to provide the higher cost courses in regional NSW (but without the same economies of scale benefits). This problem is most likely to occur in regional areas, as government metropolitan providers are more able to consolidate operations in response to increased private competition (due to the larger market size for high cost qualifications) than their regional counterparts. Furthermore, there may be a role for regional NSW Government education providers to offer location-specific training programs to better meet the skills needs of current or prospective businesses based on areas of local competitive advantage (specialisation). This would seek to enhance the positive spillovers from education and encourage more efficient resource allocation.

Public infrastructure provision

Governments traditionally have sought to address **natural monopoly**, **public goods** and **network externality** market failures⁴⁴ in relation to infrastructure provision, which invariably result in insufficient investment in infrastructure from a societal perspective.

Governments have also intervened for equity reasons to provide a basic level of infrastructure, that would not otherwise be provided, to groups that are on average less able to pay and/or are more costly to supply (such as rural communities). Remoteness and low population density are drivers for the higher cost of infrastructure in regional NSW.

The existence of **natural monopoly** is a source of market failure for many types of public infrastructure, including electricity, water supply and transport. A natural monopoly exists where it is more efficient for one business to supply the entire market than it would be for two or more businesses to do so, usually due to high fixed costs. For example, it would generally be inefficient to have two distributors of water, each with their own system of pipes running down every street. Conditions of natural monopoly create the potential for the incumbent firm to exercise its market power by setting prices higher, and the level of output lower, than would occur under a more competitive market. This leads to a reduction in net benefits to the community.

⁴³ Small education markets may refer to an entire region, or the market for a specific niche qualification within a broader region.

⁴⁴ Productivity Commission 2014, Public Infrastructure, Inquiry Report, vol. 1, pp. 60-62, Canberra.

Historically governments have addressed natural monopolies through government provision and ownership of assets (for example energy assets, or telecommunications infrastructure). In more recent years, provider corporatisation or privatisation, with accompanying regulation, has been used in some cases to improve the efficiency of service delivery by instilling a commercial purpose to an entity while safeguarding the community against monopolist behaviour.

However, the commercial incentives imposed on State Owned Corporations (SOCs) may have an unintended consequence where public infrastructure projects suffer from a degree of **public good** market failure. Public goods are non-rivalrous (consumption by one person will not diminish consumption by others) and non-excludable (it is difficult to exclude anyone from benefitting from the good).

Because public goods are available to everyone once provided, and one person's consumption does not diminish another person's, the associated problem of 'free riding' emerges. Free riding is where businesses hesitate to invest in a project and instead attempt to benefit from another firm's investment in that infrastructure. For example, an initial electricity distribution connection in a newly developed area would have a significant cost for the first business if they were forced to incur its entire cost, but once it is in place, the second and subsequent businesses could move into the location and take advantage of the first's investment in the connection. Such behaviour will result in sub-optimal investment in such infrastructure and the consequent obstruction of economic growth. Where government-owned providers might have previously subsidised the connection on the basis that the full cost would likely be recoverable over time from future customers, the imperative for SOC boards to generate dividends reduces their incentive to incur the demand risk over relatively long periods of time.

Community Services Obligation (CSO) payments to SOC and private infrastructure providers could be used to encourage the most socially efficient provision of infrastructure from the point of view of NSW. For example, CSO payments to electricity distributors to subsidise the cost of initial connection to the electricity distribution network for regional businesses identified as being a 'first mover' could overcome the problem of free riding.

Network externalities are the effects on a user of a good or service of others using the same or compatible goods or services. The existence of network externalities can give rise to a need for coordination, which in some cases may be a function best performed by government. For example, when making decisions on infrastructure projects the NSW government may be best placed to determine suitability of a project by also accounting for broader 'network effects' that would stem from the project. The presence of network externalities, if unaccounted for, may result in the construction of projects that do not optimise the benefits from the interwoven network of infrastructure across the community. This particularly affects the road and transport networks of the State.

Transport and Information Communication Technology (ICT) infrastructure that enhances connectivity between places (i.e. between a regional town such as Orange and a metropolitan centre such as Sydney) is likely to generate **positive externality** spillovers. These spillovers exist because an improvement in connectivity extends the effective agglomeration network, thus increasing the effective depth of the labour force and the breadth of knowledge spillovers. Because a business that provides the infrastructure is not able to directly capture these agglomeration economies that flow to businesses and individuals in each region, some projects that are in the best interests of society may not be commercially viable privately and therefore will not be constructed. In the absence of government investment or intervention less infrastructure will be constructed than is socially optimal.

For the purpose of regional development, government has a long established and strong role in the provision of public infrastructure. Infrastructure projects being constructed on efficiency grounds should be subject to cost benefit analysis, with those that provide the greatest net benefits to society prioritised. Particularly in larger cities, private returns from the provision of infrastructure are often sufficient to attract private investment and government should not discourage or crowd out such investment. Regulation may be required to accompany private investment, particularly where there is the likelihood of a natural monopoly, or there is a need for centralised planning, as is often the case with network externalities.

Particularly for regional NSW, government may also choose to intervene for equity reasons to provide a basic level of infrastructure that would not otherwise be provided.

Facilitating tourism promotion in regional NSW

Tourism promotion is an area of historical government involvement, for example Destination NSW and Tourism Australia. This is because tourism promotion (destination marketing) is a **public good** as it is both non-excludable (all tourism businesses in NSW benefit from NSW promotion) and non-rival (the consumption of tourism promotion by one person or business does not reduce the amount available to others).

The problem of **free riding** is particularly relevant to tourism promotion, as businesses hesitate to voluntarily pay for advertising because they are unable to capture all the benefits and instead attempt to 'free ride' off other firms that choose to privately conduct tourism promotion activities. As a result, less promotion of NSW as a premier tourist destination is undertaken than is socially efficient.

In the regional development context there may be scope for government supported promotion of specific regional areas, specifically those regions that are identified as having strong competitive advantage (specialisation) in tourism related industries. Promotion would be best targeted to interstate and international markets to overcome additional issues (to generate benefits from the perspective of the entire NSW community), or may target NSW residents that would otherwise have travelled interstate or overseas.

Government involvement in tourism promotion does not necessarily mean that the taxpayer pays for it - cost recovery, via an industry levy, may be appropriate where the major beneficiaries can be identified and it is cost effective to implement.

Supporting research and development, specific to regional industries

Research and development (R&D) often generates benefits that spillover to other businesses, industries, or the community more widely. Where these spillovers (**positive externalities**) are large, i.e. the benefits of research are spread thinly across a wide range of industries, or accrue mainly to the wider community: the role for government intervention is stronger. This is because private returns from the R&D are likely to be insufficient to attract the optimal level of investment, and therefore R&D that would provide a net benefit to society may not be undertaken.

For research that produces predominantly private benefits, for example research that is able to be commercialised, it is likely that private returns would be sufficient to attract funding regardless of government intervention.

In some cases the spillovers from R&D are limited to an identifiable industry: of particular relevance would be industries with a competitive advantage/regional specialisation. There may be a role for government to co-ordinate investment (via a levy) in the R&D that is beneficial to the industry as a whole but is not undertaken due to the inability of any individual firm to sufficiently capture the benefits. Levy arrangements ensure that the industry that captures the benefit collectively contributes towards the cost of the R&D. This is already implemented to some degree in certain industries through the Australian Governments Rural Research and Development Corporations and the NSW Government's active role in carrying out agricultural, forestry and fishing research functions.

Business location incentives

Geographical concentration (agglomeration) generates broader public benefits and costs that 'spillover' to others and are not captured/borne by individual businesses when making location decisions (externalities).

Because business location decisions are based on private benefits and costs, costs passed on to other businesses or individuals indirectly (i.e. **negative externalities**) are not factored into private decisions. In relation to location decisions these negative externalities are mostly in the form of congestion and pollution. Avoidable congestion costs in Sydney were \$6.1 billion in 2015 (NSW Budget, 2016-17).⁴⁵

⁴⁵ NSW Government 2016, Budget Paper No. 2 Infrastructure Statement, Budget 2016-17, Sydney.

Because of the nature of negative externalities, the optimal social spatial distribution of businesses may differ from the market driven response, which are motivated by private, rather than social costs and benefits.

Therefore, where the public benefits of relocation from metropolitan areas to a regional site outweigh the private firms net relocation costs (via a net reduction in negative externality costs, such as congestion and pollution in metropolitan areas), there may be scope for government to subsidise firm relocation costs or reduce transaction costs by providing relevant information.

4.3 Chapter summary

The main types of government intervention that economic principles suggest are worthy of consideration on efficiency grounds are as follows:

- Skills, particularly vocational training: intervention should focus on overcoming information asymmetries in the funding of training, inter-firm spillovers and natural monopoly in provision.
- Infrastructure provision should focus on projects in the best interests of the community, particularly those with strong public good characteristics, where a natural monopoly may exist and when network externalities call for significant co-ordination.
- Tourism promotion should focus on overcoming the underprovision of tourism destination promotion noting the public good characteristics.
- Research and development intervention should focus on overcoming positive externalities (spillovers) in the market for research and development.
- Business location incentives should focus on overcoming negative externalities (spillovers) of congestion and pollution by attracting businesses at the margin.

Whether these market failures are sufficient for intervention depends on a demonstration that the cost of each intervention is exceeded by its benefits on a case-by-case basis.

5. Pilot project results

5.1 Purpose and methods of the pilot

The pilot project was an initial ‘test of concept’ for the Growth Enablers approach, with the intention of extending the analysis to other regional economies if the approach and outcomes proved sound.

A combination of desktop economic modelling, stakeholder consultation and primary data collection was used to provide robust evidence, transparent and intuitively understandable analysis, and draw on the grassroots experience of industries in each regional economy. The main analytical tool used was the Regional Analysis Model (RAM), developed by the Centre for Economic Development within the NSW Department of Industry, Skills and Regional Development. (See 1.4 for further information about the RAM).

Primary data collection was undertaken by a consultant three regional economies – Orange, Port Macquarie and Wagga Wagga. These regional economies were chosen because their locations and conditions provided a solid test of the project methods and represent the diversity of regional NSW.

The Department contracted AgEconPlus Consulting to facilitate workshops with local stakeholders in each of the three pilot regional economies. Workshops including representatives of local and state government, local businesses and chambers of commerce. The purpose of the workshops was to confirm the findings of the preliminary economic modelling; identify the nature and magnitude of impediments and enablers of regional economic growth; and identify key industries and firms within those key industries for further survey by the consultant.

The consultant also surveyed 67 firms in key industries within the three regional economies. The purpose of the surveys was to identify possible enablers of growth for businesses operating in the key sectors described in phase 1 and to explore the cost profile of these firms. The aim of the cost profile data collection was to enable quantitative estimation of the significance on firm performance of specific projects in any subsequent economic modelling.

An evaluation of the pilot’s success in meeting these objectives and a discussion of the desirability of duplicating the approach in other major regional economies is provided at the end of this chapter.

5.2 Workshop results

While workshop participants were encouraged to consider only actions that the NSW government could take to enable economic growth in the region, a broad range of comments were captured.

5.2.1 Orange economic region workshop

Workshop participants discussed the industries of regional specialisation identified by RAM analysis as per Appendix 13 Table 13.7 and identified the regional economy’s key sectors as:

- medical services and residential care
- food product manufacture
- repair and maintenance
- transport

Despite the large size of the sectors, participants saw little value in focussing on mining or agriculture as sectors to be surveyed. Mining was viewed as able to deal directly with the government, and agriculture was considered already developed, with the best prospect for further growth being from food product manufacturing.

Participants had concerns about the methodology of the project and noted a tension between projects that encourage regions to diversify and this project that looks to support areas of specialisation. Concern was expressed that focus on specialisation could overlook emerging industries.

Participants also discussed the interconnectedness of industries, such as mining and machinery repair, and agriculture and food manufacture.

Table 5.1 Orange workshop - key industries, their importance, and suggested actions to enable growth

Key Industry	Why is it important to the region?	What needs could be addressed by the NSW Government?
Medical and residential care services	High retention rates of staff, and Orange is attractive to health professionals. Job growth potential - residential care is labour intensive and less subject to automation than other industries.	<ul style="list-style-type: none"> Development of a regional medical school.
Home care services	Movement toward in-home care rather than residential aged care	
Food product manufacture	Linked to specialisations in agriculture and transport.	
Repair and Maintenance	Linked to specialisations in agriculture and mining.	
Transport	View that this industry has grown significantly since data used in this study was collected, and is set to grow further.	<ul style="list-style-type: none"> Improvements in infrastructure reduce regulatory barriers and encouraging the expansion of transport and logistics providers.
Applicable to many industries	<ul style="list-style-type: none"> Poor telecommunications and limited land availability are big barriers to expansion and establishment of new businesses. Freight costs, payroll tax and electricity costs all holding back businesses A second or more reliable airline needed. 	<ul style="list-style-type: none"> Implement a project similar to the mobile black spots program which would identify telecommunications barriers to industry growth and assist co-located businesses to access telecommunications at reasonable cost, to overcome the current situation where the available providers refuse to provide a solution to telecommunications infrastructure problems.

5.2.2 Port Macquarie economic region workshop

Workshop participants discussed the industries of regional specialisation identified by RAM analysis as per Appendix 15 Table 15.7 and identified the regional economy's key industries as:

- tourism
- health care
- education

Manufacturing was also identified by a few participants as a key industry.

The workshop acknowledged that tourism was not an identified ANZSIC industry, but primarily consisted of accommodation and food services (identified as a specialisation in Port Macquarie) and arts and recreation services. Arts and recreation services accounts for 1.7% of the NSW workforce and 1.16% of all employment in the Port Macquarie regional economy.

Participants largely agreed that heavy construction should not be considered a key industry because activity in this sector was mostly due to the construction of the Pacific Highway and would shortly move out of the Port Macquarie area. Electricity generation was also not considered a key industry because most activity in this sector was due to the decision to move Essential Energy's headquarters to Port Macquarie, and the business had been heavily restructured since the data used in this study had been collected.

Table 5.2 Port Macquarie workshop - key industries, their importance, and suggested actions to enable growth

Key Industry	Why is it important to the region?	What needs could be addressed (by NSW Government)?
Tourism Includes corporate events, educational tourism, and large-scale sporting events	<ul style="list-style-type: none"> Evidence of strong growth in the region Provides a steady supply of low-skilled casual jobs. Industry draws on large tertiary student body for workers 	<ul style="list-style-type: none"> More school and VET level training in relevant skills Airport - terminal upgrade and better bad-weather landing facilities. Infrastructure and Crown land use – foreshore development for amenity, linkage of CBD to foreshore, and walking and bike trails. Sport infrastructure funding Grants linked to jobs in the sector for long-term unemployed (precedent - \$3M for 350 jobs for long-term unemployed, about 50% of whom still in work). Upgrade of road to north coast. Introduction of direct flights to Melbourne.
Health Specifically residential care or human services more broadly	<ul style="list-style-type: none"> Australian sector is falling behind overseas models of services, so plenty of room to innovate. Not an area that will be subject to significant mechanised replacement of human labour. Aging population NSW-wide, drawn to Port Macquarie by existing quality of health care. Potential for high-quality jobs in 20-65 year old demographic. 	<ul style="list-style-type: none"> Training across a range of professions at tertiary and VET level, including training in Port Macquarie.
Education Specifically tertiary education and trade training	<p>In tertiary education:</p> <ul style="list-style-type: none"> International students stay on in region, establish businesses, innovate and increase skill level. Potential for high-quality jobs in 20-65 year old demographic. Port Macquarie has an established campus infrastructure and plans for growth. <p>In trade training:</p> <ul style="list-style-type: none"> Gaps in trade training across many industries Market needs Cert 4 training while school training only goes to Cert 3, and TAFE is not filling gaps. 	<ul style="list-style-type: none"> Training at tertiary and VET level, including upskilling. Grants and capital costs e.g. for orbital road between airport and CSU campus (and more projects).
Manufacturing	<ul style="list-style-type: none"> Currently Port Macquarie has several niche manufacturers Growth possible as existing businesses reinvent their products and services for new markets (example of saw sharpener who has moved into an international trade in dental instrument sharpening) Growth possible to service health industry Generates high export value and high quality jobs Businesses will fund own training needs if they have jobs to fill. 	<ul style="list-style-type: none"> State Government could introduce a local content procurement policy More trade training Access to advice and incentives about existing businesses transitioning to new markets Upgrade wharf at Birdon WHS – WorkCover should be providing advice to businesses, not just penalties.

5.2.3 Wagga Wagga economic region workshop

Workshop participants discussed the industries of regional specialisation identified by RAM analysis (Appendix 18 Table 18.7). Participants all agreed that education was a key industry for the region, but there was little consensus on others. Suggestions included aviation-related industries, recycling and health.

Participants agreed that defence, although a regional specialisation, should not be considered further because it was reliant on federal government policy and funding. Lack of jobs for partners of defence force personnel who were moved into the region was identified as a concern.

Participants were of the view that the regional economy was much larger than identified by work locations, and that Wagga Wagga had a significantly larger catchment of customers for retail goods and health services.

Table 5.3 Wagga Wagga workshop - key industries, their importance, and suggested actions to enable growth

Key Industry	Why is it important to the region?	What needs could be addressed (by NSW Government)?
Education tertiary and vocational	<ul style="list-style-type: none"> Gaps in trade training across many industries 	<ul style="list-style-type: none"> Reduce reliance on red tape in the Smart and Skilled program, which is not functioning in the regions
Aviation	Existing businesses in aviation (Douglas plane painting, Rex pilot training, and Temora historic plane museum) are seen as unique in regional NSW.	
Waste Recycling	Wagga Wagga is ideally located half way between Sydney and Melbourne which generate massive waste, and is possible under the RMS regulations to drive to either city and back in the one day.	<ul style="list-style-type: none"> Examine ways to make it easier to bring rubbish to regional NSW for recycling. Remove disincentives to growth e.g. parts unable to be recycled in Sydney incur waste levies in the city before being shipped to Wagga for recycling.
Applicable to many industries	<ul style="list-style-type: none"> Regulations, fees and levies are designed for Sydney, and are often not relevant for regional towns. Heavy infrastructure costs incurred by first movers into an area, and 'first upgraders' is a disincentive to grow 	<ul style="list-style-type: none"> Introduce special planning laws applying to certain zones in the regions to make it easy to develop businesses in those areas and reduce expenses and delays from planning laws designed for Sydney Establish a regional rate for payroll tax to encourage employers to set up outside of Sydney.

5.3 Recommendations for business survey

Decisions on which industries to survey (Table 5.3) were based on the recommendations of workshop participants, advice from regional development experts, and results of the RAM analysis. In order to allow inter-regional comparisons, the same industry was surveyed in more than one location where possible.

Table 5.4 Key industries for survey

Surveyed in Orange	Surveyed in Port Macquarie	Surveyed in Wagga Wagga
Food Product Manufacturing	Accommodation	Food Product Manufacturing
Road Freight Transport	Arts and Recreation Services	Road Freight Transport
Health Services	Social Assistance	Tertiary Education
Aged Care	Aged Care	Air and Space Transport
Specialised Machinery and Equipment Manufacturing	Log Sawmilling and Timber Dressing	

5.4 Business survey results

The following sections compare the simple average cost profile of survey respondents with the State industry average, as reflected in the NSW Input-Output (IO) table. Care must be taken when interpreting the cost profile comparisons below due to the small number of respondents surveyed. It was known before the survey that the number of respondents in each location would be insufficient to conduct a statistical comparison, but the pilot was designed to elicit both quantitative and qualitative material to enable judgements to be made regarding the similarity, or otherwise, of the regional and Input-Output cost profiles, as well as the identification of potential trends or phenomena that might explain differences.

5.4.1 Tertiary education

Tertiary education was the only key sector agreed on at the Wagga Wagga workshop, it is the third largest employing industry in that regional economy.⁴⁶ Both higher education and technical and vocational education (which together comprise tertiary education) are strong areas of specialisation in Wagga Wagga.

Technical and vocational education specialisations were evident in Orange, Port Macquarie and Wagga Wagga. Reflecting the nature of vocational education and training which often involves practical work in the form of an apprenticeship which is an immobile factor of production (discouraging concentration up to a point). However only Wagga Wagga was selected for survey because the other regions did not demonstrate specialisation in higher education.

Table 5.5 Cost profile comparisons – tertiary education

Item	Input-Output NSW (%)	Survey average (%)	Orange (%)	Wagga Wagga (%)	Port Macquarie (%)
No. of respondents	-		-	8	-
Employee costs	66.0	62.0	-	62.0	-
Profit⁴⁷	8.1	8.1	-	8.1	-
Rent	1.8	5.3	-	5.3	-
Utilities	0.5	2.3	-	2.3	-
Total purchases	3.4	3.2	-	3.2	-
Information, media and telecommunications	2.4	4.8	-	4.8	-
Other	20.1	19.1	-	19.1	-
Total	100	100	-	100	-

The average cost profile of the Wagga Wagga businesses surveyed bears strong similarity to the equivalent NSW IO profile, with employee costs making up around two thirds of all costs. However, the major fixed costs of rent, utilities and information, media and telecommunications are materially higher in Wagga Wagga. This pattern is consistent with Wagga Wagga providers being of smaller scale than State average (as reflected in the IO breakdown).

Among the largest individual businesses surveyed in Wagga Wagga, cost profiles were more similar to the equivalent NSW industry IO profile, noting higher employee expense share and at the same time lower fixed costs.

⁴⁶ Tertiary education was the third largest employer in the Wagga Wagga (4.7%) regional economy at ANZSIC Level 3 behind sheep, beef cattle and grain farming (5.95%) and defence (5.9%).

⁴⁷ Profit as a share of total cost is assumed to be the same as the IO share for the broader industry. Data on profit due to its sensitive nature was not sought, so as to maximise response rates to the survey. Other cost shares were adjusted down proportionately.

Respondent comments

Access to skilled labour and employee costs

A number of survey participants highlighted the difficulty in attracting labour with the appropriate skills and experience in management and teaching to Wagga Wagga as an impediment to growth:

- *We have difficulty sourcing high level management, senior information technology support and financial officers i.e. executives.*
- *Academics are difficult to attract to Wagga Wagga. [Instead we] train our own academics and network with other operators to attract candidates.*
- *[Difficulty] in attracting professional instructors to Wagga Wagga is the result of the regional location and limited local opportunity for career progression. Geographical location cannot be changed, however this [is partly offset] through lower business costs such as the lower cost of rent.*

Cost and access to utilities

The cost profile of the businesses surveyed in Wagga Wagga indicates the proportion of utilities (electricity, water, gas etc.) costs are higher than the industry more broadly, accounting for 2.3 per cent in Wagga Wagga compared to just 0.5 per cent of total costs State-wide (Table 5.5).

However, despite the larger share of costs for utilities none of the eight survey respondents raised the cost of utilities as an issue for themselves.

One respondent highlighted access to electricity infrastructure as an issue for many businesses in the Wagga Wagga region:

- *Electricity is not an issue for our business but access to suitable power supplies is a major constraint to businesses in our region.*

Information, media and telecommunications

Poor internet access was highlighted by many survey respondents as being a significant impediment to firm growth:

- *Access to broadband/NBN is a major constraint. Modern teaching relies on video conferencing our remote campuses, which inadequate access to broadband prevents. [The government should] invest to ensure adequate broadband for the training sector in remote locations.*
- *Information technology is a major cost [for my business], while the quality and reliability of the service is missing. Whole suburbs of Wagga Wagga are without broadband internet access, it is easier to do business in Sydney or Melbourne.*
- *The issue of broadband access (the lack of) is a major impediment to our business. We are located in a business hub and broadband is not available. Whole Wagga Wagga suburbs don't have access to broadband services.*

Links to market failure

Infrastructure provision

Access to utilities (electricity, gas, water etc.) was not identified as an impediment among the tertiary education providers, but the assertion that (lack of affordable) access to electricity is a major constraint to other businesses may warrant further investigation. Chapter 4 underscored that the public good nature of utilities infrastructure lends itself to being vulnerable to free riding, resulting in less investment in electricity infrastructure than is in the best interests of the community.

Internet access

Inferior internet services is consistently raised by Wagga Wagga firms as an impediment to business efficiency, this is an area for further investigation by government intervention. This topic is addressed in more detail in Chapter 5.5 below.

Skills

It is a natural consequence of agglomeration that regional economies may have less access to skills due to thin labour markets. The experiences of several Wagga Wagga respondents that state the difficulties in

securing employees seem to support the notion of thin labour markets in regional areas. As thin markets are a reflection of the actual cost of doing business in a regional area they are not, in themselves, a market failure. Difficulties in attracting suitably skilled labour could be most readily overcome by businesses offering more flexible employment packages and higher salaries. As was noted by one respondent these additional costs are offset, at least in part, in other ways such as lower land or rent costs.

5.4.2 Road freight transport

Despite not being identified in the desktop analysis as a specialisation of the Orange regional economy, road freight transport was identified as a key sector at the Orange workshop, partially due to its strong growth since the 2011 Census. While tertiary education was the only key sector agreed on at the Wagga Wagga workshop, road freight transport is a major employing industry in the Wagga Wagga regional economy, accounting for approximately 2.15 per cent of the workforce. Road freight transport was therefore selected for survey in Orange and Wagga Wagga to provide the opportunity for cross-regional comparison.

Table 5.6 Cost profile comparisons – road freight transport

Item	Input-Output NSW (%)	Survey average (%)	Orange (%)	Wagga Wagga (%)	Port Macquarie (%)
No. of respondents	-		4	6	-
Employee costs	25.5	37.5	40.2	35.7	-
Profit⁴⁸	16.3	16.3	16.3	16.3	-
Rent	3.5	2.7	3.1	2.4	-
Utilities	0.5	1.2	1.9	0.8	-
Retail trade services	3.4	22.9	19.7	25.1	-
Total purchases	8.9	29.0	24.1	32.2	-
Financial and insurance services	4.5	7.7	7.5	7.8	-
Other	45.2	13.4	14.4	12.6	-
Total	100	100	100	100	-

Some significant differences between the survey respondents and the NSW IO cost profile can be observed. Unfortunately, the NSW IO data does not differentiate between road freight transport and road passenger transport, meaning that the IO cost profile are influenced to an unknown degree by the presence of road passenger transport data. Accounting for fuel purchases in the IO table is another difficulty as it appears to have been included in the 'other' cost category, whereas survey respondents invariably reported fuel purchase as a retail transaction.

Notwithstanding these difficulties, the survey data does provide some useful insights into the road freight transport sector in regional economies. As expected, costs are dominated by employee costs and fuel purchase, with finance and insurance services significant. These cost category shares are similar between the two regional economies. Closer inspection of individual firm responses indicated that the Wagga Wagga employee expense share is very consistent across firms, with more variation demonstrated in Orange where the survey included a more diverse range of firms both in terms of scale and services provided (i.e. small local couriers as well as a very large national freight company).

⁴⁸ Profit as a share of total cost is assumed to be the same as the IO share for the broader industry. Data on profit due to its sensitive nature was not sought, so as to maximise response rates to the survey. Other cost shares were adjusted down proportionately.

Respondent comments

A number of themes common to both locations emerged from the survey, particularly a reduction in business as a consequence of a decrease in local manufacturing and the importance of strategic location on fatigue management. Orange was considered well located between Sydney and Dubbo, and Wagga Wagga's equidistance from Sydney and Melbourne was highlighter. Wagga Wagga firms were more focussed on interstate freight movement, and Orange firms predominantly serviced Central West communities. While access to skills was nominated as an impediment to growth by a minority of respondents in both locations, two issues received widespread attention: infrastructure and regulatory burden.

Infrastructure

The inability to use B-doubles and higher mass vehicles on important routes, and its effect on business productivity, was raised by multiple respondents in both locations:

- *The Sydney Orange road is the worst road in Australia. I acknowledge the work that is being done fixing up the Katoomba route (our drivers are banned from Bells Line) but even with all the improvements there will still be 15km which prevent us from using B Doubles. B Doubles would give us a 20% to 25% productivity gain. Also under the Higher Mass Limits scheme we can gear up for 99% of our route but the last km or so will be in suburban streets with inadequate bridges so we are no further ahead. These suburban roads are the responsibility of councils but there needs to be some state government oversight.*
- *The road infrastructure is very good but Higher Mass Limits stop us from taking full advantage of it.*
- *From a truck driver's point of view Sydney congestion results in a major loss of productivity - 10 years ago we could do 10 pick-ups per day in Sydney, now it is down to 5.*
- *Main roads are now mostly in good shape. 'Blackspots' include the West Wyalong to Dubbo and the Wagga to Albury roads. They need to be two lanes all the way.*

The capacity of local road infrastructure was even more commonly raised:

- *Road infrastructure is improving and we acknowledge the good work being done by the State Government. Wagga Council needs to be careful that when it upgrades roads, roundabouts are designed for B Triples - these will be legal in the medium term and other competitor cities are already doing it (e.g. Albury and Goulburn).*
- *Wagga desperately needs a by-pass. Unity Bridge Wagga - weight limit is too low. Council is trying to upgrade Byrnes Rd east of Wagga but State Government help is needed. Our road system can't handle the manufactured capacity of our trucks.*

Regulatory burden

Regulatory burden, particularly regarding safety, were raised by the majority of industry respondents:

- *Compliance with regulation is a major issue for our business - Truck Safe Maintenance Program, NHVR, Customer regulations - each of these requires audit and 65% of the questions are the same. It's a relatively small cost but still 2% of turnover.*
- *RMS (Roads and Maritime Services) are overly zealous when checking heavy vehicles. This is particularly an issue with the heavy vehicle checking station at Forbes. Their current policy seems to be not to let a truck through without finding at least one defect.*

Interstate comparisons regarding regulatory burden were common:

- *State differences in OHS - NSW, Vic and SA are all different. The Federal system is better but we are too small to qualify. National heavy duty regulator is fixing/harmonising state differences - but slowly.*

One respondent suggested that these differences are material to business viability:

- *Our biggest problem is WorkCover, HR and OHS regulation. The whole area has become overblown. Safety is important but a risk free work place is not possible. The viability of this business is under threat from WorkCover premiums that have increased from \$14k per month to \$33k. Premiums are much cheaper in Vic and Qld. A truckie quits and under the award we have to pay him 4 weeks wages plus an extra week because he is over 45 years - these costs are killing our business.*

Links to market failure

Infrastructure provision

The case for suggesting that roads suffer from a public good market failure is strong in many cases, and is discussed in Section 5.5.

The fact that regulatory compliance represents a cost to business does not imply that there is a situation where government intervention in the economy to correct a market failure costs more to society than the original problem.

However, the responses of many survey respondents appear to raise concerns over whether these two conditions are being met by the present NSW regulatory regime. The efficiency of NSW's regulation would be questionable if the safety outcomes in interstate jurisdictions are comparable to those achieved in NSW but at lower overall cost (both public and private). Exploration of this issue as it relates to both fatigue management and the use of heavier vehicles may represent an opportunity to optimise NSW regulation and subsequently lower the operating costs and raise the productivity of the road freight transport sector.

5.4.3 Food product manufacturing

Food product manufacturing, employing 2.5 per cent of the workforce, was identified as a key sector at the Orange workshop and the best prospect for leveraging the strength of the local agricultural and transport industries. While not specifically identified at the Wagga Wagga workshop, the industry is also a major employer in the regional economy, accounting for approximately 2.8 per cent of the workforce. The food product manufacturing specialisation around Orange was relatively broadly based while the Wagga Wagga regional economy had a strong specialisation in meat processing. Somewhat related agricultural production provides key inputs to the food product manufacturing sector and employs a further 6.7 per cent in the Orange regional economy and 6.3 per cent in the Wagga Wagga regional economies, respectively.

Table 5.7 Cost profile comparisons – food product manufacturing

Item	Input-Output NSW (%)	Survey average (%)	Orange (%)	Wagga Wagga (%)	Port Macquarie (%)
No. of respondents	-		5	3	-
Employee costs	14.9%	27.0%	25.8%	28.9%	-
Profit⁴⁹	8.6%	8.6%	8.6%	8.6%	-
Rent	1.1%	1.5%	2.4%	0.0%	-
Utilities	2.0%	5.7%	4.6%	7.6%	-
Manufactured products	16.4%	1.9%	3.1%	0.0%	-
Total purchases	24.1%	6.5%	10.4%	0.0%	-
Agriculture	18.6%	32.4%	28.5%	39.0%	-
Transport, postal and warehousing	7.4%	12.5%	13.2%	11.3%	-
Other	49.3%	50.7%	48.3%	54.8%	-
Total	100.0%	100.0%	100.0%	100.0%	-

The eight food product manufacturing firms that were surveyed in the Orange and Wagga Wagga regional economies covered a wide range of product types: meat, dairy, oils and fats, fruit and vegetables, and grain milling and cereals. The businesses are of considerable scale, with an average workforce of 86 FTEs, and the cost profile comparison presented above (at ANZSIC Level 2) suggests that the surveyed firms spend nearly twice as much proportionately on employee costs than the NSW IO cost profile average. Inspection of the firm-level data revealed that this is the case for all but one of the respondents, and this respondent was easily the largest of the food product businesses surveyed.

⁴⁹ Profit as a share of total cost is assumed to be the same as the IO share for the broader industry. Data on profit due to its sensitive nature was not sought, so as to maximise response rates to the survey. Other cost shares were adjusted down proportionately.

Transport, postal and warehousing is also materially greater for the surveyed firms, suggesting that distance to market imposes higher logistics costs on regional firms – all but one of the respondents sell the overwhelming majority of their product outside of their regional economy. The discrepancies in agriculture and manufactured product costs between the surveyed firms and the NSW IO table can probably be explained by a greater tendency of regional firms to buy raw materials from farmers, while many inputs for metropolitan firms may already be partially transformed.

Respondent comments

The most common themes raised by respondents were skills availability, utility connection and regulatory impediments, and these issues were raised in both locations. Other issues raised by one or two firms included the change over time in the use of uniquely productive agricultural land to rural residential purposes, which is impacting the availability of raw materials, as well transport connectivity. However, these issues seemed to be firm specific.

Skills

The inability to recruit and retain suitably qualified staff was reported by the majority of firms. The use of overseas workers to fill the lower-skilled jobs on offer was raised by three respondents, with two explicitly stating that their business relied on overseas workers.

- *417 and 457 Visas make this business possible. Without them we could not secure enough willing workers of acceptable quality.*
- *417 and 457 Visas make this business possible but longer term I would like some help training Australians to work in the processing plant.*
- *Skilled labour is without doubt our biggest impediment - we are resisting calls from our customers for more product until we get this right. We are also investigating labour saving machinery. We are getting more professional - hiring an HR consultant to help with recruitment and training. We may need to recruit from overseas so any help here (e.g. resettlement costs) from the NSW Government would be gratefully received. We would like to know more about what is on offer from the NSW Government with respect to training.*

Other businesses specifically raised the poor availability of higher skilled workers, particularly science-qualified workers:

- *Laboratory managers (good quality science graduates) are hard to get. Process workers to work night shifts with no skill/training are also hard to get - people won't work at night.*
- *This is a short, medium and long term issue - the business is able to recruit unskilled labour but very difficult to find management, finance and food technology skills.*

Several respondents in Orange believed that the present satisfactory local labour market, which was due to the recent release of labour from other sectors, wouldn't last:

- *Medium term issue – it has been very difficult up to this year but contraction of the mining and the white goods sector has provided access to very capable people. However, those who don't secure jobs will leave the community and we will once again be short of skills.*

Utility connection (infrastructure)

Access to utilities was raised as a major issue by a number of respondents in both locations.

- *To expand this plant and employ another 60 FTE we need to invest in a rendering plant and plate freezer - upgrade of electricity supply will cost \$1.2 million, the most assistance I can get from NSW Government is \$60k and it will cost me \$50k for the grant application!*
- *Yes this is an issue, we have worked to make electricity as efficient as possible but we use a lot of high priced gas. Access to natural gas (pipeline for Nyngan) would make a big difference to our cost structure.*

Regulatory impediments

A variety of perceived regulatory impediments and interstate inequities were raised by respondents:

- *Day to day there is not an issue. However if we want to expand the DA process is extremely difficult and expensive, the questions asked are uninformed and there is no one who will make decisions. Section 94 community contributions are an unnecessary addition to my cost base - what about the economic benefits the plant brings!*
- *Australia is turning into a risk free environment and this will not work for business in a world that is changing fast, our industry will be left behind.*

- *NSW EPA policies on trade waste are not replicated in Vic or Qld. To comply with NSW EPA requirements to reduce waste sugar levels we were forced to install an \$800k treatment facility which adds at least \$80k in additional cost and lost throughput (revenue) each year. To make matters worse, high sugar waste is valuable to the biological functioning of the Council's municipal waste treatment plant.*
- *We are an established business that is looking to expand in Orange. New competitors are starting up in South Australia and their state government is offering \$100k in capital assistance for every job created - they are getting a free ride to take our market. The best NSW Government will offer is \$10k per job.*

Links to market failure

Skills

As with the tertiary education sector, it is a natural consequence of agglomeration that regional economies may have less access to skills due to thin labour markets. The expectation of several Orange respondents that excess labour would depart the regional economy would seem to support the notion of thin labour markets in regional areas. As thin markets are a reflection of the actual cost of doing business in a regional area they are not, in themselves, a market failure. Difficulties in attracting suitably skilled labour could be most readily overcome by businesses offering more flexible employment packages and higher salaries.

However, there is evidence of market failure in vocational education and training, particularly where skills are transferable across employers (externalities) or potential trainees are young or otherwise unable to fund their training (information failure in finance markets). These issues may well be relevant to the food product manufacturing industry. The apparent willingness of respondents to invest in worker training and the use of overseas workers to fill roles suggests that the latter market failure may be the more relevant to the surveyed firms. Governments may therefore have a role in identifying suitable trainees and facilitating their relocation and training.

Infrastructure provision

New or upgraded access to electricity and gas was identified by a small number of respondents. The higher cost share of gaining access to utilities for regional businesses relative to comparable businesses in large cities is a natural consequence of lower agglomeration economies in regional markets and possibly greater distances between existing utility networks and business location. These higher costs are a reflection of the actual cost of doing business in regional areas and are not, in themselves, a market failure.

However, there may be a 'first mover' **public good** market failure which is discussed further in section 5.5. It is unclear whether those are the circumstances affecting food product manufacturers in the Orange and Wagga Wagga regional economies, but further investigation may be warranted.

The interstate comparisons of regulatory and investment attraction regimes by several survey respondents brings into question whether the present NSW regulatory regime is providing the least distortionary option available and is proportionate to the problem it seeks to correct. The efficiency of NSW's regulation would be questionable if the environmental outcomes in interstate jurisdictions are comparable to those achieved in NSW but at lower overall cost (both public and private). Exploration of this issue as it relates to both environmental protection and investment attraction may represent an opportunity to optimise NSW regulation and subsequently lower the operating costs and raise the productivity of the food product manufacturing sector.

5.4.4 Tourism-related industries

The 'tourism industry' is not defined as an industry under the ANZSIC industry classification system. Unlike other industries, tourism is defined by what visitors (tourists⁵⁰) do and what they spend their money on rather than by the supply or production of good and services. Consequently it is made up of a range of different industries that provide goods and services to visitors, such as accommodation, retail, arts and recreation, and transport services. Despite this ambiguity, tourism was identified as a key sector at the Port Macquarie

⁵⁰ Tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes.

workshop, with accommodation (identified as a specialisation in Port Macquarie) and arts and recreation services (in relation to tourist attractions) nominated by workshop participants as being the most significant tourism-related industries in the Port Macquarie regional economy.

Three sub-industry sectors were selected to provide an approximation of the tourism industry on the basis that they are significantly dependent on tourism expenditure and are major components of the tourist experience:

- Accommodation - a major employing industry in Port Macquarie, accounting for approximately 2.5 per cent of the workforce.
- Heritage and creative and performing arts activities (two subdivisions of Arts and Recreation Services) - accounts for approximately 0.4 per cent of the workforce.
- Scenic and sightseeing transport – which accounts for approximately 0.05 per cent of the workforce in Port Macquarie but has a proportionally large share of revenue attributable to tourists and includes charter fishing boat operation, helicopter sightseeing operation and whale watching cruises.

The reported cost share (Table 5.8) of total purchases for accommodation survey respondents is significantly higher than the NSW IO share for the same expense, and closer inspection of individual firm responses indicated that this is mostly comprised of costs relating to linen, consumables and accommodation fit out. These items appear to have been included as imports in the NSW IO table, and reported in the 'other' category.

The accommodation businesses surveyed are of small scale, with a median workforce of 4 FTEs, with one medium sized business surveyed bringing the average number of FTEs up to 23. This was reflected in the higher expense shares across the major fixed costs such as rent and utilities than the NSW IO share for the same expense. This pattern is consistent with regional tourism markets being of smaller scale than the State average (as reflected in the IO breakdown) and is a result of less economies of scale.

The average cost profile of the Port Macquarie heritage, creative and performing arts firms' bears strong similarity to the NSW IO profile. Financial and insurance services are materially higher for surveyed firms when compared to the NSW IO, probably as the result of the small size of these businesses, meaning that finance represents a disproportionately large share of costs for a single operator.

Table 5.8 Cost profile comparisons – tourism-related industries

Item	Accommodation		Heritage, Creative & Performing Arts		Scenic & Sightseeing Transport	
	Input-Output NSW (%)	Port Macquarie (%)	Input-Output NSW (%)	Port Macquarie	Input-Output NSW (%)	Port Macquarie (%)
No. of respondents	-	7	-	5	-	4
Employee costs	27.6	31.5	22.9	19.6	19.3	23.4
Profit⁵¹	20	20	30	30	22.1	22.1
Rent	3.3	4.4	3.2	1.7	2.9	6.4
Utilities	2.4	6.3	0.8	3.1	0.4	0.6
Total purchases	8.8	17.1	4.7	6.7	7.1	31.5
Financial and insurance services	8.1	3.1	1.4	9.1	11.1	1.9
Professional, scientific and technical services	1.4	5.0	5.2	3.5	2.7	9.7
Other	37.8	20.7	38.3	38.9	48.2	16
Total	100	100	100	100	100	100

Some significant differences between the scenic and sightseeing transport survey respondents and the equivalent NSW IO sector cost profile can be observed. Unfortunately a concordance problem was

⁵¹ Profit as a share of total cost is assumed to be the same as the IO share for the broader industry. Data on profit due to its sensitive nature was not sought, so as to maximise response rates to the survey. Other cost shares were adjusted down proportionately.

encountered when compiling the results for scenic and sightseeing transport, with the NSW IO table merging the separate sub-industry sectors of pipeline operation for the transport of gas, oil and other material and water transport. The conflation of the three industry subsectors means that the IO cost profiles are influenced to an unknown degree by the presence of water transport and pipeline transport data. It is also difficult to account for fuel purchases in the NSW IO share, but it appears to have been included in the 'other' cost category, whereas survey respondents invariably reported fuel purchase as a retail transaction.

Respondent comments

Access to skilled and unskilled labour

Many respondents in accommodation and arts businesses identified difficulties in finding employees for low skilled positions:

- *Finding cleaners and other lower skilled staff can be a challenge. [Our town] doesn't have a population of employable unemployed.*
- *I would like to employ cleaners and gardeners but I just can't find reliable people.*
- *Skilled labour is not an issue. We need ordinary able bodies that can be trained and who are prepared to work for \$20/hr. These are in short supply in [our region].*

Skilled labour was an issue for a majority of respondents in the scenic and sightseeing transport industry:

- *This is a major issue. There are not many people in Port Macquarie with a coxswain's certificate who are looking for work. Even people with PWC and dinghy licenses are scarce.*
- *Yes, skippers that are licensed for twelve metre boats are hard to find.*

The high cost burden of employee turnover was raised by one respondent:

- *This is our number one issue. It costs us up to \$5,000 to train a housekeeper and I have trained and lost twenty in five years. [Our region] has an old population and people want to work part time or not at all.*

Regulatory impediments

Regulatory impediments of many kinds were raised by a majority of businesses. Accommodation businesses raised issues around development consent:

- *It is very difficult to secure a DA through the [local] council, this has hindered our expansion.*
- *Achieving council approval has been a major and expensive process because no one was prepared to make a decision.*

NSW Strata legislation was also raised:

- *This is a major issue. NSW Strata management legislation is way behind Queensland. When you visit Queensland nearly all the accommodation is strata, not so in NSW. We should adopt the Queensland model.*

Half of all businesses surveyed in the scenic and sightseeing transport industry raised issues with the slow timeframe of government, with a particular focus on RMS:

- *RMS are not easy to deal with, to replace my boat and have them complete a survey on a new (second hand) vessel for my charter business has taken weeks and is costing me from lost revenue. NSW Fisheries are simplifying our log books and no longer recognise 'catch and release'. I am worried that in five years' time they will refuse me a license because we take so few fish and the log book will point toward diminished stock.*
- *Water safety has just been moved to a national framework and managed by AMSAR, and this has been a big improvement. We still have issues with RMS - it takes five months to renew a coxswain's license.*

Businesses involved in heritage, creative and performing arts sectors raised other issues:

- *NSW Heritage Office can be overly zealous in what they will allow, for example forestry education material may be deemed to detract from heritage value of the building's façade.*
- *We have a problem with securing performing art talent that relies on government grants. Grants are decided late in the year and performers can't commit to touring regional areas until their funding has been secured.*

Links to market failure

Skills

Difficulties in attracting unskilled and skilled labour could be most readily overcome by businesses offering more flexible employment packages, improving working conditions and higher wages, and is not evidence of market failure.

Regulation

Although not directly raised as an issue by survey participants, other accommodation businesses in NSW have publically raised the issue of (the lack of) regulation for new emerging business models that form part of the 'sharing economy'. In the accommodation space, entrants such as Airbnb are becoming large entities in their own right. The regulatory gap between the established accommodation business and these new emerging competitors, that make up part of the 'sharing economy' (peer to peer transactions), potentially risks harming individuals that use their services or highlights the possible existence of unnecessary regulation of traditional accommodation businesses. The government may wish to gauge the continuing need for existing regulation or consider drafting new legislation that is more consistently applied to both existing businesses and to the new entrants that are part of the sharing economy.

5.4.5 Health care and medical services

Health care (including hospitals and medical services) was one of the main industries raised in the Orange workshop and is the largest employing industry (10%) in that regional economy. Specialisation in health care was evident in Orange and Wagga Wagga, however health care businesses were only surveyed in Orange.

The health care and medical services sector was also identified during the Orange workshops as being of regional significance. Participants noted Orange was an attractive location for health professionals, and discussed the benefits of the health care and medical services sector and the education sector working together to create a medical school in the region.

Table 5.9 Cost profile comparisons – health care and medical services

Item	Input-Output NSW (%)	Survey average (%)	Orange (%)	Wagga Wagga (%)	Port Macquarie (%)
No. of respondents	-	7	7	-	-
Employee costs	57.8	46.1	46.1	-	-
Profit⁵²	13.9	13.9	13.9	-	-
Rent	1.1	9.2	9.2	-	-
Utilities	0.7	4.2	4.2	-	-
Total purchases	6.5	19.8	19.8	-	-
Wholesale Trade Services	2.7	17.7	17.7	-	-
Financial and insurance Services	3.3	0.7	0.7	-	-
Other	19.9	6.8	6.8	-	-
Total	100	100	100	-	-

The average cost profile of the Orange health care and medical services displays considerable differences to the IO profile. While all operations are dominated by employee costs the disparity may reflect more specialist doctors being located and remunerated in metropolitan areas rather than regional locations such as Orange,

⁵² Profit as a share of total cost is assumed to be the same as the IO share for the broader industry. Data on profit due to its sensitive nature was not sought, so as to maximise response rates to the survey. Other cost shares were adjusted down proportionately.

thus comparatively inflating the NSW IO employee cost profile. It is also observed that the average employee expense share among Orange providers is lower than the NSW IO share.

However, the major fixed costs, such as rent; and utilities and information, media and telecommunications, are materially higher in Orange. This pattern is consistent with Orange providers being of smaller scale than State average (as reflected in the IO breakdown). This pattern of higher employee expense share and concomitantly lower fixed costs for larger providers is also strongly reflected in the cost profiles of Orange health care and medical service respondents, with a strong correlation between scale (measured in full time equivalent workers) and employee expense share.

Respondent comments

Access to skilled labour and employee costs

Several survey participants highlighted difficulty in attracting labour with the appropriate skills and experience to Orange is an impediment to growth:

- *We still struggle to secure enough nurses and will have a problem with nurse retirement in the next few years.*
- *Orange struggles to attract enough GPs.*
- *We have a shortage of sonographers (ultrasound operators) - training new people comes at a cost to the business (lost staff productivity during training). Perhaps there is scope for training incentives.*
- *A small number of doctors are prepared to fly in and service this market as a community service, but not many. We are really questioning the ongoing viability of clinics west of the Blue Mountains.*

Information, media and telecommunications

Poor internet access was highlighted by many survey respondents as being a significant impediment to firm growth:

- *Internet speed is an issue - Orange is too slow and the whole medical profession needs good internet access. We rely on internet for transmitting images and diagnosis.*
- *Connections is an issue – [facility] was designed before access to mobile phones and Wi Fi was essential and now we are trying to retrofit connectivity.*

Links to market failure

Skills

Difficulties in attracting suitably skilled labour could be most readily overcome by businesses offering more flexible employment packages and higher salaries, survey respondents in health care and medical services noted that they are unable to compete with the public health system in attracting qualified health professionals. If skills shortages persist it may be necessary for government to consider the introduction of regional bonuses/incentives to ensure a 'base level' of services is able to be provided to all regions of NSW. Further investigation and analysis may be warranted. Access to labour and associated skills market failures are discussed further in section 5.5.

Two respondents noted the value of addressing specialist skill shortages with fly-in fly-out arrangements was limited by transport - a single passenger flight operator with late arrival and early departure schedules does not provide enough time for a full day of work limiting the viability of such a model.

Government interventions may involve incentives to relocate or subsidise travel costs to enable more skilled and specialised personnel to be available in the region. More social infrastructure for medical specialists may also assist in attracting the required skills in the region. It can be argued the passenger airline provider in this region has a monopoly on the air passenger market segment and could be a determining factor in the arrival and departure of flight times. This suggests a monopoly market failure, however further investigation would be necessary to determine to what extent market failure exists, if at all.

Internet access

Health care and medical services appears to be an industry where poor internet access is a significant cost to business, and a role for the NSW Government in this area is discussed in section 5.5.

5.4.6 Aged care

Aged care was one of the key sectors raised in the Orange and Port Macquarie workshop, employing approximately 2% and 4% of the workforce in each regional economy respectively. In absolute terms employment growth was strong in the aged care sector in both regions between the 2006 and 2011 Census.

Participants at the Port Macquarie workshop noted the climate, beaches and lower land rents as major draw cards for retirees, while survey participants in Orange noted retirees relocate to Orange for family reasons and because of the hospital and medical services available. Workshop participants in Orange considered aged care recipients to be heavy consumers of medical and health care services, highlighting the close relationships between the sectors.

Table 5.10 Cost profile comparisons – aged care

Item	Input-Output NSW (%)	Survey average (%)	Orange (%)	Wagga Wagga (%)	Port Macquarie (%)
No. of respondents			5		4
Employee costs	74.6	60.9	59.9	-	62.2
Profit⁵³	6.5	6.5	6.5	-	6.5
Rent	1.2	0.6	0.6	-	0.7
Utilities	0.5	5.2	4.1	-	6.5
Total purchases	4.2	20.0	22.1	-	17.3
Wholesale Trade Services	1.3	15.6	14.4	-	17.1
Other	13.1	6.9	6.9	-	6.8
Total	100	100	100	-	100

As expected, costs are dominated by employee costs across the aged care sector. However, there are some considerable differences in both regional economies cost profiles compared to the NSW IO cost profile. Employee costs represent a lower share of total costs while the major fixed cost of utilities is materially higher. This pattern is consistent with Orange and Port Macquarie providers being of smaller scale than State average (as reflected in the IO breakdown).

This pattern of higher employee expense share and concomitantly lower fixed costs for larger providers is also strongly reflected in the cost profiles of Orange and Port Macquarie aged care service respondents, with a strong correlation between scale (measured as full time equivalent workers) and employee expense share.

The comparatively higher prices required to consume wholesale trade services by survey respondents may be due to survey respondents purchasing these services quite some distance outside their local region, resulting in proportionally higher transports costs which do not appear to be allocated as transport costs. Additionally, all survey respondents noted these costs are specialised, indicating a premium service is consumed.

Respondent comments

Access to skilled labour and employee costs

Many respondents noted access to registered nurses was a major difficulty:

- *Registered nurses are very difficult to get - wages are lower than in the State system.*
- *Getting registered nurses (RNs) is a big challenge. Aged care is not popular and RNs working in hospitals get much better pay.*
- *Registered nurses are hard to attract to aged care but the quality of people in the whole human services area has slipped in the last 15 to 20 years as training standards have fallen.*

⁵³ Profit as a share of total cost is assumed to be the same as the IO share for the broader industry. Data on profit due to its sensitive nature was not sought, so as to maximise response rates to the survey. Other cost shares were adjusted down proportionately.

- *Difficult to get registered nurses in regional areas.*

Regulatory and government policy impediments

Respondents were concerned about regulatory costs and relationships with NSW Health affecting the quality of patient care and costs to aged care businesses:

- *The relationship between [NSW] Health and the Aged Care sector is appalling. NSW Health forces patients back into aged care too soon after hospital admission, they don't understand our constraints and there is no case conferencing. We can't get access to specialists through the public health system once they are [deemed] in our care, so we have to use and pay for private specialists (e.g. wound care)*
- *Current NSW [Department] of Health and Ageing approach using the Aged Care Funding Instrument (ACFI) requires nursing staff to keep extensive records and funding is determined by what is in these documents - so if a nurse forgets to list a particular patient issue our funding for that patient may be put at risk. NSW Health ACFI record keeping [requirements] needs to be simplified and de-coupled from funding*

Planning issues were also raised by one respondent:

- *Local [Government] approval for buildings is a major impediment. The council is fundamentally not business minded and doesn't understand that we are building infrastructure to support the community.*

Links to market failure

Access to labour

The assertion regarding training quality of human services graduates may be a window into a possible mismatch between the needs of industry and what's offered by training providers. Staff in the aged care sector may be trained at either a university or by a technical and vocational education provider. Thus, the NSW Government has a role in monitoring the provision of training services in NSW and lobbying the Australian Government and Australian training and education regulators to address the quality standards of graduates, as well as a community service obligation via its TAFE network to ensure the most socially efficient provision of education funding to meet the needs of industry.

5.5 Dominant issues raised through the pilot

The dominant issues raised through the pilot were access to labour, infrastructure provision, regulatory costs, and internet access. The case for government intervention in most of these areas is weak although a few indications of possible market failure may warrant further examination (Table 5.5).

Table 5.5 – Areas warranting further investigation of possible market failure and government intervention

Area of possible intervention	Industry affected	Location where identified
skilled labour	food product manufacturing	Orange
skilled labour	health care and medical services	Orange
skilled labour	aged care	Port Macquarie
unskilled labour	accommodation	Port Macquarie
infrastructure investment (roads)	road freight transport	Wagga Wagga
infrastructure investment (utilities)	food product manufacturing	Orange, Wagga Wagga
regulatory burden	road freight transport	Wagga Wagga
regulatory burden	food product manufacturing	Orange
internet quality and access	health care and medical services	Orange
internet quality and access	tertiary education	Wagga Wagga

Access to labour

Access to labour was the most commonly raised issue, reported by at least some businesses in all industries surveyed. In most industries, the case for government intervention in the provision of skills is weak on efficiency grounds, with no major market failure evident. The strongest case for work force market failure is for skilled labour in food product manufacturing.

Access to labour is likely to be an issue in all or most regional economies, and less a problem in cities. A natural consequence of agglomeration is that regional economies may have less access to skills due to thin labour markets. This reflects the actual cost of doing business in a regional area it is not a market failure.

Reduced employee search costs and better employee-employer matches are outcomes of deeper labour markets associated with greater spatial concentration in cities. This natural outcome of agglomeration may act as a disincentive to operate a business in a regional area. However, this disadvantage relative to comparable businesses in large cities is offset to a degree by the advantages of less concentration, such as lower land rents and cost, less congestion and less pollution.

Difficulties in attracting suitably skilled labour could be most readily overcome by businesses offering more flexible employment packages and higher salaries.

However where specific skill shortages are evident more widely (such as across NSW) it may be suggestive of broader market failure in the education and training sector as discussed in chapter 4. Government may have a role in auditing state-wide skills supply and whether the training offered is sufficient for industry needs. If insufficient numbers of students are choosing to enrol in such courses, this may be representative of information failure relating to the misalignment of interests between students and training institutions.

Some respondents raised the issue of the cost of job-specific training and staff turnover after completion of training. It is generally accepted that hiring and training costs can be viewed as investments, investments are inherently risky and there is no guarantee about future returns (i.e. an employee may depart upon conferment of training and earn a higher salary at a competitor business). These costs are not evidence of a market failure, but are a cost of doing business.

Businesses typically seek to reduce these costs through the creation of contracts that better align the incentives of the employee and the employer (to overcome the principle agent problem between employer and employee).

Infrastructure provision

Infrastructure provision was identified as an issue by businesses in road freight transport (with regard to road access for heavy vehicles) and food product manufacture (with regard to new or upgraded access to electricity and gas), and as a generic problem in Wagga Wagga (with regard to access to electricity). Underinvestment in some forms of infrastructure is likely to be an issue in most or all regional economies.

The public good nature of infrastructure provision is well recognised. There is often underinvestment in public infrastructure due to their non-rivalrous and non-excludable characteristics, although both of these conditions might be questioned when road infrastructure is considered: road congestion suggests that roads are rivalrous at high levels of usage while non-paying users can be excluded from using toll roads.

However, the case for suggesting that roads suffer from a public good market failure is strong in many cases. Returns to public investment in road infrastructure will be maximised when projects are prioritised according to their potential public returns, and efficient cost recovery mechanisms are in place both to optimise usage and to minimise the public cost of provision.

The higher cost share of gaining access to utilities for regional businesses relative to comparable businesses in large cities is a natural consequence of lower agglomeration economies in regional markets and possibly greater distances between existing utility networks and business location. These higher costs are a reflection of the actual cost of doing business in regional areas and are not, in themselves, a market failure.

However, there may be a ‘first mover’ public good market failure for shared utility access if the first business to connect to a utility network is expected to pay the full cost of that connection and subsequent businesses will be able to ‘free ride’ on the first business’s outlay. Further investigation is warranted to determine the extent of the problem in the Wagga Wagga regional economy.

If a high cost of initial power supply connection for prospective new and relocating businesses is a major deterrent to investment the case for government intervention may be strong. Intervention would be warranted only if a prospective location is attractive to several businesses (i.e. the public good argument does not hold if the connection is for a sole business). Appropriate government responses could include the use of community services obligation payments to encourage the most socially efficient provision of infrastructure, or alternatively the boards of State owned corporations could be given incentives to address instances of public good market failures where it is economically beneficial to invest, yet not viewed as financially viable.

Regulatory costs

Road freight transport, food product manufacturing, tourism-related industries and aged care all identified regulatory compliance as a cost to business. This is not necessarily evidence of a situation where government intervention in the economy to correct a market failure costs more to society than the original problem.

Evidence-based regulatory intervention that is both the least distortionary option available and proportionate to the problem it seeks to correct is generally an efficient governmental response. However, many survey respondents in road freight transport and food product manufacturing raised concerns over whether these two conditions are being met by the present NSW regulatory regime in comparison with interstate regulations. The efficiency of NSW’s regulation would be questionable if the outcomes in interstate jurisdictions are comparable to those achieved in NSW but at lower overall cost (both public and private).

Market failures related to regulatory costs are likely to be industry-specific and affect regional economies and cities in similar ways.

Internet access

Health care and medical services and tertiary education appear to be industries where poor internet access imposes significant cost to regional businesses.

Government has long intervened in the telecommunications industry to overcome associated natural monopoly market failures, where the market is insufficiently large to support more than one provider. Historically, this occurred primarily through the Australian Government’s ownership of Telstra. Since the sale of Telstra, a model of private ownership and regulation has developed, with regulation designed to limit the provider’s ability to exploit its market power through monopoly pricing. This regulatory role is currently carried out by the Australian Government.

Natural monopoly is likely to be particularly applicable to regional areas with high fixed costs and thin markets for telecommunication services. For some regional communities, government has typically intervened on equity grounds to ensure a basic quality of services is provided. Poor internet access is likely to disproportionately affect regional economies because of the greater expense of providing the same services available in the city to regional economies where users are more thinly dispersed.

Beyond the Australian Government’s current regulatory role and provision of the National Broadband Network which are justified on natural monopoly efficiency grounds and equity grounds, the role of the NSW Government is limited to monitoring the provision of telecommunications services in NSW and lobbying the Australian Government where monopoly rents are observed to be being sought. Additionally a community service obligation could also be perceived to exist by NSW residents seeking the NSW Government to ensure the most socially efficient provision of telecommunications infrastructure enabling NSW businesses and communities to develop, expand and grow. The NSW Government may choose to proactively engage in the roll out of the NBN to maximise the engagement of, and benefit to, regional communities.

5.6 Pilot evaluation

The objective of the pilot was twofold: Firstly, to identify potential projects of specific interest to businesses operating in the key sectors and to see if there was an alignment with the types of projects that could be identified through a 'market failure' test conducted on first principles; and secondly, to explore the cost profile of these firms to enable quantitative estimation of the significance on firm performance of specific projects in any subsequent economic modelling.

With respect to project identification, the qualitative evidence garnered through both the workshops and interviews has been shown in the preceding sections to align with market failure considerations in all of the key sectors surveyed. This suggests that attempting to identify prospective projects and issues for government attention using first principles is likely to be a useful method for project prioritisation prior to quantitative project appraisal.

The utility of conducting firm surveys is less clear. The small number of respondents in each sector rendered statistical analysis impossible, and while the conclusions drawn regarding the differences between respondent and I-O cost profiles appear reasonable, they are based on an interpretation that relies heavily on first principles, such as differences in scale. The quantitative material collected therefore provides adjustment factors across a range of sectors and firm sizes with which to adjust the I-O data for use in regional analyses, but it is not likely to be worth collecting more such data unless bespoke research was necessary for a very large project.

However, the survey's qualitative evidence collection on potential enablers to firm growth usefully added to that obtained through the workshops, and indeed has been shown above to be a richer source of specific issues for consideration. The resource cost of this approach, both in terms of cost and time, does suggest that such qualitative information might be more economically obtained through workshops of business managers that are facilitated to avoid 'group think'.

On balance, the conduct of the pilot was a useful exercise, but primarily for the purpose of validating existing methodologies than obtaining primary data. The gleanings from both the workshops and survey were incorporated in the subsequent more extensive regional consultations conducted by LEK Consulting on behalf of the Department of Industry as part of the Regional Economic Opportunities and Infrastructure Priorities project.

6. Investment directions

6.1 Dominant enablers

Enablers of growth can be divided into three broad categories: skills-related enablers, where a sector is limited in its growth by lack of suitably qualified staff; infrastructure-related enablers, where underinvestment in public infrastructure limits growth; and regulatory enablers, where the cost of complying with regulation outweighs the benefits.

The enablers identified for key sectors in Table 6.1 point to challenges that if overcome would most benefit the particular industry sector (see Appendix 20 for detailed methodological approach). Only the highest benefit actions have been identified, and the results should not be interpreted as indicating that other key industry sectors would not benefit from similar investment or regulatory reform, only that the other industry is less exposed to the particular challenge.

For example government investment that increases the skills capacity of the NSW labour force is likely to most positively affect agriculture, vocational and higher education, and health care. These sectors were identified to have the greatest demand for skilled labour, based on their current industry occupation profiles, although many other sectors have some demand for skilled labour and would similarly benefit (to a lesser degree) from the investment in skills.

Table 6.1 Enablers with greatest potential for return in key industry sectors

Key													
		Challenge											
Skills		Agriculture	Mining	Food product manufacturing	Beverage manufacturing	Wood product manufacturing	Wholesaling	Accommodation	Road freight transport	Vocational education	Higher education	Health care	Aged care
	General skills ^A												
	Training quality ^B												
Infrastructure	Training provider scale ^C												
	Road, rail and air transport												
	Utilities ^D												
Regulation	Other public infrastructure ^E												
	Workplace, health and safety												
	Environmental												
	Land use and planning												

A General skills issues arise because individuals can't capture all the benefits from training and businesses that train staff risk having them poached

B Training quality issues arise when training is not of sufficient quality to enable students to find work in that industry.

C Training provider scale issues arise where there is natural monopoly among training providers in a regional economy.

D Utilities include gas, water, electricity, waste and telecommunications infrastructure.

E Other public infrastructure includes all other infrastructure projects that are not road, rail, air or utilities related, for example hospital construction.

Skills-related enablers were identified for seven of the 12 key sectors (Table 6.1). General skills issues arise where individuals can't capture all the benefits from training, and businesses that train staff risk having them poached. Training quality issues arise when training is not of sufficient quality to enable students to find work

in that industry. Training provider scale issues arise where there is natural monopoly among training providers in a regional economy.

Infrastructure-related enablers were identified for eight of the 12 key sectors (Table 6.1). Enablers for road, rail and air transport are most common, and occur in all manufacturing sectors, the wholesaling sector and the road freight transport sector.

Utilities infrastructure enablers include gas, water, electricity, waste and telecommunications, but telecommunications was the most commonly identified utility issue by survey and workshop participants. Other public infrastructure was identified as enabling issues for the vocational education and health care sectors.

Regulatory reform enablers include workplace health and safety (WH&S), environmental enablers and land use planning enablers. While WH&S reform was identified as an enabler across four diverse sectors, reform in environmental and land use planning was primarily concentrated in sectors that depend on natural endowments (Table 6.1). These regulatory imposts were also raised by some regional businesses as part of the workshops and surveys. However, while the presence of a regulatory barrier is not necessarily indicative that regulation is needlessly onerous, future assessment of the sufficiency of regulation might be justified.

The results presented in this section do not suggest that existing interventions are ineffective. Rather the findings highlight themes of investment and regulatory reform that are most likely to make the NSW community better off. Subsequent work is required to determine whether new, further or alternative interventions would improve the business environment in specific regional economies and engender faster economic growth.

6.2 Key sectors to drive growth

Globally resources are scarce, there is a limited amount of land, labour and natural resources and a constant want and need for more from society. For governments resources are also limited.

In recent history international trade, facilitated by technological advancement in both transport productivity and information dissemination, has allowed economies to create more goods from fewer resources via increasing specialisation and fragmentation within the value chain. While nations have experienced a related 'narrowing and deepening' of their industrial bases as a consequence of this increasing specialisation, regions are typically even more focussed on a smaller number of goods and services that align with their competitive advantage.

At a more granular level, businesses are themselves strong advocates for specialisation: very rarely do they stray from one clear focus or niche. As an example, BHP's origins extends back to Broken Hill in 1885 where BHP was first incorporated to mine silver, lead and zinc. To date the company remains principally engaged in mining, which it specialises in so as to be competitive and make use of economies of its large scale.

The same applies to regional economies. Economic principles suggest a regional economy is most likely to prosper where it is able to focus its efforts on a small number of key industry sectors.

Key industry sectors prosper when they make use of a local built, locational or natural endowment. This is because endowments confer an advantage in production and provide the necessary edge for an industry sector to succeed in the face of competition.

Endowments can be natural such as superior agricultural land, mineral deposits, temperate climates or scenic attraction, or built such as roads or hospitals and can even be borne out of distance to other centres (and influenced by transport infrastructure). Human endowments, such as access to skilled or unskilled labour can also confer advantage, however labour is more mobile than natural or built endowments.

Specialisation, based on endowment, is evident in all regions covered in this report (see regional appendices). This indicates that businesses are already making use of local endowments, an inferred by specialisation.

Typically relatively small regional economies like those examined here are able to sustain a relatively small number of specialisations. The regional specialisations that may be key local sectors are identified in Table

6.2. These are the possible key industry or emerging sectors that were identified as part of this project and are viewed as potential drivers of local economic growth in each respective regional economy.

Table 6.2 Principal industry sectors to drive growth by regional economy

Regional Economy	Sector I	Sector II	Sector III	Sector IV
Albury-Wodonga	Agriculture	Food product manufacturing	Road freight transport	
Armidale	Higher education	Agriculture		
Bathurst	Agriculture	Food product manufacturing	Wood product manufacturing	Higher education
Bega	Tourism	Dairy product manufacturing	Dairy cattle farming	
Broken Hill	Mining	Tourism	Agriculture	
Coffs Harbour	Health care	Aged care	Tourism	Fruit and nut growing
Dubbo	Agriculture	Food product manufacturing	Road freight transport	Tourism
Goulburn	Agriculture			
Griffith	Wine production	Agriculture	Food product manufacturing	
Lismore	Tourism	Agriculture	Higher education	
Moree	Agriculture	Road freight transport		
Mudgee	Mining	Agriculture	Wine production	Tourism - food & wine
Orange	Mining	Health care	Agriculture	Road freight transport
Parkes	Agriculture	Mining	Tourism	Road and rail freight transport
Port Macquarie	Tourism	Health care	Aged care	
Tamworth	Agriculture	Food product manufacturing	Road freight transport	
Tweed	Tourism	Aged care	Health care	
Wagga Wagga	Higher education	Agriculture	Food product manufacturing	Road freight transport

The industry sectors identified in Table 6.2 are only an indication of possible key industries that use local endowments. Superior local knowledge among of business, councils and residents may reveal additional or separate endowments and industry specialisations. New industries are also always emerging and these key industries of advantage will change over time, with technology and infrastructure.

However, this does not change the fact that economic growth is best achieved by being focussed, with a small number of industries likely to be appropriate for the regional economies covered in this enablers report. By directly addressing the main challenges to growth of identified key local sectors (see Table 6.1) investment and regulatory reform can be best targeted to generate the greatest possible returns to the region. This is because the key industries underpin the population base; their success flows on to the businesses that provide them with inputs and in turn flows on to businesses that service the population.

A focus on industry diversification, particularly in the absence of a competitive advantage bestowed by a local endowment, will come at the cost of growth. Diversification is only a viable strategy where the benefits from reducing exposure to one or a few industries exceed the loss to economic efficiency.

6.3 Regional investment strategies

The regional economies fashioned for the Growth Enablers project were built from empirical data to provide the most economically meaningful outputs. These regions relate to tangible local economies rather than artificial geographic constructs and provide the level of local focus that best enables sound policy formulation. Larger constructs of regional economies (such as the broadly defined Central West) were not examined as part of this study because they may mask local specialisation. The smaller and more tractable regions adopted allow for additional precision, providing information on functional regional economies. Consequently, the study makes no attempt to aggregate results into larger regions.

Table 6.3 summarises the key sectors and enablers with greatest potential to produce regional growth from government investment for each of 18 regional economies. The recommendations are limited by the age of the data, and the results do not suggest that existing interventions are ineffective. Rather, the findings highlight themes of regional investment and regulatory reform that are most likely to be of economic benefit to the NSW economy based on the principal that investment that builds on a region's competitive advantage and endowments is most likely to succeed.

The impact of regulation and observed market failures are not unique to specific regional economies; however the impacts from these issues are borne to varying degrees by different industries and different regions, and Table 6.3 captures the largest impacts only.

The importance of agriculture and mining in most of the regional economies examined is a reminder of the historic reason these regions were successfully settled and have continued to exist. The manufacturing key sectors in these regions are all forms of agricultural product manufacturing. The effects of agglomeration in these regional economies have meant that some industries that are generally enabling industries (wholesaling, road freight transport) and population serving (education, health and aged care) have now become engine industries in their own right in some regional economies with endowments providing a competitive advantage over other regional economies.

This indicates that, to remain competitive and thrive, businesses are already utilising locational endowment to their advantage and this is reflected in the composition of individual regional economies. (More detailed regional economy reports are found in Appendices 1-18.)

A regional economy is most likely to prosper where it is able to focus its efforts on a small number of key industry sectors.

Table 6.3 Key sectors, regional economies and enablers with greatest potential to produce regional growth from government investment

(Blue shading indicates areas of recommended investment; numbers are % of jobs in regional economy provided by that industry in 2011)

Key sectors													
Enablers													
	Agriculture		Mining	Manufacturing			Wholesaling	Accommoda- tion	Road freight transport	Vocational education	Higher education	Health care	Aged care
	Skills	General skills	Training quality and scale*	Food product	Beverage	Wood product		Training quality and scale*		General skills	General skills	General skills	
	Infrastructure			Transport infrastructure	Transport and utilities infrastructure	Transport infrastructure	Transport infrastructure	Utilities infrastructure	Transport infrastructure	Other public infrastructure		Other public infrastructure	
	Regulatory relief	WH&S and environmental regulation	Environmental, land use and planning regulation	Environmental regulation		WH&S and land use and planning regulation			WH&S regulation			Environmental regulation	WH&S regulation
Albury-Wodonga		4.4		5.2					2.5	1.2			
Armidale		11.1									9.7		
Bathurst		4.5		6.0		3.2					4.2		
Bega		3.4		3.7		1.2		4.2					
Broken Hill		4.1	9.0					4.2				8.9	
Coffs Harbour		3.8						3.1		1.1		9.2	
Dubbo		7.1							2.4	1.1		4.8	
Goulburn		9.6								1.0			
Griffith		12.7		8.4	5.3								
Lismore		5.3		4.0								4.4	
Moree		23.5	2.9				1.9		2.2				
Mudgee		9.6	15.6		1.5			2.5					
Orange		6.7	6.8							1.3		9.9	
Parkes		17.9	3.8										
Port Macquarie						1.2		2.5		1.1		4.7	3.9
Tamworth		8.3		4.8					2.7	1.2		5.3	
Tweed												5.2	4.8
Wagga Wagga		6.3							2.2	1.2	3.6		

*Training quality issues arise when training is not of sufficient quality to enable students to find work in that industry. Training scale issues arise where there is natural monopoly among training providers in a regional economy.

Ultimately key industry sectors should seek to leverage endowments because they provide the necessary competitive and/or comparative advantage to ensure the industry will prosper, even in the face of growing global competition.

The primary finding of this work for regional communities is therefore that, as with the rest of the world, the economic base of NSW's regions is 'narrowing and deepening', with fewer but proportionally larger 'engine' industries that are directly linked to local endowments. This has important implications for the three levels of government and other stakeholders in their attempts to foster economic growth in regional communities. Key points are:

- The future of individual regional economies is inexorably linked to their natural endowments, and attempts to retain or establish industries without an underpinning endowment are unlikely to succeed;
- 'Engine' industries provide a surprisingly stable proportion of total employment across all economies, and the smaller number of engine industries that remain in regional NSW will continue to provide a similar proportion of jobs in most communities;
- However, a narrower industrial base in an individual regional economy implies a greater exposure to boom and bust cycles and the associated social costs, and hence, an industrial base comprised of an (inevitably small) number of relatively unrelated industries (based on endowments) would appear to offer the best hedge against cyclical variation in economic performance.

The interventions of all three levels of government consequently need to balance the desire for risk mitigation through industrial diversification with a realistic appraisal of economic opportunity. The best way to do this is to anchor all plans to regional endowments.

Government resources are always competed for by a variety of alternate uses. In an ideal situation, all possible projects would be subject to cost benefit analysis prior to any funding decisions. However this is not always viable either because of time constraints or the disproportionate cost of analysis.

The Growth Enablers project is intended to provide a timely and economical option that identifies major industries of advantage while not discounting potentially emerging industries. When applied to several projects simultaneously it serves as a rigorous sorting tool that prioritises projects with strong strategic alignment. This allows decision makers to focus only on those projects that are likely to generate the greatest net benefit to the State.

6.4 Summary

The Growth Enablers project has tested an approach to regional development based on contemporary principles of economics and regional development (Chapter 1).

Regional economies can be identified by analysis of Census data. The towns around which they are based are centres of regional agglomeration (Chapter 2).

Analysis of 18 NSW regional economies indicates that industries of specialisation are based on locational endowments, both natural and human-made (Chapter 3).

Contemporary approaches to regional development suggest that only those policies that build on a region's competitive advantages will succeed. Government has a role in identifying and addressing factors (market failures and regulatory restrictions) within its control which would allow regions to make full use of their competitive advantage - the 'enablers' of economic growth (Chapter 4).

Workshops and surveys tested the findings of the preliminary economic modelling, identified key industries in three regional economies, and identified the nature and magnitude of impediments and enablers of regional economic growth. Issues around skills and infrastructure were consistently raised during the consultation process (Chapter 5).

Key sectors, or 'engine industries', typically lead growth in an economy, attracting population to the region and drawing in businesses that provide inputs and services to the key industry. Investments which benefit key

sectors in the regional economy are most likely to succeed in generating economic benefit for the region and for NSW as a whole. Engine industries rely on locational endowments that underpin the necessary competitive advantage for that industry to remain viable (Chapter 6).

6.5 Conclusion

Specialisation has been increasing worldwide as information exchange and transport costs fall, with each developed nation's industrial base narrowing but deepening. This trend is observable in regional NSW, where each 'regional economy' increasingly devotes relatively more of their resources to a small number of industries.

These trends are consistent with contemporary 'new growth theory' where regional specialisations directly relate to a region's factor endowments, particularly labour availability, knowledge accumulation and fixed factors of production, such as agricultural land, mineral deposits, environmental amenity or strategic location. This analysis demonstrates that all existing industrial specialisations across the 18 regional economies examined are based on readily identifiable endowments. While growth in most of these industries, as well as the emergence of new endowment-based industries in some cases, can be expected, there are numerous sources of market failure that may be hindering such growth and therefore potentially provide opportunities for efficient government intervention – these are the 'growth enablers'.

While industrial diversity enhances regional economic resilience, attempts to foster a regional industrial specialisation lacking an endowment basis will fail. Hence, public interventions aimed at increasing regional development need to (i) concentrate on the growth enablers of endowment-based industry; and (ii) build local leadership capacity in order to enable a region to capitalise on opportunities.

6.6 Future directions

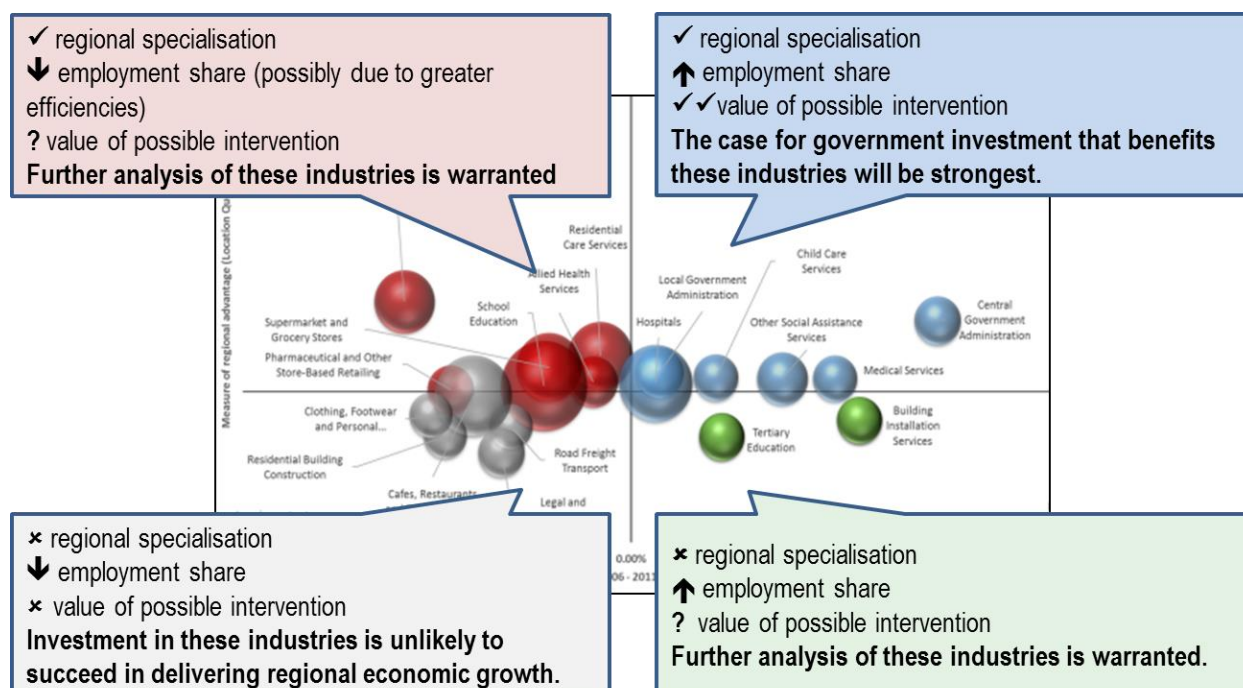
The research incorporated in this report is already being used by the NSW Government to inform its investment decisions. It is also anticipated that this report will be a useful guide and resource for regional leadership in drawing up economic development strategies.

The Centre for Economic Development has already commenced supplementary research into the determinants of spatial variation in regional economic growth – see the Centre's website for the most recent work.

Appendices

Interpreting prospects for investment in individual regional economies

The Regional Analysis Model visually represents the position of industries in each regional economy (Figure A) with respect to their degree of specialisation (measured by location quotient on the vertical axis), industry employment share (relative to the proportion of employment share in NSW as a whole, on the horizontal axis) and employment size (relative size of bubble).



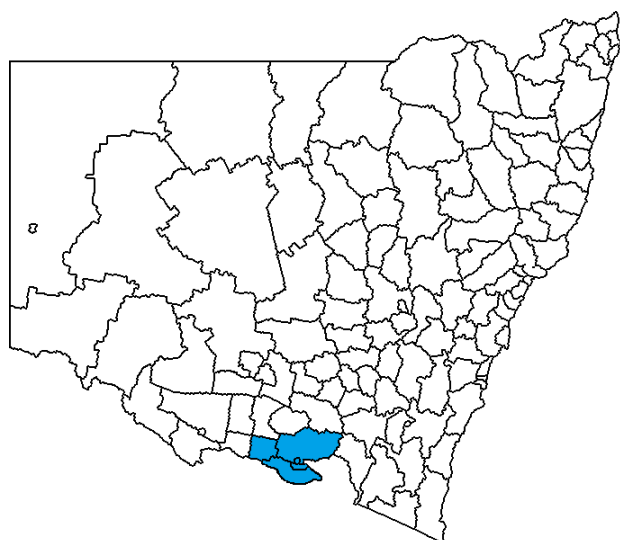
Industries found in the blue quadrant are those where the case for government investment is strongest, based on their specialisation and employment growth.

Industries in the red quadrant, while also showing specialisation, have declined in employment between 2006 and 2011. These industries should be examined further. Employment decline may be due to greater efficiencies, and may not diminish a case for regional investment that benefits those industries. Furthermore, the study relies on data from the 2006 and 2011 Australian Census, the most recent data available at the time of the study, and will not detect industry changes which have taken place since 2011.

Industries found in the green quadrant (Figure 6.1) showed employment growth between 2006 and 2011, but analysis indicated that they were not regional specialisations. Again, the age of the data available for this study limits conclusions about the current status of these industries, and further examination is warranted.

Industries in the grey quadrant (Figure 6.1) show no specialisation and declining employment, and are investment that benefits these industries is least likely to succeed in delivering regional economic growth

Appendix 1 Albury-Wodonga regional economy



Defining the regional economy

The Employment Self-Containment (ESC) and Employment Self-Sufficiency (ESS) estimates for Albury, Wodonga and surrounding LGAs indicate that a relatively high proportion of the local labour forces travel out of their residential LGA for work.

The ESS for Albury (Table A1.1) indicates that 33 per cent (7,048) of Albury jobs are filled by labour from outside the LGA, and of these, 57 per cent are filled by residents of Wodonga (Table A1.2). Of Wodonga jobs which are filled by workers from outside the LGA, 58 per cent are filled by people from Albury (Table A1.2). The two economic centres of the Albury and Wodonga LGAs are about 8km from one

another (Table A1.3), separated by the Murray River and its floodplains, and appear to effectively forming a single economic centre.

In general, locations which are satellites to an employment centre will have a higher level of self-sufficiency (ESS) than self-containment (ESC). On this basis, Albury and Wodonga appear to be centre of agglomeration, with Greater Hume, Indigo Shire and Corowa Shire as satellites.

Table A1.1 Employment capacity, sufficiency and containment in Albury-Wodonga regional economy LGAs (2011)

	Albury	Corowa Shire	Greater Hume	Indigo	Wodonga
Local labour force	21,451	4,229	3,226	4,596	16,120
Number of jobs in local area	20,551	3,376	3,016	4,087	15,116
Number of local jobs held by locals	14,403	2,645	2,472	3,131	9,368
Number of locals employed outside the area	7,048	1,584	754	1,465	6,752
Employment self-containment (ESC)	0.66	0.59	0.56	0.44	0.57
Jobs Housing Balance (JHB)	0.98	0.94	0.72	0.64	0.98
Employment self-sufficiency (ESS)	0.67	0.63	0.77	0.68	0.58

Further analysis of employment patterns indicates a close linkage between Albury and Greater Hume, with 56 per cent of Greater Hume's workers who live outside the LGA coming from Albury. Table A1.2 also highlights the significant linkage with 53 per cent of Greater Hume residents that work outside the LGA working in Albury. A close linkage is also observed between Albury and Wodonga with seventeen percent of all Albury LGA workers being employed in the Wodonga LGA. Similarly 24 per cent of Wodonga LGA workers are employed in the Albury LGA.

Consequently, the Albury-Wodonga regional economy is defined as the Albury LGA and neighbouring LGAs of Wodonga, Corowa Shire and Greater Hume.

Table A1.2 Employment linkages between LGAs around Albury Wodonga – number and proportion of workers

LGA in which workers are living	Working in Albury	Working in Corowa	Working in Greater Hume	Working in Indigo Shire	Working in Wodonga
Albury (no.)	-	145	424	190	3,901
Albury proportion	-	1.9%	5.6%	2.5%	51.6%
Corowa (no.)	311	-	30	386	240
Corowa proportion	16.6%	-	1.6%	20.6%	12.8%
Greater Hume (no.)	1,042	42	-	15	271
Greater Hume proportion	52.7%	2.1%	-	0.8%	13.7%
Indigo (no.)	798	468	17	-	1,336
Indigo proportion	19.8%	11.6%	0.4%	-	33.1%
Wodonga (no.)	3,997	76	73	365	-
Wodonga proportion	56.3%	1.1%	1.0%	5.1%	-

Regional overview

Table A1.3 Summary by LGA – Albury-Wodonga regional economy

Local Government Area	Area (Km ²)	Population Estimate*	Distance to Albury from main town	Estimated Gross Regional Product+
Albury	306	51,082	-	\$2,498m
Wodonga	400	38,131	8 km	\$2,125m
Indigo	2,044	15,409	49 km	\$590m
Corowa Shire	2,329	11,455	57 km	\$479m
Greater Hume	5,746	10,258	61 km	\$374m
Total	10,825	126,335	-	\$6,066m

*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

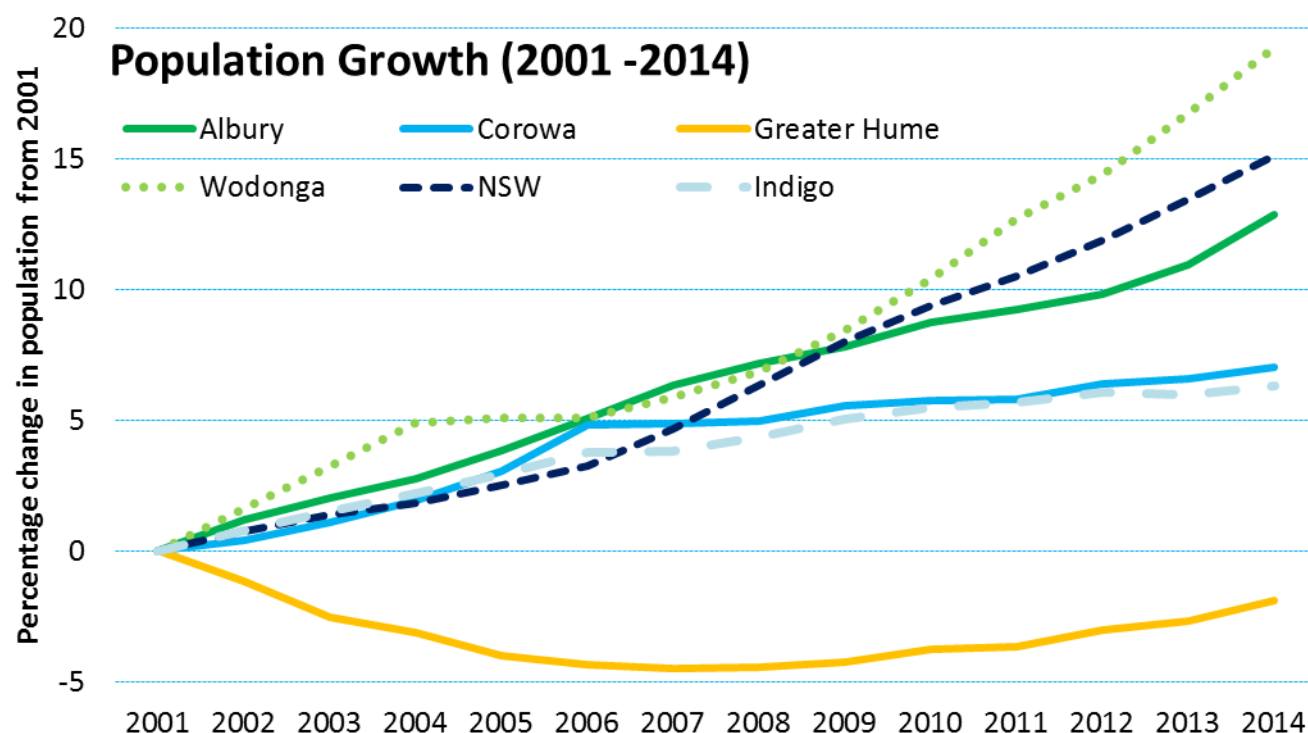
Population dynamics

The Albury-Wodonga regional economy has a population of approximately 126,300. Population grew by 14 per cent (13,500 persons) from 2001 to 2014 which was at a slower rate than both NSW (15 per cent) and Sydney (18 per cent).

By local government area (Figure A1.1), the larger centres of Albury and Wodonga (which is located in Victoria) captured a majority of the population growth (12,000 persons). Indigo (located in Victoria) and Corowa also grew in population, however at slower rate. The smaller Greater Hume Shire, experienced population decline of -1.9 per cent.

The faster rate of growth in the larger LGAs is indicative of the forces of agglomeration, with these regional towns' centres of agglomeration in their own right.

Figure A1.1 Population growth - Albury-Wodonga regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Albury-Wodonga regional economy is no exception with an aged dependency ratio⁵⁴ of 26% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Snapshot A2. Composition of resident population (2014)

	Albury-Wodonga	NSW
Ratios (%)		
Aged Dependency Ratio ^A	26	24
Youth Dependency Ratio ^B	30	28
Dependency Ratio ^C	57	52
Proportion^D (%)		
Young Persons (15 to 34)	26	27
Older Persons (65+)	17	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

⁵⁴ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Social indicators

Table A1.4 Income (Australian Taxation Office Data) - Albury-Wodonga regional economy

	Albury-Wodonga	Sydney ⁵⁵	NSW
Average Taxable Income (1994-95) - Adjusted ⁵⁶	\$43,000	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$46,500	\$62,100	\$56,600
Change	\$3,500	\$9,500	\$7,300
Increase in Real Wage (%)	8.1	18.1	14.8

Real wages in the Albury-Wodonga regional economy grew by 8.1 per cent between 1994-95 and 2012-13. Real wages growth was strongest (11.9 per cent) in the Greater Hume Shire despite the backdrop of local population decline.

However, despite being better off, the Albury-Wodonga regional economy was less well-off compared to the NSW average (14.8 per cent), with real incomes growing at a slower rate.

Table A1.5 Educational attainment (population aged 15 years and over, 2011 Census) - Albury-Wodonga regional economy

	Albury-Wodonga (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	10.5	23.5	18.4
Advanced or Graduate Diploma	8.9	10.7	9.8
Certificate Qualification	23	14.6	17.7
Population with a Post-School Qualification	42.4	48.7	45.8

Compared to the larger economic centre of Sydney the Albury-Wodonga regional economy has fewer people with post school qualifications. However, a larger share of the population has attained a certificate level qualification as their highest level award. This may be indicative of the different competitive advantages available to Albury-Wodonga than compared to Sydney and a reflection of the required skill sets.

It is also noted this pattern is repeated across a majority of regional economies, with regions typically having fewer persons with post school qualifications, yet a higher share of persons with certificate qualifications. This may be a result of the differing industry specialisations which appear in these regional economies compared to Sydney.

Table A1.6 Welfare dependency (population aged 15 years and over, 2013) - Albury-Wodonga regional economy

	Albury-Wodonga (%)	Sydney (%)	NSW (%)
Aged Pension	14.7	9.8	12.6
Disability Support Pension	5.2	3.2	4.4
Newstart Allowance	4.3	3	3.5
Total ⁵⁷	25.3	16.5	21.3

A larger proportion of persons in the Albury-Wodonga regional economy are dependent on social welfare, than compared to NSW on average.

⁵⁵ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁵⁶ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

⁵⁷ Total includes service pensions not shown in table

Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

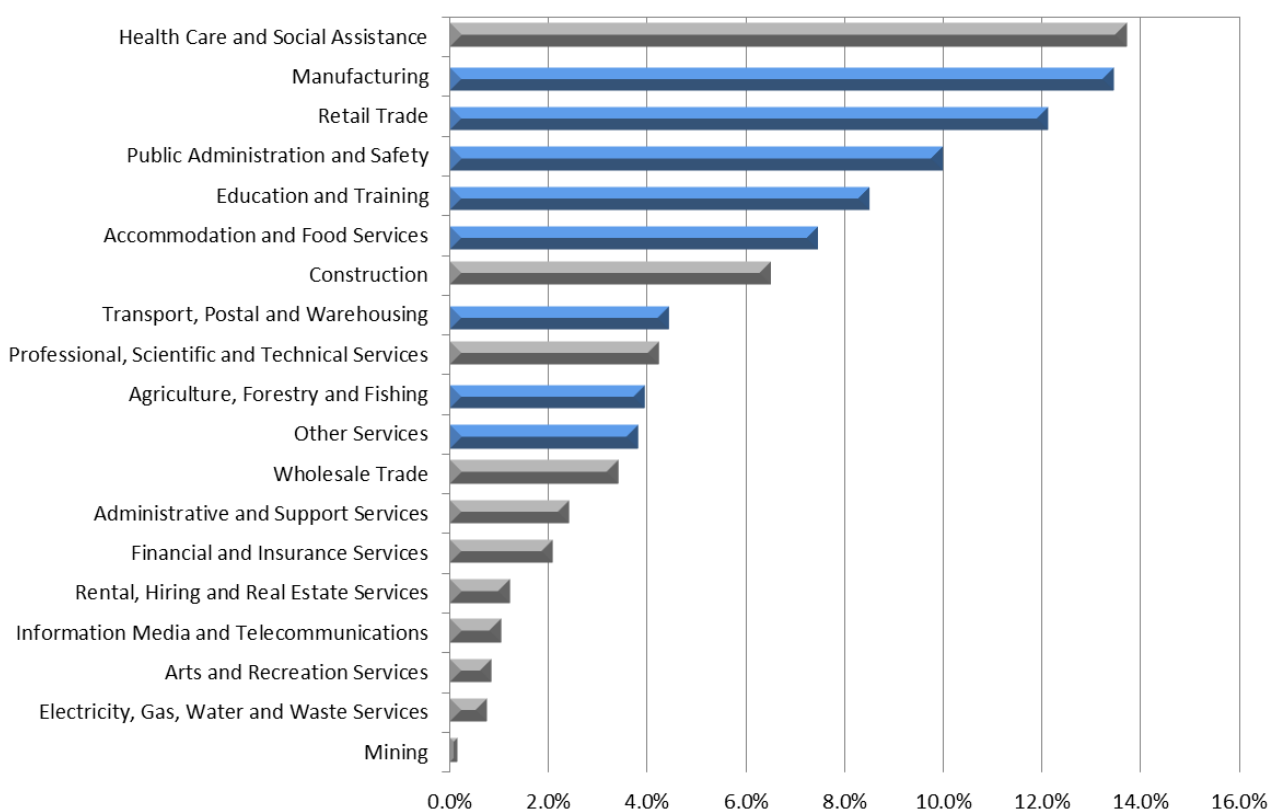
Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Albury-Wodonga regional economy demonstrates regional specialisation at one or more ANZSIC levels within eight industry divisions (Figure A1.2 and Table A1.7). Health care and social assistance, although a large employer, is not an area of regional specialisation.

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A1.3), important growth industries in the Albury-Wodonga regional economy are shown to be:

- central government administration; and
- local government administration.

Figure A1.2 Percentage of employment in each industry division (ANZSIC Level 1) - Albury-Wodonga regional economy Blue bars indicate specialisation (LQ equal or larger than 1.25) at one or more ANZSIC level within the division.



However, both these industries are mainly population serving (i.e. exist to provide services to the population) and provide limited opportunity for additional NSW government investment.

The 'specialisation' evident in local government administration is likely to be a consequence of the smaller economies of scale available to councils in the Albury-Wodonga regional economy compared to the more populated Sydney councils. Because the quantum of services expected from councils across LGAs is relatively similar it is a natural result that the number of people employed in local government as a proportion

of population is higher in councils that provide services across larger geographies or that service fewer ratepayers.

Important, yet potentially declining industries in the Albury-Wodonga regional economy that could be characterised as key sectors were identified as: sheep, beef cattle and grain farming; other food product manufacturing; accommodation; and road freight transport.

Despite employment growth declining in relative terms both other food product manufacturing and road freight transport in Albury-Wodonga recorded employment growth in absolute terms which is indicative of possible state wide competitive advantage.

Sheep, beef cattle and grain farming is a key industry sector in the Albury Wodonga regional economy making use of the regions superior agricultural land. This is despite employment declining. This may be a consequence of short term variable climatic conditions. Or is reflective of broader changes to the agricultural industry, partly from increasing levels of openness and trade and technological advances that have culminated in greater capital intensity, larger farm sizes (benefitting from greater economies of scale) and subsequently less demand for labour.

Health care (medical services and hospitals) is not an industry sector of specialisation but exhibited employment growth and may be an emerging industry. However, health care primarily exists to service the population and typically follows population growth, rather than being a direct generator of economic growth.

Figure A1.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Albury-Wodonga regional economy

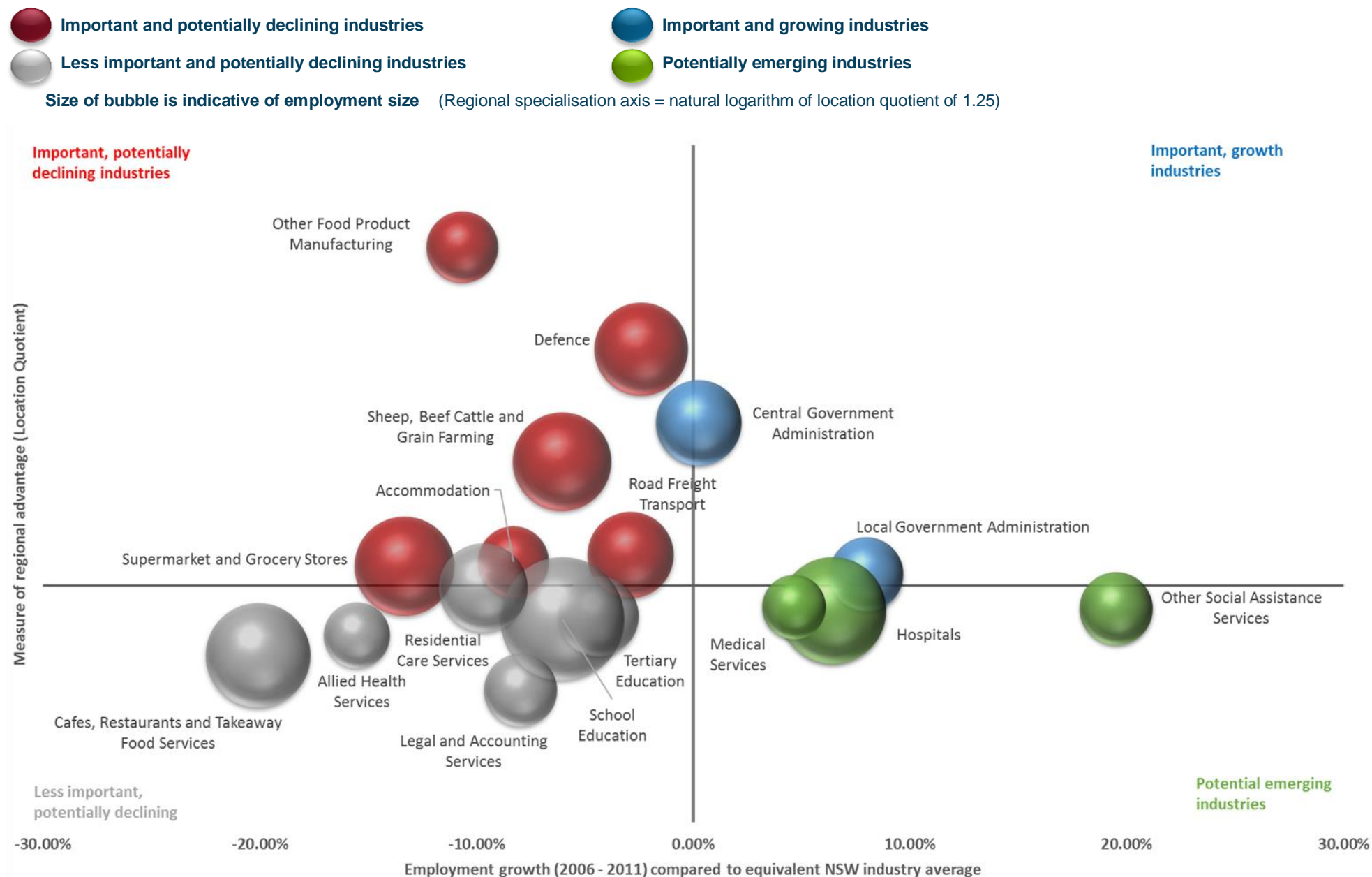
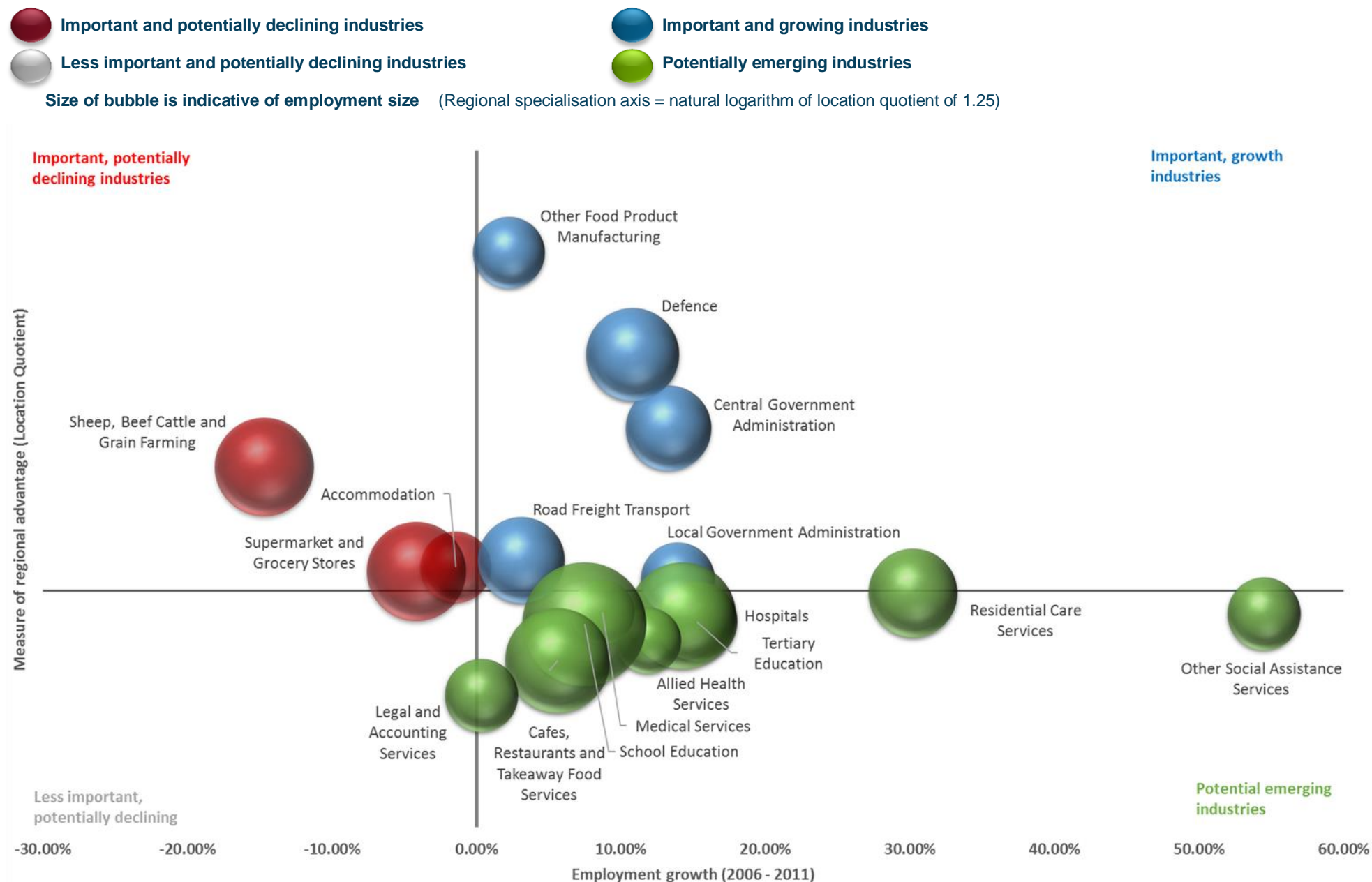


Figure A1.4 Regional advantage and regional employment growth for key industries - Albury-Wodonga regional economy



Disaggregation of data shows detail about industries of specialisation (Table A1.7).

Table A1.7 Industries of regional specialisation in detail - Albury-Wodonga regional economy
(industries with LQ ≥ 1.25 , employment size $\geq 1\%$)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing					
	1	2,307	4.65%	-14.4%	2.02
Agriculture	2	2,179	4.39%	-14.5%	2.13
Sheep, Beef Cattle and Grain Farming	3	1,627	3.28%	-6.1%	2.37
Beef Cattle Farming (Specialised)	4	515	1.04%	-11.0%	2.18
Manufacturing					
	1	7,246	14.60%	-3.5%	1.69
Food Product Manufacturing	2	2,555	5.15%	4.9%	3.02
Machinery and Equipment Manufacturing	2	1,032	2.08%	62.3%	1.57
Primary Metal and Metal Product Manufacturing	2	564	1.14%	-2.7%	1.45
Fabricated Metal Product Manufacturing	2	550	1.11%	-14.6%	1.88
Other Food Product Manufacturing	3	859	1.73%	-10.7%	7.19
Meat and Meat Product Manufacturing	3	569	1.15%	138.3%	2.25
Prepared Animal and Bird Feed Manufacturing	4	652	1.32%	-14.7%	24.19
Meat Processing	4	559	1.13%	143.7%	4.64
Retail Trade					
Food Retailing	2	2,140	4.31%	-10.7%	1.28
Supermarket and Grocery Stores	3/4	1,654	3.33%	-13.2%	1.38
Accommodation and Food Services					
Accommodation	2/3/4	851	1.72%	-8.2%	1.41
Clubs (Hospitality)	3/4	578	1.17%	-15.9%	1.45
Transport, Postal and Warehousing					
Road Transport	2	1,513	3.05%	-5.9%	1.32
Road Freight Transport	3/4	1,240	2.50%	-2.9%	1.46
Public Administration and Safety					
	1	4,791	9.65%	0.3%	1.58
Public Administration	2	2,718	5.48%	3.3%	1.44
Defence	2/3/4	1,452	2.93%	-2.3%	4.25

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Central Government Administration	3/4	1,213	2.44%	0.7%	2.90
Local Government Administration	3/4	905	1.82%	8.0%	1.32
Education and Training					
Technical and Vocational Education and Training	4	575	1.16%	1.5%	1.60
Other Services					
Automotive Repair and Maintenance	3	726	1.46%	-1.6%	1.35

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

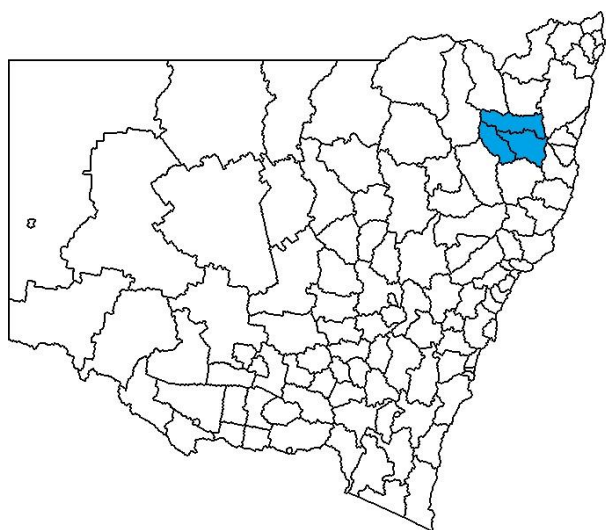
To start the process the most likely industry sectors for the Albury-Wodonga regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A1. These are indicative only and are best selected based on the addition of local knowledge.

Box A1	Probable 'key industry sectors' in Albury-Wodonga
•	Agriculture Mostly sheep, beef cattle and grain farming. This industry sector is an established specialisation that utilises the regions agricultural land endowments and provides inputs for food product manufacturing businesses.
•	Food product manufacturing Employs 5% of the regional economy and is a key specialisation. Meat processing and prepared animal and bird feed manufacturing are the largest sub-components.
•	Road freight transport Albury-Wodonga is conveniently located between Sydney and Melbourne and boasts convenient access to other key markets critical to road freight transport firms. This industry sector employs 2.5% of the regional economy.

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 2 Armidale regional economy



Defining the regional economy

The ESC for Armidale indicates a high proportion of jobs are filled by local residents (84 per cent). Armidale-Dumaresq LGA has the highest ratio of jobs to homes (1.01) when compared to surrounding LGAs (Table A2.1). This indicates that Armidale is a regional centre, while Guyra and Uralla form residential satellites.

Table A2.1 Employment capacity, sufficiency and containment in Armidale regional economy LGAs (2011)

	Armidale-Dumaresq	Guyra	Uralla
Total local workers (working anywhere)	10,111	1,744	2,613
Number of jobs in local area	10,203	1,397	1,423
Number of local jobs held by locals	8,451	1,099	1,066
Employment self-containment (ESC)	0.84	0.63	0.41
Jobs Housing Balance (JHB)	1.01	0.80	0.54
Employment self-sufficiency (ESS)	0.83	0.79	0.75

Further analysis of Armidale employment linkages indicates that 79 per cent of all Uralla workers and 38 per cent of all Guyra workers that are employed outside of the LGA are employed in the Armidale LGA, while links to other LGAs are weaker. This confirms the view that Armidale is a regional centre for the Guyra and Uralla LGAs. **Consequently, the Armidale Regional economy is defined as the Armidale-Dumaresq LGA and the two neighbouring LGAs of Uralla and Guyra (Table A2.2).**

Table A2.2 Employment linkages between LGAs around Armidale – number and proportion of workers

LGA in which workers are living	Working in Armidale-Dumaresq	Working in Uralla	Working in Guyra	Working in Tamworth	Working in Inverell
Armidale-Dumaresq (no.)	-	255	137	60	21
Armidale-Dumaresq proportion	-	17.9%	9.6%	4.2%	1.5%
Uralla (no.)	1,163	-	28	39	42
Uralla proportion	78.8%	-	1.9%	2.6%	2.8%
Guyra (no.)	223	27	-	8	170
Guyra proportion	37.8%	4.6%	-	1.4%	28.8%

Regional overview

Table A2.3 Summary by LGA - Armidale regional economy

Local Government Area	Area (Km ²)	Population Estimate*	Distance to Armidale township from main town (km)	Estimated Gross Regional Product +
Armidale-Dumaresq	4,235	25,327	-	\$1,230m
Guyra	4,395	4,619	38	\$183m
Uralla	3,230	6,408	23	\$188m
Total	11,860	36,354	-	\$1,601m

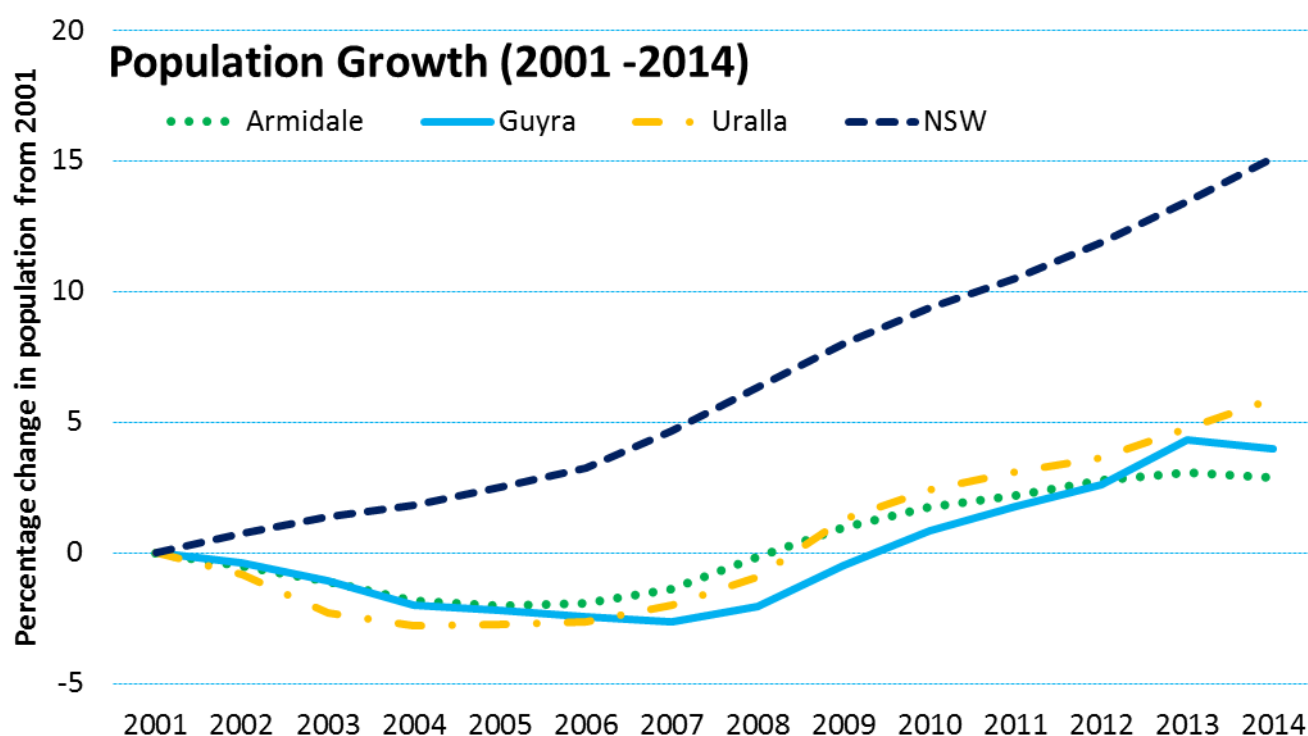
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Armidale regional economy has a population of approximately 36,300. Population grew by 3.5 per cent (1,200 persons) from 2001 to 2014 which represents a significantly slower rate of growth than observed across NSW (15 per cent) and in Sydney (18 per cent).

Trend population growth was similar across the three LGAs that encompass the Armidale regional economy as seen in Figure A2.1.

Figure A2.1 Population growth - Armidale regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Armidale regional economy is no exception with an aged dependency ratio⁵⁸ of 25% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

⁵⁸ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Unlike most regional areas, the age group of 15 to 34 was over-represented (see Snapshot A2) because many young people are attracted to the region to study at the University of New England Armidale campus and are counted in the population statistics. Historic data indicates that most of this group leaves the region on or soon after completion of their studies.

Snapshot A2. Composition of resident population (2014)

	Armidale	NSW
Ratios (%)		
Aged Dependency Ratio ^A	25	24
Youth Dependency Ratio ^B	30	28
Dependency Ratio ^C	55	52
Proportion^D (%)		
Young Persons (15 to 34)	29	27
Older Persons (65+)	16	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A2.4 Income (Australian Taxation Office Data) - Armidale regional economy

	Armidale	Sydney ⁵⁹	NSW
Average Taxable Income (1994-95) - Adjusted ⁶⁰	\$41,700	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$42,900	\$62,100	\$56,600
Change	\$1,200	\$9,500	\$7,300
Increase in Real Wage (%)	2.8	18.1	14.8

The Armidale regional economy recorded an improvement in real wages of 2.8 per cent between 1994-95 and 2012-13. This was regardless of falls in both Guyra and Uralla (-4.1 per cent and -2.4 per cent respectively).

However, despite being better off on average the Armidale regional economy was less well-off compared to NSW overall with real wages growing by 14.8 per cent across the State over the same period.

Table A2.5 Educational attainment (population aged 15 years and over, 2011 Census) - Armidale regional economy

	Armidale (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	17.4	23.5	18.4
Advanced or Graduate Diploma	8.9	10.7	9.8
Certificate Qualification	18	14.6	17.7
Population with a Post-School Qualification	44.4	48.7	45.8

The proportion of persons in the Armidale regional economy with post school qualifications is roughly equivalent to NSW on average.

⁵⁹ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁶⁰ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

In contrast to other regional economies Armidale has a higher share of persons with bachelor or postgraduate qualifications, which is most likely a consequence of the Armidale campus of the University of New England.

Table A2.6 Welfare dependency (population aged 15 years and over, 2013) - Armidale regional economy

	Armidale (%)	Sydney (%)	NSW (%)
Aged Pension	12.6	9.8	12.6
Disability Support Pension	5.5	3.2	4.4
Newstart Allowance	4.1	3	3.5
Total ⁶¹	22.9	16.5	21.3

A similar, albeit marginally larger proportion of Armidale residents are dependent on social welfare compared to the NSW average. The higher proportion of persons receiving Newstart may be reflective of frictional unemployment, which characteristically prevails for moderately longer in smaller labour markets such as that of Armidale.

Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Armidale regional economy demonstrates regional specialisation at one or more ANZSIC level within six industry divisions (Figure A2.2 and Table A2.7).

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A2.3), important growth industries in the Armidale regional economy are shown to be:

- pubs, taverns and bars; and
- department stores.

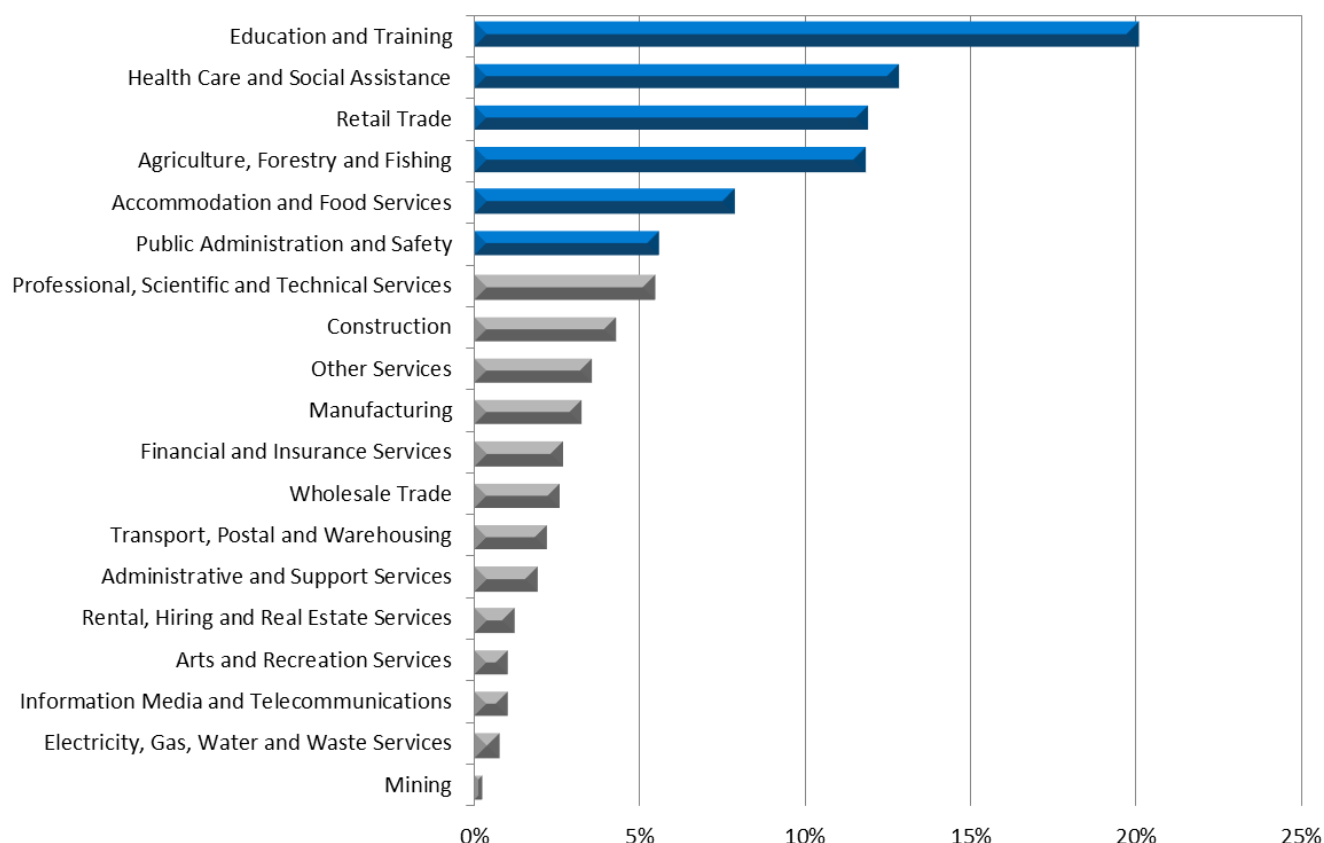
Both these industry sectors exist to support the population and typically grow/decline in step with the success of sectors that are 'engines of growth'. These industry sectors alone provide limited opportunity for government investment to propel sustainable regional economic growth.

Important, yet potentially declining industries in the Armidale regional economy that can be characterised as key industry sectors (making use of local endowments) are tertiary education, sheep, beef cattle and grain farming and accommodation.

⁶¹ Total includes service pensions not shown in table

Figure A2.2 - Percentage of employment in each industry division (ANZSIC Level 1) - Armidale regional economy

Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



Sheep, beef cattle and grain farming is a key industry sector in the Armidale regional economy making use of the regions superior agricultural land. This is despite employment declining. This may be a consequence of short term variable climatic conditions. Or is reflective of broader changes to the agricultural industry, partly from increasing levels of openness and trade and technological advances that have culminated in greater capital intensity, larger farm sizes (benefitting from greater economies of scale) and subsequently less demand for labour.

Allied health and medical services, pharmaceutical retailing, legal and accounting services and depository financial intermediation did not demonstrate specialisation but exhibited employment growth and may be emerging industries. However, none of these industry sectors are clear engines of growth and instead these sectors exist to support either the population (i.e. retail, health and education) or are 'enabling industries' (i.e. legal and accounting services). This means these industry sectors tend to grow/decline based on population growth and the prosperity of those key industry sectors that are areas of competitive advantage and make use of locational endowments. Therefore the scope for NSW government investment to propel sustainable regional economic growth is limited.

Figure A2.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Armidale regional economy

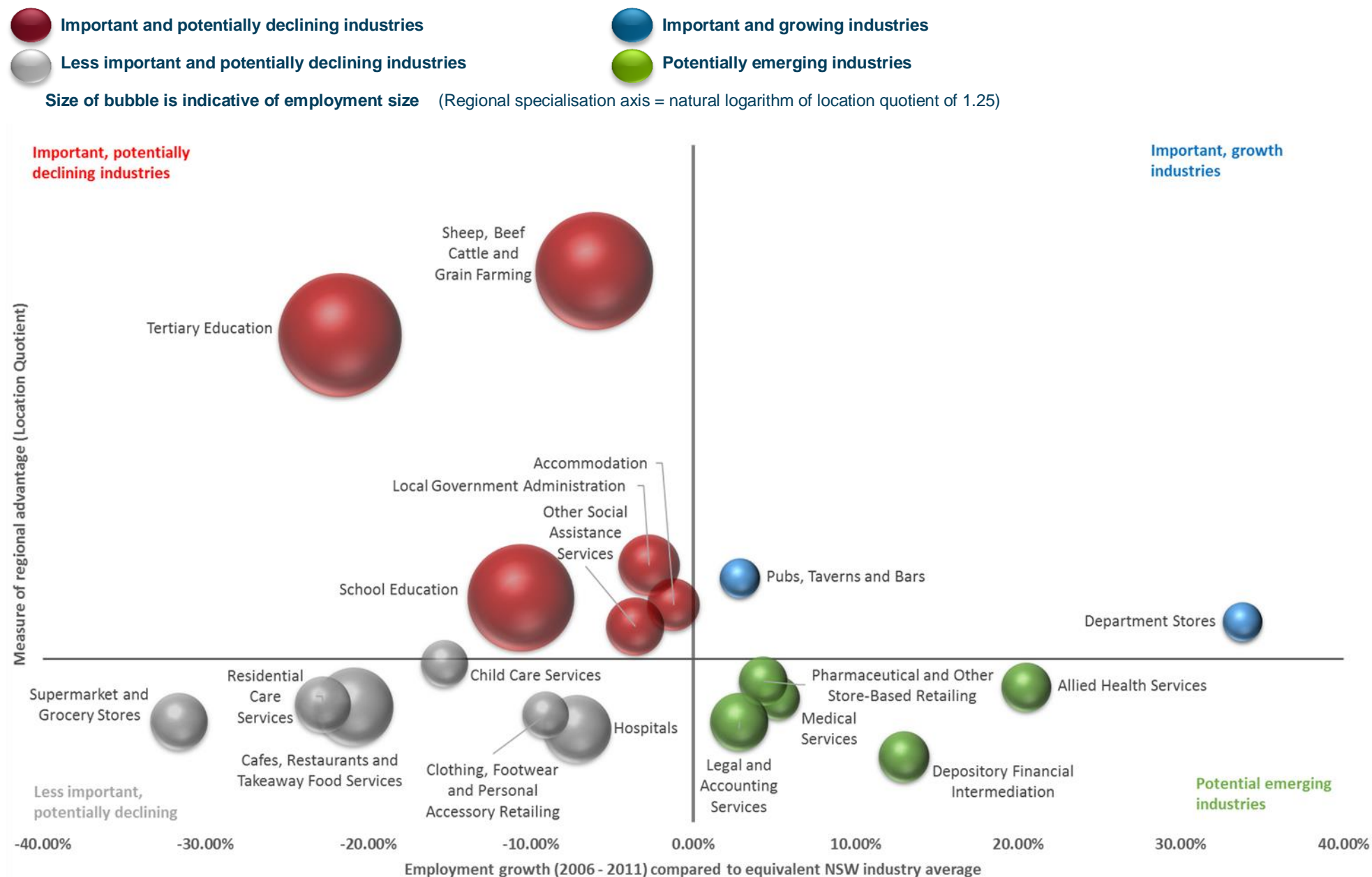
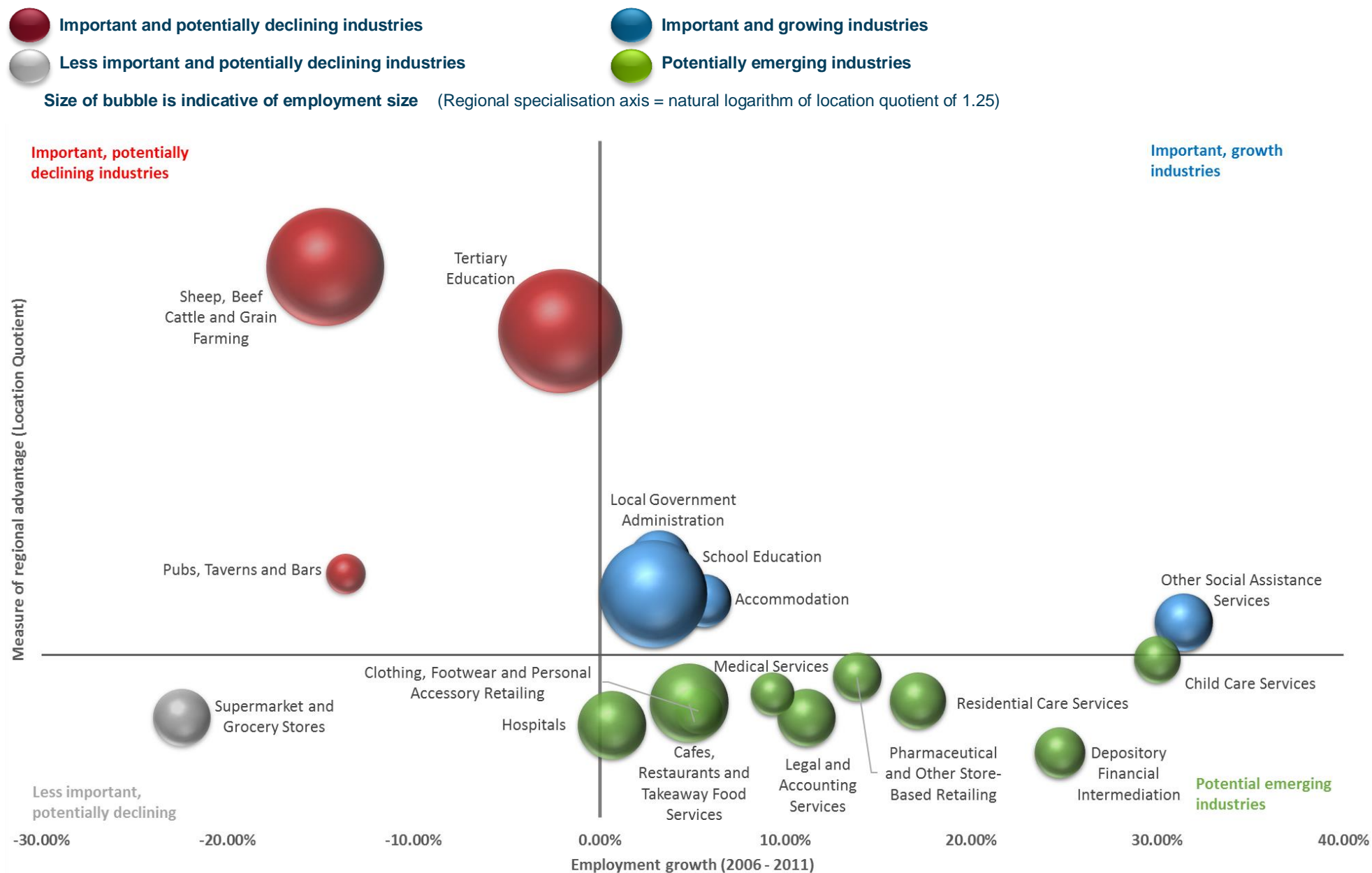


Figure A2.4 Regional advantage and regional employment growth for key industries - Armidale regional economy



Disaggregation of data shows detail about industries of specialisation (Table A2.7).

Table A2.7 Industries of regional specialisation in detail - Armidale regional economy
(industries LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing					
	1	1,540	11.82%	3.4%	5.14
Agriculture	2	1,450	11.12%	2.4%	5.39
Sheep, Beef Cattle and Grain Farming	3	1,257	9.65%	-6.1%	6.98
Beef Cattle Farming (Specialised)	4	493	3.78%	2.7%	7.95
Sheep-Beef Cattle Farming	4	450	3.45%	-6.6%	19.63
Sheep Farming (Specialised)	4	284	2.18%	-18.8%	9.06
Retail Trade					
Department Stores	3	137	1.05%	33.8%	1.47
Hardware, Building and Garden Supplies Retailing	3	132	1.01%	50.3%	1.67
Department Stores	4	136	1.04%	33.2%	1.46
Accommodation and Food Services					
Accommodation	2	252	1.93%	-1.6%	1.59
Accommodation	3	252	1.93%	-1.2%	1.59
Pubs, Taverns and Bars	3	141	1.09%	2.9%	1.79
Accommodation	4	253	1.94%	-1.2%	1.60
Pubs, Taverns and Bars	4	141	1.09%	3.8%	1.78
Public Administration and Safety					
Local Government Administration	3	340	2.61%	-2.7%	1.89
Local Government Administration	4	342	2.62%	-1.6%	1.90
Education and Training					
	1	2,614	20.05%	-14.9%	2.45
Tertiary Education	2	1,392	10.68%	-21.9%	5.24
Preschool and School Education	2	1,108	8.50%	-8.3%	1.64
Tertiary Education	3	1,393	10.69%	-21.7%	5.25
School Education	3	1,044	8.01%	-10.6%	1.64
Higher Education	4	1,264	9.71%	-22.8%	7.40
Combined Primary and Secondary Education	4	443	3.40%	-32.9%	3.83
Secondary Education	4	298	2.29%	-8.8%	1.27
Health Care and Social					

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Assistance					
Social Assistance Services	2	502	3.85%	-2.9%	1.35
Other Social Assistance Services	3	303	2.32%	-3.6%	1.44
Other Social Assistance Services	4	300	2.30%	-5.0%	1.43

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

To start the process the most likely industry sectors for the Armidale regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A2. These are indicative only and are best selected based on the addition of local knowledge.

Box A2	Probable 'key industry sectors' in Armidale
•	<p>Higher education</p> <p>The University of New England Armidale campus in itself is a man-made endowment. Higher education employs approximately 10% of the regions workforce and is a significant industry.</p> <p>Agriculture</p> <p>Natural land endowments provide Armidale with an advantage in agricultural production, currently sheep and beef cattle farming account for the majority of activity.</p>

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 3 Bathurst regional economy



Defining the regional economy

The ESS for Bathurst (Table A3.1) indicates a high proportion of Bathurst jobs are filled by local residents, with about 11 percent of jobs filled by labour from outside the LGA. The Bathurst ESC estimates that approximately 20 per cent of the local labour force travel out of the area for work. In comparison, the ESC for Oberon shows that more than 30 per cent of the local labour force travel outside of the area for work. This analysis suggests that Bathurst is a regional centre with Oberon as a residential satellite.

Table A3.1 Employment capacity, sufficiency and containment in Bathurst regional economy LGAs (2011)

	Bathurst	Oberon
Local labour force	17,012	2,232
Number of jobs in local area	15,220	2,018
Number of local jobs held by locals	13,596	1,556
Number of locals employed outside the area	3,016	613
Employment self-containment (ESC)	0.80	0.70
Jobs Housing Balance (JHB)	0.89	0.90
Employment self-sufficiency (ESS)	0.89	0.77

Further analysis of Bathurst employment patterns indicates which LGAs they are most closely linked to (Table A3.2). Eighteen percent of all Bathurst workers that are employed outside of the Bathurst LGA are employed in the Orange LGA, and another 13 per cent are employed in Lithgow. Both Orange and Lithgow are regional centres approximately equal distance from Bathurst. In contrast, fifty-six percent of all Oberon workers that are employed outside of the Oberon LGA are employed in the Bathurst LGA, whereas only 8 per cent are employed in the adjoining Lithgow LGA. **Consequently, the Bathurst regional economy is defined as the Bathurst LGA and neighbouring Oberon LGA.**

Table A3.2 Employment linkages between LGAs around Bathurst – number and proportion of workers

LGA in which workers are living	Working in Bathurst LGA	Working in Oberon LGA	Working in Orange LGA	Working in Blayney LGA	Working in Cabonne LGA	Working in Lithgow LGA
Bathurst (no.)	-	292	543	213	103	398
Bathurst proportion	-	9.7%	18.0%	7.1%	3.4%	13.2%
Oberon (no.)	343	-	13	14		54
Oberon proportion	56.0%	-	2.1%	2.3%		8.8%

Regional overview

Table A3.3 Summary by LGA – Bathurst regional economy

Local Government Area	Area (Km ²)	Population Estimate*	Distance to Bathurst from main town	Estimated Gross Regional Product+
Bathurst	3,820	41,682	-	\$1,973m
Oberon	3,659	5,327	46 km	\$239m
Total	7,479	47,009	-	\$2,212m

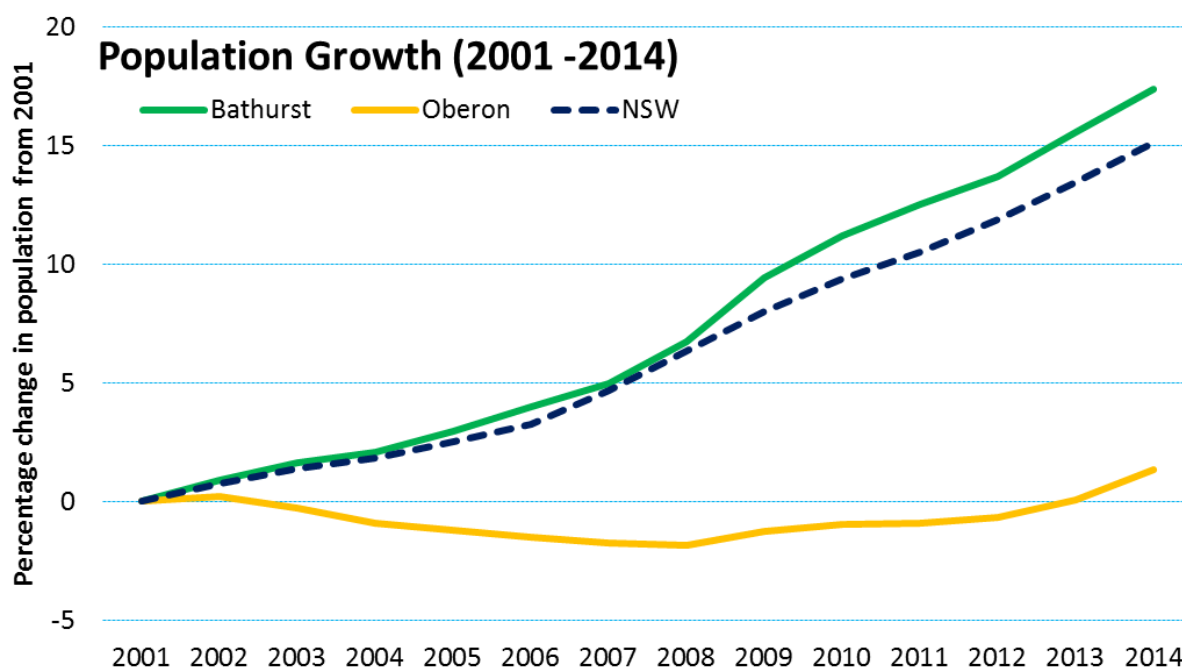
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Bathurst regional economy has a population of approximately 47,000. Population grew by 15 per cent (6,200 persons) from 2001 to 2014 which was at a similar rate to the NSW average, albeit at a slower rate than Sydney (18 per cent).

By local government area (Figure A3.1), Bathurst accounted for almost the entirety of the regional economies population growth (6,100 persons). The smaller Oberon shire, recorded more moderate overall population growth of 1.3 per cent, with population actually declining on several occasions over the period.

Figure A3.1: Population growth - Bathurst regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. However, the Bathurst regional economy is an exception with an aged dependency ratio⁶² of 24%, on par with the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Unlike most regional areas, the age group of 15 to 34 was over-represented (see Snapshot A3) because many young people are attracted to the region to study at the Charles Sturt University Bathurst campus and are counted in the population statistics. Past trends indicate that most of this group leaves the region soon after completion of their studies.

⁶² The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Snapshot A3. Composition of resident population (2014)

	Bathurst	NSW
Ratios (%)		
Aged Dependency Ratio ^A	24	24
Youth Dependency Ratio ^B	30	28
Dependency Ratio ^C	54	52
Proportion^D (%)		
Young Persons (15 to 34)	28	27
Older Persons (65+)	15	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A3.4 Income (Australian Taxation Office data) - Bathurst regional economy

	Bathurst	Sydney ⁶³	NSW
Average Taxable Income (1994-95) - Adjusted ⁶⁴	\$44,500	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$49,400	\$62,100	\$56,600
Change	\$4,900	\$9,500	\$7,300
Increase in Real Wage (%)	11.1	18.1	14.8

Real wages grew by 11.1 per cent in the Bathurst regional economy between 1994-95 and 2012-13. Growth in Real wages growth was strongest in the Bathurst LGA, with real wages in Oberon rising by a modest 1.4 per cent.

Despite being better off the Bathurst regional economy was less well-off compared to NSW on average, noting that incomes, in real terms, grew by 14.8 per cent.

Table A3.5 Educational attainment – (population aged 15 years and over, 2011 Census) - Bathurst regional economy

	Bathurst (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	9.5	23.5	18.4
Advanced or Graduate Diploma	6.5	10.7	9.8
Certificate Qualification	17.8	14.6	17.7
Population with a Post-School Qualification	33.8	48.7	45.8

In spite of the Charles Sturt University campus in the Bathurst regional economy a smaller share of the population is formally qualified than compared to NSW on average. This indicates that on completion of studies a majority of graduates leave the regional economy.

The discrepancy in skills composition may be due to higher proportions of informal or 'on the job' training being undertaken in the industries of specialisation that prevail in the Bathurst region.

Table A3.6 Welfare dependency (population aged 15 years and over, 2013) - Bathurst regional economy

	Bathurst (%)	Sydney (%)	NSW (%)
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⁶³ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁶⁴ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

Aged Pension	12.8	9.8	12.6
Disability Support Pension	5.1	3.2	4.4
Newstart Allowance	3.2	3	3.5
Total ⁶⁵	21.6	16.5	21.3

A similar proportion of persons in the Bathurst regional economy are dependent on social welfare, than compared to NSW on average.

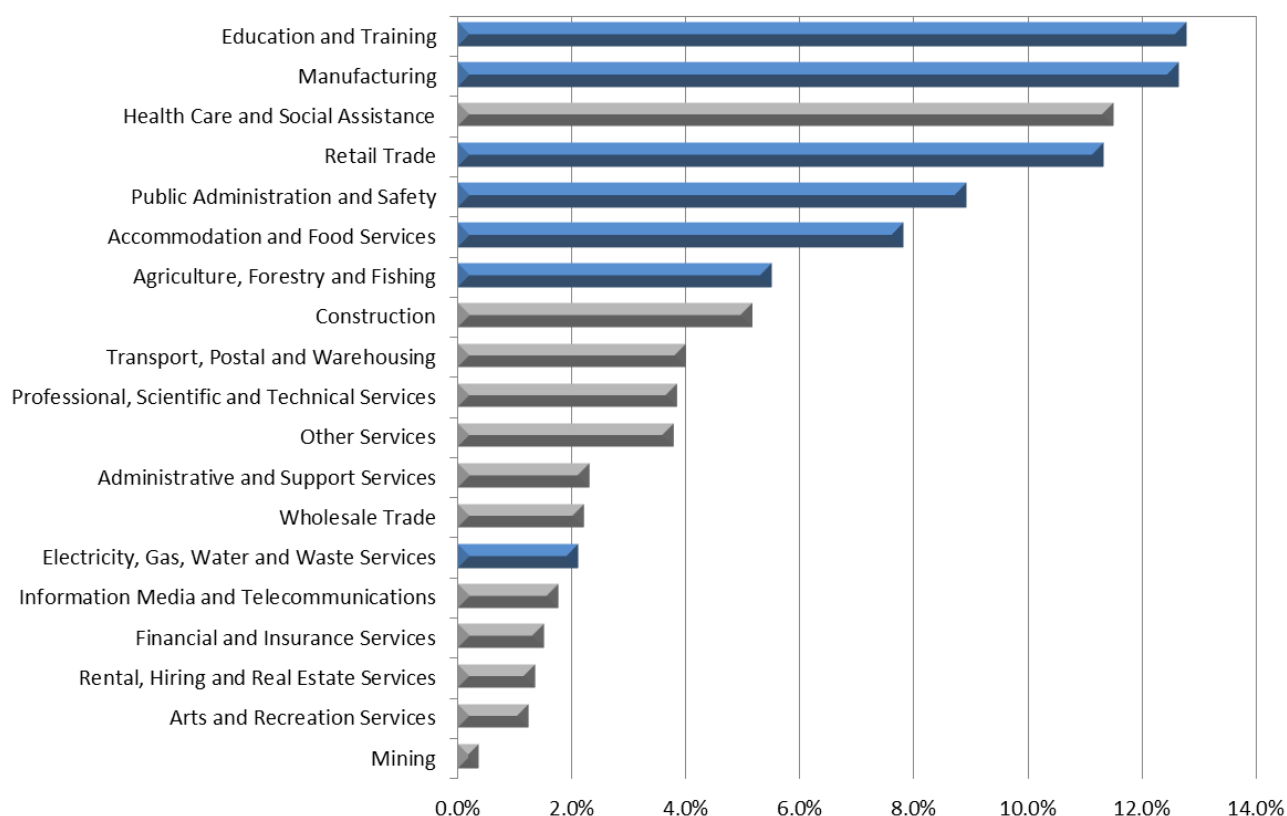
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Bathurst regional economy demonstrates regional specialisation at one or more ANZSIC levels within seven industry divisions (Figure A3.2 and Table A3.7). Health care and social assistance, although a large employer, is not an area of regional specialisation.

Figure A3.2 Percentage of employment in each industry division (ANZSIC Level 1) - Bathurst regional economy Blue bars indicate specialisation (LQ larger than 1.25) at one or more ANZSIC level within the division.



⁶⁵ Total includes service pensions not shown in table

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A3.3), important growth industries in the Bathurst regional economy are shown to be:

- accommodation (a proxy for tourism and/or tertiary education);
- log sawmilling; and
- local government administration.

Of these three industry sectors both accommodation (locational, man-made attractions and natural aesthetic endowments) and log sawmilling (natural resource endowment) are likely to be 'engines of growth'. Local government administration mostly exists to service the population and provides limited scope for NSW Government investment.

However, unadjusted (absolute) employment in the log sawmilling sector fell (Figure A3.4) in the Bathurst regional economy, meaning that employment in log sawmilling declined across NSW from 2006 - 2011, but declined at a slower rate in the Bathurst regional economy. This implies the log sawmilling sector in NSW may be coming under increased pressure from international competition and previous competitive advantage is being eroded. Based on comparative performance log sawmilling operations in the Bathurst regional economy are likely to be more efficient (and have a greater competitive advantage) than other operators across NSW. Alternatively employment may be in decline due to greater automation of processes and capital intensity, in turn displacing labour.

The 'specialisation' evident in local government administration is mostly due to smaller economies of scale. As regional economies such as Bathurst service larger geographical areas with fewer rate payers per local government compared to the average Sydney council.

Important, yet potentially declining industries in the Bathurst regional economy that could be characterised as key sectors were identified as tertiary education, sheep, beef cattle and grain farming, food product manufacturing (fruit and vegetable product manufacturing, meat and meat product manufacturing and other food product manufacturing) and other wood product manufacturing.

Employment in tertiary education in Bathurst grew in absolute terms between 2006 and 2011, despite growth in the respective sector across NSW being at a faster rate.

Sheep, beef cattle and grain farming is a key industry sector in the Bathurst regional economy making use of the regions superior agricultural land. This is despite employment declining. This may be a consequence of short term variable climatic conditions. Or is reflective of broader changes to the agricultural industry, partly from increasing levels of openness and trade and technological advances that have culminated in greater capital intensity, larger farm sizes (benefitting from greater economies of scale) and subsequently less demand for labour.

Legal and accounting services is not an industry sector of specialisation but exhibited employment growth and may be an emerging industry. However, legal and accounting services primarily exist to support the population (both in terms of residents and businesses) and independently is unlikely to be a strong driver of sustainable economic growth.

Figure A3.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Bathurst regional economy

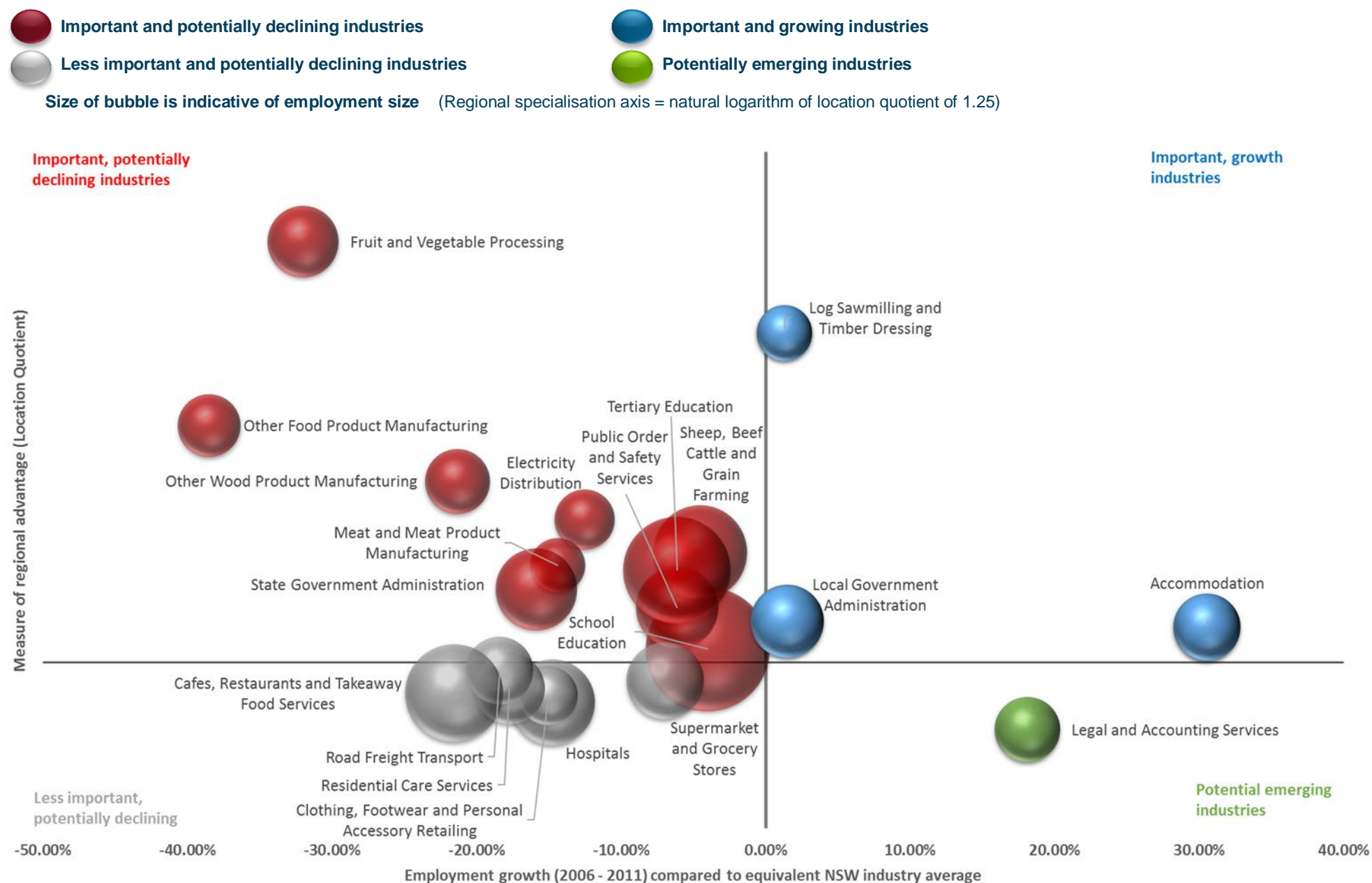
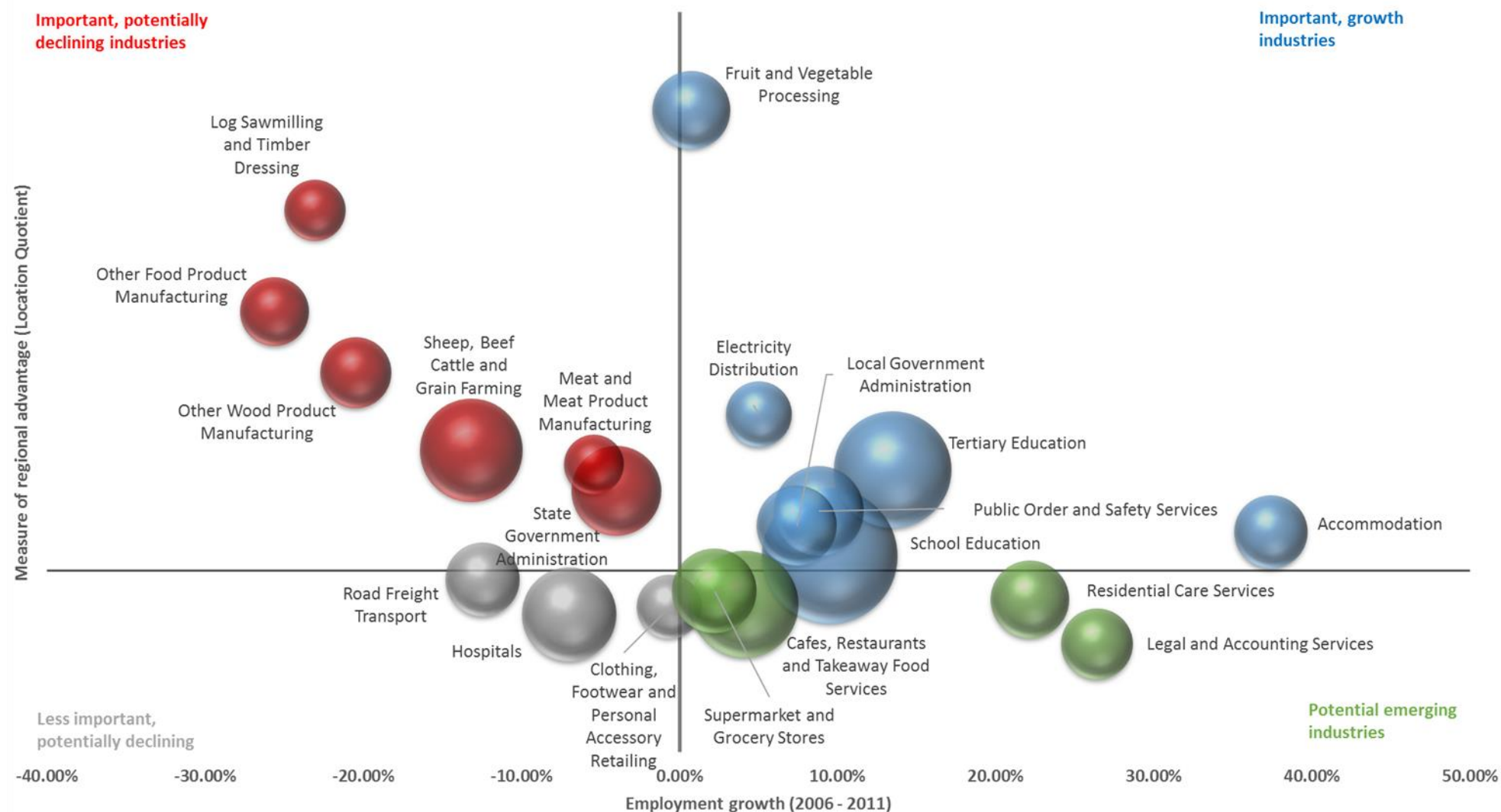


Figure A3.4 Regional advantage and regional employment growth for key industries - Bathurst regional economy



Disaggregation of data shows detail about industries of specialisation (Table A3.7).

Table A3.7 Industries of regional specialisation in detail - Bathurst regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing	1	948	5.50%	0.0%	2.39
Agriculture	2	776	4.50%	-2.3%	2.18
Sheep, Beef Cattle and Grain Farming	3	673	3.90%	-4.5%	2.82
Beef Cattle Farming (Specialised)	4	235	1.36%	-1.1%	2.86
Sheep Farming (Specialised)	4	212	1.23%	-7.5%	5.11
Sheep-Beef Cattle Farming	4	200	1016%	-4.4%	6.6
Manufacturing	1	2,177	12.62%	-9.6%	1.46
Food Product Manufacturing	2	1,027	5.95%	-14.2%	3.50
Wood Product Manufacturing	2	555	3.22%	-15.5%	6.69
Fruit and Vegetable Processing	3	383	2.22%	-32.0%	28.15
Other Wood Product Manufacturing	3	318	1.84%	-21.3%	4.77
Other Food Product Manufacturing	3	299	1.73%	-38.5%	7.20
Log Sawmilling and Timber Dressing	3	234	1.36%	1.3%	14.32
Meat and Meat Product Manufacturing	3	225	1.31%	-14.4%	2.56
Fruit and Vegetable Processing	4	384	2.23%	-31.3%	27.41
Prepared Animal and Bird Feed Manufacturing	4	290	1.68%	-27.1%	30.98
Log Sawmilling	4	225	1.31%	28.2%	19.15
Meat Processing	4	220	1.28	-9.8	5.27
Reconstituted Wood Product Manufacturing	4	209	1.21%	16.3	56.12
Electricity, gas, water and waste services	1	361	2.09%	-6.1%	1.85
Electricity Supply	2	282	1.64%	-12.8%	2.61
Electricity Distribution	3	274	1.59%	-12.5%	3.60
Electricity Distribution	4	272	1.58%	-13.5%	3.57
Retail Trade					
Motor Vehicle and Motor Vehicle Parts Retailing	2	186	1.08%	1.4%	1.39
Accommodation and Food Services	-	-	-	-	-

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Accommodation	2	341	1.98%	30.0%	1.63
Accommodation	3	341	1.98%	30.5%	1.63
Accommodation	4	341	1.98%	30.0%	1.63
Public Administration and Safety	1	1,534	8.90%	-6.9%	1.45
Public Administration	2	1,006	5.83%	-8.5%	1.54
Public Order, Safety and Regulatory Services	2	523	3.03%	-3.8%	1.85
Public Order and Safety Services	3	514	2.98%	-6.1%	1.87
State Government Administration	3	504	2.92%	-15.9%	2.15
Local Government Administration	3	403	2.34%	1.5%	1.70
State Government Administration	4	505	2.93%	-15.6%	2.15
Local Government Administration	4	404	2.35%	1.3%	1.70
Correctional and Detention Services	4	318	1.84%	-11.2%	6.68
Education and Training	1	2,200	12.76%	-5.8%	1.56
Preschool and School Education	2	1,198	6.95%	-4.1%	1.34
Tertiary Education	2	870	5.05%	-6.2%	2.48
School Education	3	1,165	6.75%	-4.0%	1.38
Tertiary Education	3	871	5.05%	-6.1%	2.48
Higher Education	4	720	4.18%	-7.2%	3.19
Secondary Education	4	485	2.82%	14.7%	1.56
Primary Education	4	483	2.80%	-3.9%	1.32

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

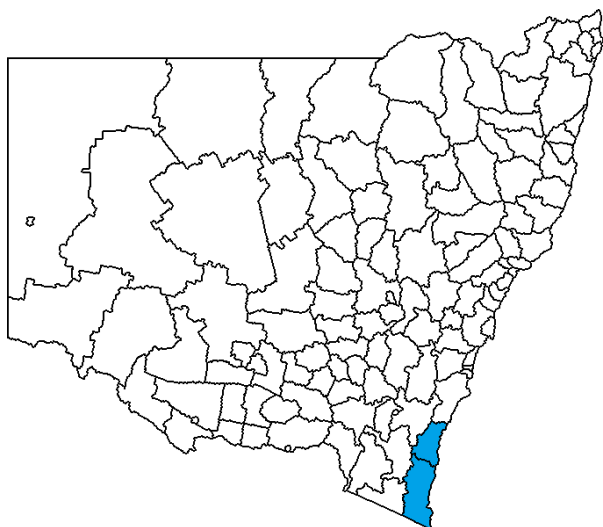
To start the process the most likely industry sectors for the Bathurst regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A3. These are indicative only and are best selected based on the addition of local knowledge.

Box A3	Probable 'key industry sectors' in Bathurst
•	Agriculture Natural land endowments provide Bathurst with a competitive advantage in agricultural production, currently sheep and beef cattle farming account for the majority of activity.
•	Food product manufacturing Leverages proximity to agricultural inputs as an endowment. In Bathurst food product manufacturing is a mix of fruit and vegetable processing, animal and bird feed manufacturing and meat processing.
•	Wood product manufacturing Utilises locational endowment of proximity to the logging and forestry industry. A mix of log sawmilling and reconstituted wood product manufacturing.
•	Higher education Specialisation due to the Charles Sturt University Bathurst campus.

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 4 Bega regional economy



Defining the regional economy

The ESS for Bega indicates a high proportion of local jobs are filled by local residents, with only about two per cent of jobs filled by labour from outside the LGA. Taken in conjunction with the Bega's high jobs-housing balance this indicates Bega may be a regional centre. However Eurobodalla, which shares a similar mix of industry specialisation and similar physical geography, also appears to be a regional centre, as opposed to a regional satellite. Despite both regions appearing to be relatively independent, the similarities between both lend themselves to joint analysis.

Table A4.1 Employment capacity, sufficiency and containment in Bega regional economy LGAs (2011)

	Bega	Eurobodalla
Total local workers (working anywhere)	12,446	11,880
Number of jobs in local area	11,205	11,003
Number of local jobs held by locals	10,928	10,357
Employment self-containment (ESC)	0.88	0.87
Jobs Housing Balance (JHB)	0.90	0.95
Employment self-sufficiency (ESS)	0.98	0.89

Further analysis of Bega employment linkages indicates 21 per cent of all Bega workers that are employed, in NSW yet outside of the LGA are employed in the Eurobodalla LGA. While conversely 11 per cent of all Eurobodalla workers employed in NSW outside of the LGA are employed in the Bega LGA. Both regions were the single largest source (by LGA) of the others external workforce. **Consequently, the Bega regional economy is defined as the Bega Valley LGA and neighbouring LGA of Eurobodalla.**

Table A4.2 Employment linkages between LGAs around Bega – number and proportion of workers

LGA in which workers are living	Working in Bega	Working in Eurobodalla
Bega (no.)	-	202
Bega proportion	-	21.6%
Eurobodalla (no.)	106	-
Eurobodalla proportion	11.7%	-

Regional overview

Table A4.3 Summary by LGA - Bega regional economy

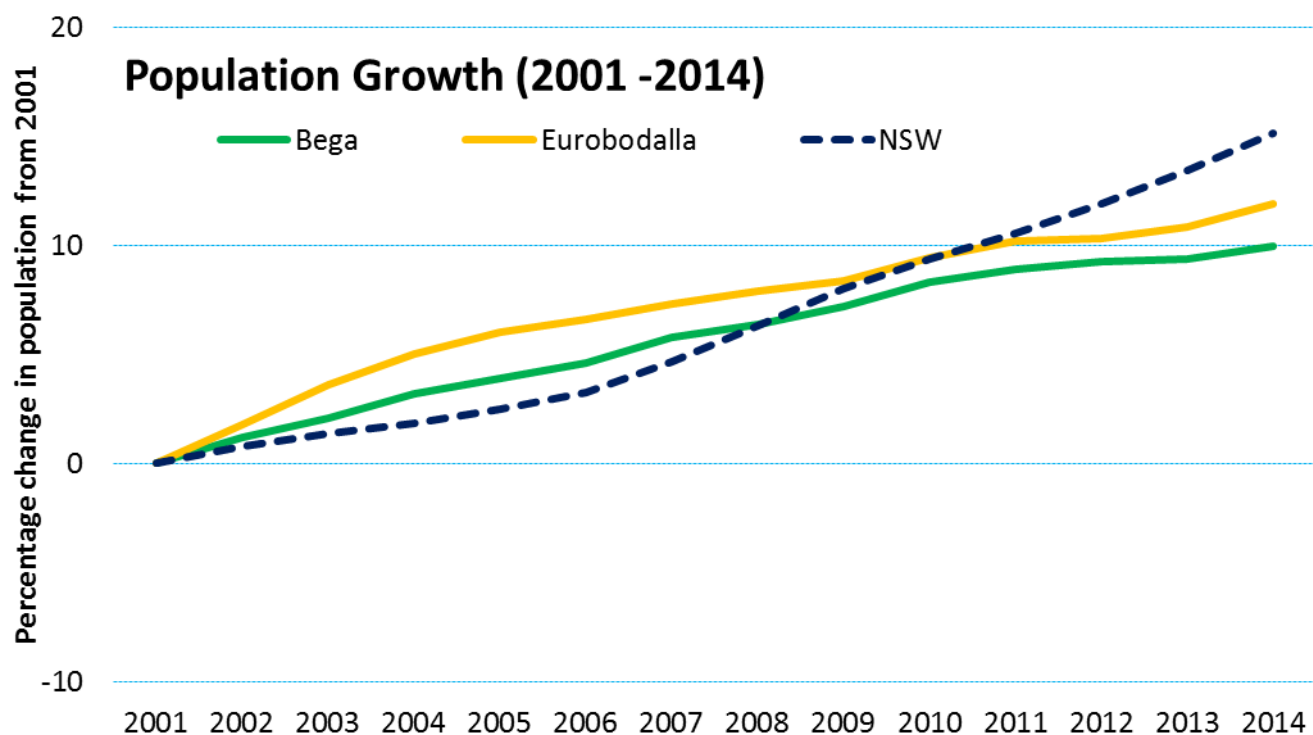
Local Government Area	Area (Km ²)	Population Estimate*	Distance to Bega township from main town (km)	Estimated Gross Regional Product+
Bega	6,279	33,468	-	\$1,356m
Eurobodalla	3,428	37,643	145.4	\$1,312m
Total	9,707	71,111	-	\$2,668m

*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Bega regional economy has a population of approximately 71,100. Population grew by 11 per cent (7,000 persons) from 2001 to 2014 which was at a slower rate than both NSW (15 per cent) and Sydney (18 per cent).

Figure A4.1 Population growth - Bega regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Bega regional economy is no exception with an aged dependency ratio⁶⁶ of 46% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A4) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

⁶⁶ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

As is the case for many NSW coastal regions aged dependency ratios have also risen, on account of older persons relocating to the coast for retirement or lifestyle reasons, this is particularly the case in the Bega regional economy. The trend of retirees moving to the coast has been supported by lower cost of land or rent and the draw of beaches and the regions surrounding natural environment, among a myriad of other factors.

Snapshot A4. Composition of resident population (2014)

	Bega	NSW
Ratios (%)		
Aged Dependency Ratio ^A	46	24
Youth Dependency Ratio ^B	28	28
Dependency Ratio ^C	72	52
Proportion^D (%)		
Young Persons (15 to 34)	17	27
Older Persons (65+)	26	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A4.4 Income (Australian Taxation Office data) - Bega regional economy

	Bega	Sydney ⁶⁷	NSW
Average Taxable Income (1994-95) - Adjusted ⁶⁸	\$38,200	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$40,300	\$62,100	\$56,600
Change	\$2,000	\$9,500	\$7,300
Increase in Real Wage (%)	5.3	18.1	14.8

Real wages grew by 5.3 per cent in the Bega regional economy between 1994-95 and 2012-13. Despite being better the Bega regional economy was less well-off compared to NSW on average (14.8 per cent).

Table A4.5 Educational attainment (population aged 15 years and over, 2011 Census) - Bega regional economy

	Bega (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	10.4	23.5	18.4
Advanced or Graduate Diploma	9.0	10.7	9.8
Certificate Qualification	22.9	14.6	17.7
Population with a Post-School Qualification	42.4	48.7	45.8

More Bega residents as a share of the working age population have a certificate level qualification than across NSW.

This composition of skills is likely to reflect the skills demanded, noting skills needs differ significantly by industry. For example in Sydney, which has a strong specialisation in finance related activities, degree qualifications are more prevalent because the industries of specialisation are more reliant on formal qualifications.

⁶⁷ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁶⁸ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

Table A4.6 Welfare dependency (population aged 15 years and over, 2013) - Bega regional economy

	Bega (%)	Sydney (%)	NSW (%)
Aged Pension	21.9	9.8	12.6
Disability Support Pension	7.6	3.2	4.4
Newstart Allowance	4.6	3	3.5
Total ⁶⁹	35.7	16.5	21.3

A larger proportion of persons in the Bega regional economy (35.7) are dependent on social welfare, than compared to NSW, on average (21.3). This is mostly explained by Bega's ageing population, and associated higher proportion of its population accessing an aged pension.

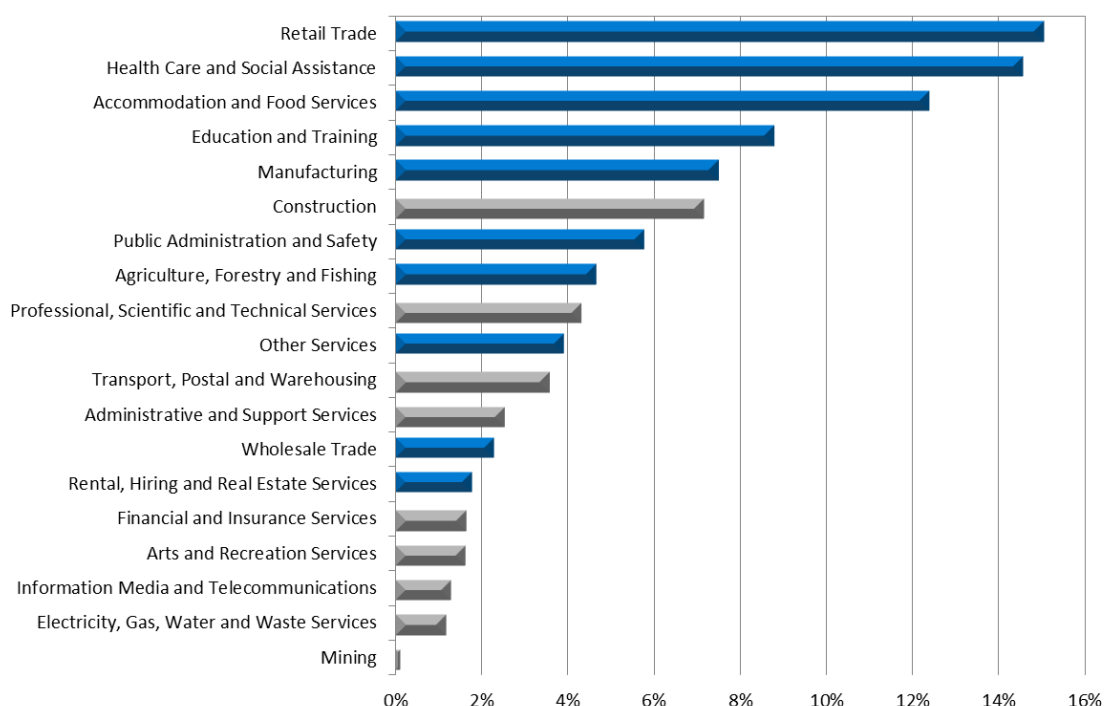
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Bega regional economy demonstrates regional specialisation at one or more ANZSIC level within ten industry divisions (Figure A4.2 and Table A4.7).

Figure A4.2 Percentage of employment in each industry division (ANZSIC Level 1) - Bega regional economy
Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



⁶⁹ Total includes service pensions not shown in table

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A4.3), important growth industries in the Bega regional economy are shown to be:

- dairy product manufacturing;
- other social assistance services; and
- automotive repair and maintenance.

Dairy product manufacturing is the predominant key industry sector, making use of proximity to agricultural inputs (dairy cattle farms). Both other social assistance and automotive repair and maintenance are populating serving industries and tend to grow/decline in accord with population and are less likely to provide opportunities for NSW government investment to propel sustainable regional economic growth.

Important, yet potentially declining industries in the Bega regional economy that can be characterised as key industry sectors (making use of local endowments) are dairy cattle farming, accommodation (a proxy for tourism) and potentially residential care services (aged care).

The tourism industry in the Bega regional economy leverages locational endowment in beaches, national parks and general scenic amenity. Despite accommodation declining in employment in relative terms, in absolute terms employment grew in Bega, just at a slower rate than the NSW industry average. This may be reflective of stronger international visitation, as measured by nights stayed (+27%) between June 2006 and June 2011 compared to domestic visitors staying for a total of less nights (-1%). Because international visitors tend to stay predominantly in Sydney (84% of nights as at year ending March 2016) and the origin of visitor in regional economies tends to be domestic, it is likely that this stronger growth was the cause of the relative decline in employment.

Despite traditionally being a population serving industry, the disproportionately large share of older Australians residing in the Bega regional economy⁷⁰ may be reflective of a competitive advantage due to natural amenity in the market for retirees. If this is the case NSW Government investment that seeks to overcome industry barriers may become an engine of growth by attracting retirees from interstate or retain NSW residents that would otherwise have retired elsewhere, for example the Gold Coast in Queensland. This would be most pertinent to residential care services (aged care)

Employment in dairy cattle farming declined in both absolute and relative terms, however this may have been due to climatic variability across the State, or efficiencies resulting in greater utilisation of capital and declining use of labour inputs. It should be noted that the raw inputs produced by the dairy cattle farming sector are critical for dairy product manufacturing. Although not captured in the 2011 Census recent falls in the price of milk at the farm gate (driven in part by global supply and demand) are likely to have exacerbated any declines in industry employment, at least in the short term.

Allied health services and legal and accounting services did not demonstrate specialisation but exhibited employment growth and may be emerging industries. However both these industries exist primarily to support either the population (i.e. retail, health and education) or the engines of growth (i.e. legal and accounting services) and are unlikely to be strong drivers of sustainable economic growth without growth in accompanying key industry sectors.

⁷⁰ The Bega regional economy has an age dependency ratio of 0.46 nearly double the NSW average of 0.24 (the age dependency ratio is the number of persons aged 65 year and older divided by the population aged 15 to 64).

Figure A4.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Bega regional economy

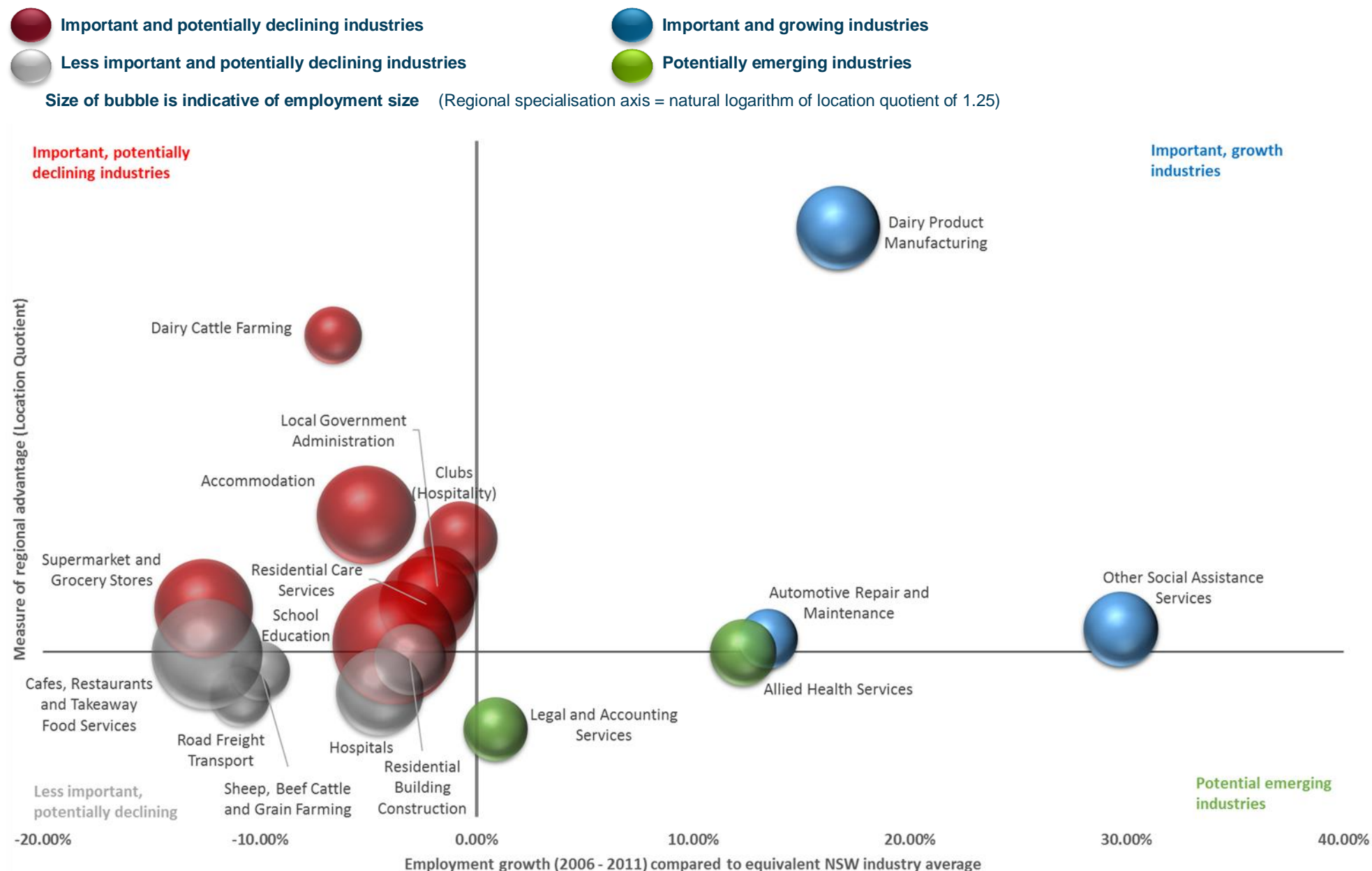
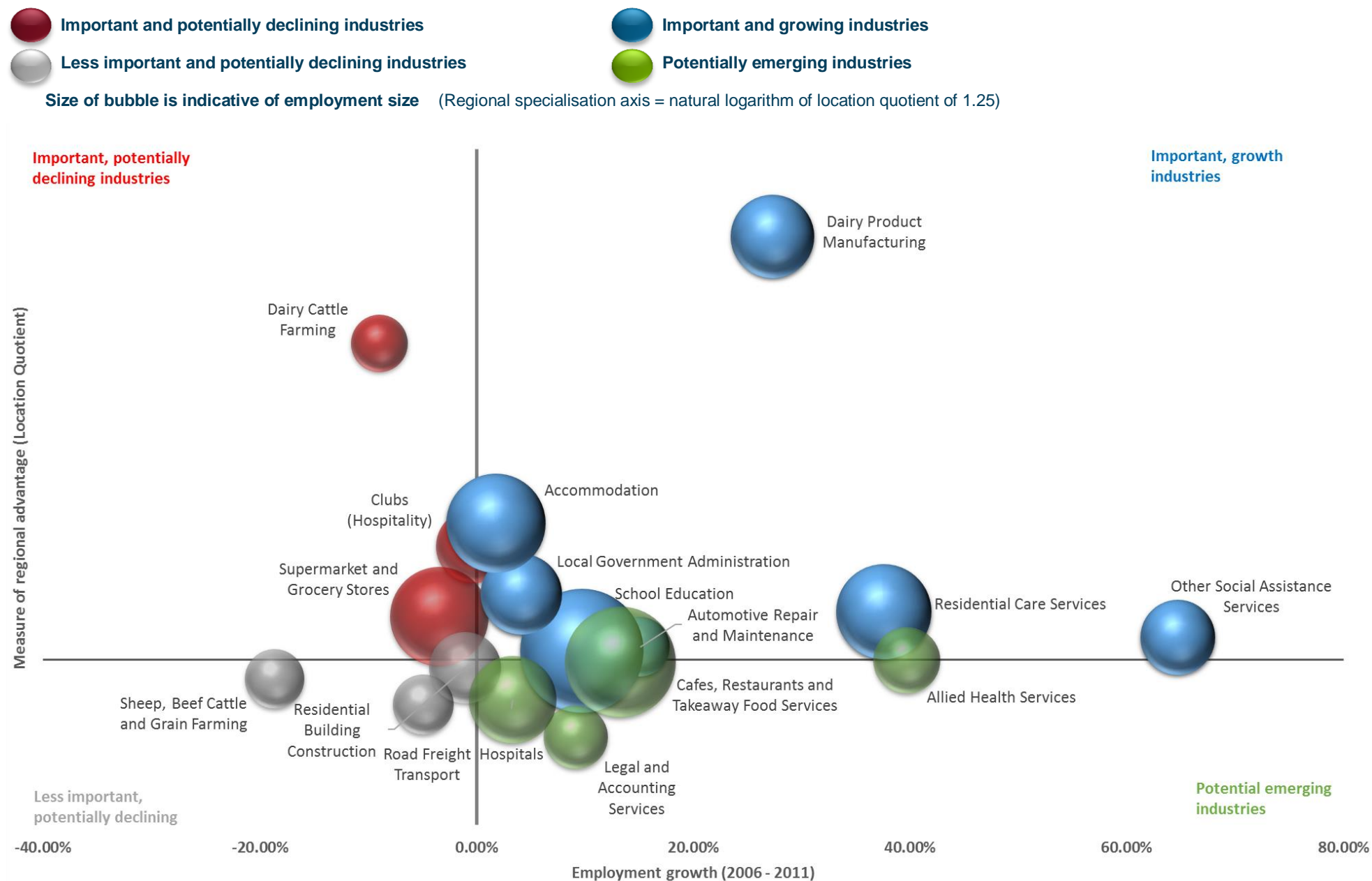


Figure A4.4 Regional advantage and regional employment growth for key industries - Bega regional economy



Disaggregation of data shows detail about industries of specialisation (Table A4.7).

Table A4.7 Industries of regional specialisation in detail - Bega regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing					
	1	1,036	4.66%	-5.6%	2.03
Agriculture	2	748	3.37%	-4.0%	1.63
Dairy Cattle Farming	3	308	1.39%	-6.6%	13.00
Dairy Cattle Farming	4	308	1.38%	-3.2%	12.37
Beef Cattle Farming (Specialised)	4	256	1.15%	-22.0%	2.42
Manufacturing					
Food Product Manufacturing	2	831	3.74%	12.0%	2.20
Wood Product Manufacturing	2	260	1.17%	-15.8%	2.43
Dairy Product Manufacturing	3	657	2.96%	16.7%	28.70
Cheese and Other Dairy Product Manufacturing	4	652	2.93%	12.4%	46.23
Wholesale Trade					
Basic Material Wholesaling	2	245	1.10%	35.8%	1.36
Retail Trade					
	1	3,342	15.03%	-11.4%	1.41
Other Store-Based Retailing	2	1,728	7.77%	-11.7%	1.28
Food Retailing	2	1,220	5.49%	-11.1%	1.63
Motor Vehicle and Motor Vehicle Parts Retailing	2	225	1.01%	-14.9%	1.30
Supermarket and Grocery Stores	3	924	4.16%	-12.6%	1.72
Pharmaceutical and Other Store-Based Retailing	3	490	2.21%	-6.9%	1.52
Specialised Food Retailing	3	298	1.34%	-9.3%	1.40
Hardware, Building and Garden Supplies Retailing	3	244	1.10%	-29.9%	1.82
Recreational Goods Retailing	3	228	1.02%	-10.8%	1.82
Supermarket and Grocery Stores	4	924	4.16%	-12.6%	1.72
Pharmaceutical, Cosmetic and Toiletry Goods Retailing	4	237	1.07%	-8.1%	1.36
Accommodation and Food Services					
	1	2,747	12.36%	-11.5%	1.80
Food and Beverage Services	2	1,823	8.20%	-12.6%	1.45
Accommodation	2/3/4	927	4.15%	-5.1%	3.43
Clubs (Hospitality)	3/4	515	2.32%	-0.7%	2.89
Cafes and Restaurants	4	929	4.18%	-5.1%	3.44

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Secondary Education	4	650	2.92%	-0.1%	1.56
Rental Hiring and Real Estate Services					
Real Estate Services	3/4	282	1.27%	-12.5%	1.27
Public Administration and Safety					
Local Government Administration	3/4	622	2.80%	-1.9%	2.03
Education and Training					
Preschool and School Education	2	1,561	7.02%	-1.7%	1.36
School Education	3	1,451	6.53%	-3.8%	1.33
Primary Education	4	709	3.19%	-0.6%	1.50
Secondary Education	4	622	2.80%	6.4%	1.55
Health Care and Social Assistance					
Residential Care Services	2/3	852	3.84%	-2.2%	1.78
Social Assistance Services	2	805	3.62%	0.6%	1.27
Other Social Assistance Services	3/4	529	2.38%	29.7%	1.48
Aged Care Residential Services	4	841	3.79%	-0.3%	1.90
Other Services					
Automotive Repair and Maintenance	3	332	1.49%	13.4%	1.38

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

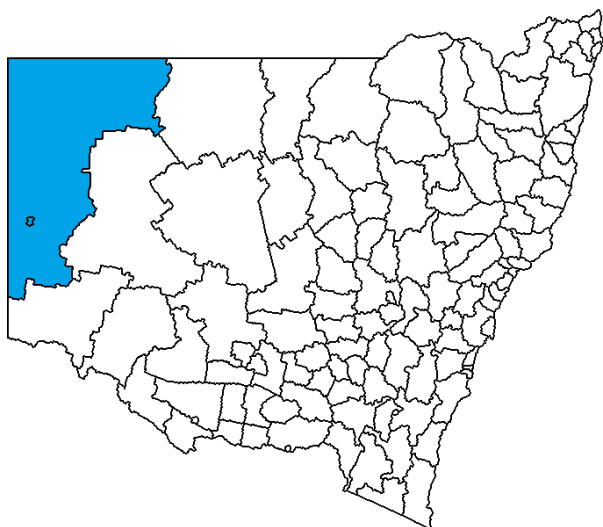
To start the process the most likely industry sectors for the Bega regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A4. These are indicative only and are best selected based on the addition of local knowledge.

Box A4	Probable 'key industry sectors' in Bega
•	<p>Tourism</p> <p>Identified using accommodation as a proxy. The regional economy has endowments in natural amenity (beaches, forests and natural aesthetic) that provide a strong advantage to build on. Accommodation employs over 4% of the work force.</p> <p>Dairy product manufacturing</p> <p>Utilises its proximity to dairy cattle farms (milk) as an endowment that generates the competitive advantage.</p> <p>Dairy cattle farming</p> <p>Natural land endowments provide Bega with a competitive advantage in dairy cattle farming. Current market conditions may be challenging the continued advantage the dairy farming industry sector enjoys over other agricultural activities.</p>

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 5 Broken Hill regional economy



Defining the regional economy

The ESS for Broken Hill (Table A5.1) indicates a high proportion of Broken Hill jobs are filled by local residents, with about four per cent of jobs filled by labour from outside the LGA. The Broken Hill ESC estimates approximately 12 per cent of the employed local labour force travel outside the area for work. In comparison the ESC for Unincorporated Far West Region shows that 28 per cent of employed local labour force travel outside of the area for work. This analysis suggests that Broken Hill is a regional centre with Unincorporated Far West Region as a satellite.

Table A5.1 Employment capacity, sufficiency and containment in Broken Hill regional economy (2011)

	Broken Hill LGA	Unincorporated Far West Region
Total local workers (working anywhere)	6,850	679
Number of jobs in local area	6,295	733
Number of local jobs held by locals	6,029	489
Employment self-containment (ESC)	0.88	0.72
Jobs Housing Balance (JHB)	0.92	1.08
Employment self-sufficiency (ESS)	0.96	0.67

Further analysis of Broken Hill employment linkages indicates that 42 per cent of all Unincorporated Far West Region workers that are employed outside of the LGA, in NSW, are employed in the Broken Hill LGA. **Consequently, the Broken Hill regional economy is defined as the Broken Hill LGA and neighbouring area of Unincorporated Far West Region.**

Table A5.2 Employment linkages within the Broken Hill regional economy – number and proportion of workers

LGA in which workers are living	Working in Broken Hill	Working in Unincorporated Far West Region	Working in Central Darling
Broken Hill LGA (no.)	-	44	24
Broken Hill LGA proportion	-	8.5%	4.7%
Unincorporated Far West Region (no.)	64	-	6
Unincorporated Far West Region proportion	41.6%	-	3.9%

Regional overview

Table A5.3 Summary– Broken Hill regional economy

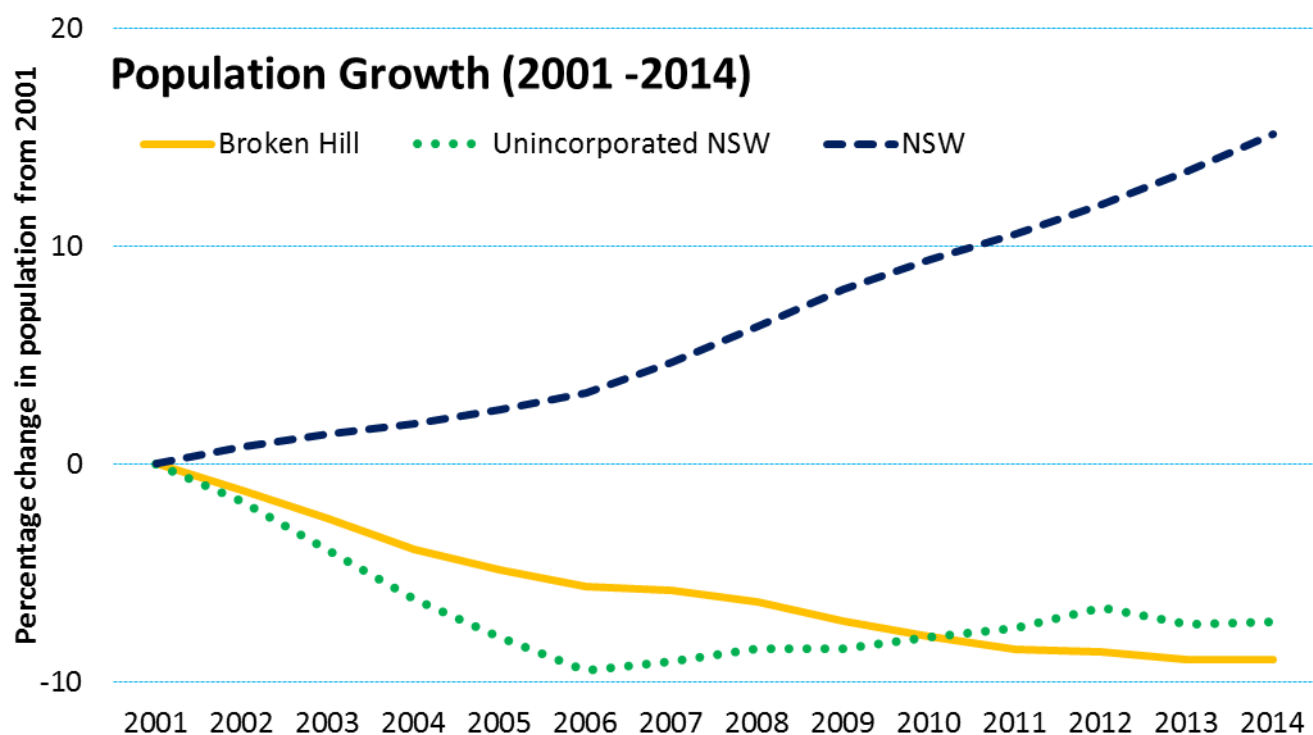
Area	Area (Km ²)	Population Estimate*	Distance to Broken Hill from main town (km)	Estimated Gross Regional Product+
Broken Hill LGA	170	19,048	-	\$985m
Unincorporated Far West Region	93,300	1,122	332	n.a.
Total	93,470	20,170	-	n.a.

*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Broken Hill regional economy has a population of approximately 20,200. From 2001 to 2014 population declined by 8.9 per cent (-2,000 persons), in comparison population across NSW grew by 15 per cent over the same period.

Figure A5.1 Population growth - Broken Hill regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Broken Hill regional economy is no exception with an aged dependency ratio⁷¹ of 33% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A5) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

⁷¹ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

The Broken Hill shire council commissioned a report that indicated the share of people aged 65 and over is expected to reach 30 per cent by 2031.

Snapshot A5. Composition of resident population (2014)

	Broken Hill	NSW
Ratios (%)		
Aged Dependency Ratio ^A	33	24
Youth Dependency Ratio ^B	29	28
Dependency Ratio ^C	62	52
Proportion^D (%)		
Young Persons (15 to 34)	23	27
Older Persons (65+)	20	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A5.4 Income (Australian Taxation Office Data) - Broken Hill regional economy

	Broken Hill	Sydney ⁷²	NSW
Average Taxable Income (1994-95) - Adjusted ⁷³	\$46,615	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$49,820	\$62,100	\$56,600
Change	\$3,200	\$9,500	\$7,300
Increase in Real Wage (%)	6.9	18.1	14.8

Average real wages in the Broken Hill regional economy grew by 6.9 per cent between 1994-95 and 2012-13, despite being better off on average, the Broken Hill regional economy was less well-off compared to the NSW average (14.8 per cent). Real wages in Broken Hill increased despite declining population, pointing to the possible influence of the mining industry noting strong wages throughout the period covered.

Table A5.5 Educational attainment (population aged 15 years and over, 2011 Census) - Broken Hill regional economy

	Broken Hill (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	6.1	23.5	18.4
Advanced or Graduate Diploma	5.4	10.7	9.8
Certificate Qualification	20.1	14.6	17.7
Population with a Post-School Qualification	31.6	48.7	45.8

The skills base of the Broken Hill regional economy is less formally qualified than NSW, on average.

Table A5.6 Welfare dependency (population aged 15 years and over, 2013) - Broken Hill regional economy

	Broken Hill (%)	Sydney (%)	NSW (%)
Aged Pension	15.9	9.8	12.6
Disability Support Pension	8	3.2	4.4

⁷² Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁷³ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

Newstart Allowance	4.3	3	3.5
Total ⁷⁴	29	16.5	21.3

A larger proportion of persons in the Broken Hill regional economy (29 per cent) are dependent on social welfare, than compared to NSW, on average (21.3 per cent). This may be a result of recent structural changes to the Broken Hill economy and declining employment in the mining industry having led to increased structural and frictional unemployment as the local economy slowly adjusts. The population that are less mobile are more likely to come to rely on welfare, as the relatively thin labour market of the region means frictional unemployment is likely to persist for longer.

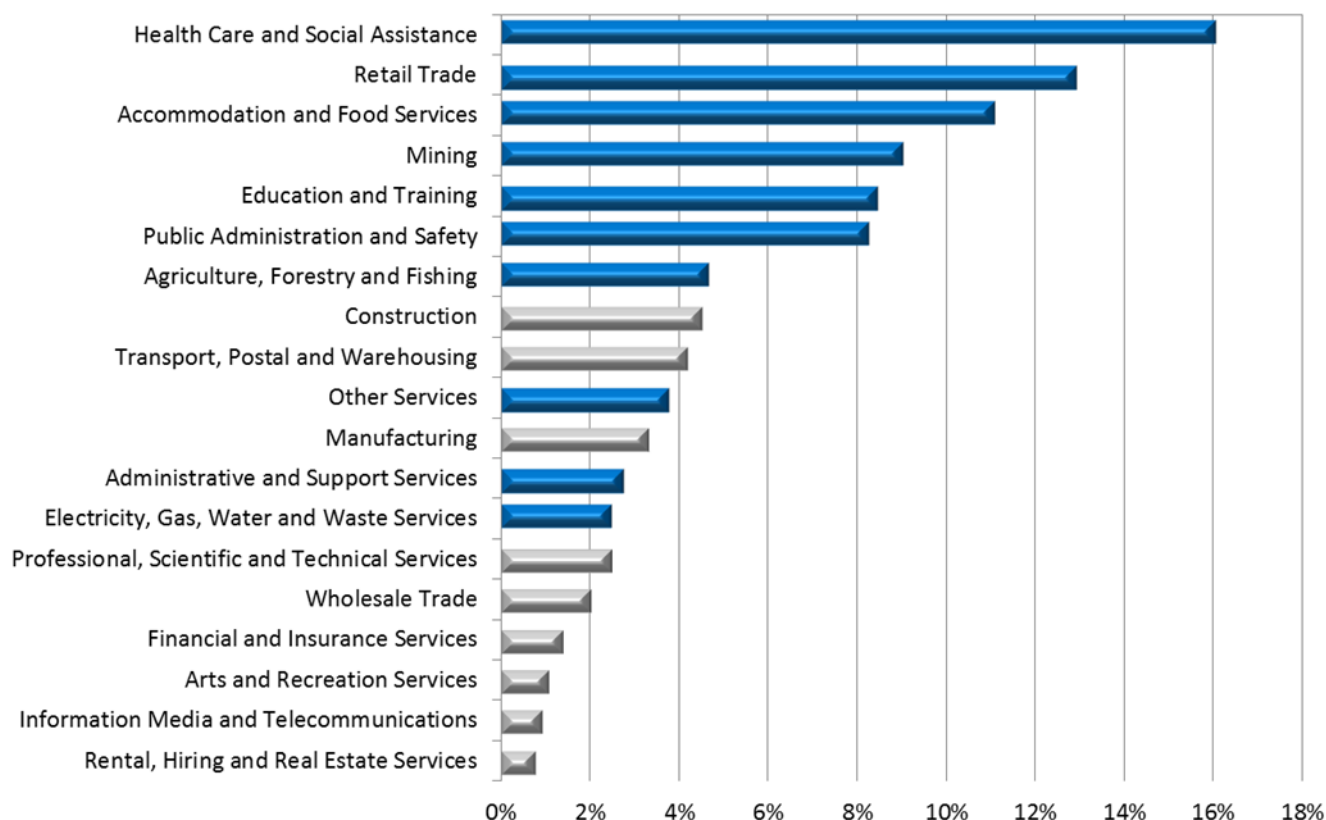
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Broken Hill regional economy demonstrates regional specialisation at one or more ANZSIC level within ten industry divisions (Figure A5.2 and Table A5.7).

Figure A5.2 Percentage of employment in each industry division (ANZSIC Level 1) - Broken Hill regional economy
Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



⁷⁴ Total includes service pensions not shown in table

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A5.3), important growth industries in the Broken Hill regional economy are shown to be:

- accommodation (a proxy for tourism);
- sheep, beef cattle and grain farming;
- school education (primary and secondary);
- other social assistance services; and
- medical services.

Accommodation and sheep, beef cattle and grain farming are industries that typically make use of locational endowments to gain a competitive advantage. Because of the relatively small population of the Broken Hill regional economy (compared to other regions covered in this report) it should be noted that despite exhibiting specialisation these industries employ relatively few people (less than 300) and caution should be used when interpreting future industry sector prospects.

School education, other social assistance services and medical services were all sectors of specialisation with growing employment however predominantly exist to service the population. With school education typically growing as the population of young people (of primary and secondary school age) grows and industry sectors like medical serves grow as the proportion of the population aged 65+ grows, as is the case in Broken Hill. To propel ongoing growth in these industries it is usually most effective to target NSW government investment to key industry sectors ('engines of growth') that grow the population base.

Metal ore mining is a significant industry of specialisation yet is potentially a declining industry in the Broken Hill regional economy with employment having declined both in absolute terms and in relative terms between the 2006 and 2011 Census'. It is likely that this weakness has carried on past 2011 with the mining industry across NSW coming under pressure following in the face of the global downturn in commodity prices, noting that many proposed projects have not gone ahead, and some existing operations across the State have been suspended.

If commodity prices remain low and/or mineral reserves are exhausted the Broken Hill regional economy may continue to drift away from mining activity towards the currently smaller industries that exhibit signs of having a competitive advantage, such as tourism.

Road freight transport and allied health services are not industry sectors of specialisation but exhibited employment growth and may be emerging industries. Growth in allied health services is reflective of the ageing resident population and it not a key industry sector, however road freight transport may have an emerging competitive advantage due to locational endowment, particularly with proximity to South Australia.

Figure A5.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Broken Hill regional economy

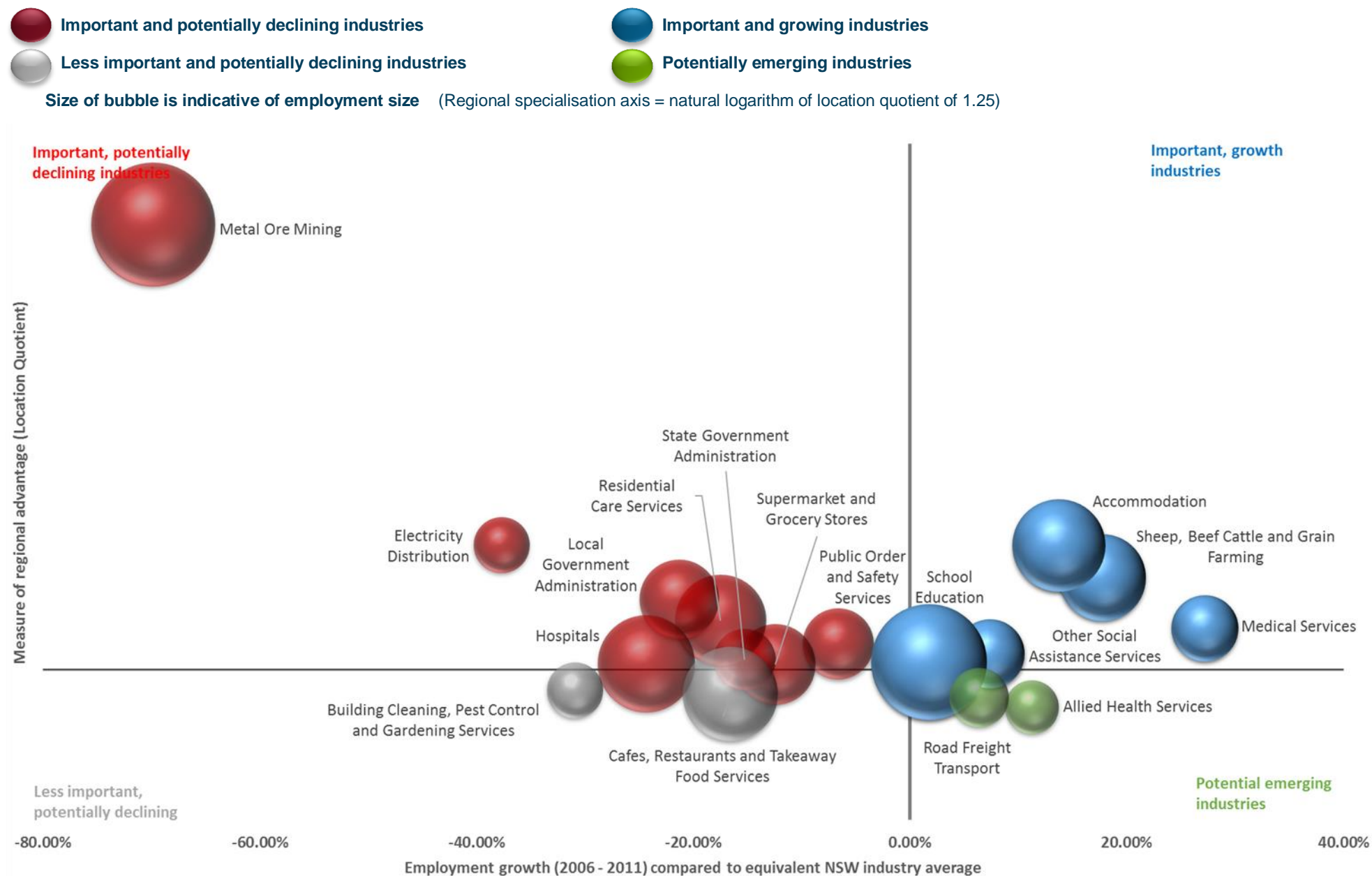
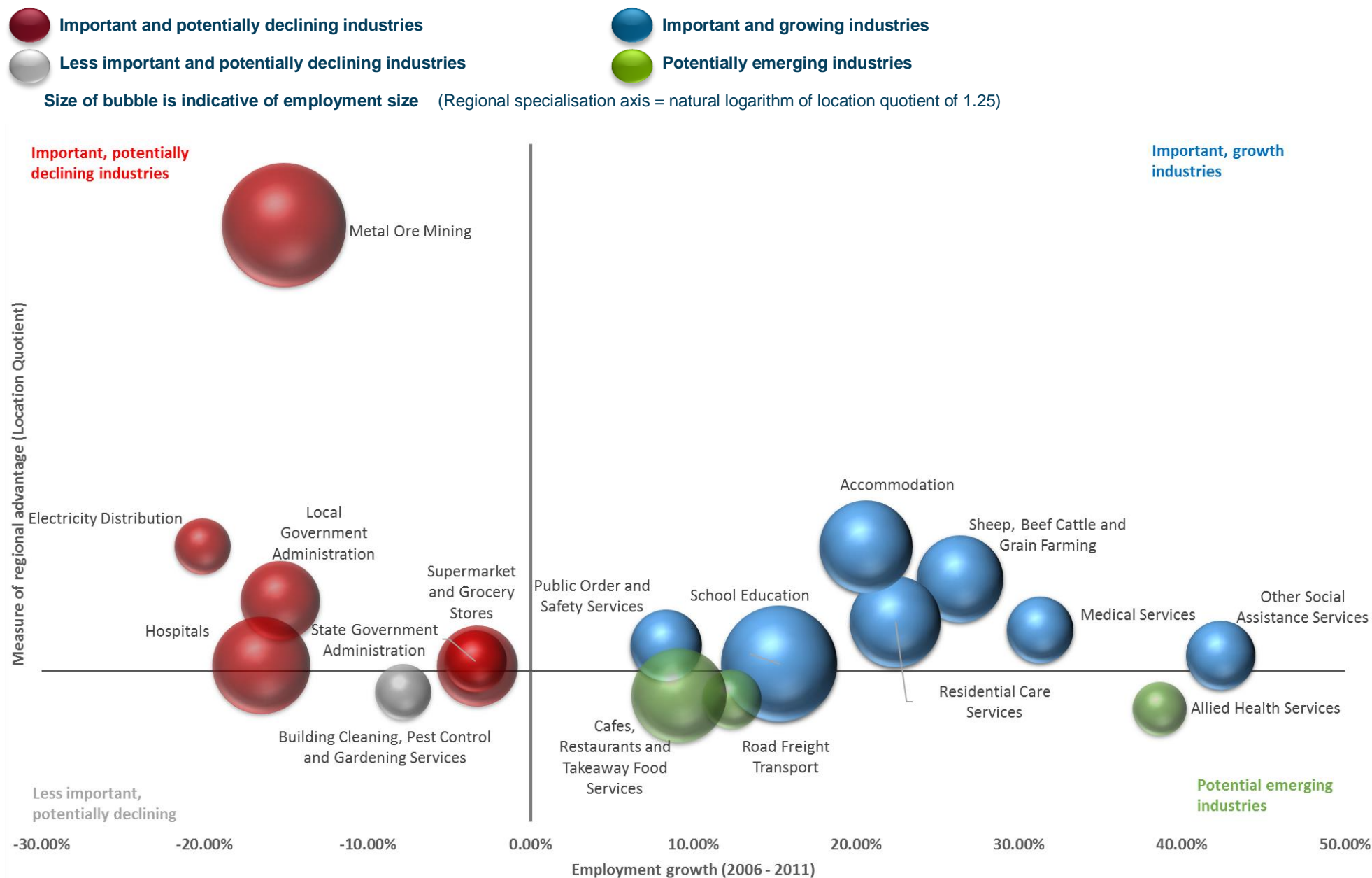


Figure A5.4 Regional advantage and regional employment growth for key industries - Broken Hill regional economy



Disaggregation of data shows detail about industries of specialisation (Table A5.7).

Table A5.7 Industries of regional specialisation in detail - Broken Hill regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing	1	328	4.66%	18%	2.03
Agriculture	2	290	4.11%	24.9%	1.99
Sheep, Beef Cattle and Grain Farming	3	258	3.65%	17.7%	2.64
Sheep Farming (Specialised)	4	108	1.54%	-7.2%	6.37
Sheep-Beef Cattle Farming	4	100	1.42%	14.2%	8.07
Mining	1	636	9.03%	-63.6%	9.08
Metal Ore Mining	2/3	525	7.45%	-70.1%	46.6
Exploration and Other Mining Support Services	2	78	1.11%	-2.2%	10.12
Silver-Lead-Zinc Ore Mining	4	450	6.4%	-13.2%	290.56
Electricity, Gas, Water and Waste Services	1	175	2.49%	-27.0%	2.2
Electricity Supply	2	115	1.63%	-41.5%	2.61
Electricity Distribution	3/4	107	1.52%	-37.7%	3.45
Retail Trade					
Motor Vehicle and Motor Vehicle Parts Retailing	2	81	1.15%	-0.6%	1.48
Supermarket and Grocery Stores	3/4	222	3.15%	-12.4%	1.3
Pharmaceutical and Other Store Based Retailing	3	146	2.07%	-15.0%	1.42
Department Stores	3/4	106	1.5%	-16.7%	2.11
Pharmaceutical, Cosmetic and Toiletry Goods Retail	4	81	1.15%	6.8%	1.46
Accommodation and Food Services	1	781	11.09%	-3.9%	1.61
Accommodation	2/3/4	293	4.16%	13.8%	3.43
Clubs (Hospitality)	3/4	95	1.35%	-3.5%	1.68
Pubs, Taverns and Bars	3/4	85	1.21%	6.9%	1.99
Takeaway Food Services	4	195	2.77%	-15.9%	1.31
Administrative and Support Services					
Building and Other Industrial Cleaning Services	4	90	1.28%	-21.7%	1.26

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Public Administration and Safety	1	582	8.26%	-18%	1.35
Public Administration	2	400	5.68%	-18.9%	1.5
Public Order, Safety and Regulatory Services	2	169	2.41%	-11.2%	1.47
Local Government Administration	3/4	215	3.05%	-21.4%	2.22
Public Order and Safety Services	3	173	2.45%	-6.6%	1.54
State Government Administration	3/4	130	1.84%	-15.5%	1.36
Police Services	4	77	1.09%	25.2%	1.76
Education and Training					
Preschool and School Education	2	491	6.96%	5.1%	1.34
School Education	3	458	6.50%	1.8%	1.33
Primary Education	4	237	3.37%	1.7%	1.59
Secondary Education	4	183	2.60%	9.7%	1.44
Health Care and Social Assistance	1	1,131	16.06%	-12.9%	1.35
Hospitals	2/3	324	4.60%	-24.1%	1.31
Medical and Other health Care Services	2	301	4.27%	7.4%	1.26
Residential Care Services	2/3	282	4.00%	-17.8%	1.86
Other Social Assistance Services	3/4	162	2.29%	7.4%	1.42
Medical Services	3	151	2.14%	27.2%	1.75
Hospitals (Excluding Psychiatric)	4	327	4.65%	-23.9%	1.33
Aged Care Residential Services	4	259	3.69%	-19.0%	1.92
General Practice Medical Services	4	133	1.89%	24.0%	2.11
Other Services					
Automotive Repair and Maintenance	3	100	1.42%	0.5%	1.31

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

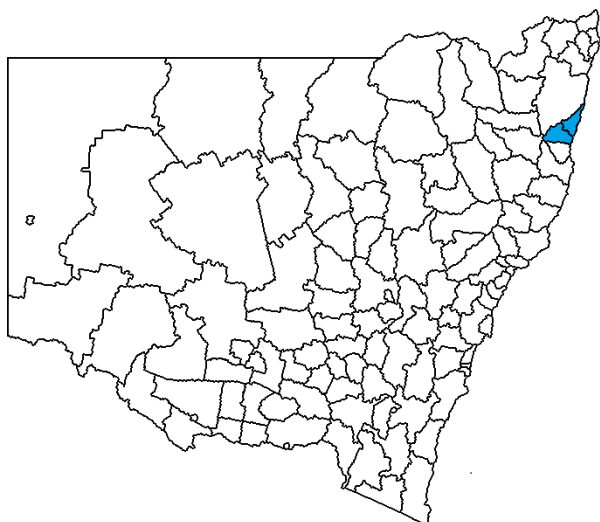
To start the process the most likely industry sectors for the Broken Hill regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A5. These are indicative only and are best selected based on the addition of local knowledge.

Box A5	Probable 'key industry sectors' in Broken Hill
•	Mining Natural mineral deposits create the competitive advantage in mining production. Predominantly silver-lead-zinc ore mining. Recent volatility in commodity prices may have somewhat eroded the size of this industry in Broken Hill.
•	Tourism Accommodation is used as a proxy and reveals a strong specialisation. Employment grew by 20%, unadjusted from 2006 to 2011. Further development of the industry would be needed to cement tourism as a leading employer.
•	Agriculture Although not necessarily an industry of absolute competitive advantage (agricultural land endowments and access to water are not as strong,) employment in agriculture is growing, particularly in sheep and beef cattle farming. Agriculture is currently a small specialisation.

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 6 Coffs Harbour regional economy



Defining the regional economy

The ESS for Coffs Harbour (Table A6.1) indicates a high proportion of Coffs Harbour jobs are filled by local residents, with about nine per cent of jobs filled by labour from outside the LGA. The Coffs Harbour ESC estimates that approximately 15 per cent of the local labour force travel out of the area for work. In comparison, the ESC for Bellingen shows that 41 per cent of the local labour force travel outside of the area for work. This analysis suggests that Coffs Harbour is a regional centre with Bellingen as a residential satellite.

Table A6.1 Employment capacity, sufficiency and containment in Coffs Harbour regional economy LGAs (2011)

	Coffs Harbour	Bellingen
Local labour force	26,864	4,535
Number of jobs in local area	25,215	3,267
Number of local jobs held by locals	22,888	2,683
Number of locals employed outside the area	3,113	1,687
Employment self-containment (ESC)	0.85	0.59
Jobs Housing Balance (JHB)	0.94	0.72
Employment self-sufficiency (ESS)	0.91	0.82

Further analysis of Coffs Harbour employment patterns indicates that 70 per cent of all Bellingen workers that are employed outside of the LGA are employed in the Coffs Harbour LGA, while links between Coffs Harbour and other LGAs are weaker by comparison (Table A6.2). **Consequently, the Coffs Harbour regional economy is defined as the Coffs Harbour LGA and the neighbouring LGA of Bellingen.**

Table A6.2 Employment linkages between LGAs around Coffs Harbour – number and proportion of workers

LGA in which workers are living	Working in Coffs Harbour LGA	Working in Bellingen LGA	Working in Nambucca LGA	Working in Clarence Valley LGA	Working in Kempsey LGA
Coffs Harbour (no.)	-	355	135	445	36
Coffs Harbour proportion	-	11.4%	4.3%	14.3%	1.2%
Bellingen (no.)	1,172	-	143	26	17
Bellingen proportion	69.5%	-	8.5%	1.5%	1.0%
Nambucca (no.)	439	136	-	11	246
Nambucca proportion	35.7%	11.0%	-	0.9%	20.0%
Clarence Valley (no.)	379	34	7	-	14
Clarence Valley proportion	22.0%	2.0%	0.4%	-	0.8%

Regional overview

Table A6.3 Summary by LGA – Coffs Harbour regional economy

Local Government Area	Area (Ha)	Population Estimate*	Distance to Coffs Harbour township from main town (km)	Estimated Gross Regional Product+
Coffs Harbour	117,370	72,382	-	\$3,527m
Bellingen	160,040	13,032	35	\$526m
Total	277,410	85,414	-	\$4,053m

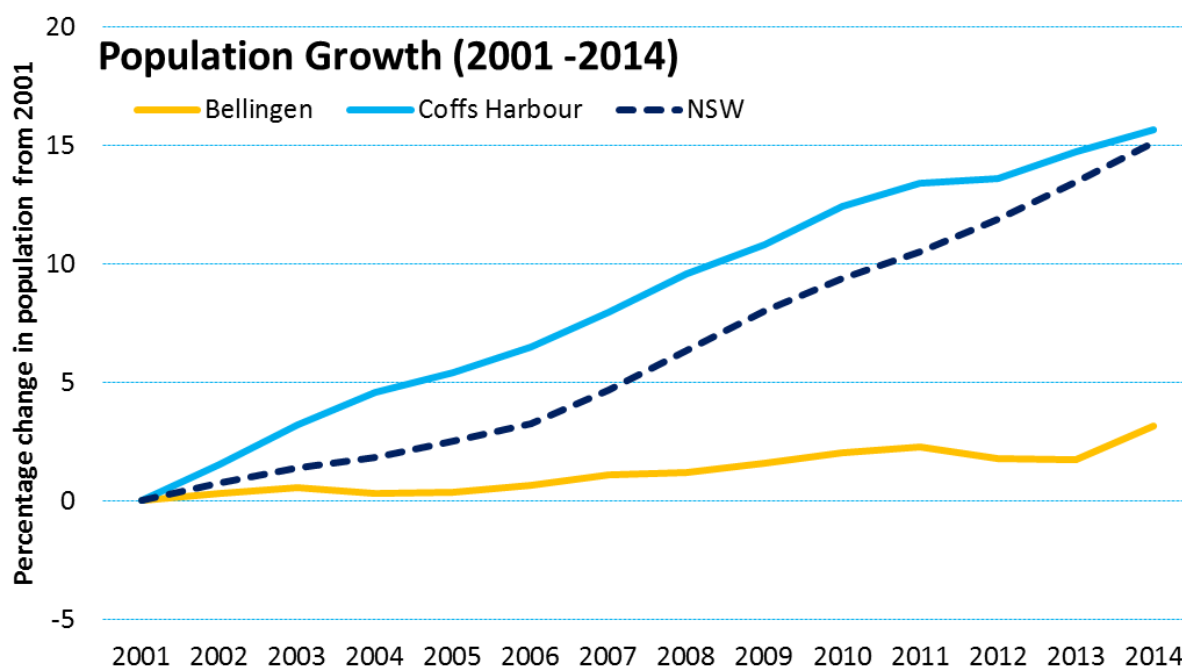
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Coffs Harbour regional economy had a population of approximately 85,400. From 2001 to 2014 population grew by approximately 14 per cent (10,200 persons), at a slightly slower rate than both NSW (15 per cent) and Sydney (18 per cent).

The larger and coastally situated Coffs Harbour LGA grew more quickly than the intertwined Bellingen LGA, and independently outpaced the growth rate in NSW. With growth more subdued in the more inland Bellingen shire.

Figure A6.1 Population growth - Coffs Harbour regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Coffs Harbour regional economy is no exception with an aged dependency ratio⁷⁵ of 31% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A6) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

⁷⁵ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

As is the case for many NSW coastal regions aged dependency ratios have also risen, on account of older persons relocating to the coast for retirement or lifestyle reasons. The trend of retirees moving to the coast has been supported by lower cost of land or rent and the draw of beaches and a warm climate, among a myriad of other factors.

Snapshot A6. Composition of resident population (2014)

	Coffs Harbour	NSW
Ratios (%)		
Aged Dependency Ratio ^A	31	24
Youth Dependency Ratio ^B	30	28
Dependency Ratio ^C	61	52
Proportion^D (%)		
Young Persons (15 to 34)	22	27
Older Persons (65+)	19	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A6.4 Income (Australian Taxation Office data) - Coffs Harbour regional economy

	Coffs Harbour	Sydney ⁷⁶	NSW
Average Taxable Income (1994-95) - Adjusted ⁷⁷	\$38,400	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$42,000	\$62,100	\$56,600
Change	\$3,600	\$9,500	\$7,300
Increase in Real Wage (%)	9.4	18.1	14.8

Real wages in the Coffs Harbour regional economy grew by 9.4 per cent between 1994-95 and 2012-13. Growth was strongest in the Coffs Harbour LGA (10.3 per cent), compared to 3.8 per cent in Bellingen.

Despite being better off the Coffs Harbour regional economy was less well-off compared to NSW on average (14.8 per cent) with incomes growing more significantly in Sydney.

Table A6.5 Educational attainment (population aged 15 years and over, 2011 Census) - Coffs Harbour regional economy

	Coffs Harbour (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	9.5	23.5	18.4
Advanced or Graduate Diploma	7.3	10.7	9.8
Certificate Qualification	18.5	14.6	17.7
Population with a Post-School Qualification	35.3	48.7	45.8

The skills base of the Coffs Harbour regional economy is less formally qualified than NSW, on average.

Table A6.6 Welfare dependency (population aged 15 years and over, 2013) - Coffs Harbour regional economy

⁷⁶ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁷⁷ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

	Coffs Harbour (%)	Sydney (%)	NSW (%)
Aged Pension	17.5	9.8	12.6
Disability Support Pension	7	3.2	4.4
Newstart Allowance	5.8	3	3.5
Total ⁷⁸	31.7	16.5	21.3

A larger proportion of persons in the Coffs Harbour regional economy are dependent on social welfare (32%), than compared to NSW, on average (21%). This is partly explained by Coffs Harbour's ageing population and larger proportion of the population accessing an aged pension.

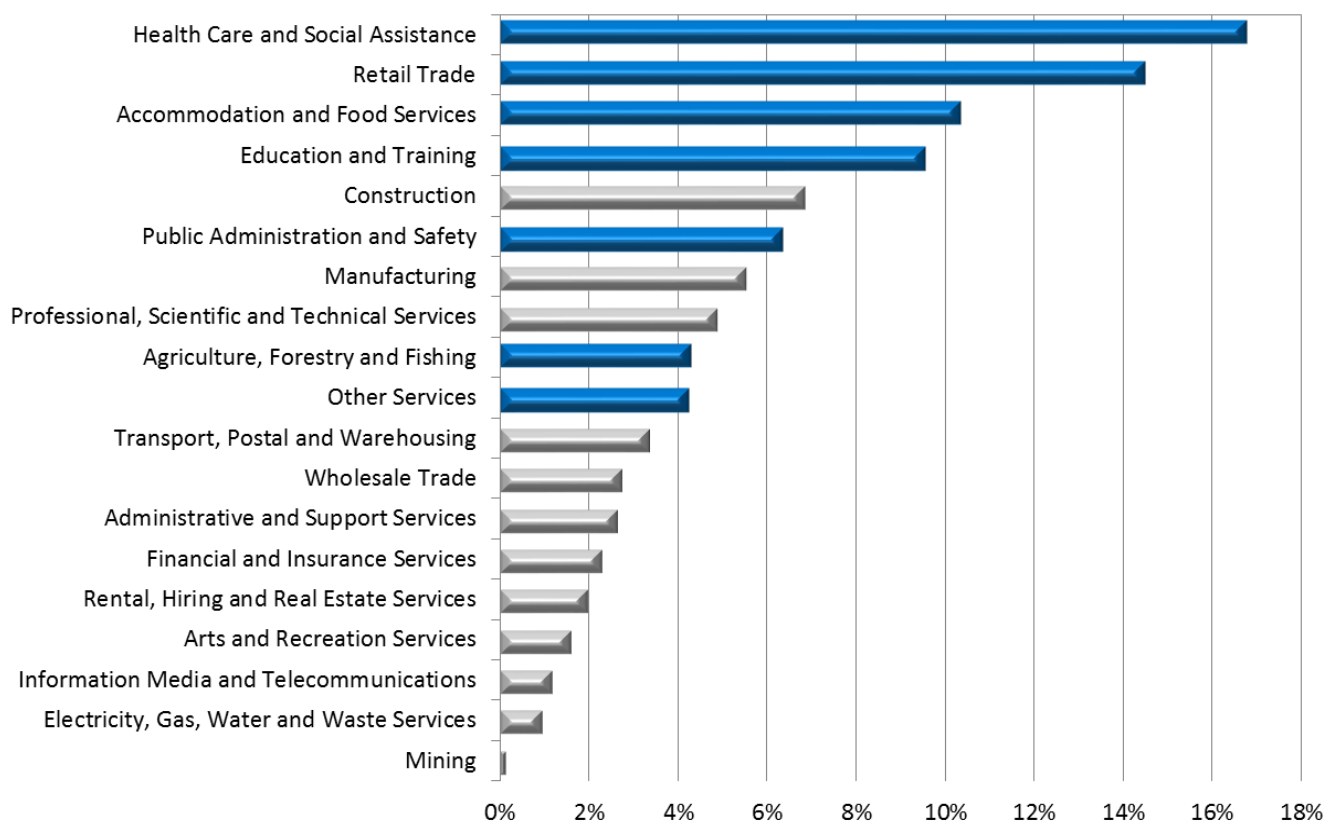
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Coffs Harbour regional economy demonstrates regional specialisation at one or more ANZSIC levels within seven industry divisions (Figure A6.2 and Table A6.7).

Figure A6.2 Percentage of employment in each industry division (ANZSIC Level 10 - Coffs Harbour regional economy)
Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



⁷⁸ Total includes service pensions not shown in table

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A6.3), important growth industries in the Coffs Harbour regional economy are shown to be:

- healthcare (hospitals, medical services and allied health services sectors);
- local and central government administration;
- child care services; and
- other social assistance services.

Of these industries none are traditionally classified as key industry sectors (engines of growth) instead these industry sectors predominantly exist to service the population base.

However, despite ordinarily being considered a population servicing industry healthcare⁷⁹ is emerging as a possible key industry specialisation, as evidenced by specialisation and absolute employment growth (Figure A6.4) in the medical services, allied health services and hospital sectors in the Coffs Harbour regional economy. This specialisation exists as a result of the appeal to retirees and older 'sea changers' extending from locational endowment available to the Coffs Harbour regional economy such as the temperate climate, natural amenity and beaches.

Similarly residential care services (predominantly aged care) is shown to be an important yet potentially declining industry, however in absolute terms recorded strong employment growth reflective of the possible advantage in the market for retirees.

Other important, yet potentially declining industries in the Coffs Harbour regional economy that can be characterised as key industry sectors (making use of local endowments) are accommodation (as a proxy for tourism) and fruit and nut tree growing (utilising superior agricultural land endowment).

Fruit and nut tree growing recorded a fall in employment in contrast to the average change in fruit and nut tree growing employment across NSW. However in absolute terms (unadjusted) employment increased, indicating the conditions and/or competitive advantage in NSW were good. This indicates the prospects for this industry sector remain strong in the Coffs Harbour regional economy.

Accommodation, as a proxy for tourism recorded declines both in relative and absolute terms, however this may be as a result of the higher (than average) Australian dollar (trade weighted index) in the lead up to the 2011 Census. A higher Australia dollar makes international tourism more attractive for Australian residents (reducing domestic tourist nights stayed), whilst simultaneously increasing the price of a trip for potential international visitors and therefore reducing demand. More recently the Australian dollar has depreciated from record highs and is now closer to its long run average which may positively impact accommodation businesses.

Tertiary education and building installation services are not industry sectors of specialisation but exhibited employment growth and may be emerging industries. However only tertiary education is likely to be a possible key industry sector that drives long run growth as building installation services is predominantly an enabling/population serving industry.

⁷⁹ The healthcare industry as defined in this report includes: hospitals; medical services; pathology and diagnostic imaging services; allied health services and other health care services.

Figure A6.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Coffs Harbour regional economy

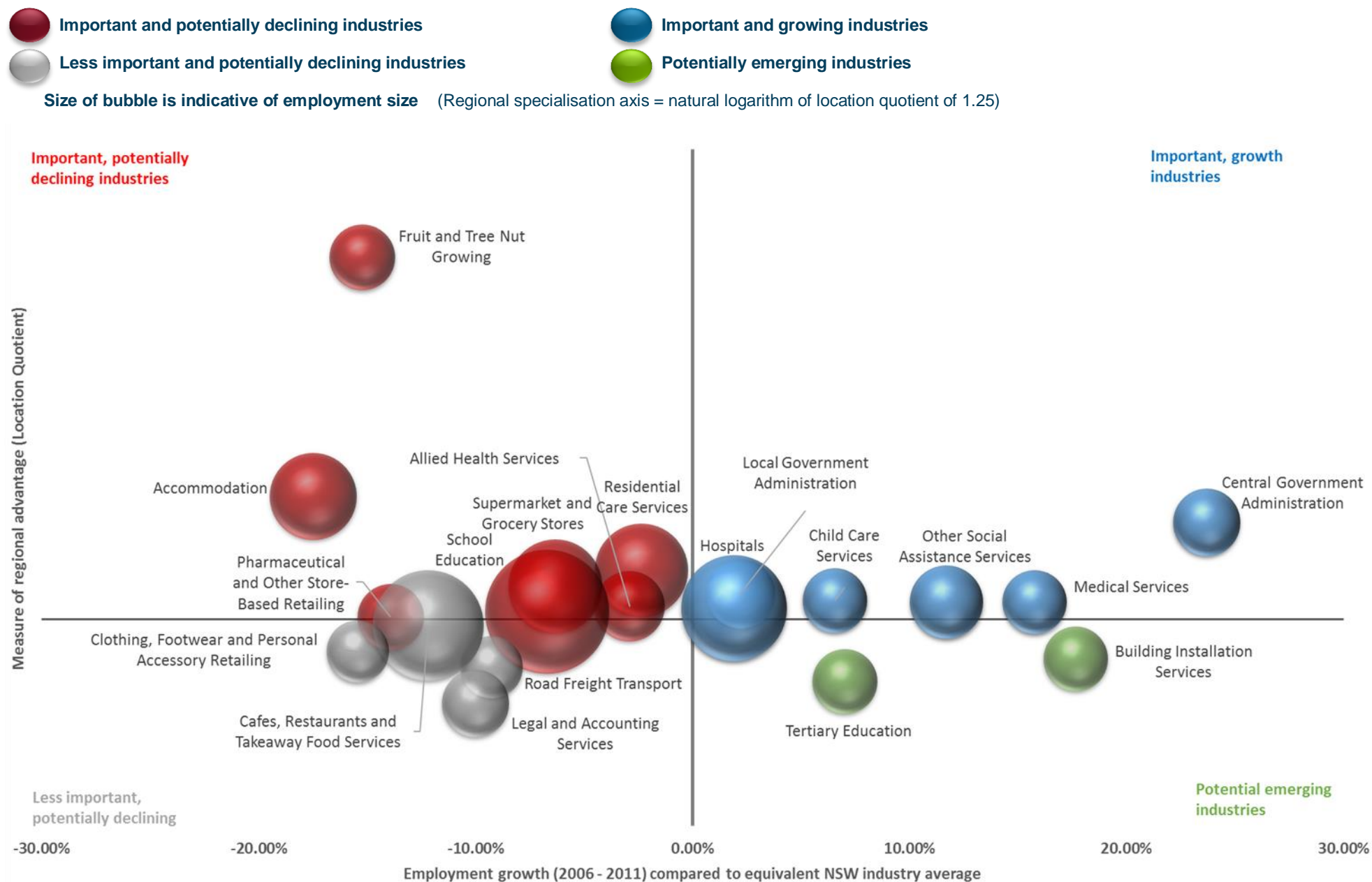
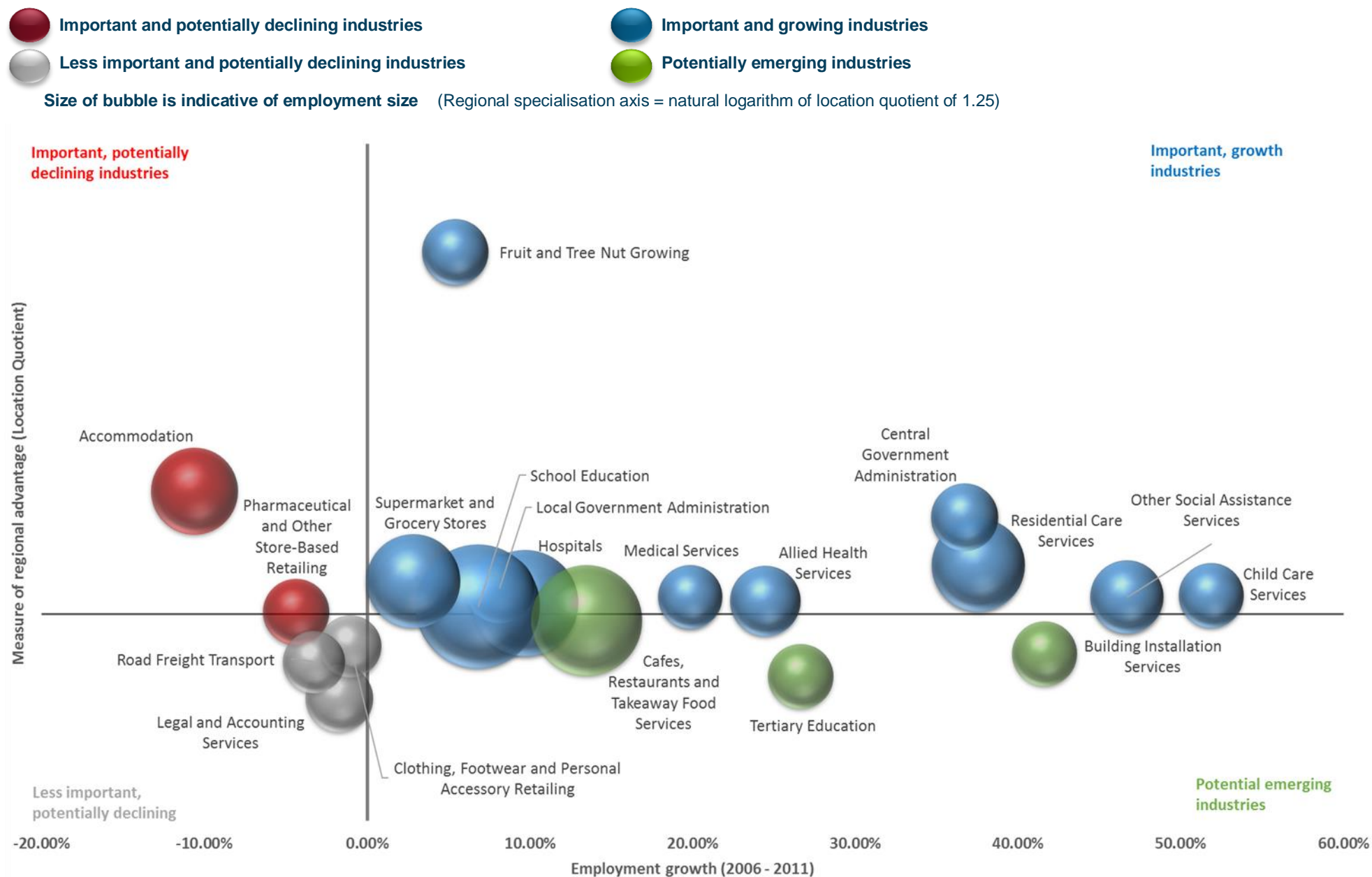


Figure A6.4 Regional advantage and regional employment growth for key industries - Coffs Harbour regional economy



Disaggregation of data shows more detail about industries of specialisation (Table A6.7).

Table A6.7 Industries of regional specialisation in detail - Coffs Harbour regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed (2011)	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing	1	1,227	4.30%	6.9%	1.87
Agriculture	2	1,073	3.76%	8.9%	1.82
Fruit and Tree Nut Growing	3	512	1.80%	-15.2%	10.60
Berry Fruit Growing	4	290	1.02%	14.4%	59.54
Retail trade	1	4,133	14.50%	-6.9%	1.36
Other Store-Based Retailing	2	2,276	7.98%	-6.7%	1.31
Food Retailing	2	1,405	4.93%	-5.9%	1.46
Motor Vehicle and Motor Vehicle Parts Retailing	2	331	1.16%	1.5%	1.49
Supermarket and Grocery Stores	3	1,047	3.67%	-6.3%	1.52
Pharmaceutical and Other Store-Based Retailing	3	524	1.84%	-13.9%	1.26
Specialised Food Retailing	3	351	1.23%	-9.4%	1.29
Department Stores	3	302	1.06%	2.5%	1.49
Hardware, Building and Garden Supplies Retailing	3	286	1.00%	-9.6%	1.66
Supermarket and Grocery Stores	4	1,049	3.68%	-6.1%	1.52
Department Stores	4	303	1.06%	2.5%	1.48
Accommodation and Food Services	1	2,953	10.36%	-16.7%	1.50
Food and Beverage Services	2	2,054	7.20%	-14.9%	1.27
Accommodation	2	896	3.14%	-17.5%	2.58
Accommodation	3	896	3.14%	-17.5%	2.58
Clubs (Hospitality)	3	337	1.18%	-9.9%	1.47
Accommodation	4	896	3.14%	-17.3%	2.58
Takeaway Food Services	4	792	2.78%	-9.8%	1.31
Clubs (Hospitality)	4	339	1.19%	-9.6%	1.48
Public Administration and Safety					
Public Administration	2	1,478	5.18%	9.0%	1.37
Local Government Administration	3	570	2.00%	2.2%	1.45
Central Government Administration	3	532	1.87%	23.7%	2.21
Local Government Administration	4	572	2.01%	2.7%	1.46

Industry	ANZSIC code level	Number employed (2011)	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Central Government Administration	4	532	1.87%	23.6%	2.21
Education and Training		-	-	-	-
Preschool and School Education	2	1,961	6.88%	-6.4%	1.33
School Education	3	1,823	6.39%	-6.7%	1.31
Primary Education	4	799	2.80%	-10.9%	1.32
Secondary Education	4	687	2.41%	-13.0%	1.34
Technical and Vocational Education and Training	4	304	1.07%	17.4%	1.47
Health Care and Social Assistance					
	1	4,781	16.77%	4.8%	1.41
Hospitals	2	1,330	4.67%	1.7%	1.33
Medical and Other Health Care Services	2	1,300	4.56%	8.6%	1.35
Social Assistance Services	2	1,125	3.94%	6.6%	1.38
Residential Care Services	2	1,024	3.59%	-2.5%	1.67
Hospitals	3	1,333	4.68%	1.9%	1.33
Residential Care Services	3	1,027	3.60%	-2.4%	1.67
Other Social Assistance Services	3	634	2.23%	11.7%	1.38
Allied Health Services	3	584	2.05%	-2.9%	1.35
Child Care Services	3	494	1.73%	6.6%	1.39
Medical Services	3	483	1.69%	15.8%	1.38
Hospitals (except Psychiatric Hospitals)	4	1,334	4.68%	1.1%	1.34
Aged Care Residential Services	4	901	3.16%	-4.2%	1.65
Other Social Assistance Services	4	634	2.22%	11.0%	1.38
Child Care Services	4	493	1.73%	6.1%	1.39
General Practice Medical Services	4	347	1.22%	6.0%	1.35
Other Allied Health Services	4	288	1.01%	-11.3%	1.60
Other Services		-	-	-	-
Automotive Repair and Maintenance	3	430	1.51%	1.9%	1.39

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

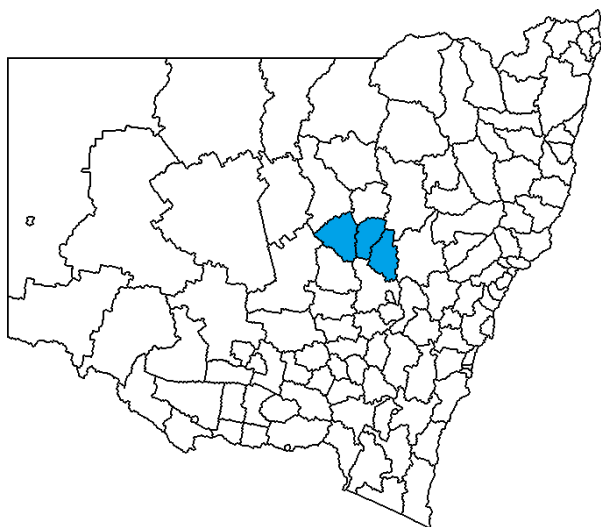
To start the process the most likely industry sectors for the Coffs Harbour regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A6. These are indicative only and are best selected based on the addition of local knowledge.

Box A6	Probable 'key industry sectors' in Coffs Harbour
•	Health care This industry sector directly employs 9% of the workforce in the Coffs Harbour regional economy. It draws its competitive advantage from the regions pleasant climate, beaches which in turn attract retirees that demand these services.
•	Aged care Similar to health care this industry derives advantage from regional endowments that attract retirees. This industry directly employs 3% of the workforce of the regional economy.
•	Tourism Natural amenity (beaches, temperate climate and general aesthetic) makes the Coffs Harbour regional economy domestically competitive in the market for leisure tourism.
•	Fruit and nut tree growing The environment of the region provides an advantage in fruit and tree nut growing, although relatively small (employs <2% of the workforce) this is an area of strong specialisation.

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 7 Dubbo regional economy



Defining the regional economy

The ESS for Dubbo (Table A7.1) indicates a high proportion of Dubbo jobs are filled by local residents, with about 10 per cent of jobs filled by labour from outside the LGA. The Dubbo ESC estimates that approximately 15 per cent of the local labour force travel out of the LGA for work. The ESC for Narromine and Wellington are significantly lower to that of Dubbo, indicating that 33-35 per cent of workers are employed outside their home LGAs.

Table A7.1 Employment capacity, sufficiency and containment in Dubbo regional economy LGAs (2011)

	Dubbo	Narromine	Wellington
Local labour force	17,968	2,734	2,943
Number of jobs in local area	17,017	2,073	2,278
Number of local jobs held by locals	15,287	1,824	1,905
Number of locals employed outside the area	2,283	823	944
Employment self-containment (ESC)	0.85	0.67	0.65
Jobs Housing Balance (JHB)	0.95	0.76	0.77
Employment self-sufficiency (ESS)	0.90	0.88	0.84

Further analysis of employment patterns indicates that 60 per cent of all Narromine workers and 53 per cent of all Wellington workers that are employed outside of the LGA are employed in the Dubbo LGA (Table A7.2), while links to other LGAs are weak (under 10 per cent). **Consequently, the Dubbo regional economy is defined as the Dubbo LGA and neighbouring LGAs of Narromine and Wellington.**

Table A7.2 Employment linkages between LGAs around Dubbo – number and proportion of workers

LGA in which workers are living	Working in Dubbo	Working in Narromine	Working in Wellington	Working in Warren	Working in Gilgandra
Dubbo (no.)	-	160	192	19	41
Dubbo proportion	-	7.0%	8.4%	0.8%	1.8%
Narromine (no.)	494	-	6	35	10
Narromine proportion	60.0%	-	0.7%	4.3%	1.2%
Wellington (no.)	497	4	-	-	4
Wellington proportion	52.6%	0.4%	-	-	0.4%

Regional overview

Table A7.3 Summary by LGA – Dubbo regional economy

Local Government Area	Area (Ha)	Population Estimate*	Distance to Dubbo township from main town (km)	Estimated Gross Regional Product+
Dubbo	342,570	41,573	-	\$2,363m
Narromine	526,040	6,854	45.2	\$261m
Wellington	411,010	9,054	54.0	\$273m
Total	868,610	57,481	-	\$2,897m

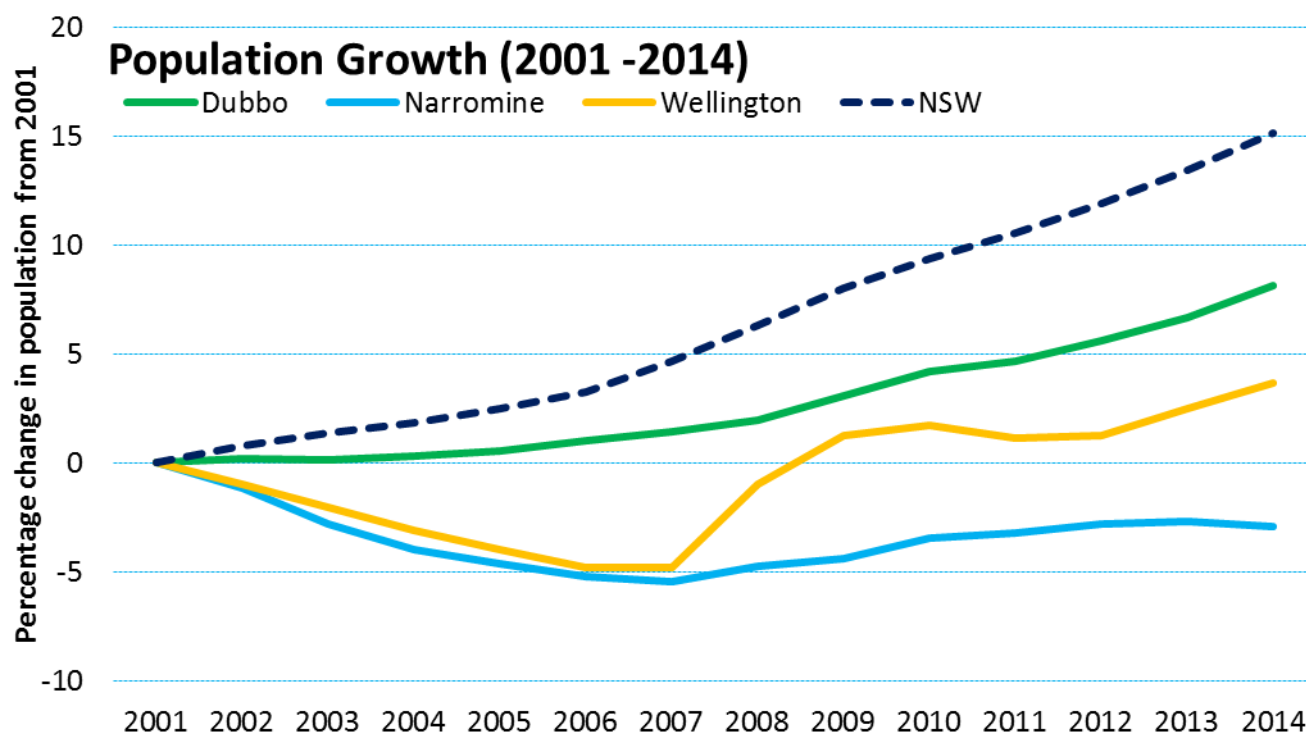
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Dubbo regional economy has a population of approximately 57,500 persons. Population grew by approximately six per cent (3,200 persons) from 2001 to 2014, at a slower rate than both NSW (15 per cent) and Sydney (18 per cent).

By local government area population growth was strongest in the regional centre, Dubbo, (8 per cent), while the smaller satellite towns recorded slower growth in the case of Wellington (4 per cent), and a decline in the case of Narromine (-3 per cent).

Figure A7.1 Population growth - Dubbo regional economy



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Dubbo regional economy is no exception with an aged dependency ratio⁸⁰ of 26% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

⁸⁰ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A7) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

Snapshot A7. Composition of resident population (2014)

	Dubbo	NSW
Ratios (%)		
Aged Dependency Ratio ^A	26	24
Youth Dependency Ratio ^B	35	28
Dependency Ratio ^C	61	52
Proportion^D (%)		
Young Persons (15 to 34)	25	27
Older Persons (65+)	16	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A7.4 Income (Australian Taxation Office Data) - Dubbo regional economy

	Dubbo	Sydney ⁸¹	NSW
Average Taxable Income (1994-95) - Adjusted ⁸²	\$41,900	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$46,100	\$62,100	\$56,600
Change	\$4,200	\$9,500	\$7,300
Increase in Real Wage (%)	10	18.1	14.8

Real wages grew by 10 per cent in the Dubbo regional economy between 1994-95 and 2012-13 with gains in prosperity distributed fairly evenly across the three LGAs.

Despite being better off the Dubbo regional economy was less well-off compared to NSW on average (14.8 per cent).

Table A7.5 Educational attainment (Population aged 15 years and over, 2011 Census) - Dubbo regional economy

	Dubbo (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	7.7	23.5	18.4
Advanced or Graduate Diploma	5.4	10.7	9.8
Certificate Qualification	17.2	14.6	17.7
Population with a Post-School Qualification	30.3	48.7	45.8

The skills base of the Dubbo regional economy is less formally qualified than NSW on average.

This may be due to greater weight being placed on experience, informal training and on-the-job skills acquisition. The formal qualification mix of the regional economy is also likely to be influenced by the regions key specialisations.

Table A7.6 Welfare dependency (population aged 15 years and over, 2013) - Dubbo regional economy

⁸¹ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁸² Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

	Dubbo (%)	Sydney (%)	NSW (%)
Aged Pension	14.1	9.8	12.6
Disability Support Pension	5.7	3.2	4.4
Newstart Allowance	4.3	3	3.5
Total ⁸³	24.7	16.5	21.3

A larger proportion of persons in the Dubbo regional economy are dependent on social welfare, than compared to NSW on average. Larger reliance's on Newstart and Disability Support Pensions may be a result of higher levels (and longer spells) of frictional unemployment associated with thin labour markets typical of regional economies.

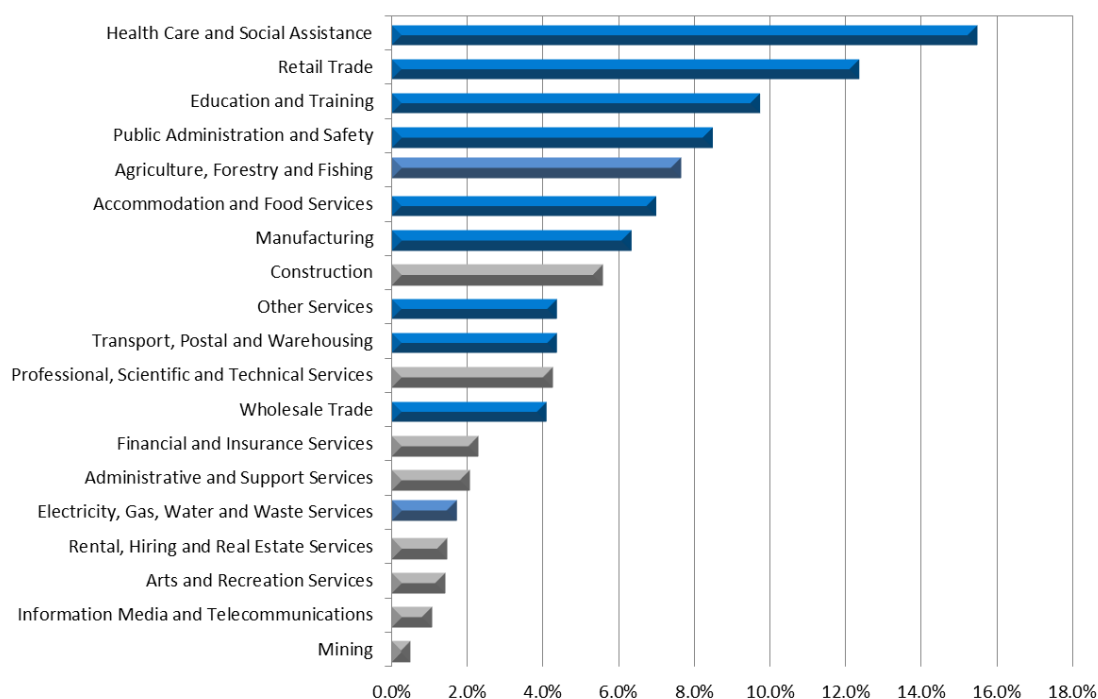
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Dubbo regional economy demonstrates regional specialisation at one or more ANZSIC level within 11 industry divisions (Figure A7.2 and Table A7.7).

Figure A7.2 Percentage of employment in each industry division (ANZSIC Level 1) - Dubbo regional economy
Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A7.3), important growth industries in the Dubbo regional economy are shown to be:

⁸³ Total includes service pensions not shown in table

- road freight transport;
- other social assistance services; and
- public order and safety services.

Of these industries only road freight transport is a possible key industry sector (engine of growth). The remaining important growth industries predominantly exist to service the population base and offer little opportunity for government investment to add sustainable value.

Other important, yet potentially declining industries in the Dubbo regional economy that can be characterised as key industry sectors (making use of local endowments) are accommodation (as a proxy for tourism), sheep, beef cattle and grain farming (utilising the superior agricultural land endowment) and meat and meat product manufacturing.

Sheep, beef cattle and grain farming is a key industry sector in the Dubbo regional economy making use of the regions superior agricultural land. This is despite employment declining. This may be a consequence of short term variable climatic conditions. Or is reflective of broader changes to the agricultural industry, partly from increasing levels of openness and trade and technological advances that have culminated in greater capital intensity, larger farm sizes (benefitting from greater economies of scale) and subsequently less demand for labour.

Supermarket and grocery stores and real estate services are not industry sectors of specialisation but exhibited employment growth and may be emerging industries. However both sectors are predominantly population serving and unlikely to be future drivers of sustainable economic growth on their own.

Figure A7.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Dubbo regional economy

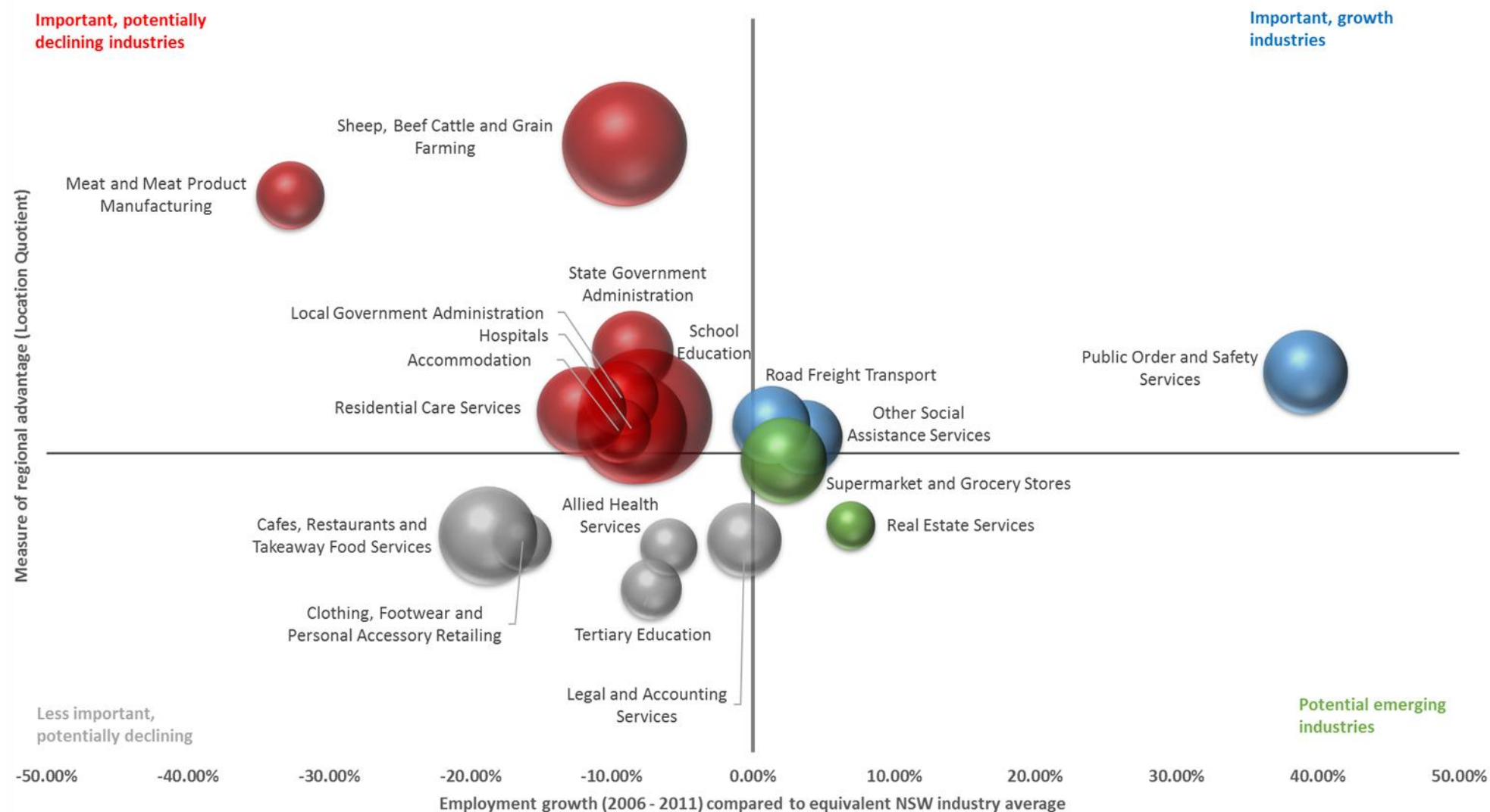
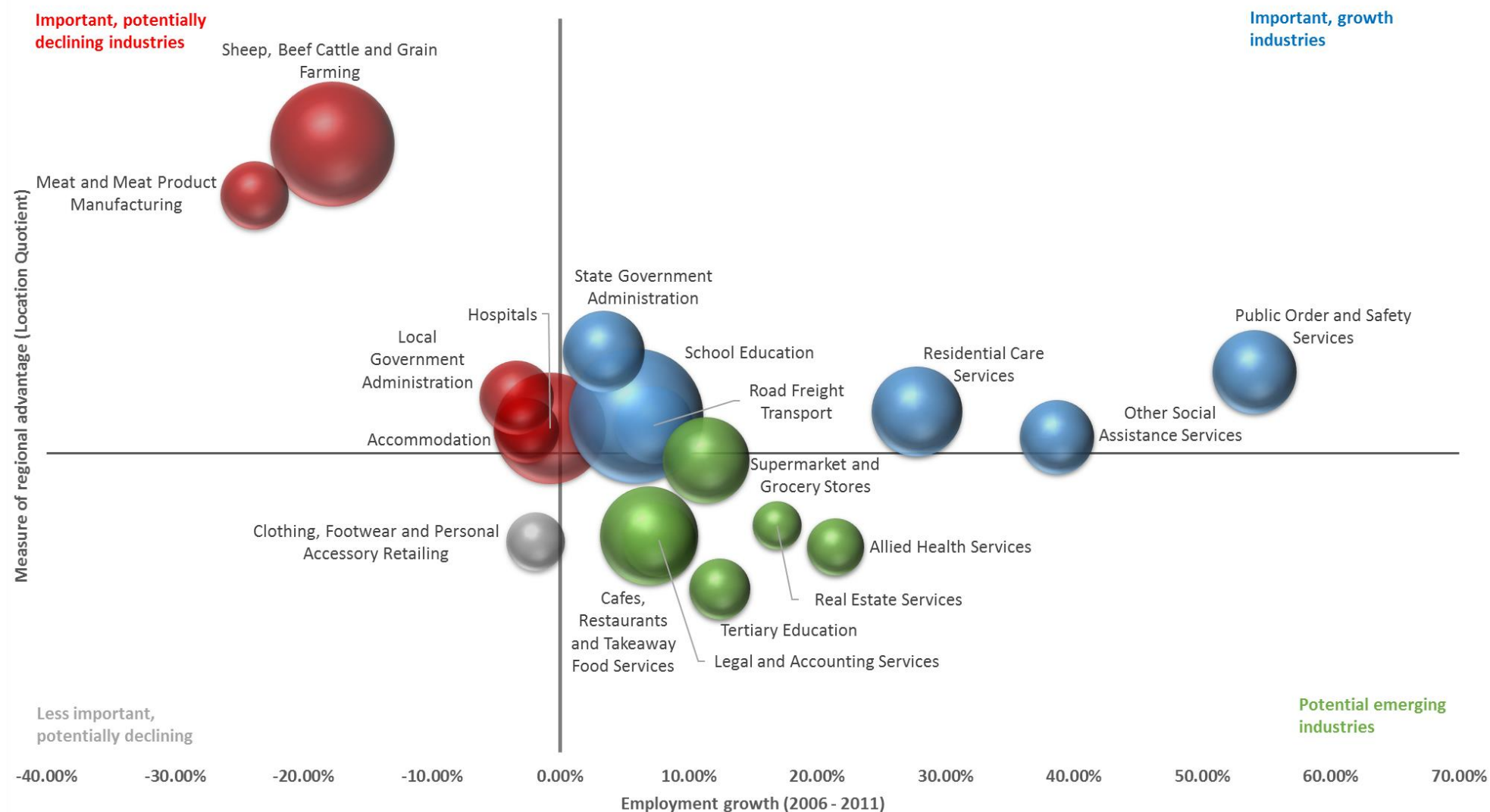


Figure A7.4 Regional advantage and regional employment growth for key industries - Dubbo regional economy



Disaggregation of data shows detail about industries of specialisation (Table A7.7).

Table A7.7 Industries of regional specialisation in detail - Dubbo regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing	1	1,635	7.64%	-6.8%	3.32
Agriculture	2	1,518	7.09%	-8.2%	3.44
Sheep, Beef Cattle and Grain Farming	3	1,307	6.11%	-9.1%	4.42
Grain-Sheep or Grain-Beef Cattle Farming	4	399	1.87%	-6.8%	6.61
Other Grain Growing	4	282	1.32%	-9.3%	6.53
Sheep Farming (Specialised)	4	260	1.22%	-12.2%	5.04
Beef Cattle Farming (Specialised)	4	224	1.05%	-10.5%	2.20
Manufacturing					
Food Product Manufacturing	2	677	3.17%	-14.5%	1.86
Meat and Meat Product Manufacturing	3	390	1.82%	-32.8%	3.58
Meat Processing	4	378	1.77%	-34.9%	7.29
Electricity, Gas, Water and Waste Services	1	367	1.72%	-0.3%	1.52
Wholesale trade					
Basic Material Wholesaling	2	329	1.54%	10.7%	1.89
Retail trade		-	-	-	-
Motor Vehicle and Motor Vehicle Parts Retailing	2	332	1.55%	-3.6%	1.99
Motor Vehicle Retailing	3	237	1.11%	-4.0%	1.96
Department Stores	3	217	1.01%	-3.6%	1.42
Car Retailing	4	221	1.03%	-2.5%	1.98
Department Stores	4	220	1.03%	-2.6%	1.44
Accommodation and Food Services					
Accommodation	2	356	1.66%	-9.4%	1.37
Accommodation	3	356	1.66%	-9.5%	1.37
Accommodation	4	356	1.67%	-9.8%	1.37
Transport, Postal and Warehousing		-	-	-	-
Road Transport	2	633	2.96%	-7.3%	1.28
Road Freight Transport	3	512	2.39%	1.3%	1.40
Road Freight Transport	4	513	2.40%	1.4%	1.40

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Public Administration and Safety	1	1,815	8.48%	2.1%	1.39
Public Administration	2	1,221	5.71%	-7.9%	1.50
Public Order, Safety and Regulatory Services	2	596	2.78%	39.0%	1.70
Public Order and Safety Services	3	593	2.77%	39.1%	1.74
State Government Administration	3	551	2.58%	-8.5%	1.89
Local Government Administration	3	462	2.16%	-9.3%	1.57
State Government Administration	4	553	2.59%	-8.5%	1.90
Local Government Administration	4	462	2.16%	-9.2%	1.57
Correctional and Detention Services	4	285	1.33%	143.6%	4.84
Education and Training	-	-	-	-	-
Preschool and School Education	2	1,605	7.50%	-6.0%	1.45
School Education	3	1,524	7.12%	-7.6%	1.46
Primary Education	4	657	3.07%	-8.4%	1.45
Secondary Education	4	532	2.49%	3.6%	1.38
Combined Primary and Secondary Education	4	300	1.41%	-47.4%	1.58
Technical and Vocational Education and Training	4	228	1.07%	-15.1%	1.47
Health Care and Social Assistance	1	3,311	15.47%	-5.0%	1.30
Hospitals	2	1,037	4.84%	-8.9%	1.38
Social Assistance Services	2	837	3.91%	6.0%	1.37
Residential Care Services	2	682	3.18%	-12.7%	1.48
Hospitals	3	1,039	4.86%	-8.6%	1.38
Residential Care Services	3	685	3.20%	-12.1%	1.48
Other Social Assistance Services	3	460	2.15%	3.7%	1.33
Child Care Services	3	361	1.69%	-3.8%	1.36
Hospitals (except Psychiatric Hospitals)	4	1,044	4.88%	-8.8%	1.40
Aged Care Residential Services	4	518	2.42%	-15.9%	1.26
Other Social Assistance Services	4	460	2.15%	3.7%	1.34
Child Care Services	4	363	1.70%	-3.6%	1.36
Other Services	-	-	-	-	-
Repair and Maintenance	2	525	2.45%	-6.9%	1.35
Automotive Repair and Maintenance	3	344	1.61%	-11.4%	1.48

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

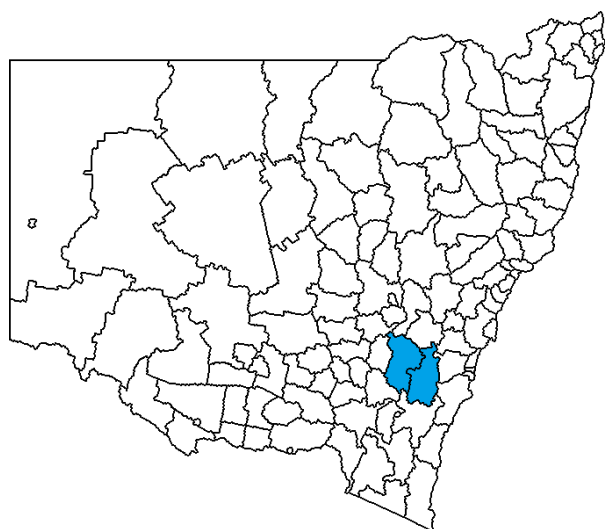
To start the process the most likely industry sectors for the Dubbo regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A7. These are indicative only and are best selected based on the addition of local knowledge.

Box A7	Probable 'key industry sectors' in Dubbo
<ul style="list-style-type: none"> • Agriculture <p>Natural land endowments provide Dubbo with a competitive advantage in agricultural production, currently grain growing, sheep and beef cattle farming account for the majority of activity.</p> • Food product manufacturing <p>Meat processing is the largest sub-component and it makes use of proximity to key agricultural inputs to generate its advantage.</p> • Road freight transport <p>Competitive advantage is underpinned by the proximity to other markets, with the potential existing to build on this specialisation.</p> • Tourism <p>The tourism industry in Dubbo is a possible industry of advantage, making use of locational endowments such as Taronga Western Plains Zoo and recent increases to air route capacity.</p> 	

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 8 Goulburn regional economy



Defining the regional economy

The ESS for Goulburn (Table A8.1) indicates a high proportion of Goulburn jobs are filled by local residents, with about 12 per cent of jobs filled by labour from outside the LGA. The Goulburn ESC estimates that approximately 27 per cent of the local labour force travel outside of the area for work compared to 43 per cent in the Upper Lachlan. This analysis indicates that Goulburn is a regional centre with Upper Lachlan as a residential satellite.

Table A8.1 Employment capacity, sufficiency and containment - Goulburn regional economy LGAs (2011)

	Goulburn	Upper Lachlan
Total local workers (working anywhere)	11,703	3,310
Number of jobs in local area	9,790	2,163
Number of local jobs held by locals	8,567	1,902
Employment self-containment (ESC)	0.73	0.57
Jobs Housing Balance (JHB)	0.84	0.65
Employment self-sufficiency (ESS)	0.88	0.88

Further analysis of Goulburn employment linkages indicates that 55 per cent of all Upper Lachlan workers that are employed outside the LGA, and not outside NSW, are employed in the Goulburn LGA, while links between Goulburn and other LGAs are weaker by comparison (Table A8.2). **Consequently, the Goulburn regional economy is defined as the Goulburn LGA and neighbouring LGA of Upper Lachlan.**

Table A8.2 Employment linkages between LGAs around Goulburn– number and proportion of workers

LGA in which workers are living	Working in Goulburn	Working in Upper Lachlan	Working in Wingecarribee	Working in Yass Valley	Working in Palerang
Goulburn (no.)	-	128	302	20	54
Goulburn proportion	-	6.6%	15.6%	1.0%	2.8%
Upper Lachlan (no.)	527	-	21	67	10
Upper Lachlan proportion	54.7%	-	2.2%	7.0%	1.0%
Wingecarribee (no.)	225	21	-	-	-
Wingecarribee proportion	5.0%	0.5%	-	-	-
Yass Valley (no.)	21	36	-	-	20
Yass Valley proportion	2.9%	5.0%	-	-	2.8%

Regional overview

Table A8.3 Summary by LGA – Goulburn regional economy

Local Government Area	Area (Km ²)	Population Estimate*	Distance to Goulburn township from main town (km)	Estimated Gross Regional Product+
Goulburn	3,220	29,376	-	\$1,370m
Upper Lachlan	7,102	7,761	45.1	\$240m
Total	10,322	37,137	-	\$1,610m

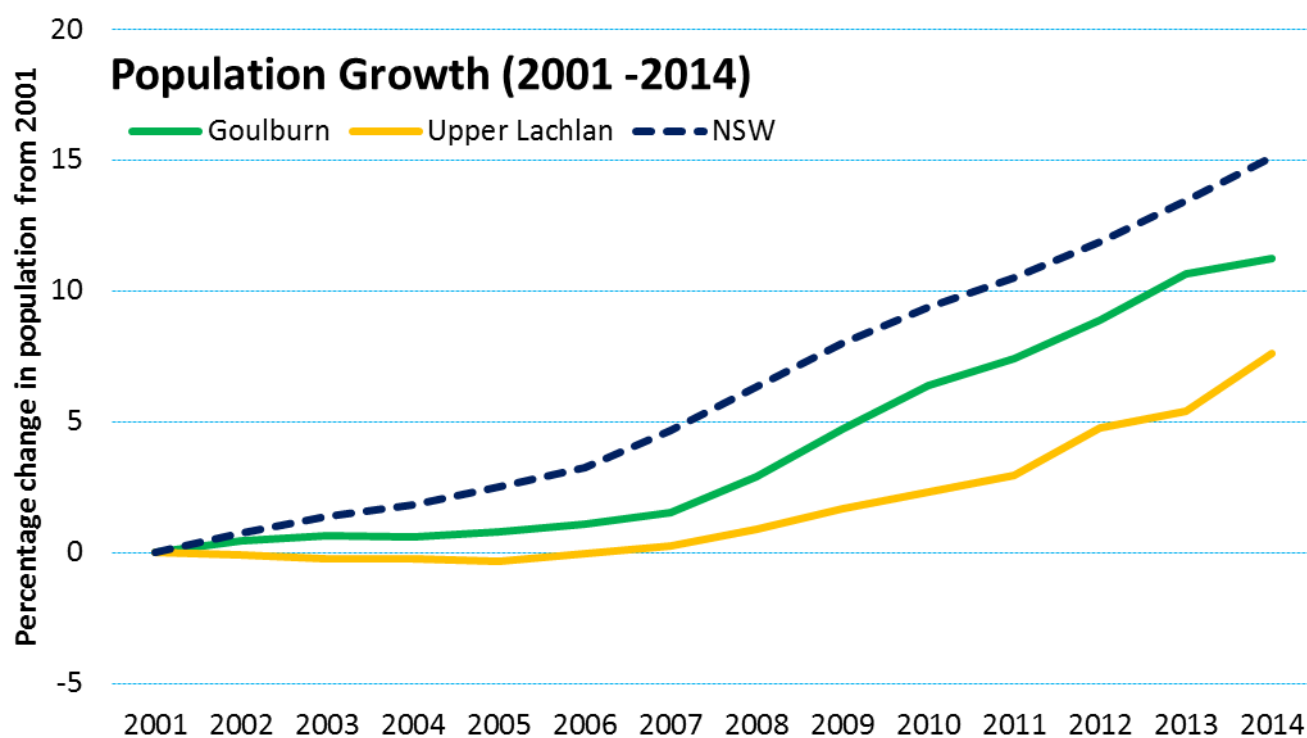
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Goulburn regional economy has a population of approximately 37,100. From 2001 to 2014 population grew by 10.5 per cent (3,500 persons) which was at a slower rate than both NSW (15 per cent) and Sydney (18 per cent).

Of the 3,500 person increase most of this (84%) was in the Goulburn LGA, which grew at a faster rate, and from a larger base, than the smaller Upper Lachlan LGA.

Figure A8.1 Population growth - Goulburn regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Goulburn regional economy is no exception with an aged dependency ratio⁸⁴ of 31% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

⁸⁴ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A8) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

Snapshot A8. Composition of resident population (2014)

	Goulburn	NSW
Ratios (%)		
Aged Dependency Ratio ^A	31	24
Youth Dependency Ratio ^B	30	28
Dependency Ratio ^C	61	52
Proportion^D (%)		
Young Persons (15 to 34)	22	27
Older Persons (65+)	20	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A8.4 Income (Australian Taxation Office data) - Goulburn regional economy

	Goulburn	Sydney ⁸⁵	NSW
Average Taxable Income (1994-95) - Adjusted ⁸⁶	\$43,200	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$46,400	\$62,100	\$56,600
Change	\$3,200	\$9,500	\$7,300
Increase in Real Wage (%)	7.4	18.1	14.8

Average real wages in the Goulburn regional economy grew by 7.4 per cent between 1994-95 and 2012-13. Despite being better off the Goulburn regional economy was less well-off compared to the NSW average (14.8 per cent).

Table A8.5 Educational attainment (population aged 15 years and over, 2011 Census) - Goulburn regional economy

	Goulburn (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	9	23.5	18.4
Advanced or Graduate Diploma	8.3	10.7	9.8
Certificate Qualification	22.2	14.6	17.7
Population with a Post-School Qualification	39.5	48.7	45.8

Compared to NSW the Goulburn regional economy has a smaller share of its population with post-school qualifications.

However, the proportion of the population having attained a certificate level qualification as their highest level of educational attainment is notably higher than the NSW average. The different skills mix evident in the Goulburn regional economy is likely to be a result of the different industry mix, with skill demands varying by industry sector.

⁸⁵ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁸⁶ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

Table A8.6 Welfare dependency (population aged 15 years and over, 2013) - Goulburn regional economy

	Goulburn (%)	Sydney (%)	NSW (%)
Aged Pension	17	9.8	12.6
Disability Support Pension	5.9	3.2	4.4
Newstart Allowance	4	3	3.5
Total ⁸⁷	27.5	16.5	21.3

A larger proportion of the Goulburn regional economy's residents are dependent on social welfare, than in NSW on average.

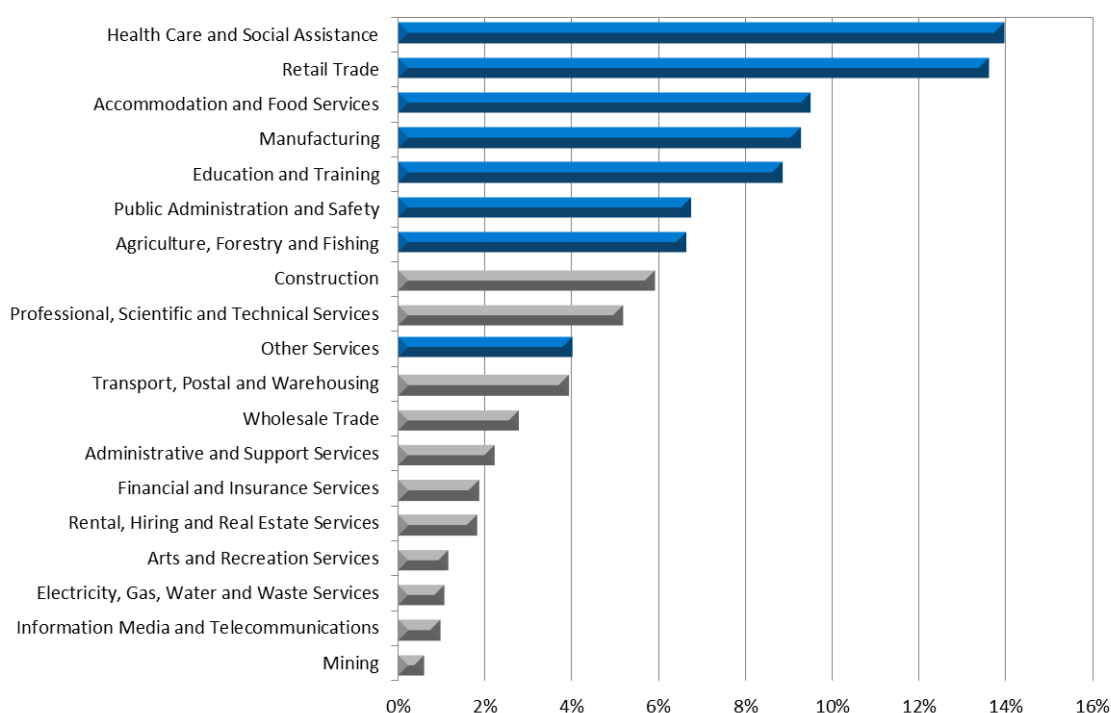
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Goulburn regional economy demonstrates regional specialisation at one or more ANZSIC levels within eight industry divisions (Figure A8.2 and Table A8.7): Health Care and Social Assistance; Retail Trade; Accommodation and Food Services; Manufacturing; education and training; Public Administration and Training; agriculture, forestry and fishing; and Other Services.

Figure A8.2 Percentage of employment in each industry division (ANZSIC Level 1) - Goulburn regional economy
Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



⁸⁷ Total includes service pensions not shown in table

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A8.3), important growth industries in the Goulburn regional economy are shown to be:

- sheep, beef cattle and grain farming;
- residential care services; and
- department stores.

Residential care services and department stores tend to exist to service the population and mostly grow/decline in line with fluctuations in population. Because other industries ('engines of growth') tend to drive sustainable changes to population, government investment aiming to drive regional economic growth is better targeted at the key industry sectors ('engines of growth').

Sheep, beef cattle and grain farming is a key industry sector in the Goulburn regional economy making use of the regions superior agricultural land. The industry sector directly accounts for 9% of all jobs, not counting the indirect jobs that flow from agricultural activity in the region. Employment in sheep, beef cattle and grain farming fell overall, yet at a slower rate than compared to most other regional economies across NSW. The declining number of jobs in agriculture (sheep, beef cattle and grain farming) is reflective of broader changes to the agricultural industry, partly from increasing levels of openness and trade and technological advances that have culminated in greater capital intensity, larger farm sizes (benefitting from greater economies of scale) and subsequently less demand for labour.

Important, yet potentially declining industries in the Goulburn regional economy that could be characterised as key sectors were identified as meat and meat product manufacturing and cement, lime, plaster and concrete manufacturing. Employment in each respective industry declined both in absolute and relative terms and may be indicative of the continued adjustment of businesses to the higher levels of openness and trade that have resulted in more fierce international competition.

Personal care services and building, cleaning, pest control and gardening services are not industry sectors of specialisation but exhibited employment growth and may be emerging industries. However, both sectors primarily exist to support the population (or to some degree to enable business in the case of the latter industry sector) and are each unlikely to be strong drivers of sustainable economic growth instead tending to grow on the back of the other engines of growth.

Figure A8.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Goulburn regional economy

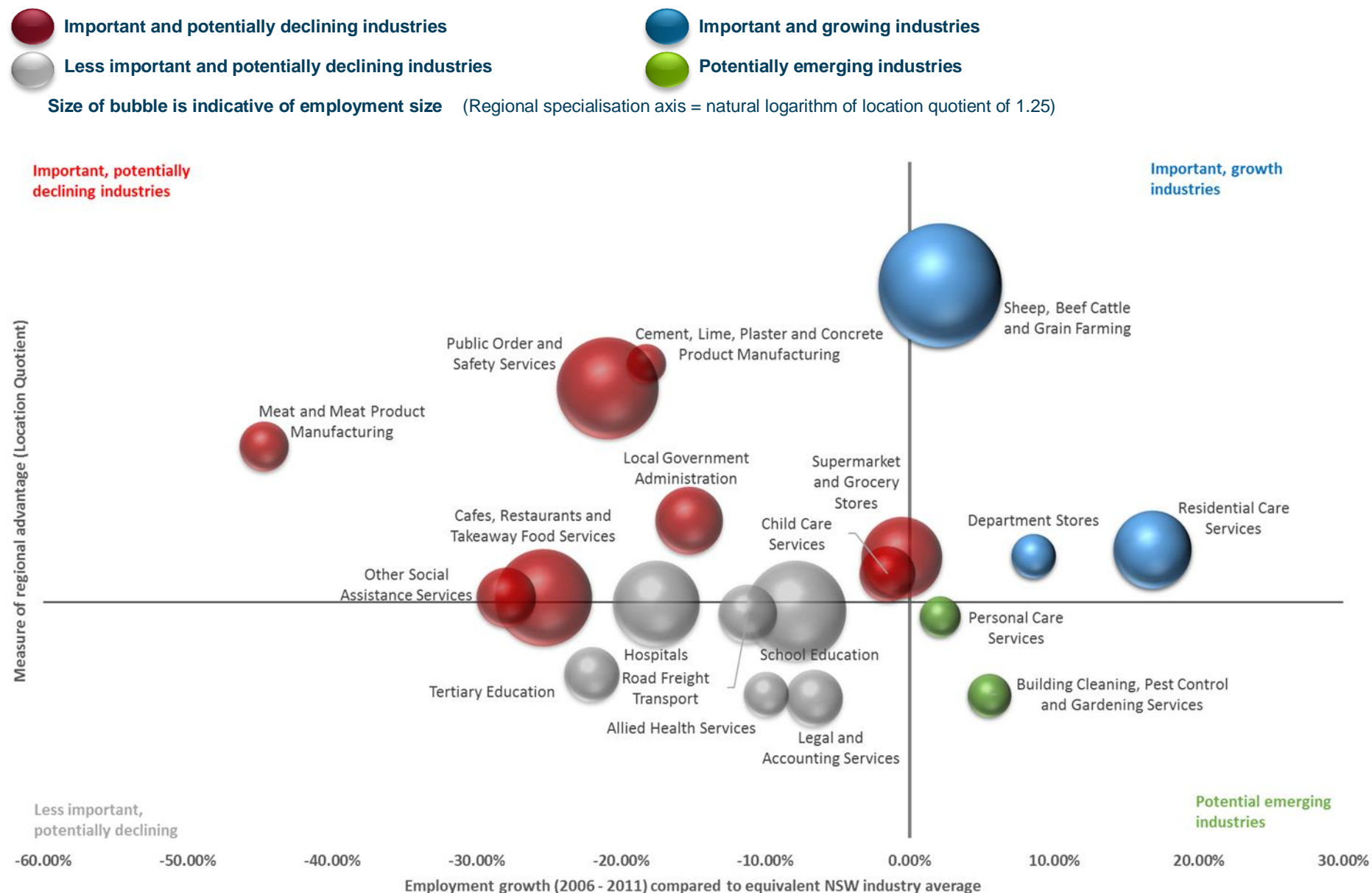
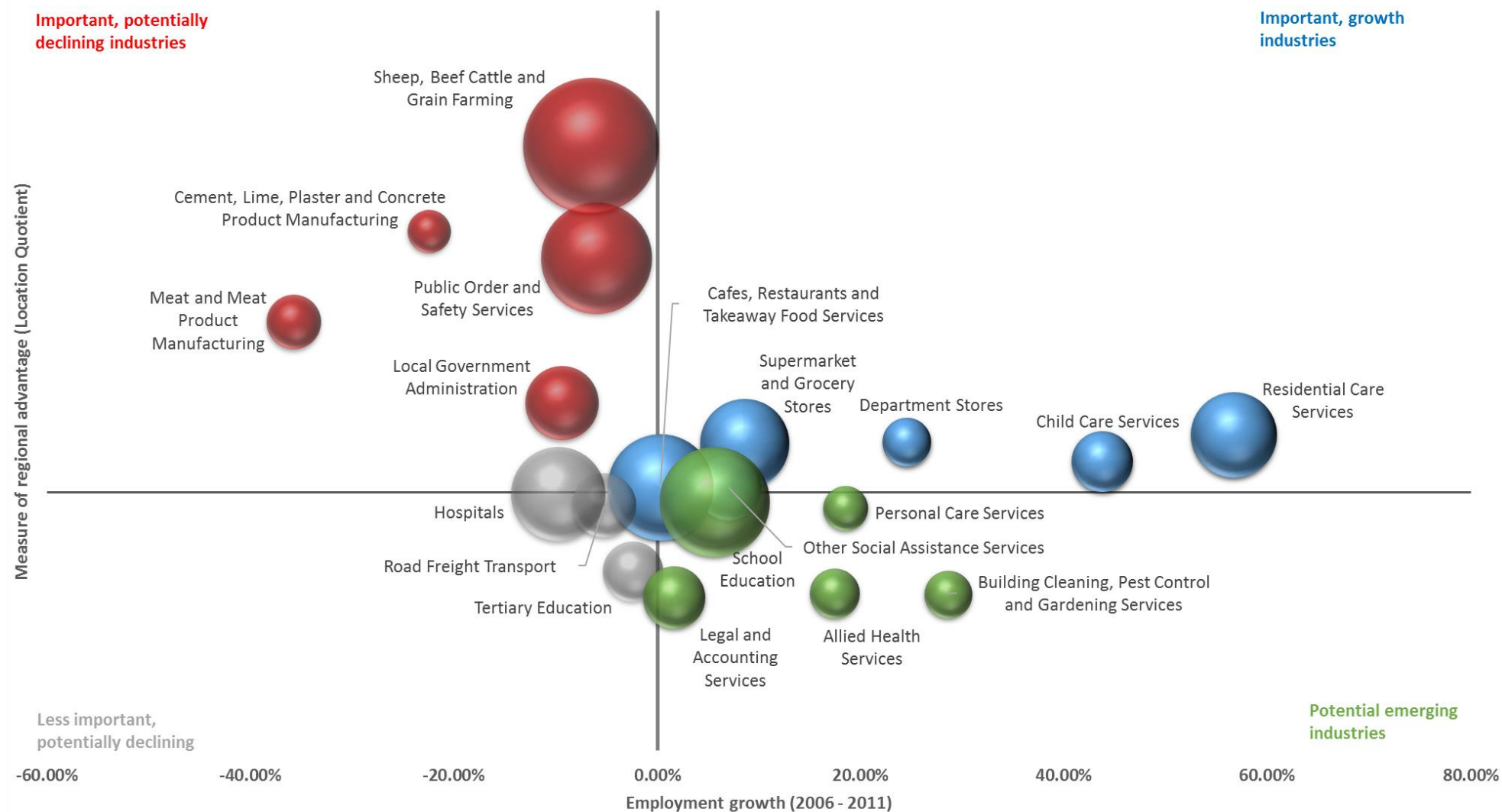


Figure A8.4 Regional advantage and regional employment growth for key industries - Goulburn regional economy



Disaggregation of data shows detail about industries of specialisation (Table A8.7).

Table A8.7 Industries of regional specialisation in detail - Goulburn regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing					
	1	1,203	10.06%	2.3%	4.37
Agriculture	2	1,152	9.63%	2.3%	4.67
Sheep, Beef Cattle and Grain Farming	3	1,064	8.89%	2.1%	6.43
Sheep Farming (Specialised)	4	515	4.30%	3.9%	17.84
Sheep-Beef Cattle Farming	4	289	2.42%	-9.0%	13.75
Beef Cattle Farming (Specialised)	4	240	2.01%	9.3%	4.22
Manufacturing					
Meat and Meat Product Manufacturing	3	170	1.42%	-44.7%	2.79
Meat Processing	4	155	1.29%	-50.8%	5.34
Retail Trade					
Food Retailing	2	534	4.46%	1.8%	1.32
Department Stores	3	135	1.13%	8.6%	1.58
Supermarket and Grocery Stores	3/4	455	3.80%	-0.6%	1.57
Department Stores	4	134	1.12%	7.7%	1.56
Accommodation and Food Services					
Cafes, Restaurants and Takeaway Food Services	3	652	5.45%	-25.4%	1.28
Accommodation	3	182	1.53%	-8.6%	1.25
Takeaway Food Services	4	363	3.04%	-40.7%	1.43
Accommodation	4	182	1.52%	-7.5%	1.25
Public Administration and Safety					
	1	1,326	11.08%	-18.0%	1.81
Public Order, Safety and Regulatory Services	2	719	6.01%	-22.0%	3.67
Public Administration	2	611	5.10%	-15.3%	1.34
Public Order and Safety Services	3	720	6.02%	-20.9%	3.78
Local Government Administration	3/4	314	2.62%	-15.3%	1.90
Correctional and Detention Services	4	387	3.23%	-24.1%	11.72
Police Services	4	282	2.36%	-20.5%	3.81
Education and Training					

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Primary Education	4	339	2.83%	-8.4%	1.34
Secondary Education	4	305	2.55%	-2.6%	1.42
Technical and Vocational Education and Training	4	122	1.02%	-28.8%	1.40
Health Care and Social Assistance					
Social Assistance Services	2	462	3.86%	-17.8%	1.35
Residential Care Services	2/3	423	3.54%	16.8%	1.64
Other Social Assistance Services	3/4	247	2.06%	-28.0%	1.28
Child Care Services	3	215	1.80%	-1.6%	1.45
Aged Care Residential Services	4	367	3.06%	13.7%	1.60
Child Care Services	4	215	1.80%	-0.9%	1.45
Other Services					
Automotive Repair and Maintenance	3	186	1.55%	-4.1%	1.43
Other Automotive Repair and Maintenance	4	129	1.08%	3.7%	1.63

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

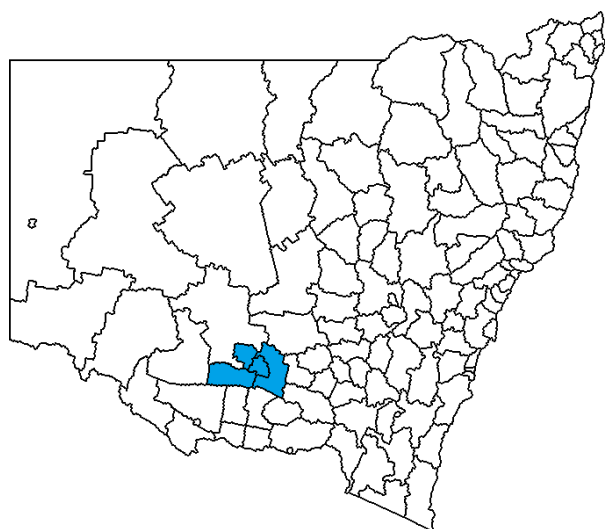
To start the process the most likely industry sectors for the Goulburn regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A8. These are indicative only and are best selected based on the addition of local knowledge.

Box A8	Probable 'key industry sectors' in Goulburn
•	Agriculture Natural land endowments provide Goulburn with a competitive advantage in agricultural production, currently sheep and beef cattle farming account for the majority of activity.
•	Meat processing Previously an industry of strong specialisation, however currently in decline.

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 9 Griffith regional economy



Defining the regional economy

The ESS for Griffith (Table A9.1) indicates a high proportion of Griffith jobs are filled by local residents, with about nine per cent of jobs filled by labour from outside the LGA. The Griffith ESC estimates that approximately 11 per cent of the local labour force travel out of the area for work. In comparison, the ESC for the other LGAs shows that between 20 to 35 per cent of the respective LGAs workforces travel outside of the area for work. This analysis suggests that Griffith is a regional centre with Leeton, Murrumbidgee and Narrandera being residential satellites.

Table A9.1 Employment capacity, sufficiency and containment in Griffith regional economy LGAs (2011)

	Griffith	Leeton	Murrumbidgee	Narrandera
Total local workers (working anywhere)	10,949	4,549	1,051	2,357
Number of jobs in local area	10,593	4,142	828	2,004
Number of local jobs held by locals	9,691	3,643	680	1,689
Employment self-containment (ESC)	0.89	0.8	0.65	0.72
Jobs Housing Balance (JHB)	0.97	0.91	0.79	0.85
Employment self-sufficiency (ESS)	0.91	0.88	0.82	0.84

Further analysis of Griffith employment linkages indicates that 41 per cent of all Leeton and 49 per cent of all Murrumbidgee workers that are employed, in NSW, outside of their respective LGA are employed in the Griffith LGA. The Narrandera LGA is shown to have close ties to Leeton, which itself appears to be a satellite of Griffith. **Consequently, the Griffith regional economy is defined as the Griffith LGA and neighbouring LGAs of Leeton, Murrumbidgee and Narrandera.**

Table A9.2 Employment linkages between LGAs around Griffith– number and proportion of workers

LGA in which workers are living	Working in Griffith	Working in Leeton	Working in Murrumbidgee	Working in Narrandera	Place of Work Undefined
Griffith (no.)	-	80	65	17	577
Griffith proportion	-	9.2%	7.5%	2%	66.3%
Leeton (no.)	321	-	21	142	223
Leeton proportion	40.7%	-	2.7%	18%	28.3%
Murrumbidgee (no.)	165	19	-	-	92
Murrumbidgee proportion	49.3%	5.7%	-	-	27.5%
Narrandera (no.)	85	291	7	-	111
Narrandera proportion	14.6%	50%	1.2%	-	19.1%

Regional overview

Table A9.3 Summary by LGA - Griffith regional economy

Local Government Area	Area (Km ²)	Population Estimate*	Distance to Griffith township from main town (km)	Estimated Gross regional Product+
Griffith	1,640	28,811	-	\$1,357m
Leeton	1,167	11,595	43	\$527m
Murrumbidgee	3,508	2,528	34	\$104m
Narrandera	4,116	5,961	85	\$233m
Total	10,431	45,895	-	\$2,221m

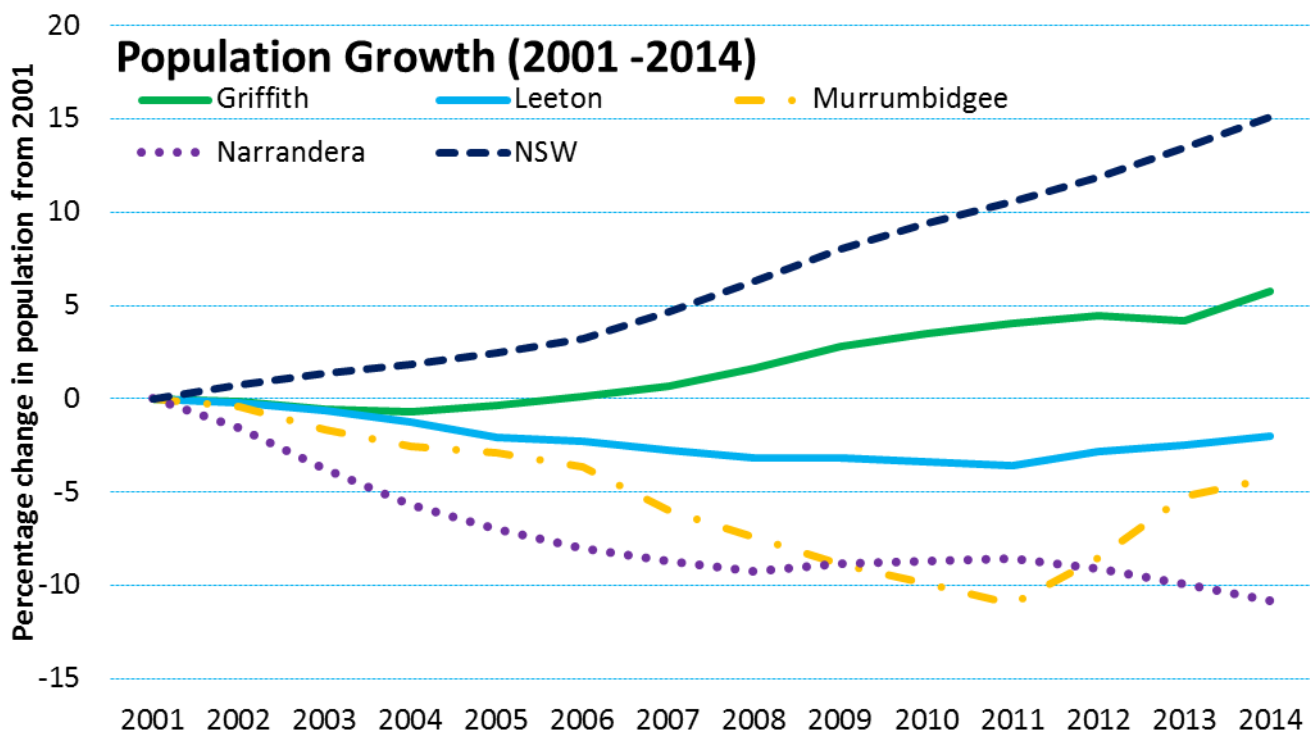
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Griffith regional economy has a population of approximately 45,900. Population grew by less than one per cent (300 persons) from 2001 to 2014 which was at a rate significantly slower than both NSW (15 per cent) and Sydney (18 per cent).

Individually the regional centre, Griffith, grew by 1,400 persons. However the smaller satellite towns of Leeton, Murrumbidgee and Narrandera declined in populous between 2001 and 2014 as reflected in the growth of just 300 persons across the Griffith regional economy.

Figure A9.1 Population growth - Griffith regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Griffith regional economy is no exception with an aged dependency ratio⁸⁸ of

⁸⁸ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

25% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Snapshot A9. Composition of resident population (2014)

	Griffith	NSW
Ratios (%)		
Aged Dependency Ratio ^A	25	24
Youth Dependency Ratio ^B	34	28
Dependency Ratio ^C	59	52
Proportion^D (%)		
Young Persons (15 to 34)	26	27
Older Persons (65+)	16	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A9.4 Income (Australian Taxation Office data) - Griffith regional economy

	Griffith	Sydney ⁸⁹	NSW
Average Taxable Income (1994-95) - Adjusted ⁹⁰	\$43,300	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$43,000	\$62,100	\$56,600
Change	-\$300	\$9,500	\$7,300
Increase in Real Wage (%)	-0.7	18.1	14.8

Real wages declined by less than one percent in the Griffith regional economy between 1994-95 and 2012-13. This may have been because of changes to the occupation profile in the regional economy over this period.

Table A9.5 Educational attainment (population aged 15 years and over, 2011 Census) - Griffith regional economy

	Griffith (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	7.9	23.5	18.4
Advanced or Graduate Diploma	5.6	10.7	9.8
Certificate Qualification	19.5	14.6	17.7
Population with a Post-School Qualification	33.1	48.7	45.8

The proportion of the Griffith population with a post-school qualification (33 per cent) is lower than the NSW average (46 per cent). This may be due to the areas of specialisation and competitive advantage in the Griffith regional economy requiring fewer qualifications, and instead more practical experience.

Table A9.6 Welfare dependency (population aged 15 years and over, 2013) - Griffith regional economy

	Griffith (%)	Sydney (%)	NSW (%)
Aged Pension	13.9	9.8	12.6
Disability Support Pension	5.4	3.2	4.4
Newstart Allowance	3.6	3	3.5

⁸⁹ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁹⁰ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

Total⁹¹

23.3

16.5

21.3

A slightly larger proportion of the Griffith regional economy's residents are dependent on social welfare, than in NSW on average.

Industries of regional specialisation

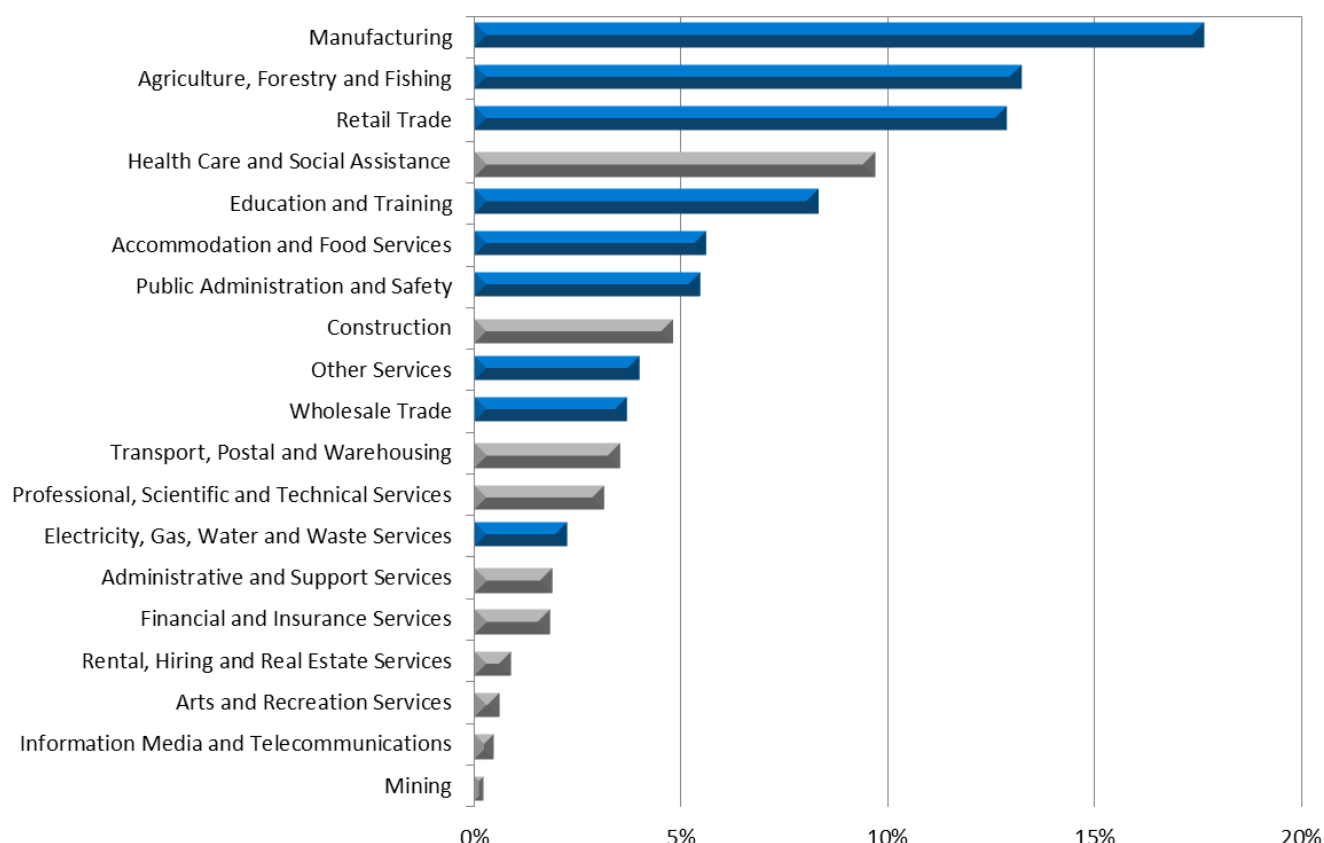
The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Griffith regional economy demonstrates regional specialisation at one or more ANZSIC level within nine industry divisions (Figure A9.2 and Table A9.7).

Figure A9.2 Percentage of employment in each industry division (ANZSIC Level 1) - Griffith regional economy

Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A9.3), important growth industries in the Griffith regional economy are shown to be:

- water supply;
- sewerage and drainage services; and

⁹¹ Total includes service pensions not shown in table

- supermarket and grocery stores.

However, respectively these industry sectors are enabling (e.g. water supply to agriculture) or population serving (e.g. supermarket retailing) and not engines of growth. This infers government investment to overcome barriers, particularly for supermarket and grocery stores is unlikely to result in sustainable long term economic growth.

Important, yet potentially declining industries in the Griffith regional economy that are most likely to be key sectors are: sheep, beef cattle and grain farming; fruit and tree nut growing (mainly grape and citrus fruit growing); beverage manufacturing (mostly wine); grain mill and cereal product manufacturing; meat and meat product manufacturing (mostly poultry); and grocery, liquor and tobacco product wholesaling.

Employment in the above sectors declined overall and at a faster rate than across most of the state. This may be partly due to increasing competition (following increases in openness and trade) and fragmentation of the value chain which has enhanced the focus on local specialisation. Increased competition may have expedited the adoption of new technology and more efficient production which has resulted in a substitution away from labour to capital.

However declining employment in these sectors is not necessarily reflective of declining competitive advantage, instead a better indicator may be quantity (or value) of outputs produced. In addition the agricultural industry is subject to continual seasonal variation which also may explain recent employment patterns.

Allied health services and cafes, restaurants and takeaway food services are not industry sectors of specialisation but exhibited employment growth and may be emerging industries. However, both sectors primarily exist to support the population and are each unlikely to be strong drivers of sustainable economic growth instead tending to grow on the back of the other engines of growth.

Figure A9.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Griffith regional economy

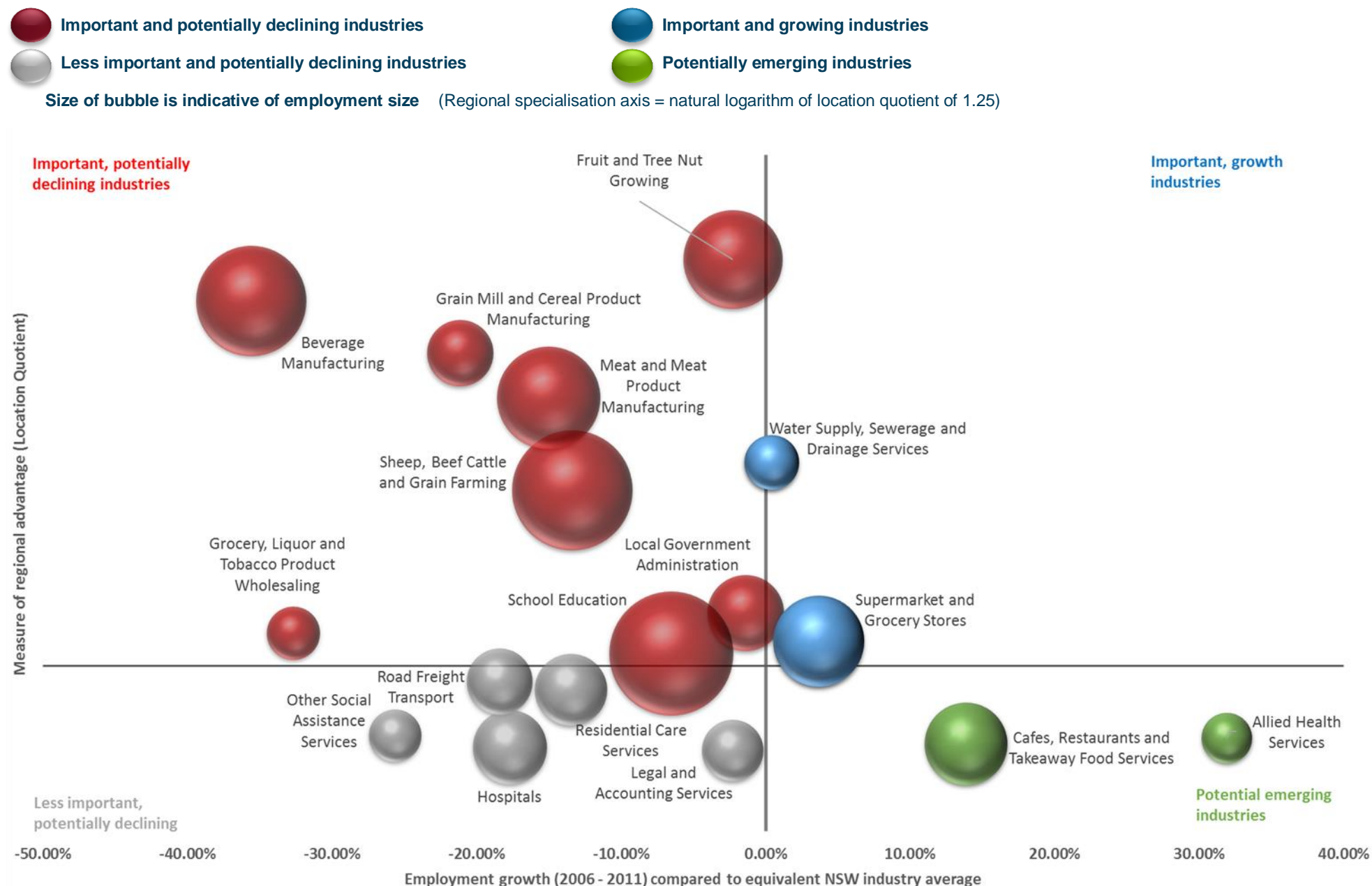
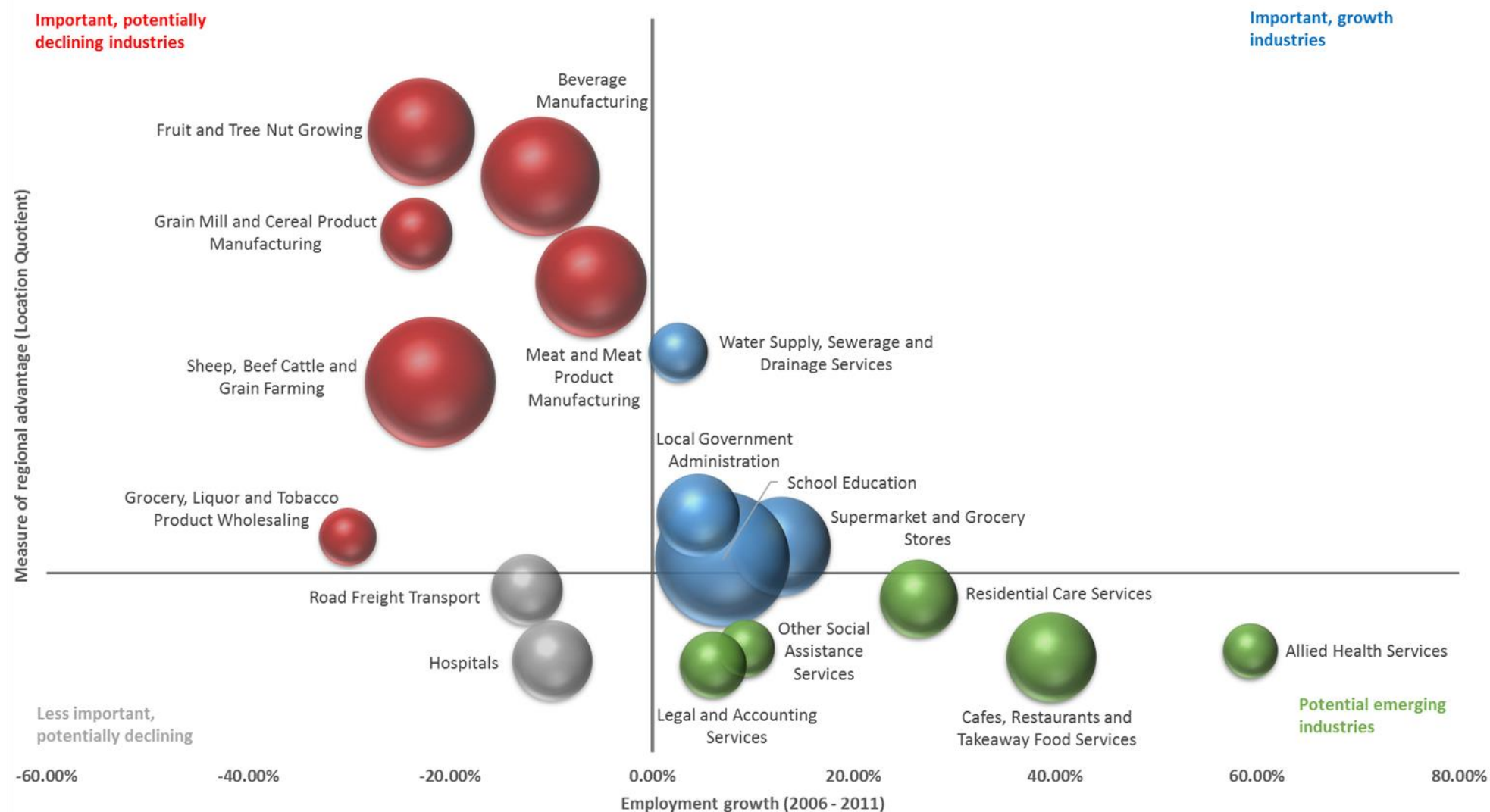


Figure A9.4 Regional advantage and regional employment growth for key industries - Griffith regional economy



Disaggregation of data shows detail about industries of specialisation (Table A9.7).

Table A9.7 – Industries of regional specialisation in detail - Goulburn regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing	1	2,325	13.22%	-9.4%	5.75
Agriculture	2	2,228	12.67%	-8.7%	6.14
Sheep, Beef Cattle and Grain Farming	3	1,114	6.33%	-13.4%	4.58
Fruit and Tree Nut Growing	3	751	4.27%	-2.2%	25.21
Other Grain Growing	4	539	3.06%	-20.2%	15.18
Grape Growing	4	364	2.07%	5.7%	42.78
Citrus Fruit Growing	4	364	2.07%	2.6%	74.14
Grain-Sheep or Grain-Beef Cattle Farming	4	326	1.85%	-13.6%	6.55
Manufacturing	1	3,102	17.63%	-5.6%	2.04
Food Product Manufacturing	2	1,482	8.42%	-14.7%	4.95
Beverage and Tobacco Product Manufacturing	2	933	5.30%	-31.6%	16.84
Beverage Manufacturing	3	935	5.32%	-35.6%	18.58
Meat and Meat Product Manufacturing	3	813	4.62%	-15.0%	9.06
Grain Mill and Cereal Product Manufacturing	3	339	1.92%	-21.1%	12.61
Wine and Other Alcoholic Beverage Manufacturing	4	909	5.17%	-8.0%	43.21
Poultry Processing	4	564	3.21%	-10.7%	15.85
Grain Mill Product Manufacturing	4	332	1.89%	-24.2%	32.06
Meat Processing	4	255	1.45%	-24.7%	5.98
Electricity, Gas, Water and Waste Services	1	396	2.25%	-13.9%	1.99
Water Supply, Sewerage and Drainage Services	2/3	227	1.29%	-0.6%	5.60
Water Supply	4	227	1.29%	-1.4%	5.94
Wholesale Trade					
Grocery, Liquor and Tobacco Product Wholesaling	2/3	216	1.23%	-33.0%	1.60
Basic Material Wholesaling	2	196	1.12%	-21.6%	1.37
Retail Trade					
Food Retailing	2	778	4.42%	3.2%	1.31

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Motor Vehicle and Motor Vehicle Parts Retailing	2	202	1.15%	-7.8%	1.48
Supermarket and Grocery Stores	3/4	637	3.62%	3.7%	1.50
Hardware, Building and Garden Supplies Retailing	3	181	1.03%	-12.3%	1.70
Accommodation and Food Services					
Clubs (Hospitality)	3/4	179	1.02%	-6.1%	1.27
Public Administration and Safety					
Local Government Administration	3/4	448	2.55%	-1.4%	1.85
Education and Training					
Preschool and School Education	2	1,245	7.08%	-5.8%	1.37
School Education	3	1,181	6.72%	-6.5%	1.37
Secondary Education	4	533	3.03%	4.1%	1.68
Primary Education	4	491	2.79%	-8.3%	1.32
Other Services					
Repair and Maintenance	2	406	2.31%	3.5%	1.27
Automotive Repair and Maintenance	3	247	1.40%	-1.9%	1.29
Hairdressing and Beauty Services	4	186	1.06%	-13.0%	1.29

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

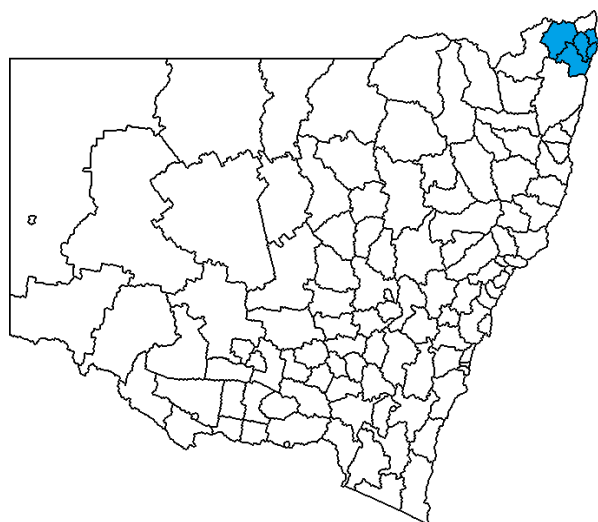
To start the process the most likely industry sectors for the Griffith regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A9. These are indicative only and are best selected based on the addition of local knowledge.

Box A9	Probable 'key industry sectors' in Griffith
•	<p>Wine production</p> <p>Competitive advantage stems from proximity to grape growing businesses.</p> <p>Agriculture</p> <p>Natural land endowments provide Griffith with a competitive advantage in agricultural production. This advantage is enhanced by superior access to water for irrigation.</p> <p>Food product manufacturing</p> <p>Advantage arises out of proximity to key agricultural inputs. Poultry processing, grain mill product, meat processing and fruit and vegetable processing are the main sub components with strong competitive advantage.</p>

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 10 Lismore regional economy



Defining the regional economy

Lismore has the highest proportion of workers who live in the LGA (74%), the lowest proportion of jobs filled by local residents (71%), and the highest ratio of jobs to homes (1.05) when compared to surrounding LGAs (Table A10.1). This indicates that Lismore is a regional centre. Ballina, Byron, Kyogle and Richmond Valley form residential satellites for Lismore.

Table A10.1 Employment capacity, sufficiency and containment - Lismore regional economy LGAs (2011)

	Lismore	Ballina	Byron	Kyogle	Richmond Valley
Local labour force	17,867	15,909	11,965	3,303	7,828
Number of jobs in local area	18,692	13,724	10,920	2,548	6,148
Number of local jobs held by locals	13,223	10,488	8,426	2,057	4,783
Employment self-containment (ESC)	0.74	0.66	0.70	0.62	0.61
Jobs Housing Balance (JHB)	1.05	0.86	0.91	0.77	0.79
Employment self-sufficiency (ESS)	0.71	0.76	0.77	0.81	0.78

Over 41 percent of all Lismore residents that are employed outside of the LGA work in the Ballina LGA (Table A10.2). While the proportion of Lismore residents in other LGAs is relatively small (3.6-14.7%), the proportion of residents of surrounding LGAs working in Lismore is high (25.7-52.7%), confirming the view that Lismore is a regional centre for surrounding LGAs. **Consequently, the Lismore regional economy is defined as the Lismore LGA and four neighbouring LGAs of Ballina, Byron, Kyogle and Richmond Valley (Table A10.2).**

Table A10.2 Employment linkages between LGAs around Lismore – number and proportion of workers

LGA in which workers are living	Working in Lismore	Working in Ballina	Working in Byron	Working in Kyogle	Working in Richmond Valley
Lismore (no.)	-	1,681	465	144	590
Lismore proportion	-	41.8%	11.5%	3.6%	14.7%
Ballina (no.)	2,519	-	1,141	20	255
Ballina proportion	52.7%	-	23.9%	0.4%	5.3%
Byron (no.)	670	701	-	5	27
Byron proportion	25.7%	26.9%	-	0.2%	1.0%
Kyogle (no.)	383	36	15	-	363
Kyogle proportion	36.3%	3.4%	1.4%	-	34.4%
Richmond Valley (no.)	1,431	444	32	168	-
Richmond Valley proportion	51.9%	16.1%	1.2%	6.1%	-

Regional overview

Table A10.3 Summary by LGA - Lismore regional economy

Local Government Area	Area (Ha)	Population Estimate*	Distance to Lismore township from main town (km)	Estimated Gross Regional Product+
Lismore	128,780	44,629	-	\$2,050m
Ballina	48,470	41,644	34.4	\$1,764m
Byron	56,580	32,119	47.4	\$1,474m
Kyogle	358,400	9,531	43.7	\$261m
Richmond Valley	304,740	22,983	32.1	\$675m
Total	896,970	150,906	-	\$6,224m

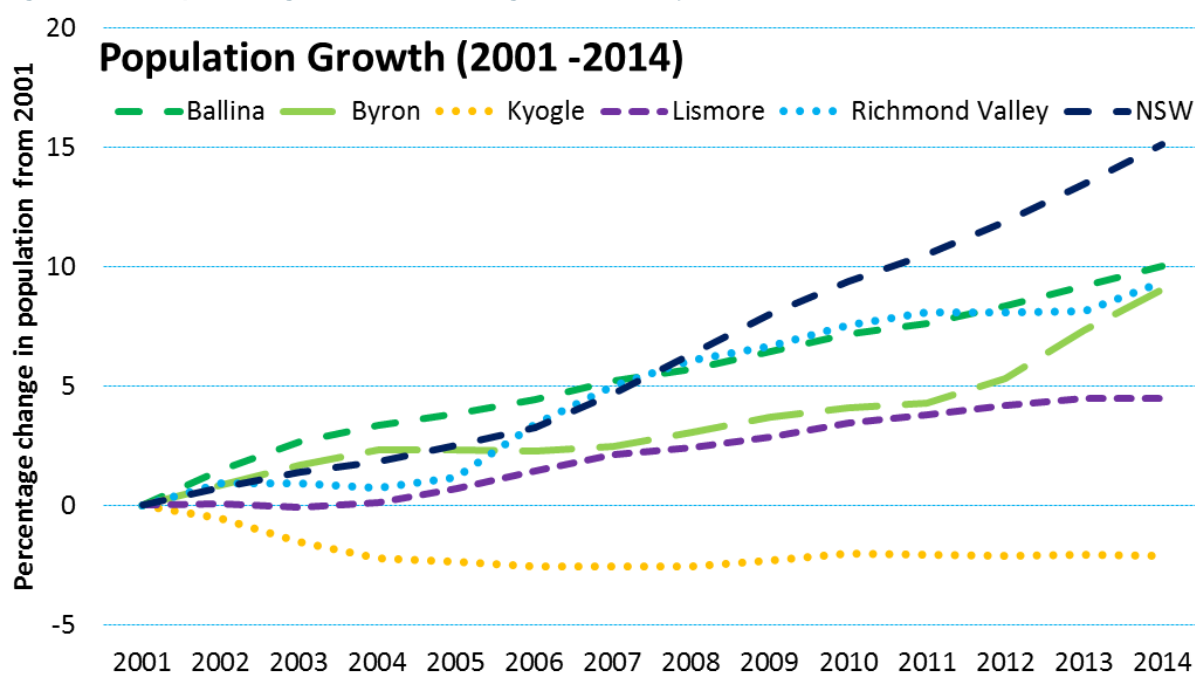
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Lismore regional economy has a population of approximately 150,900. Population grew by approximately seven per cent (10,100 persons) from 2001 to 2014 which was at a slower rate than both NSW (15 per cent) and Sydney (18 per cent).

Individually the LGAs of Byron and Ballina accounted for a majority of the regions 10,100 person growth, with increases of 2,700 and 3,800 persons respectively. Notably all this growth was from people aged 50 years and over with the LGAs respectively accommodating an 4,500 and 5,000 people aged 50 years and over.

Figure A10.1 Population growth - Lismore regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Lismore regional economy is no exception with an aged dependency ratio⁹² of 29% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

⁹² The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A10) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

The Lismore regional economy is a popular location for those relocating for retirement or lifestyle reasons to the coast. The region is a natural choice due to its warm climate, beaches and (in most parts of the regional economy) lower land costs and rent.

Snapshot A10. Composition of resident population (2014)

	Lismore	NSW
Ratios (%)		
Aged Dependency Ratio ^A	29	24
Youth Dependency Ratio ^B	29	28
Dependency Ratio ^C	58	52
Proportion^D (%)		
Young Persons (15 to 34)	21	27
Older Persons (65+)	19	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A10.4 Income (Australian Taxation Office data) - Lismore regional economy

	Lismore	Sydney ⁹³	NSW
Average Taxable Income (1994-95) - Adjusted ⁹⁴	\$39,300	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$41,200	\$62,100	\$56,600
Change	\$1,900	\$9,500	\$7,300
Increase in Real Wage (%)	5	18.1	14.8

Real wages grew by five per cent in the Lismore regional economy between 1994-95 and 2012-13. Wages growth was strongest in Ballina (11.4 per cent) and Byron (9 per cent). However the LGAs of Kyogle (-4.3 per cent) and Richmond Valley (-3.2 per cent) recorded a decline in real wages.

Despite being better off on average the Lismore regional economy was less well-off compared to NSW where real wages increased by an average of 14.8 per cent.

Table A10.5 Educational attainment – (population aged 15 years and over, 2011 Census) - Lismore regional economy

	Lismore (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	11	23.5	18.4
Advanced or Graduate Diploma	7.7	10.7	9.8
Certificate Qualification	16.9	14.6	17.7
Population with a Post-School Qualification	35.6	48.7	45.8

⁹³ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁹⁴ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

The skills base of the Lismore regional economy is less formally qualified than NSW on average with a smaller proportion of its population having attained a post-school qualification.

Table A10.6 Welfare dependency (population aged 15 years and over, 2013) - Lismore regional economy

	Lismore (%)	Sydney (%)	NSW (%)
Aged Pension	15.4	9.8	12.6
Disability Support Pension	7.9	3.2	4.4
Newstart Allowance	6.3	3	3.5
Total ⁹⁵	30.8	16.5	21.3

A larger share of Lismore's population received social welfare payments than the NSW population average. This is partly explained by the regional economies larger share of pension aged residents.

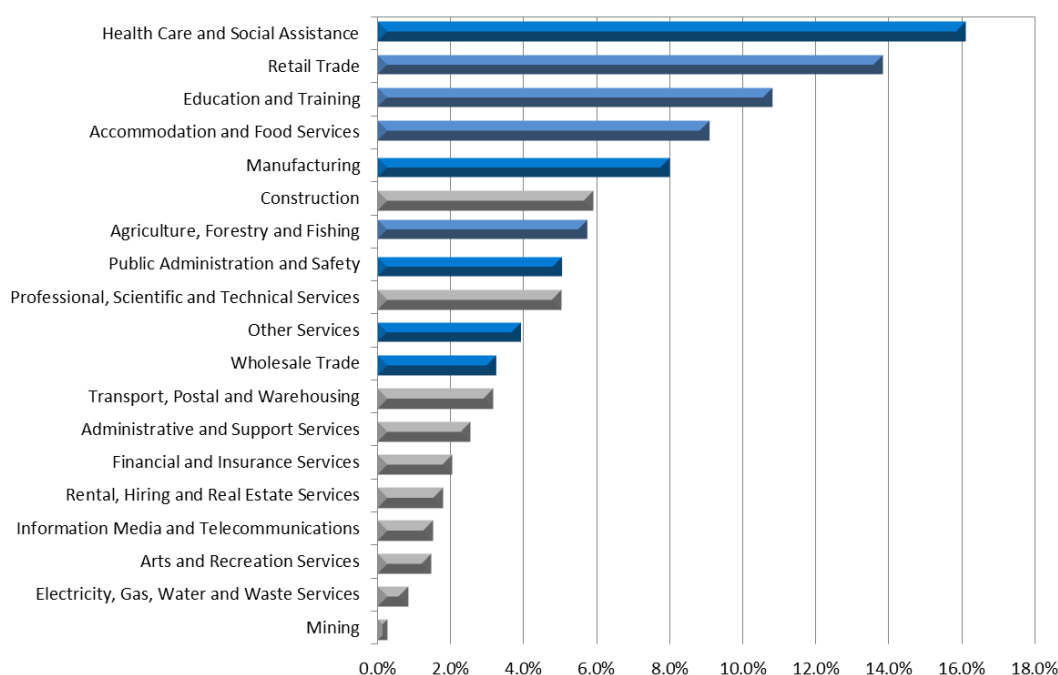
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Lismore regional economy demonstrates regional specialisation at one or more ANZSIC level within nine industry divisions (Figure A10.2) and Table 10.7.

Figure A10.2 Percentage of employment in each industry division (ANZSIC Level 1) - Lismore regional economy
Blue bars indicate regional specialisation (LQ larger than 1.25) at one or more ANZSIC level within the division.



⁹⁵ Total includes service pensions not shown in table

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A10.3), important growth industries in the Lismore regional economy are shown to be:

- Accommodation;
- medical services;
- other social assistance services; and
- local government administration.

Only accommodation (as a proxy for tourism) is a key industry sector (engine of growth) that utilises locational endowments with the remaining sectors existing predominantly to service the population base.

The 'specialisation' evident in local government administration is mostly due to smaller economies of scale. Because the Lismore regional economy extends across a larger geography it is more costly to provide services and economies of scale are smaller. Consequently in the Lismore regional economy a larger share of jobs are in local government administration compared to the average across NSW, with the leaner Sydney councils accounting for smaller shares of employment. In addition Sydney councils are able to take advantage from larger economies of scale as they service more people per council, reducing the share of jobs in local government administration.

Other important, yet potentially declining industries in the Lismore regional economy that make use of locational endowments and are 'engines of growth' are fruit and tree nut growing (particularly macadamias); meat and meat product manufacturing; sheep, beef cattle and grain farming; and tertiary education.

Employment in agricultural related specialisations (fruit and tree nut growing and sheep, beef cattle and grain farming) declined both in absolute terms, and at a faster rate than the equivalent NSW industry average. This was also the case for the agriculture related meat and meat product manufacturing industry sector. Declining employment may be reflective of climatic variation or may be the consequence of increasing openness and trade and technological change which is encouraging substitution away from labour to capital (i.e automated harvesting instead of manual processes).

No industry sectors were identified as being potentially emerging when accounting for relative employment growth. In unadjusted terms several, predominantly population serving industries grew in size. However, in every case this was most likely because of population growth in the regional economy and not necessarily reflective of an emergence of an underlying competitive advantage.

Figure A10.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Lismore regional economy

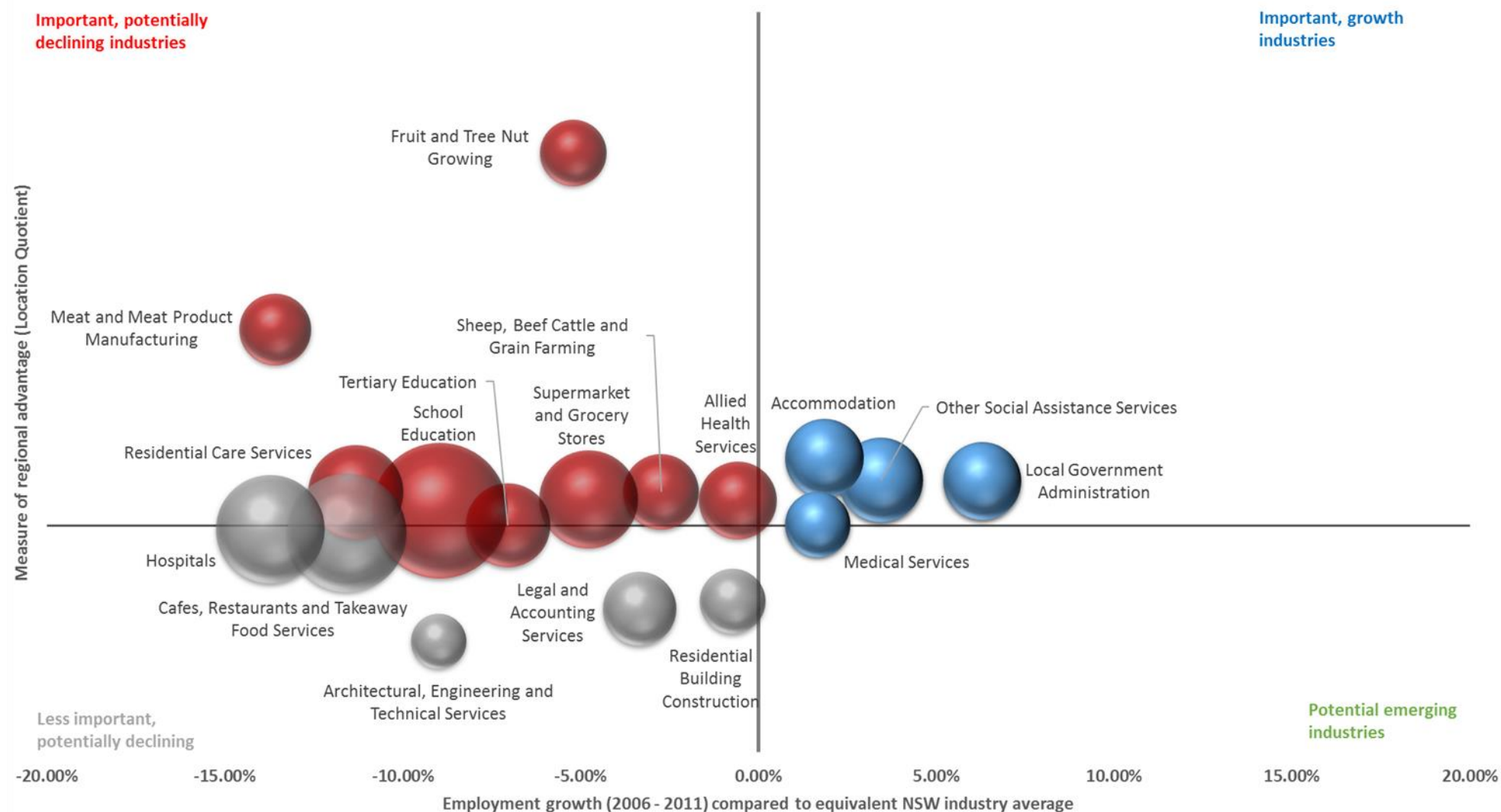
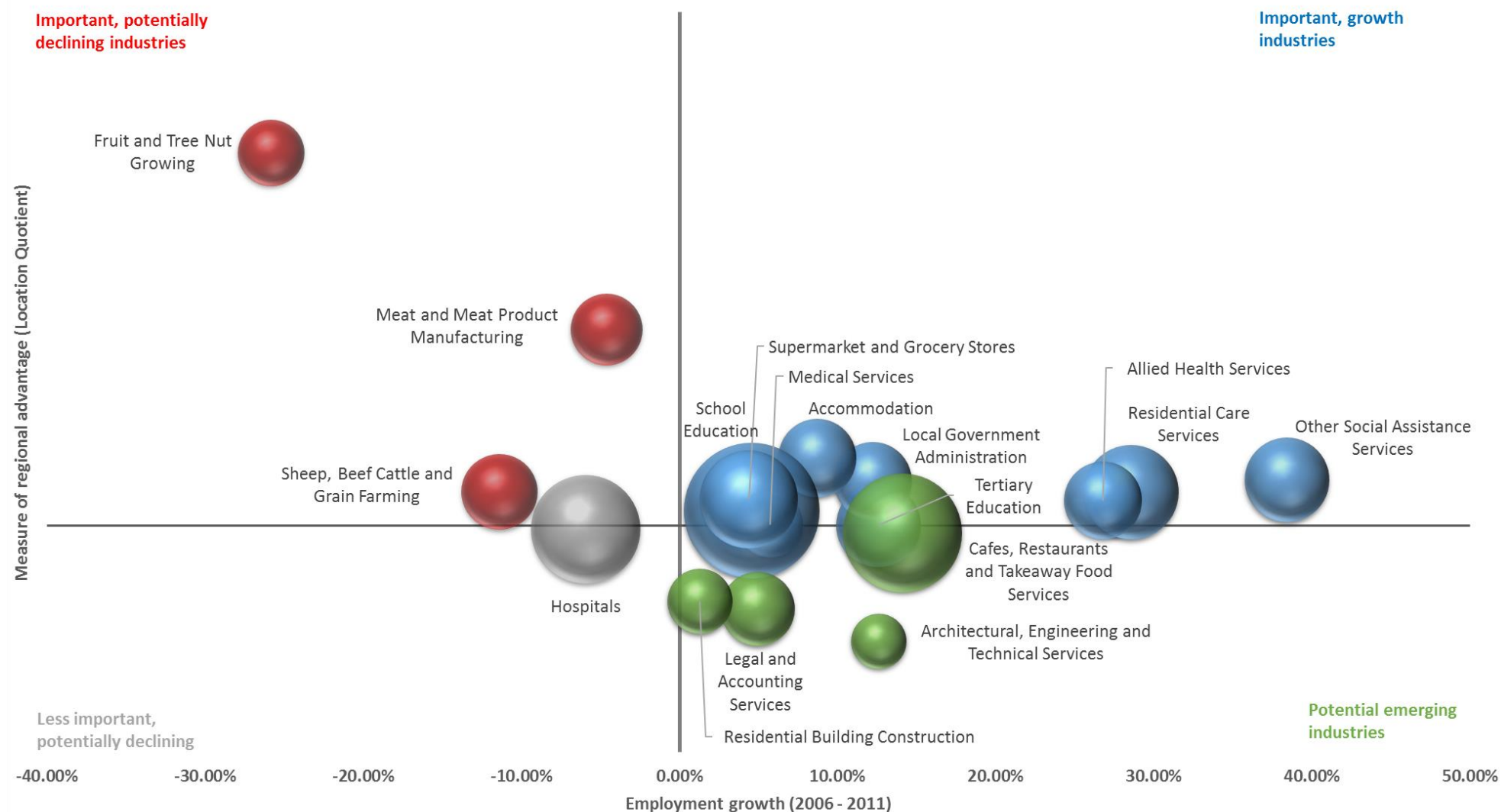


Figure A10.4 Regional advantage and regional employment growth for key industries - Lismore regional economy



Disaggregation of data shows detail about industries of specialisation (Table A10.7).

Table A10.7 Industries of regional specialisation in detail - Lismore regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing					
	1	2,985	5.73%	-8.2%	2.49
Agriculture	2	2,776	5.33%	-8.2%	2.58
Sheep, Beef Cattle and Grain Farming	3	1,081	2.07%	-2.7%	1.50
Fruit and Tree Nut Growing	3	830	1.59%	-5.2%	9.40
Beef Cattle Farming (Specialised)	4	1,034	1.99%	-6.4%	4.17
Other Fruit and Tree Nut Growing	4	743	1.43%	0.2%	27.43
Manufacturing					
Food Product Manufacturing	2	2,056	3.95%	-4.9%	2.32
Meat and Meat Product Manufacturing	3	959	1.84%	-13.6%	3.61
Meat Processing	4	701	1.35%	-8.0%	5.55
Wholesale trade					
Grocery, Liquor and Tobacco Product Wholesaling	2	535	1.03%	-23.8%	1.34
Grocery, Liquor and Tobacco Product Wholesaling	3	533	1.02%	-23.7%	1.33
Retail trade					
	1	7,201	13.82%	-8.0%	1.30
Food Retailing	2	2,521	4.84%	-8.6%	1.43
Motor Vehicle and Motor Vehicle Parts Retailing	2	544	1.04%	-7.6%	1.34
Supermarket and Grocery Stores	3	1,814	3.48%	-4.8%	1.44
Pharmaceutical and Other Store-Based Retailing	3	1,115	2.14%	-2.8%	1.47
Specialised Food Retailing	3	719	1.38%	-12.8%	1.44
Supermarket and Grocery Stores	4	1,813	3.48%	-4.9%	1.44
Pharmaceutical, Cosmetic and Toiletry Goods Retailing	4	581	1.11%	1.3%	1.42
Accommodation and Food Services					
	1	4,725	9.07%	-7.0%	1.32
Accommodation	2	1,140	2.19%	1.9%	1.80
Accommodation	3	1,141	2.19%	1.9%	1.80
Cafes and Restaurants	4	1,275	2.45%	-8.0%	1.31
Accommodation	4	1,143	2.19%	2.0%	1.80
Public Administration and Safety					

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Local Government Administration	3	1,142	2.19%	6.3%	1.59
Local Government Administration	4	1,142	2.19%	6.5%	1.59
Education and Training	1	5,632	10.81%	-7.1%	1.32
Preschool and School Education	2	3,719	7.14%	-7.8%	1.38
Tertiary Education	2	1,329	2.55%	-7.0%	1.25
School Education	3	3,452	6.63%	-9.0%	1.35
Primary Education	4	1,330	2.55%	-7.0%	1.25
Secondary Education	4	1,532	2.94%	-7.5%	1.39
Higher Education	4	1,365	2.62%	-4.6%	1.46
Health Care and Social Assistance	1	8,375	16.07%	-7.3%	1.35
Medical and Other Health Care Services	2	2,309	4.43%	-1.7%	1.31
Social Assistance Services	2	2,156	4.14%	-5.4%	1.45
Residential Care Services	2	1,679	3.22%	-11.4%	1.50
Residential Care Services	3	1,684	3.23%	-11.3%	1.50
Other Social Assistance Services	3	1,343	2.58%	3.4%	1.60
Allied Health Services	3	1,133	2.17%	-0.6%	1.43
Medical Services	3	803	1.54%	1.7%	1.26
Aged Care Residential Services	4	1,506	2.89%	-7.9%	1.51
Other Social Assistance Services	4	1,342	2.58%	3.7%	1.60
General Practice Medical Services	4	595	1.14%	0.9%	1.27
Other Allied Health Services	4	570	1.09%	3.0%	1.73
Other Services		-	-	-	-
Automotive Repair and Maintenance	3	746	1.43%	-3.5%	1.32

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

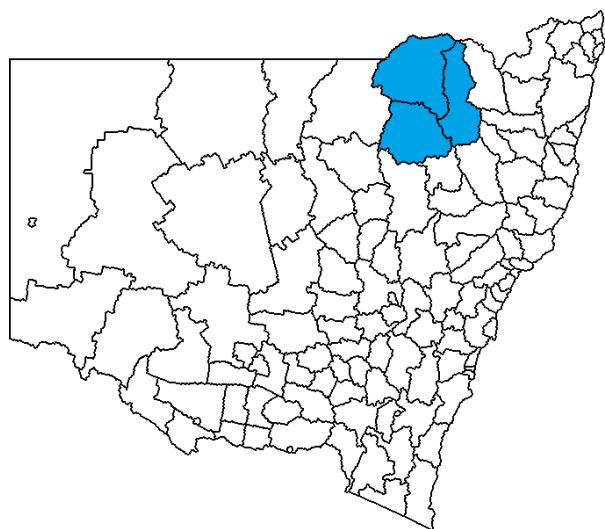
To start the process the most likely industry sectors for the Lismore regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A10. These are indicative only and are best selected based on the addition of local knowledge.

Box A10	Probable 'key industry sectors' in Lismore
<ul style="list-style-type: none"> • Tourism 	<p>Using accommodation as a proxy, tourism is a strong area of competitive advantage for the region with natural endowments (i.e. beaches, climate) proving a strong attraction.</p>
<ul style="list-style-type: none"> • Agriculture 	<p>Natural land endowments provide Lismore with a competitive advantage in agricultural production. For the Lismore regional economy beef cattle farming is the largest sub-component in terms of employment, with fruit and nut tree growing also a major employment due to the amenable climate for macadamia production.</p>
<ul style="list-style-type: none"> • Higher education 	<p>The presence of the Sothern Cross University campus in Lismore is in itself a man-made endowment. Although specialisation is less pronounced compared to other locations with higher education institutions it remains an important industry to the Lismore regional economy.</p>

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 11 Moree regional economy



Defining the regional economy

The ESS for Moree (Table A11.1) indicates a high proportion of Moree jobs are filled by local residents, with about 11 per cent of jobs filled by labour from outside the LGA. The Moree ESC estimates that approximately 16 per cent of the local labour force travel out of the area for work. In comparison, the ESC for the other LGAs shows that between 17 to 29 per cent of the LGAs workforce travels outside of the area for work. This analysis suggests that Moree is a regional centre with Gwydir and Narrabri being residential satellites.

Table A11.1 Employment capacity, sufficiency and containment - Moree regional economy LGAs (2011)

	Moree Plains	Gwydir	Narrabri
Total local workers (working anywhere)	5,661	1,979	5,681
Number of jobs in local area	5,359	1,568	5,182
Number of local jobs held by locals	4,761	1,402	4,732
Employment self-containment (ESC)	0.84	0.71	0.83
Jobs Housing Balance (JHB)	0.95	0.79	0.91
Employment self-sufficiency (ESS)	0.89	0.89	0.91

Further analysis of Moree employment linkages indicates that 30 per cent of all Gwydir workers that are employed outside of the LGA, in NSW, are employed in the Moree Plains LGA and 11 per cent of all Narrabri workers. **Consequently, the Moree regional economy is defined as the Moree Plains LGA and neighbouring LGAs Gwydir and Narrabri.**

Table A11.2 Employment linkages between LGAs around Moree – number and proportion of workers

LGA in which workers are living	Working in Moree Plains	Working in Inverell	Working in Gwydir	Working in Narrabri	Working in Walgett
Moree Plains (no.)	-	4	26	35	13
Moree Plains proportion	-	0.7%	4.5%	6.1%	2.3%
Gwydir (no.)	144	85	-	11	
Gwydir proportion	29.5%	17.4%	-	2.3%	
Narrabri (no.)	68			-	35
Narrabri proportion	11.4%			-	4.7%

Regional overview

Table A11.3 Summary by LGA - Moree regional economy

Local Government Area	Area (Km ²)	Population Estimate*	Distance to Moree township from main town (km)	Estimated Gross Regional Product+
Moree Plains	17,928	14,092	-	\$782m
Gwydir	9,453	5,080	101.0	\$193m
Narrabri	13,031	13,764	102.4	\$979m
Total	40,412	32,936	-	\$2,856m

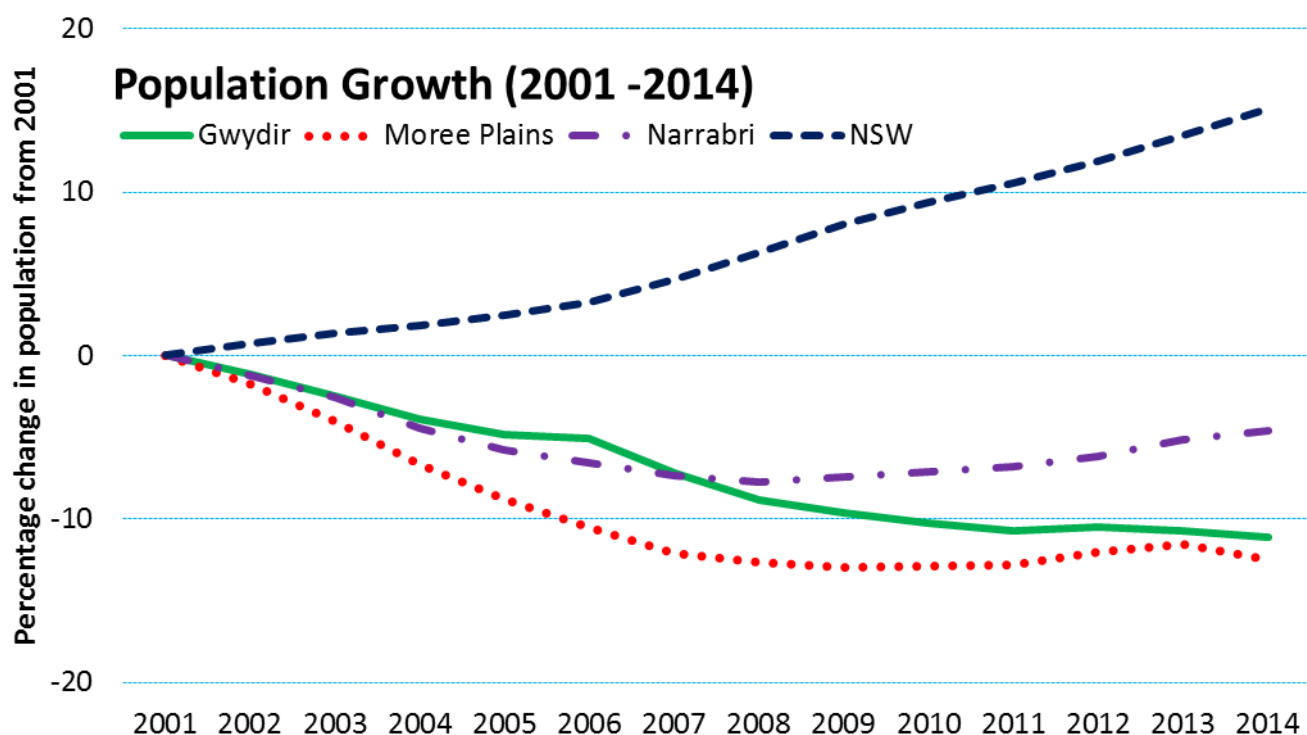
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Moree regional economy has a population of approximately 32,900. Population declined by 9.1 per cent from 2001 to 2014 (-3,300 persons), representing annual reduction of -0.73 per cent year on year. This compares to growth across NSW of 1.09 per cent each year.

Individually all the LGAs that comprise the Moree regional economy declined in population, Narrabri at the slowest rate. This may be a result of climatic variation (drought) adversely affecting the agricultural industry, which is the largest employer in the region. In turn this is likely to have contributed towards the falls in population.

Figure A11.1 Population growth - Moree regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Moree regional economy is no exception with an aged dependency ratio⁹⁶ of

⁹⁶ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

27% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A11) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

Snapshot A11. Composition of resident population (2014)

	Moree	NSW
Ratios (%)		
Aged Dependency Ratio ^A	27	24
Youth Dependency Ratio ^B	35	28
Dependency Ratio ^C	62	52
Proportion^D (%)		
Young Persons (15 to 34)	24	27
Older Persons (65+)	17	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A11.4 Income (Australian Taxation Office data) - Moree regional economy

	Moree	Sydney ⁹⁷	NSW
Average Taxable Income (1994-95) - Adjusted ⁹⁸	\$41,900	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$46,600	\$62,100	\$56,600
Change	\$4,700	\$9,500	\$7,300
Increase in Real Wage (%)	11.2	18.1	14.8

Real wages grew by 11.2 per cent in the Moree regional economy between 1994-95 and 2012-13.

Despite being better off the Moree regional economy was less well-off compared to NSW on average (14.8 per cent).

Table A11.5 Educational attainment (population aged 15 years and over, 2011 Census) - Moree regional economy

	Moree (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	7.8	23.5	18.4
Advanced or Graduate Diploma	6.3	10.7	9.8
Certificate Qualification	18.8	14.6	17.7
Population with a Post-School Qualification	32.9	48.7	45.8

The skills base of Moree is less formally qualified as a proportion of population than compared to NSW, with one third of the population having attained a post-school qualification compared to the State average of 46 per cent.

Table A11.6 Welfare dependency (population aged 15 years and over, 2013) - Moree regional economy

⁹⁷ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

⁹⁸ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

	Moree (%)	Sydney (%)	NSW (%)
Aged Pension	13.4	9.8	12.6
Disability Support Pension	6.3	3.2	4.4
Newstart Allowance	4.8	3	3.5
Total ⁹⁹	25	16.5	21.3

A larger proportion of the Moree regional economy's residents are dependent on social welfare, than in NSW on average. This may partly be due to Moree's thin labour market, with the job search process taking longer and resulting in longer reliance on Newstart.

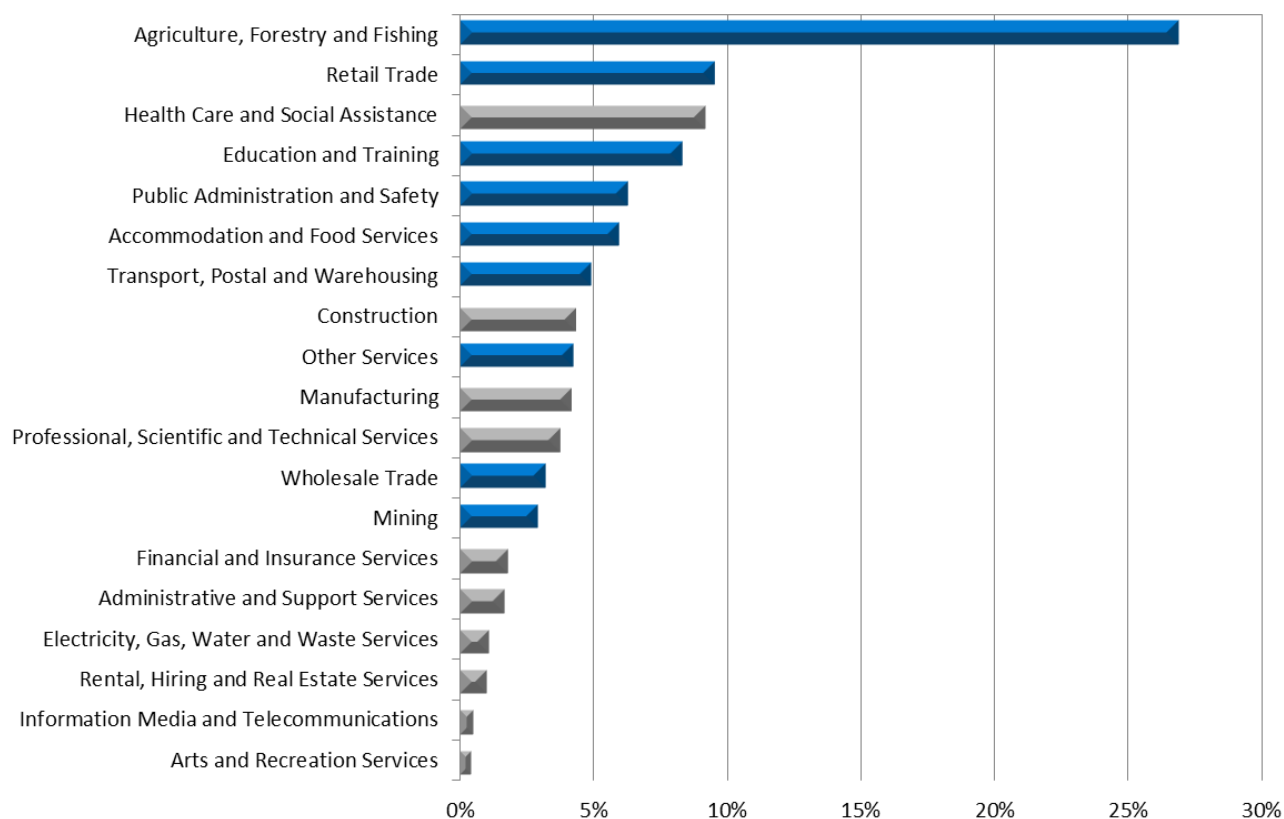
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Moree regional economy demonstrates regional specialisation at one or more ANZSIC level within nine industry divisions (Figure A11.2 and Table A11.7).

Figure A11.2 Percentage of employment in each industry division (ANZSIC Level 1) - Moree regional economy
Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



⁹⁹ Total includes service pensions not shown in table

The agriculture industry in Moree accounts for over 26% of employment in the regional economy and mainly consists of activities in sheep, beef cattle and grain farming and other crop growing.

In addition several industries exist that directly support these industry sectors (enabling industries) or exist because of them; these include agricultural support services, scientific research services and agricultural product wholesaling.

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A11.3), important growth industries in the Moree regional economy are shown to be:

- agricultural product wholesaling;
- accommodation; and
- road freight transport.

Each of these sectors is a possible key industry sector (engine of growth), however, in raw terms, because these sectors are small (between 130 - 270 employees) it is less clear if these industries demonstrate scalable competitive advantage.

Other important, yet potentially declining industries in the Moree regional economy that can be characterised as key industry sectors (making use of locational endowments) are sheep, beef cattle and grain farming and other crop growing.

Employment in both of these agricultural specialisations declined both in absolute terms, and at a faster rate than the equivalent NSW industry average. Declining employment may be reflective of climatic variation or may be the consequence of technological advances which are encouraging substitution of labour towards capital (i.e automated harvesting instead of manual processes).

Public order and safety services is not an industry sector of specialisation but exhibited employment growth and may be an emerging industry. However this sector primarily exists to support the population and is unlikely to be strong driver of sustainable economic growth.

Figure A11.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Moree regional economy

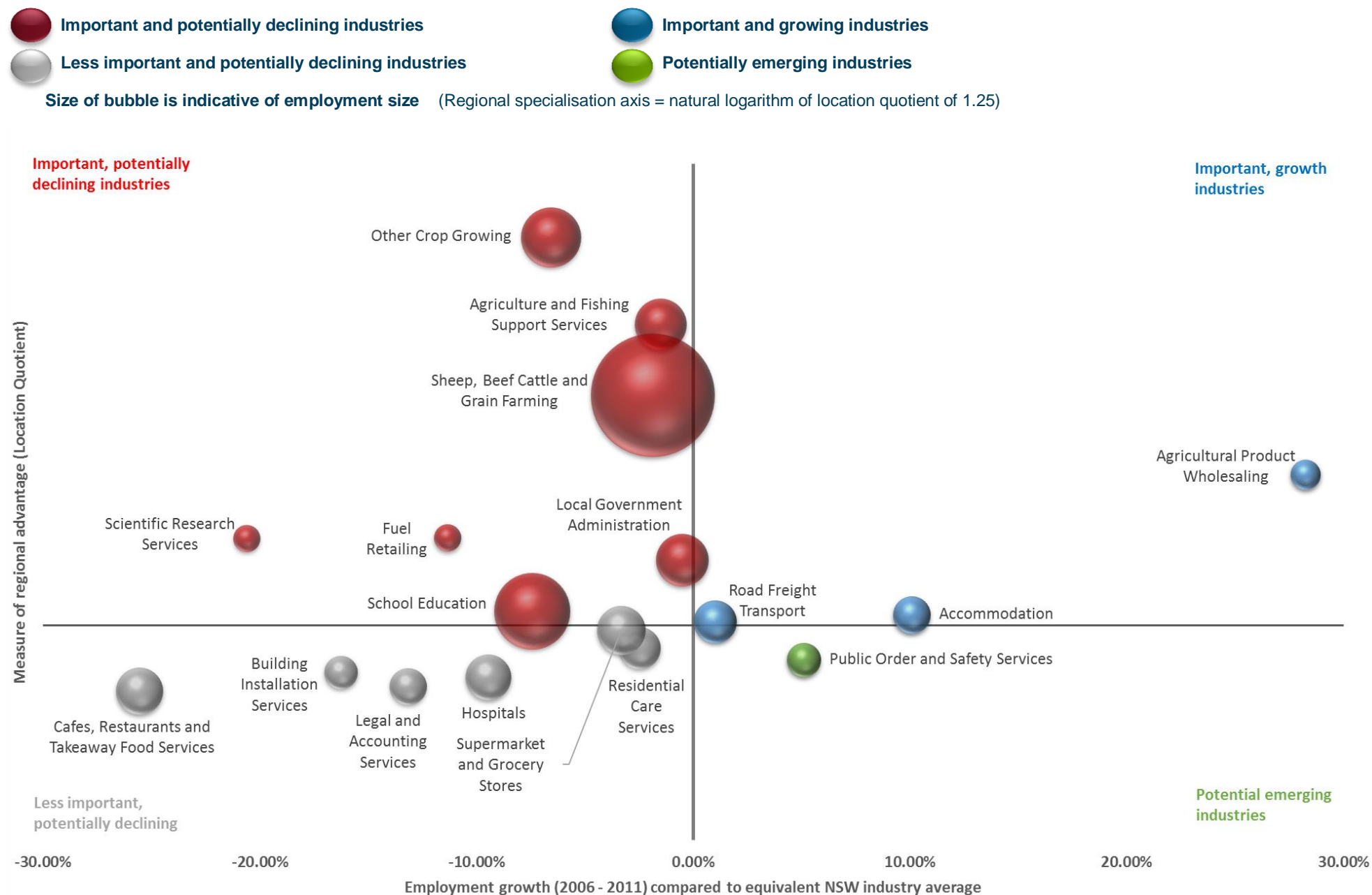
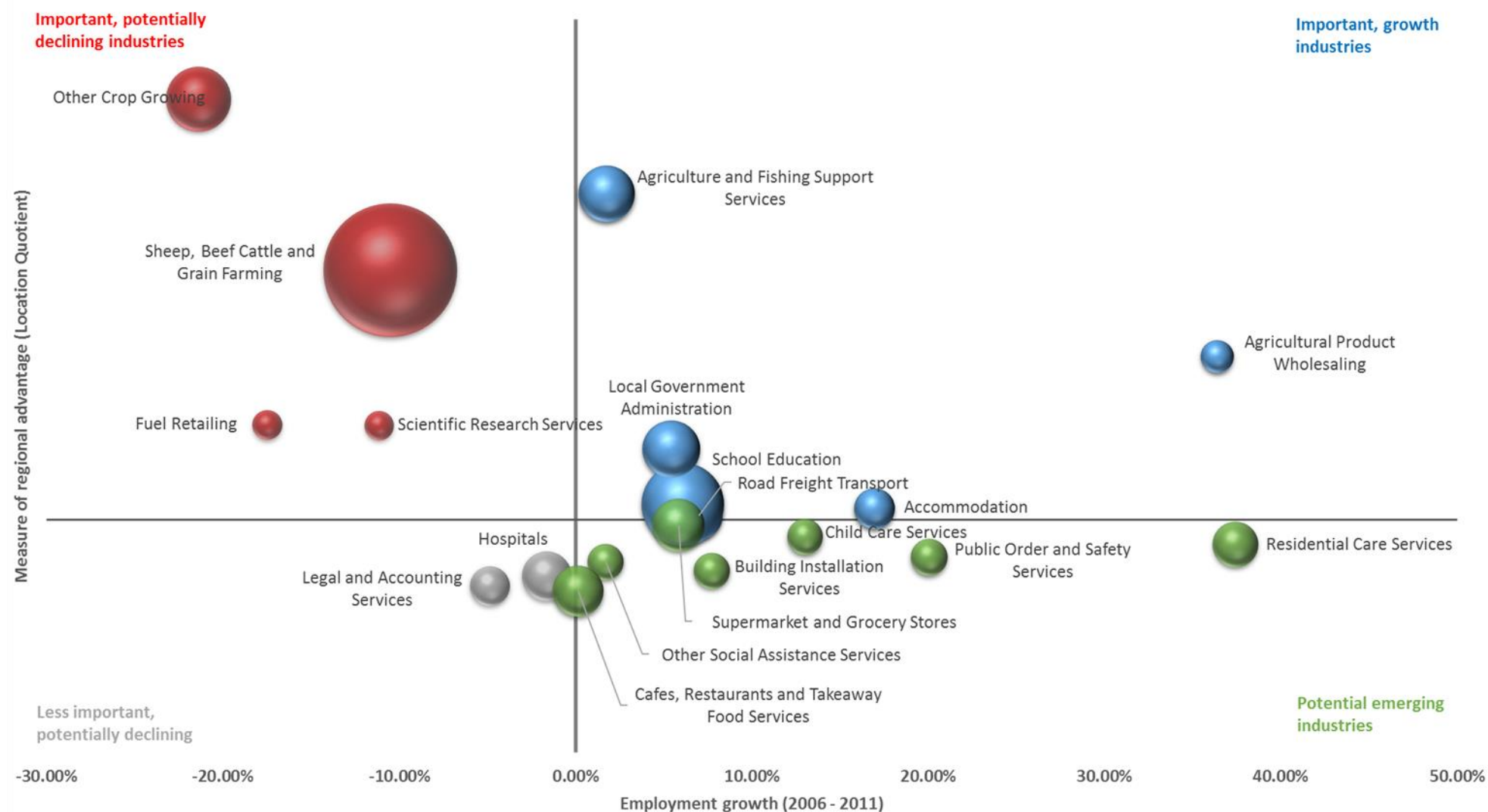


Figure A11.4 Regional advantage and regional employment growth for key industries - Moree regional economy



Disaggregation of data shows detail about industries of specialisation (Table A11.7).

Table A11.7 Industries of regional specialisation in detail - Moree regional economy
(industries with LQ ≥ 1.25 , employment size $\geq 1\%$)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing	1	3,260	26.87%	-2.3%	11.69
Agriculture	2	2,844	23.45%	-4.1%	11.36
Agriculture, Forestry and Fishing Support Services	2	401	3.30%	-0.6%	23.01
Sheep, Beef Cattle and Grain Farming	3	2,262	18.65%	-1.9%	13.49
Other Crop Growing	3	523	4.31%	-6.6%	68.99
Agriculture and Fishing Support Services	3	395	3.26%	-1.5%	27.99
Other Grain Growing	4	865	7.13%	8.0%	35.31
Beef Cattle Farming (Specialised)	4	603	4.97%	-12.6%	10.44
Grain-Sheep or Grain-Beef Cattle Farming	4	547	4.51%	-0.1%	15.99
Cotton Growing	4	515	4.24%	-7.6%	118.21
Cotton Ginning	4	205	1.69%	-20.5%	152.06
Other Agriculture and Fishing Support Services	4	177	1.46%	-18.2%	18.58
Sheep-Beef Cattle Farming	4	142	1.17%	-2.9%	6.64
Mining	1	351	2.90%	612.7%	2.91
Coal Mining	2/3/4	268	2.21%	1471.9%	3.43
Wholesale Trade					
Basic Material Wholesaling	2	233	1.92%	33.3%	2.36
Agricultural Product Wholesaling	3	133	1.10%	28.3%	5.92
Retail Trade					
Motor Vehicle and Motor Vehicle Parts Retailing	2	156	1.28%	-1.1%	1.65
Accommodation and Food Services					
Accommodation	2/3/4	204	1.68%	9.4%	1.38
Transport, Postal and Warehousing					
Road Transport	2	350	2.89%	-4.6%	1.25
Road Freight Transport	3/4	268	2.21%	1.0%	1.29
Public Administration and					

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Safety					
Public Administration	2	606	4.99%	-11.2%	1.31
Local Government Administration	3/4	410	3.38%	-0.5%	2.46
Education and Training					
Preschool and School Education	2	891	7.35%	-9.2%	1.42
School Education	3	859	7.08%	-7.4%	1.45
Primary Education	4	428	3.53%	-0.7%	1.66
Secondary Education	4	285	2.35%	-12.5%	1.31
Combined Primary and Secondary Education	4	145	1.20%	-15.8%	1.35
Other Services					
Repair and Maintenance	2	335	2.76%	-12.0%	1.52
Automotive Repair and Maintenance	3	199	1.64%	-15.1%	1.51
Machinery and Equipment Repair and Maintenance	3	123	1.01%	-16.5%	1.57
Other Automotive Repair and Maintenance	4	122	1.01%	-19.7%	1.52

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

To start the process the most likely industry sectors for the Moree regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A11. These are indicative only and are best selected based on the addition of local knowledge.

Box A11	Probable 'key industry sectors' in Moree
<ul style="list-style-type: none"> Agriculture 	<p>Natural land endowments provide Moree with a strong competitive advantage in agricultural production. This industry sector directly employs 23% of the regions workforce and indirectly supports a much larger share. The main activities include grain growing, beef and sheep farming and cotton growing/ginning.</p>
<ul style="list-style-type: none"> Road freight transport 	<p>Although only being a small specialisation employment in road freight transport grew between 2006 and 2011 and the regions proximity to key markets is an endowment that may provide scope for further industry growth.</p>

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 12 Mudjee regional economy



Defining the regional economy

The ESS for the Mid-Western LGA (Mudjee) indicates a high proportion of Mid-Western LGA jobs are filled by local residents, with only about 7 per cent of jobs filled by outside labour. The Mid-Western LGA ESC indicates that approximately 11 per cent of the employed local labour force travel out of the area for work. This analysis suggests that Mudjee is a regional centre.

Table A12.1 Employment capacity, sufficiency and containment in the Mudjee regional economy LGA (2011)

	Mid-Western LGA
Total local workers (working anywhere)	9,069
Number of jobs in local area	8,681
Number of local jobs held by locals	8,057
Employment self-containment (ESC)	0.89
Jobs Housing Balance (JHB)	0.96
Employment self-sufficiency (ESS)	0.93

Further analysis of Mid-Western Regional LGA employment linkages indicates that links to other LGAs are weak (fewer than 10 per cent) indicating that the Mudjee regional economy mostly stands alone in terms of labour flows between regions. **Consequently, the Mudjee regional economy is defined as the Mid-Western Region LGA.**

Table A12.2 Employment linkages between LGAs around Mudjee – number and proportion of workers

LGA in which workers are living	Working in Mid-Western	Working in Lithgow	Working in Bathurst	Working in Warrumbungle
Mid-Western (no.)	-	58	47	31
Mid-Western proportion	-	7.4%	6.0%	3.9%
Lithgow (no.)	89	-	286	
Lithgow proportion	5.9%	-	18.9%	
Bathurst (no.)	51	398	-	
Bathurst proportion	1.7%	13.2%	-	
Warrumbungle (no.)	45			-
Warrumbungle proportion	9.5%			-

Regional overview

Table A12.3 Summary by LGA - Mudgee regional economy

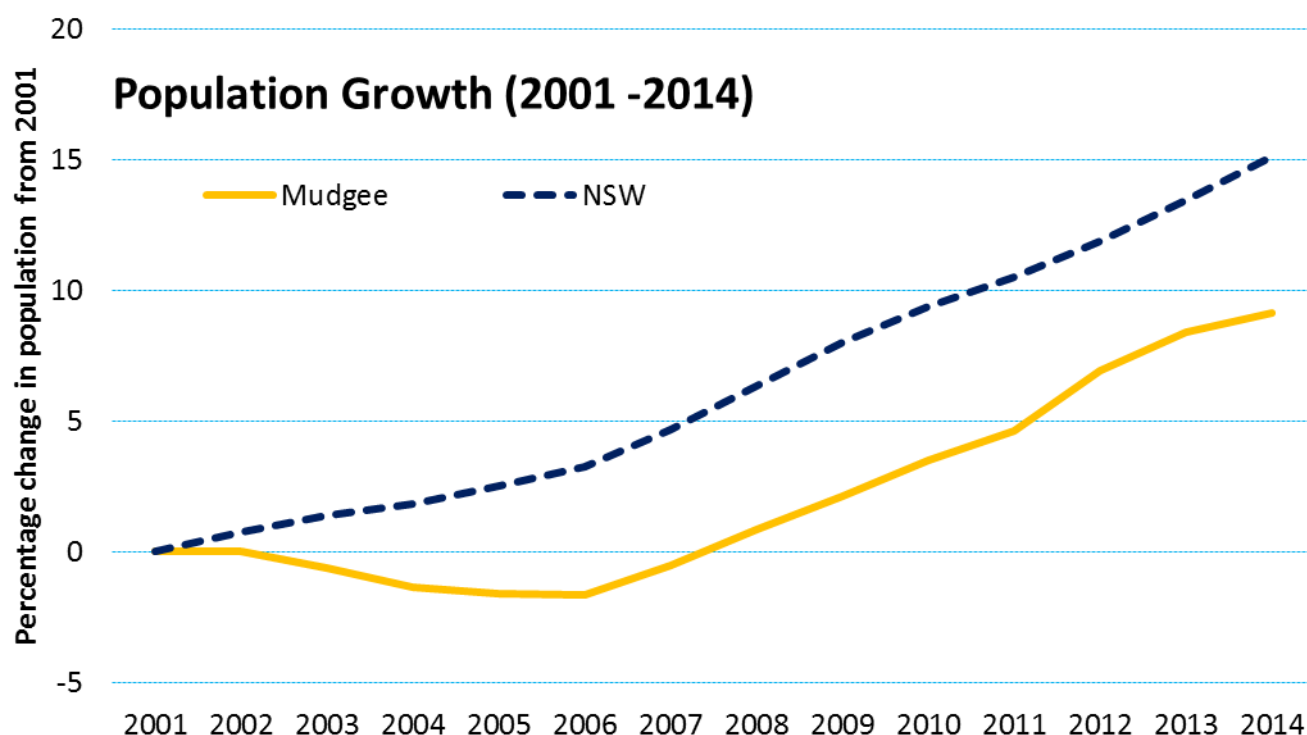
Local Government Area	Area (Km ²)	Population Estimate*	Distance to Mudgee township from main town (km)	Estimated Gross Regional Product+
Mid-Western LGA	8,737	24,017	-	\$1,784m

*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Mudgee regional economy has a population of approximately 24,000. Population grew by 9.2 per cent (2,000 persons) from 2001 to 2014 which was at a slower rate than both NSW (15 per cent) and Sydney (18 per cent).

Figure A12.1 Population growth - Mudgee regional economy



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Mudgee regional economy is no exception with an aged dependency ratio¹⁰⁰ of 30% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A12) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

¹⁰⁰ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Snapshot A12. Composition of resident population (2014)

	Mudgee	NSW
Ratios (%)		
Aged Dependency Ratio ^A	30	24
Youth Dependency Ratio ^B	33	28
Dependency Ratio ^C	63	52
Proportion^D (%)		
Young Persons (15 to 34)	22	27
Older Persons (65+)	19	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A12.4 Income (Australian Taxation Office data) - Mudgee regional economy

	Mudgee	Sydney ¹⁰¹	NSW
Average Taxable Income (1994-95) - Adjusted ¹⁰²	\$44,600	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$51,100	\$62,100	\$56,600
Change	\$6,500	\$9,500	\$7,300
Increase in Real Wage (%)	14.7	18.1	14.8

Real wages grew by 14.7 per cent in the Mudgee regional economy between 1994-95 and 2012-13.

In comparison real wages grew by a similar rate across NSW, yet at a faster rate of 18.1 per cent in Sydney. Industries utilising Mudgee's immobile factors of production, particularly mining, appear to have supported wage growth over the eighteen years to 2012-13, with strength in the mining industry culminating in strong and positive wage pressures.

Table A12.5 Educational attainment (population aged 15 years and over, 2011 Census) - Mudgee regional economy

	Mudgee (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	8.7	23.5	18.4
Advanced or Graduate Diploma	7.3	10.7	9.8
Certificate Qualification	23.1	14.6	17.7
Population with a Post-School Qualification	39	48.7	45.8

In Mudgee the proportion of the population with a bachelor or postgraduate degree as their highest level of post-school qualification is below the State average. This is partly due to the stronger demand for university qualifications in Sydney arising from the occupation mix of its key specialisations.

Table A12.6 Welfare dependency (population aged 15 years and over, 2013) - Mudgee regional economy

	Mudgee (%)	Sydney (%)	NSW (%)
Aged Pension	16.1	9.8	12.6
Disability Support Pension	6.1	3.2	4.4

¹⁰¹ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

¹⁰² Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

Newstart Allowance	4	3	3.5
Total ¹⁰³	27.1	16.5	21.3

A larger proportion of Mudgee's residents are dependent on social welfare, than in NSW on average. This is partly due to Mudgee's relatively thin labour market and aging population, with the job search process taking longer and resulting in longer reliance on Newstart.

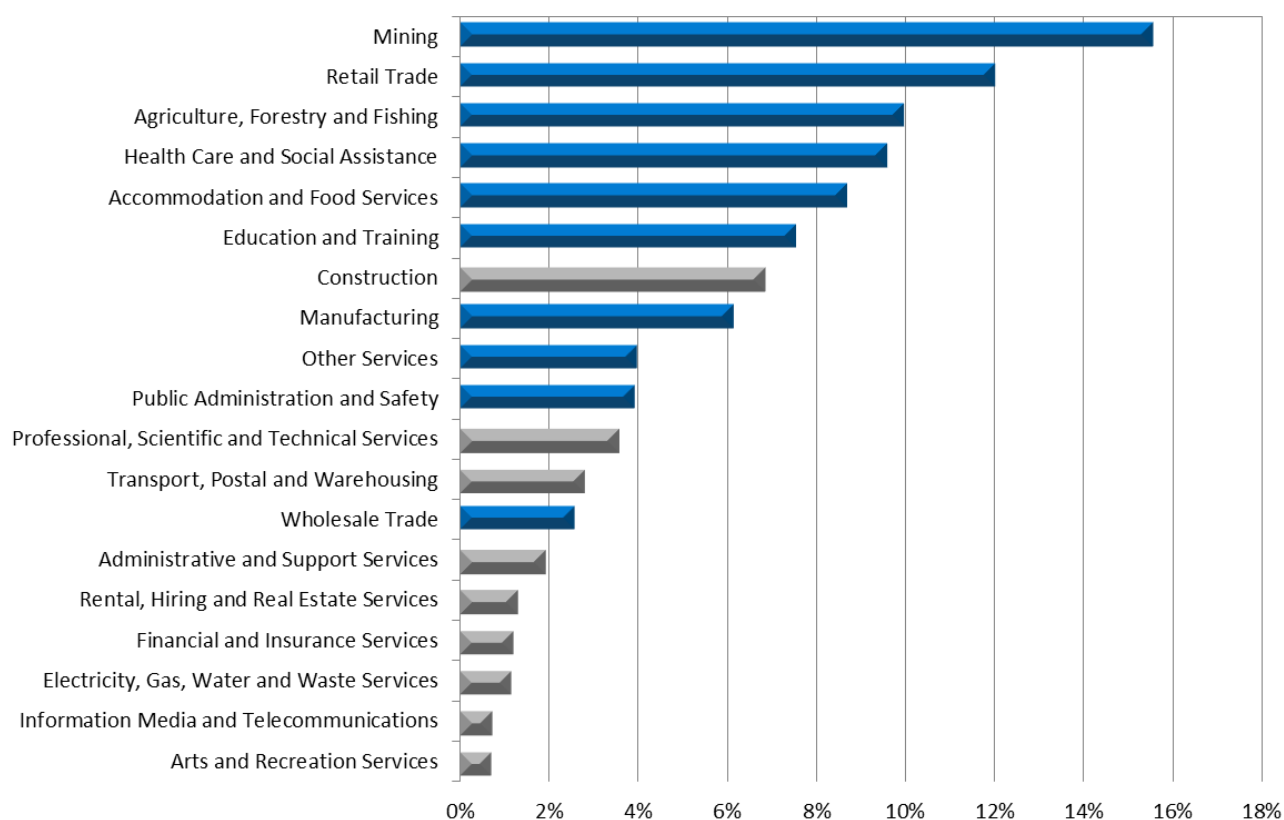
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Mudgee regional economy demonstrates regional specialisation at one or more ANZSIC level within ten industry divisions (Figure A12.2 and Table A12.7).

Figure A12.2 Percentage of employment in each industry division (ANZSIC Level 1) - Mudgee regional economy
Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A12.3), important growth industries in the Mudgee regional economy are shown to be:

- coal mining;

¹⁰³ Total includes service pensions not shown in table

- machinery and equipment repair and maintenance;
- land development and site preparation services;
- pubs, taverns and bars; and
- specialised food retailing.

Of these sectors only coal mining is a key industry sector (engine of growth), making use of mineral endowments.

Machinery and equipment repair and maintenance, land development site preparation services and electrical services (part of the emerging building installation services) are predominantly enabling industries, providing inputs to the engines of growth. In the Mudgee regional economy growth in these industries is associated with the expansion and operation of the Ulan mine, which was the major mining employer at the 2011 Census.

More recently (following the 2011 Census) coal prices (both thermal and coking) have deteriorated as world demand has not grown as quickly as expected and markets have been flooded with additional supply. The implication is that coal mining may no longer be classified as an important growth industry in the Mudgee regional economy, and associated industries are likely to be experiencing a period of contraction in relation to the slow-down in mining.

Other important, yet potentially declining industries in the Mudgee regional economy that can be characterised as key industry sectors (making use of local endowments) are sheep, beef cattle and grain farming, beverage manufacturing (mainly wine), accommodation and cement, lime, plaster and concrete manufacturing.

Despite employment declining in relative terms in the accommodation sector, in absolute terms employment in this sector grew in Mudgee, just at a slower rate than the NSW industry average. This may be partly due to stronger international visitation numbers (in terms of nights stayed) over the two Census periods, with domestic visitors being the primary source of tourism demand for the Mudgee regional economy. The niche food and wine tourism experience that is available in Mudgee is likely to benefit from a weaker Australian dollar as it elicits fewer overseas holidays, which are a substitute for domestic travel.

Sheep, beef cattle and grain farming is a key industry sector in the Mudgee regional economy making use of the regions superior agricultural land. This is despite employment declining. This may be a consequence of short term variable climatic conditions. Or is reflective of broader changes to the agricultural industry, partly from increasing levels of openness and trade and technological advances that have culminated in greater capital intensity, larger farm sizes (benefitting from greater economies of scale) and subsequently less demand for labour.

The industry sectors that are indicated to be potential emerging industries primarily exists to support the population, or are business enabling (particularly supporting mining) and are unlikely to be strong drivers of sustainable economic growth. These industries tend to grow and decline in line with the key industry sectors such as agriculture, beverage product manufacturing, tourism or mining.

Figure A12.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Mudgee regional economy

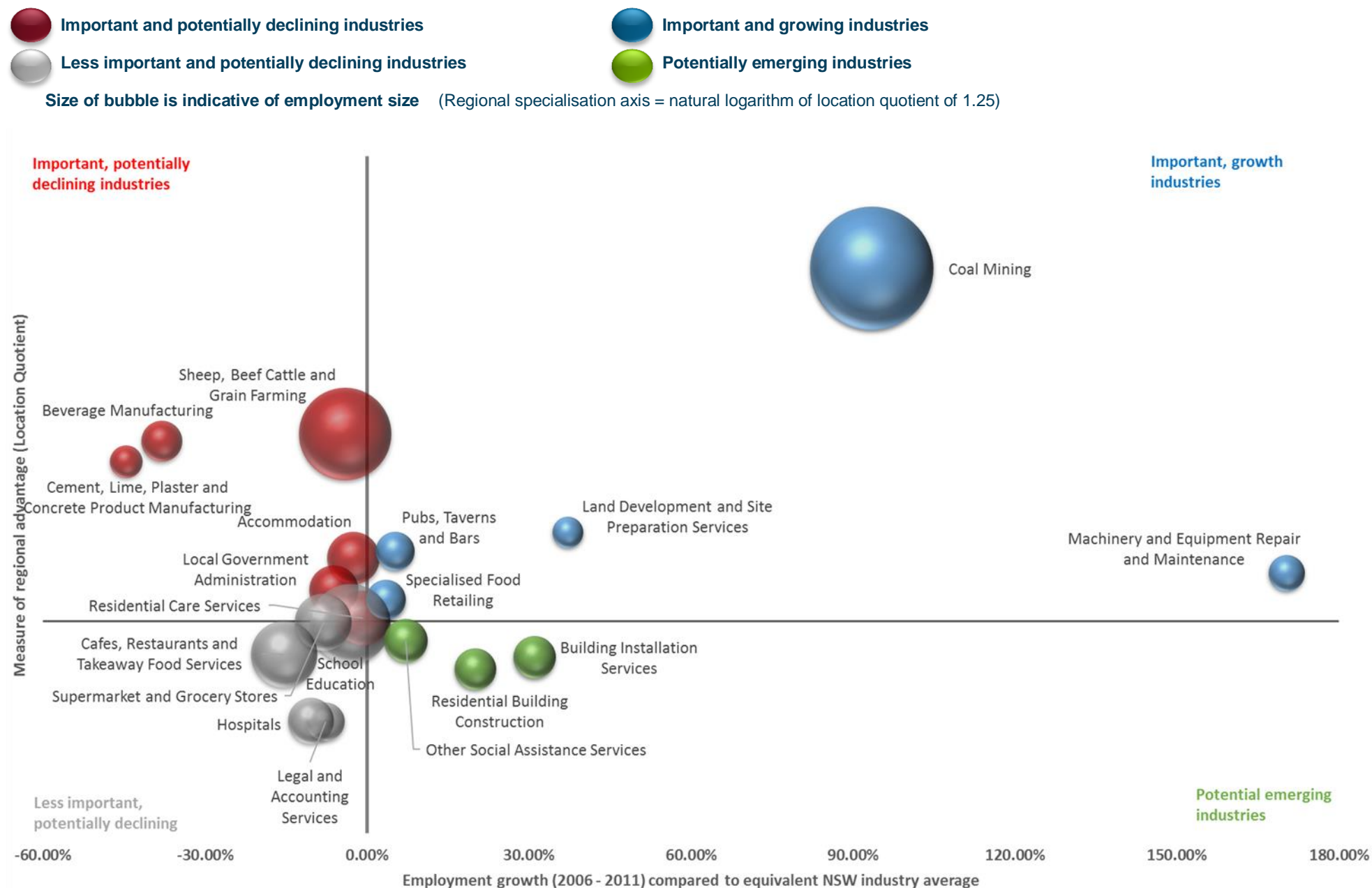
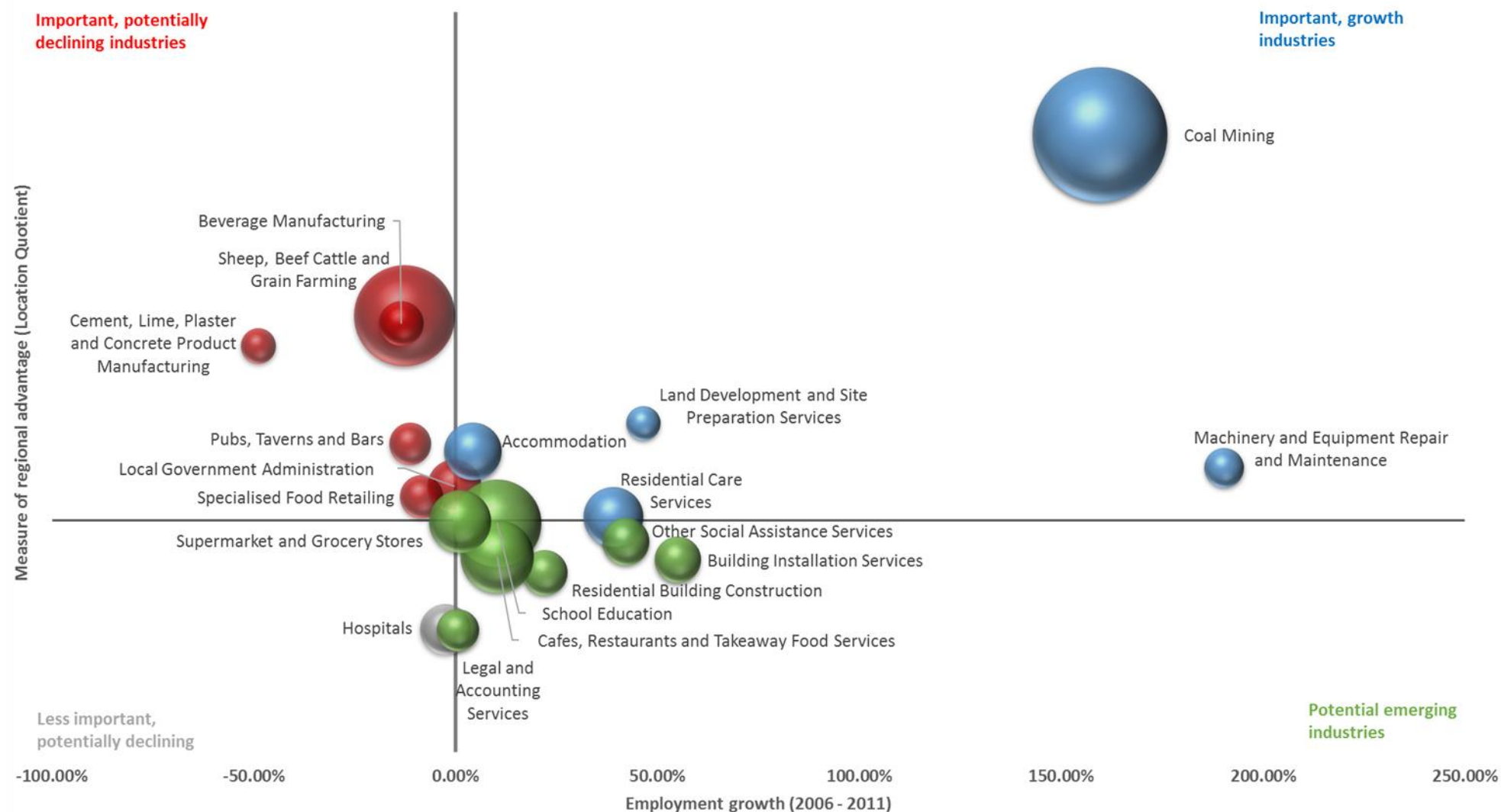


Figure A12.4 Regional advantage and regional employment growth for key industries - Mudgee regional economy



Disaggregation of data shows detail about industries of specialisation (Table A12.7).

Table A12.7 – Industries of regional specialisation in detail - Mudgee regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing	1	864	9.94%	-10.5%	4.33
Agriculture	2	834	9.59%	-9.4%	4.65
Sheep, Beef Cattle and Grain Farming	3	687	7.91%	-4.1%	5.72
Beef Cattle Farming (Specialised)	4	247	2.85%	1.5%	5.98
Sheep Farming (Specialised)	4	228	2.63%	-5.7%	10.89
Sheep-Beef Cattle Farming	4	172	1.98%	-13.2%	11.28
Mining	1	1,351	15.55%	64.3%	15.63
Coal Mining	2/3/4	1,230	14.14%	93.4%	21.98
Manufacturing					
Beverage and Tobacco Product Manufacturing	2	133	1.54%	-33.5%	4.88
Non-Metallic Mineral Product Manufacturing	2	93	1.07%	-42.0%	2.44
Beverage Manufacturing	3	134	1.54%	-38.1%	5.38
Wine and Other Alcoholic Beverage Manufacturing	4	125	1.44%	-12.9%	12.05
Wholesale Trade					
Basic Material Wholesaling	2	122	1.40%	31.2%	1.73
Retail Trade					
Food Retailing	2	374	4.30%	-7.7%	1.28
Motor Vehicle and Motor Vehicle Parts Retailing	2	104	1.20%	-10.7%	1.54
Specialised Food Retailing	3	124	1.42%	3.5%	1.49
Hardware, Building and Garden Supplies Retailing	3	102	1.17%	-6.5%	1.94
Hardware and Building Supplies Retailing	4	88	1.02%	-14.8%	1.91
Accommodation and Food Services	1	753	8.67%	-7.5%	1.26
Accommodation	2/3/4	220	2.53%	-2.0%	2.08
Pubs, Taverns and Bars	3/4	116	1.34%	5.2%	2.20
Public Administration and Safety					
Local Government Administration	3/4	193	2.22%	-6.5%	1.61

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Education and Training					
Primary Education	4	266	3.06%	8.2%	1.46
Secondary Education	4	223	2.56%	3.8%	1.44
Health Care and Social Assistance					
Residential Care Services	2/3	240	2.76%	-0.8%	1.28
Aged Care Residential Services	4	220	2.54%	-6.7%	1.32
Other Services					
Repair and Maintenance	2	225	2.59%	48.0%	1.42
Machinery and Equipment Repair and Maintenance	3	104	1.19%	170.3%	1.84

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

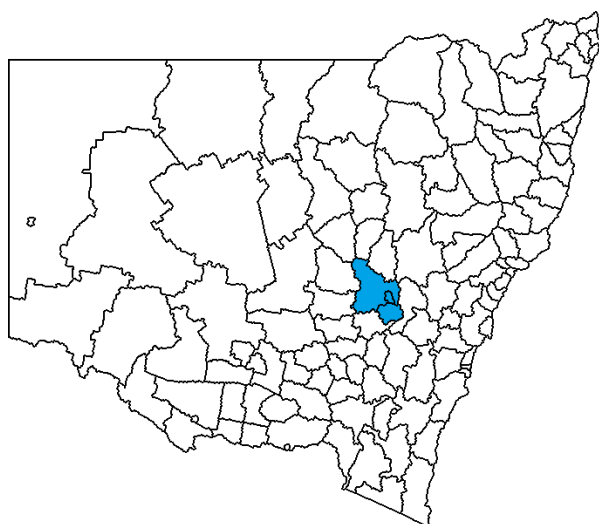
To start the process the most likely industry sectors for the Mudgee regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A12. These are indicative only and are best selected based on the addition of local knowledge.

Box A12	Probable 'key industry sectors' in Mudgee
<ul style="list-style-type: none"> • Mining 	<p>Coal deposits are the chief commodity produced by the mining industry in Mudgee. Despite strong growth from 2006 to 2011 recent falls in commodity prices infer employment may have fallen post 2011.</p>
<ul style="list-style-type: none"> • Agriculture 	<p>Superior agricultural land endowment in the Mudgee region provides a competitive advantage for agriculture. Employment is predominantly in sheep and beef cattle farming, with grape growing also evident.</p>
<ul style="list-style-type: none"> • Wine production 	<p>Making use of the regions agricultural advantage in grape growing wine production is an area of competitive advantage.</p>
<ul style="list-style-type: none"> • Tourism – food and wine 	<p>Food and wine tourism is a niche class of leisure tourism that the Mudgee economy appear to have a strong advantage in, noting the regions grape growing, wine production and accommodation specialisations. This industry is likely to continue to be a significant area of competitive advantage.</p>

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 13 Orange regional economy



Defining the regional economy

The ESS for Orange (Table A13.1) indicates a high proportion of Orange jobs are filled by local residents, with about 23 per cent of jobs filled by labour from outside the LGA. The Orange ESC estimates that approximately 20 per cent of the local labour force travel out of the area for work. In comparison, the ESC for Cabonne and Blayney show that more than 50 per cent of the local labour force travel outside of the area for work. This analysis suggests that Orange is a regional centre and that Cabonne and Blayney are likely to be residential satellites.

Table A13.1 Employment capacity, sufficiency and containment in Orange regional economy LGAs (2011)

	Orange	Cabonne	Blayney
Local labour force	16,789	5,822	3,047
Number of jobs in local area	17,316	4,600	2,428
Number of local jobs held by locals	13,292	2,767	1,463
Number of locals employed outside the area	3,497	3,055	1,584
Employment self-containment (ESC)	0.79	0.48	0.48
Jobs Housing Balance (JHB)	1.03	0.79	0.80
Employment self-sufficiency (ESS)	0.77	0.60	0.60

Given the proximity of other local government areas, further analysis of Cabonne and Blayney employment patterns is required to determine which centre they are most linked to (Table A13.2).

Over 50 per cent of all Blayney workers that are employed outside of the Blayney LGA are employed in the Orange LGA (Table A13.2). The strong link with Orange and the relative weak link with Bathurst is unexpected given that both regional centres are approximately an equal distance from Blayney. Approximately 70 percent of all Cabonne workers that are employed outside of the Cabonne LGA are employed in the Orange LGA, whereas only two per cent are employed in the adjoining Bathurst LGA. **Consequently, the Orange regional economy is defined as the Orange LGA and two neighbouring LGAs of Blayney and Cabonne (Table A13.2).**

Table A13.2 Employment linkages between LGAs around Orange – number and proportion of workers

LGA in which workers are living	Working in Orange	Working in Bathurst	Working in Cowra	Working in Blayney	Working in Cabonne
Blayney (no.)	761	263	26	-	187
Blayney proportion	50.6%	17.5%	1.7%	-	12.4%
Cabonne (no.)	2,017	51	122	74	-
Cabonne proportion	69.9%	1.8%	4.2%	2.6%	-

Regional overview

Table A13.3 Summary by LGA - Orange regional economy

Local Government Area	Area (Ha)	Population Estimate*	Distance to Orange from main town (km)	Estimated Gross Regional Product+
Orange	28,394	41,431	-	\$3,110m
Blayney	152,488	7,409	30.7	\$451m
Cabonne	602,393	13,776	30.2	\$849m
Total	783,275	62,616	-	\$4,410m

*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

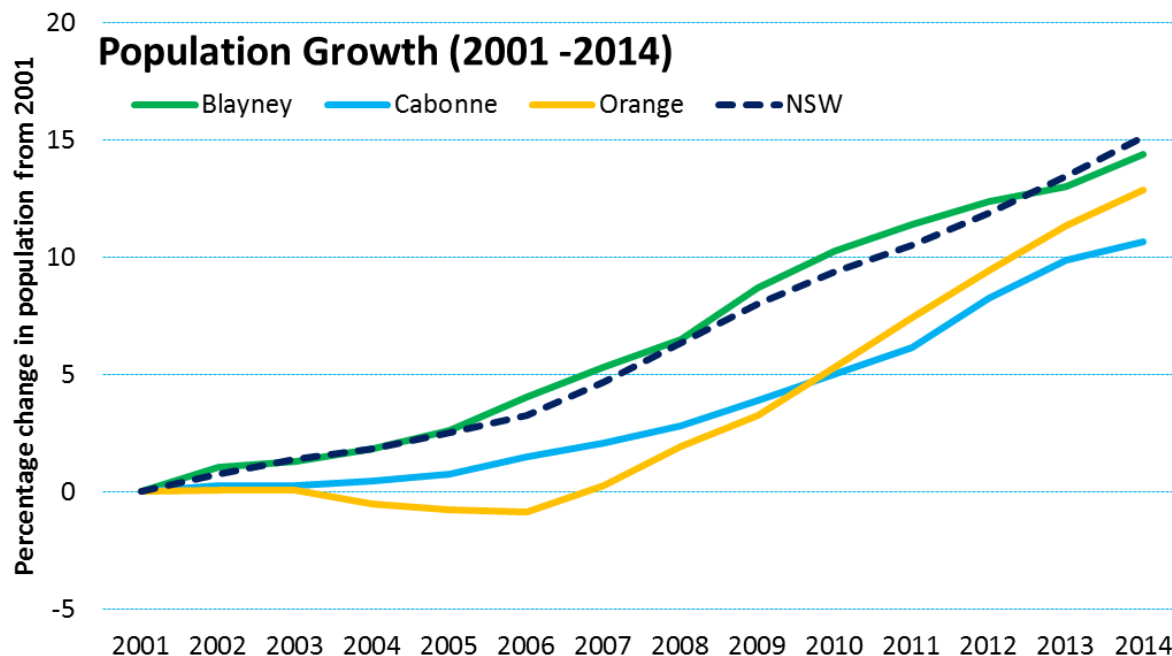
Population dynamics

The Orange regional economy has a population of approximately 62,600 persons. Population grew by 13 per cent (7,000 persons) from 2001 to 2014 which is at a slower rate than in both NSW (15 per cent) and Sydney (18 per cent).

The age demographic profile of the Orange regional economy is similar to the average across NSW albeit with slightly more infants and school aged children, possibly indicative of a positive environment to raise young children. Alternatively this could be a result of the newly completed Orange Hospital that offers superior maternity services compared to the previous hospital.

Population growth, in percentage terms was similar across the three LGAs comprising the Orange regional economy.

Figure A13.1: Population Growth of LGAs in the Orange regional economy (cumulative percent from 2001)



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Orange regional economy is no exception with an aged dependency ratio¹⁰⁴ of 26% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

¹⁰⁴ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Snapshot A13. Composition of resident population (2014)

	Orange	NSW
Ratios (%)		
Aged Dependency Ratio ^A	26	24
Youth Dependency Ratio ^B	35	28
Dependency Ratio ^C	61	52
Proportion^D (%)		
Young Persons (15 to 34)	26	27
Older Persons (65+)	16	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A13.4 Income (Australian Taxation Office data) - Orange regional economy

	Orange	Sydney ¹⁰⁵	NSW
Average Taxable Income (1994-95) - Adjusted ¹⁰⁶	\$42,900	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$51,100	\$62,100	\$56,600
Change	\$8,200	\$9,500	\$7,300
Increase in Real Wage (%)	19.1	18.1	14.8

Real wages grew by 19.1 per cent in the Orange regional economy between 1994-95 and 2012-13. Growth was strongest in the Orange LGA with wages rising by 20.6 per cent in real terms over the period.

Table A13.5 Educational attainment (population aged 15 years and over, 2011 Census) - Orange regional economy

	Orange (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	9.3	23.5	18.4
Advanced or Graduate Diploma	6.7	10.7	9.8
Certificate Qualification	17.1	14.6	17.7
Population with a Post-School Qualification	33.2	48.7	45.8

The skills base of the Orange regional economy is less formally qualified than on average across NSW with a lesser share of the population having obtained a post-school qualification of any kind (33.2 compared to 45.8 per cent).

Table A13.6 Welfare dependency (population aged 15 years and over, 2013) - Orange regional economy

	Orange (%)	Sydney (%)	NSW (%)
Aged Pension	13.9	9.8	12.6
Disability Support Pension	5.8	3.2	4.4
Newstart Allowance	3.1	3	3.5
Total ¹⁰⁷	23.6	16.5	21.3

¹⁰⁵ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

¹⁰⁶ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

¹⁰⁷ Total includes service pensions not shown in table

A slightly larger proportion of persons in the Orange regional economy are dependent on social welfare, than compared to NSW on average.

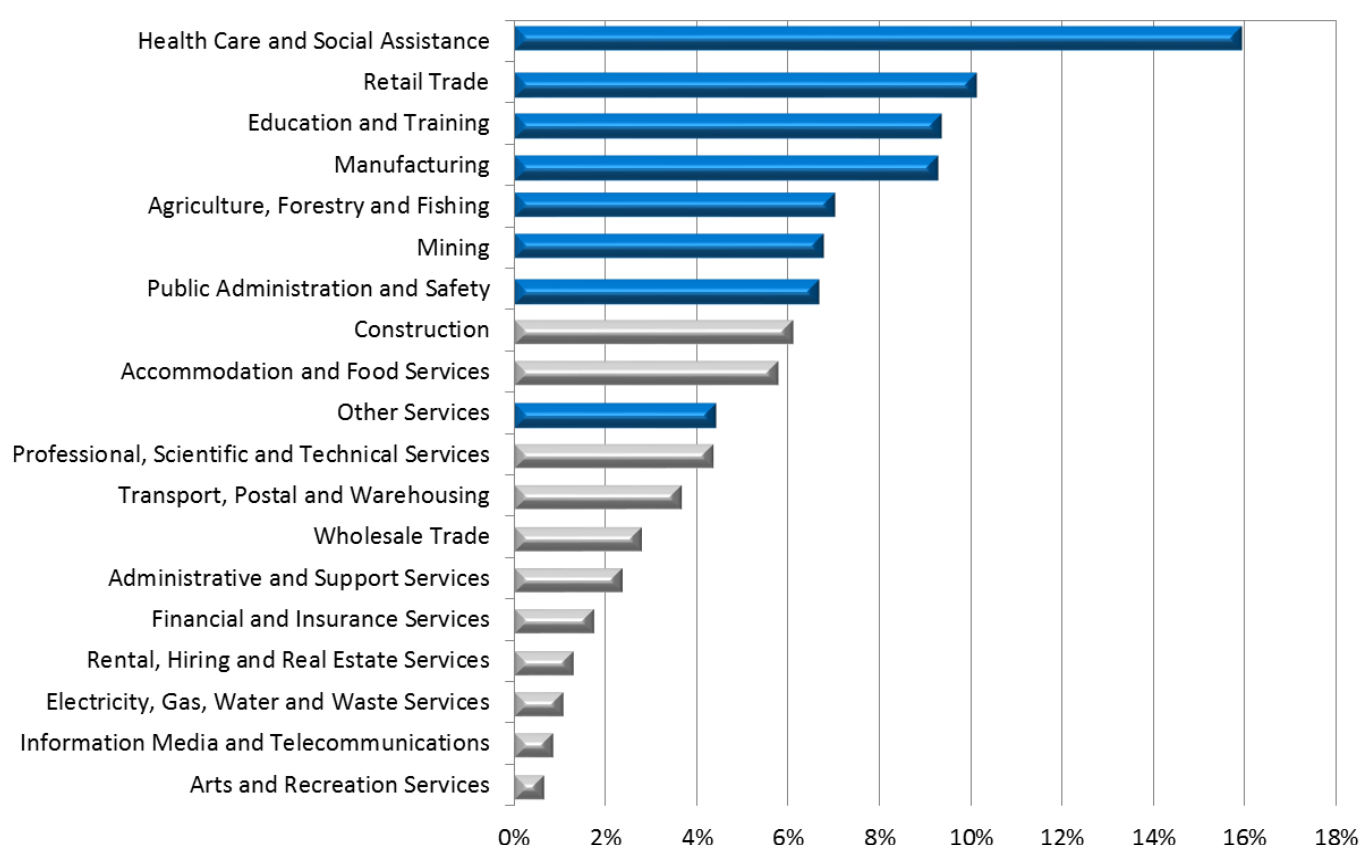
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Orange regional economy demonstrates regional specialisation at one or more ANZSIC level within eight industry divisions (Figure A13.2) and Table A13.7.

Figure A13.2 Percentage of employment in each industry division (ANZSIC Level 1) in the Orange regional economy. Blue bars indicate regional specialisation (LQ larger than 1.25) at one or more ANZSIC level within the division.



When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A13.3), important growth industries in the Orange regional economy are shown to be:

- metal ore mining (gold ore);
- medical services;
- residential care services (mostly aged care); and
- school education.

Of these industries only gold ore mining (mineral deposits) is a key sector with the other industries traditionally being population serving.

However, despite usually being considered a population servicing industry healthcare¹⁰⁸ is emerging as a possible key specialisation, as evidenced by employment growth in both medical services and allied health services in Orange. This specialisation appears to be based on a leveraging of both locational and man-made endowments, namely its pivotal location within the wider Central West region and the recent completion of the new Orange Base Hospital. Healthcare may be a potential future driver of growth in the Orange regional economy.

The specialisation evident in school education is consistent with the Orange regional economy's larger share of young persons (aged 0 to 19) as a proportion of population compared to the NSW average.

Important, yet potentially declining industries in the Orange regional economy that could be characterised as key sectors were identified as domestic appliance manufacturing and sheep, beef cattle and grain farming. Domestic appliance manufacturing was predominantly comprised of the activities of Electrolux in Orange; however this business has recently closed and this sector is therefore no longer likely to be a specialisation.

Sheep, beef cattle and grain farming is a key industry sector in the Orange regional economy making use of the regions superior agricultural land. This is despite employment declining. This may be a consequence of short term variable climatic conditions. Or is reflective of broader changes to the agricultural industry, partly from increasing levels of openness and trade and technological advances that have culminated in greater capital intensity, larger farm sizes (benefitting from greater economies of scale) and subsequently less demand for labour.

Road freight transport and architectural, engineering and technical services are not industry sectors of specialisation but exhibited employment growth and may be emerging industries. Growth in architectural, engineering and technical services may be closely tied to the growth in mining while road freight transport may have an emerging competitive advantage due to locational endowment.

¹⁰⁸ The healthcare industry as defined in this report includes: hospitals; medical services; pathology and diagnostic imaging services; allied health services and other health care services.

Figure A13.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Orange regional economy

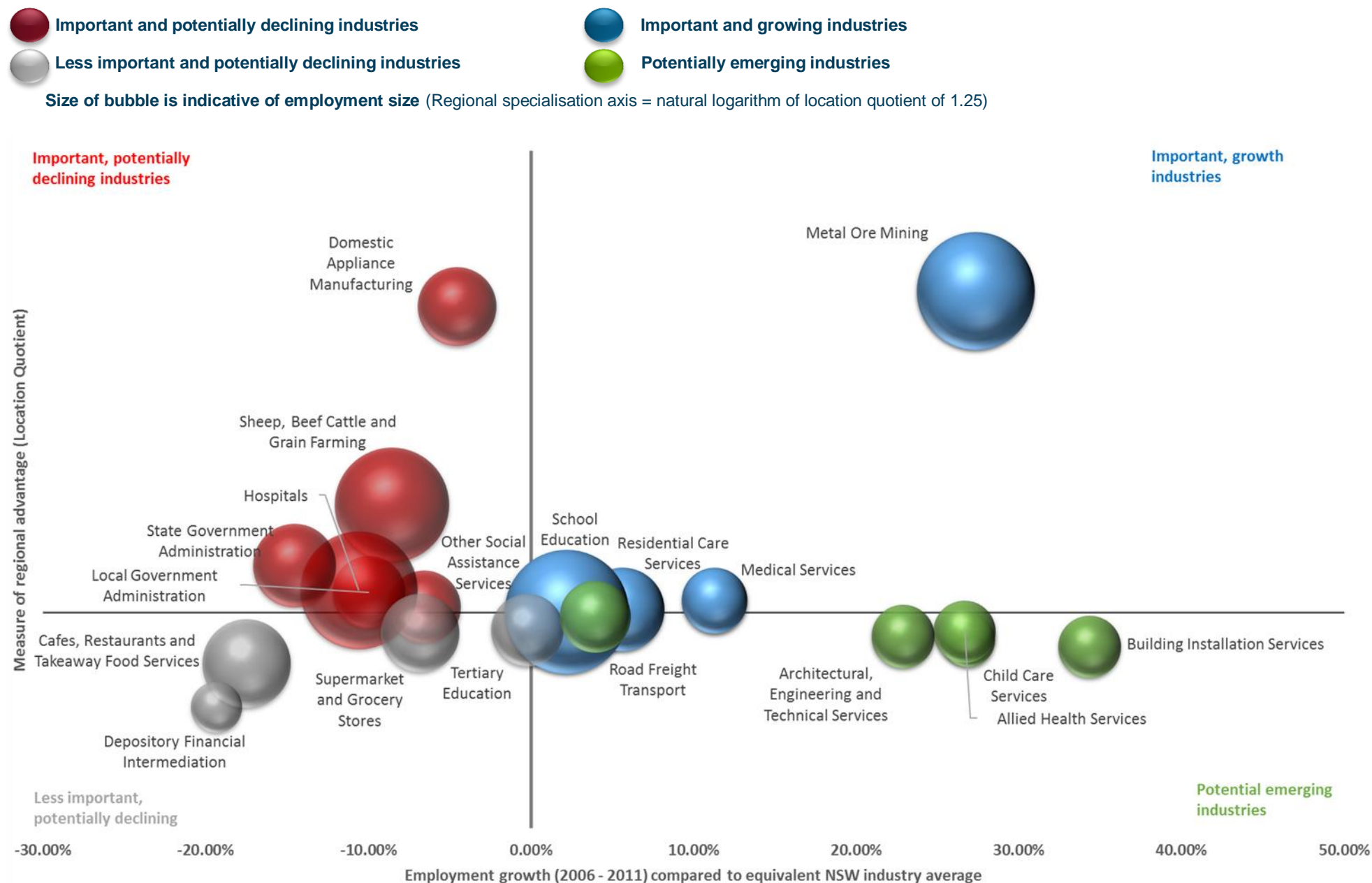
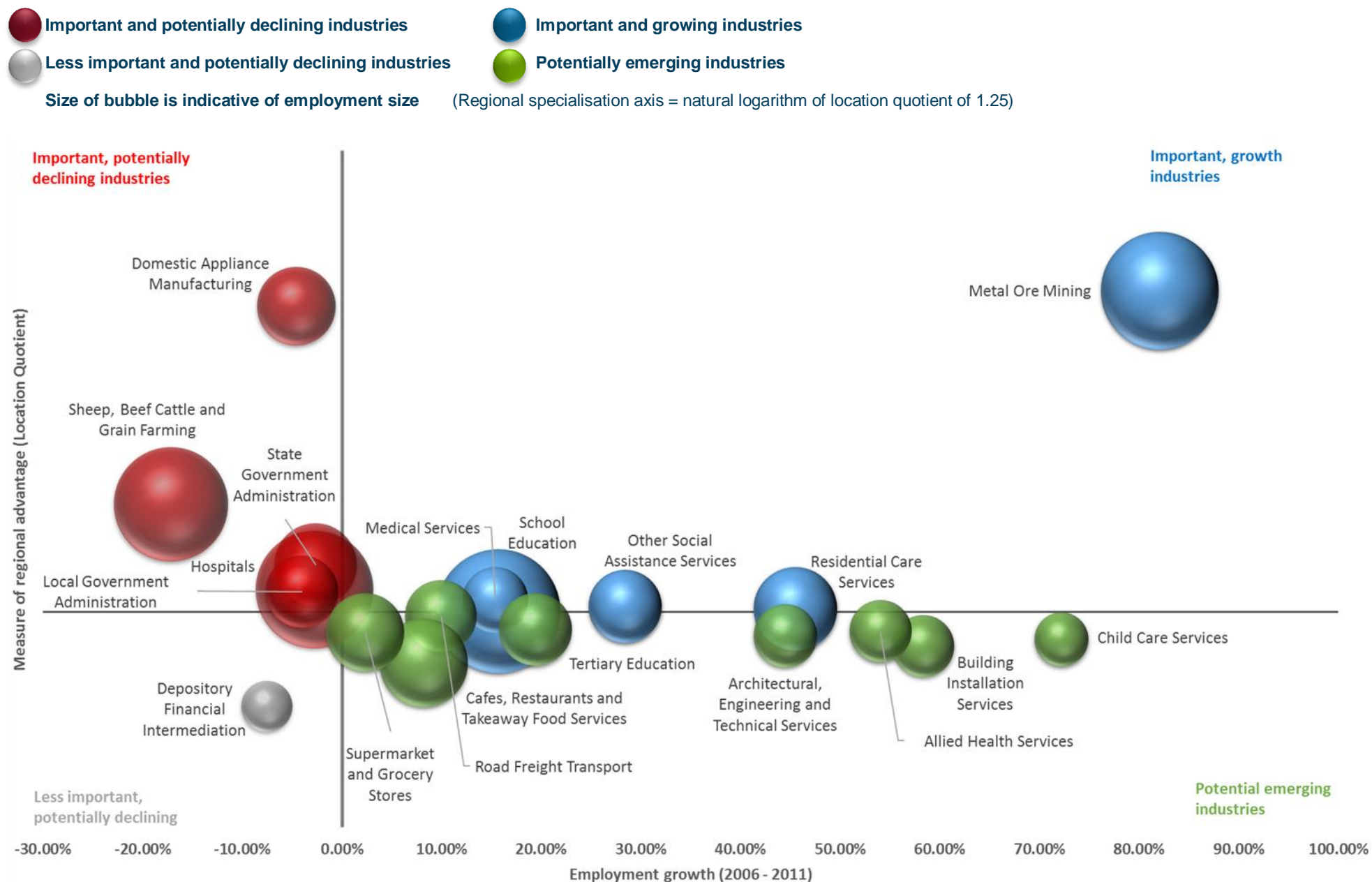


Figure A13.4 Regional advantage and regional employment growth for key industries - Orange regional economy



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Disaggregation of data shows detail about industries of specialisation (Table A13.7).

Table A13.7 – Industries of regional specialisation in detail - Orange regional economy
(industries with LQ ≥ 1.25 , employment size $\geq 1\%$)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%) [*]	Location Quotient in 2011
Agriculture, Forestry and Fishing	1	1,713	7.03%	-8.1%	3.06
Agriculture	2	1,642	6.73%	-7.8%	3.26
Sheep, Beef Cattle and Grain Farming	3	1,287	5.28%	-8.5%	3.82
Beef Cattle Farming (Specialised)	4	408	1.67%	-8.7%	3.52
Sheep Farming (Specialised)	4	313	1.28%	-5.7%	5.33
Mining	1	1,653	6.78%	40.3%	6.82
Metal Ore Mining	2	1,360	5.58%	27.8%	34.91
Exploration and Other Mining	2	246	1.01%	240.7%	9.18
Metal Ore Mining	3	1,360	5.58%	27.3%	34.90
Gold Ore Mining	4	1,302	5.34%	-1.6%	67.27
Manufacturing					
Machinery and Equipment Manufacturing	2	736	3.02%	-9.4%	2.27
Food Product Manufacturing	2	612	2.51%	-15.6%	1.47
Domestic Appliance Manufacturing	3	607	2.49%	-4.5%	29.69
Whiteware Appliance Manufacturing ¹⁰⁹	4	602	2.47%	7.3%	56.40
Retail		-	-	-	-
Motor Vehicle and Motor Parts Retailing	2	248	1.02%	-10.5%	1.31
Public Administration and Safety		-	-	-	-
Public Administration	2	1,356	5.56%	-13.0%	1.47
State Government Administration	3	676	2.77%	-14.5%	2.04
Local Government Administration	3	519	2.13%	-10.0%	1.54
State Government Administration	4	677	2.78%	-14.1%	2.04
Local Government Administration	4	519	2.13%	-9.8%	1.55
Education and Training		-	-	-	-
Preschool and School Education	2	1,602	6.57%	2.3%	1.27
School Education	3	1,504	6.17%	2.2%	1.26

¹⁰⁹ Machinery and Equipment Manufacturing and subcategories Domestic Appliance Manufacturing and Whiteware Appliance Manufacturing were identified as a specialisation based on 2006-2011 data, but are not expected to continue as specialisations following the wind-down and closure of the Orange Electrolux refrigeration factory plant in 2014-16.

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Primary Education	4	657	2.70%	5.5%	1.27
Combined Primary and Secondary Education	4	363	1.49%	-25.4%	1.68
Technical and Vocational Education	4	327	1.34%	-6.1%	1.85
Health Care and Social Assistance	1	3,880	15.92%	-2.1%	1.34
Hospitals	2	1,345	5.52%	-10.7%	1.57
Medical and Other Health Care Services	2	1,062	4.36%	16.8%	1.29
Residential Care Services	2	678	2.78%	5.2%	1.29
Hospitals	3	1,351	5.54%	-10.6%	1.58
Residential Care Services	3	682	2.80%	5.6%	1.30
Other Social Assistance Services	3	520	2.13%	-6.6%	1.32
Medical Services	3	423	1.73%	11.3%	1.42
Hospitals (except Psychiatric Hospitals)	4	1,323	5.43%	-5.6%	1.55
Other Social Assistance Services	4	521	2.14%	-6.9%	1.33
Other Services		-	-	-	-
Repair and Maintenance	2	640	2.62%	31.7%	1.44
Machinery and Equipment Repair and Maintenance	3	311	1.28%	84.3%	1.98
Other Machinery and Equipment Repair and Maintenance	4	275	1.13%	132.8%	3.21

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

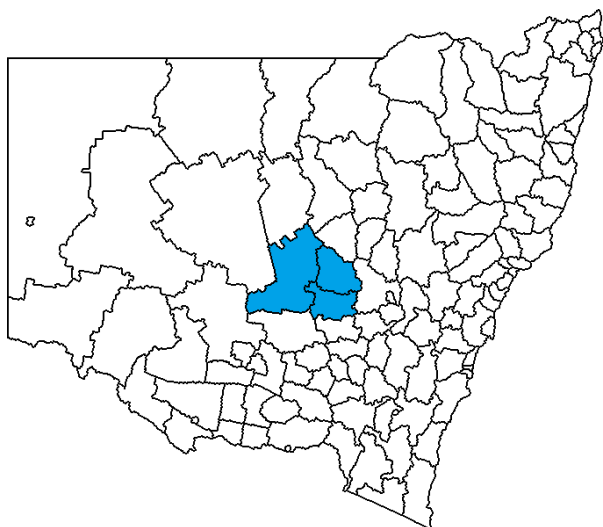
To start the process the most likely industry sectors for the Orange regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A13. These are indicative only and are best selected based on the addition of local knowledge.

Box A13	Probable 'key industry sectors' in Orange
<ul style="list-style-type: none"> • Mining Gold ore deposits are the natural endowment that provides the specialisation in mining. • Agriculture Superior agricultural land endowments provide competitive advantage in agriculture. • Health care Location in respect to other towns and the Orange Base Hospital are endowments that provide Orange with a strong competitive advantage over similar areas in the provision of health care services. If leveraged fully these endowments could result in a stronger specialisation being evident in the health care industry. • Road freight transport Although not a specialisation in 2011 employment in road freight transport increased, and Orange has a possible endowment owing to its central proximity to several key markets. This may be an emerging industry sector. 	

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 14 Parkes regional economy



Defining the regional economy

The ESS for Parkes indicates a high proportion of local jobs are filled by local residents, with only about 11 per cent of jobs filled by labour from outside the LGA. Taken in conjunction with a jobs-housing balance of 0.92 this is indicative that Parkes is a regional centre, with Forbes and Lachlan being residential satellites.

Table A14.1 Employment capacity, sufficiency and containment in Parkes regional economy LGAs (2011)

	Parkes	Forbes	Lachlan
Total local workers (working anywhere)	5,873	3,782	2,791
Number of jobs in local area	5,384	3,440	2,553
Number of local jobs held by locals	4,784	3,036	2,332
Employment self-containment (ESC)	0.81	0.80	0.84
Jobs Housing Balance (JHB)	0.92	0.91	0.91
Employment self-sufficiency (ESS)	0.89	0.88	0.91

Further analysis of Parkes employment linkages indicates that 37 per cent of all Forbes workers that are employed outside of the LGA, in NSW, are employed in the Parkes LGA. Despite the proportion of all Lachlan workers employed outside of the LGA, in NSW, being employed in Parkes being lower, Lachlan is included in the analysis to ensure the regional economy covered is sufficiently large to yield robust results.

Consequently, the Parkes regional economy is defined as the Parkes LGA and neighbouring LGAs of Forbes and Lachlan.

Table A14.2 Employment linkages between LGAs around Parkes – number and proportion of workers

LGA in which workers are living	Working in Parkes	Working in Forbes	Working in Lachlan	Working in Bland	Place of Work Unidentified
Parkes (no.)	-	189	31	5	419
Parkes proportion	-	20.4%	3.4%	0.5%	45.3%
Forbes (no.)	235	-	35	48	169
Forbes proportion	37.2%	-	5.5%	7.6%	26.8%
Lachlan (no.)	51	28	-	60	131
Lachlan proportion	14.2%	7.8%	-	16.8%	36.6%

Regional overview

Table A14.3 Summary by LGA - Parkes regional economy

Local Government Area	Area (Km ²)	Population Estimate*	Distance to Parkes township from main town (km)	Estimated Gross Regional Product+
Parkes	5,958	15,217	-	\$701m
Forbes	4,720	9,759	33.7	\$380m
Lachlan	7,431	6,775	101.7	\$263m
Total	18,109	31,751	-	\$1,344m

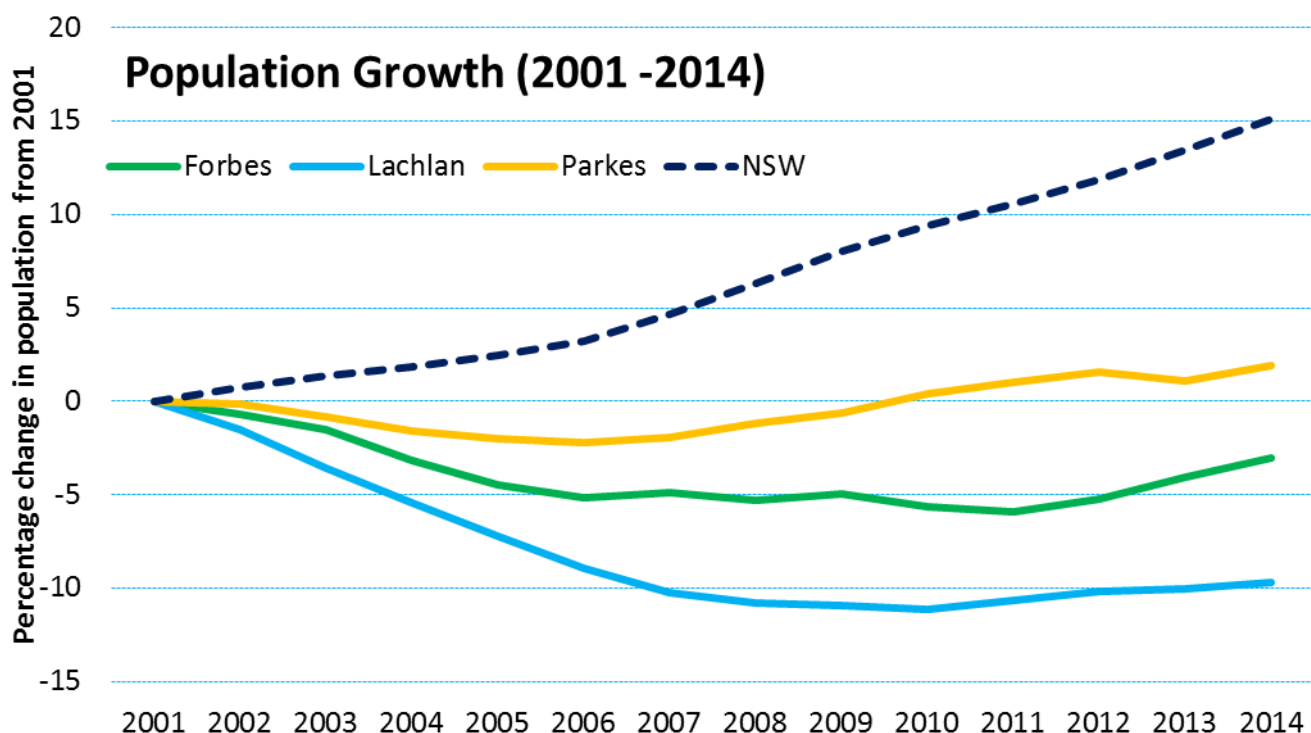
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Parkes regional economy has a population of approximately 31,800. Population declined by 2.3 per cent (1,200 persons) from 2001 to 2014 which was in contrast to population growth across NSW of 15 per cent.

By local government area (Figure A14.1) Parkes was the only LGA in the regional economy where population grew, up by 1.9 per cent, for comparison the total NSW population increased by 15.1 per cent in total. Population in the smaller Forbes and Lachlan shires fell over the thirteen years to 2014.

Figure A14.1 Population growth - Parkes regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Parkes regional economy is no exception with an aged dependency ratio¹¹⁰ of 32% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

¹¹⁰ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A14) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

Snapshot A14. Composition of resident population (2014)

	Parkes	NSW
Ratios (%)		
Aged Dependency Ratio ^A	32	24
Youth Dependency Ratio ^B	35	28
Dependency Ratio ^C	67	52
Proportion^D (%)		
Young Persons (15 to 34)	23	27
Older Persons (65+)	19	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A14.4 Income (Australian Taxation Office data) - Parkes regional economy

	Parkes	Sydney ¹¹¹	NSW
Average Taxable Income (1994-95) - Adjusted ¹¹²	\$39,100	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$43,600	\$62,100	\$56,600
Change	\$4,400	\$9,500	\$7,300
Increase in Real Wage (%)	10.2	18.1	14.8

Real wages grew by 10.2 per cent in the Parkes regional economy between 1994-95 and 2012-13.

Despite being better off the Parkes regional economy was less well-off compared to NSW on average (14.8 per cent).

Table A14.5 Educational attainment (population aged 15 years and over, 2011 Census) - Parkes regional economy

	Parkes (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	7.5	23.5	18.4
Advanced or Graduate Diploma	6.2	10.7	9.8
Certificate Qualification	20.6	14.6	17.7
Population with a Post-School Qualification	34.3	48.7	45.8

In Parkes the proportion of the population with a bachelor or postgraduate degree as their highest level of post-school qualification is less than the NSW average.

Table A14.6 Welfare dependency (population aged 15 years and over, 2013) - Parkes regional economy

	Parkes (%)	Sydney (%)	NSW (%)
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¹¹¹ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

¹¹² Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

Aged Pension	16.5	9.8	12.6
Disability Support Pension	6.9	3.2	4.4
Newstart Allowance	4.2	3	3.5
Total ¹¹³	28.4	16.5	21.3

A larger proportion of Parkes residents are dependent on social welfare, than in NSW on average.

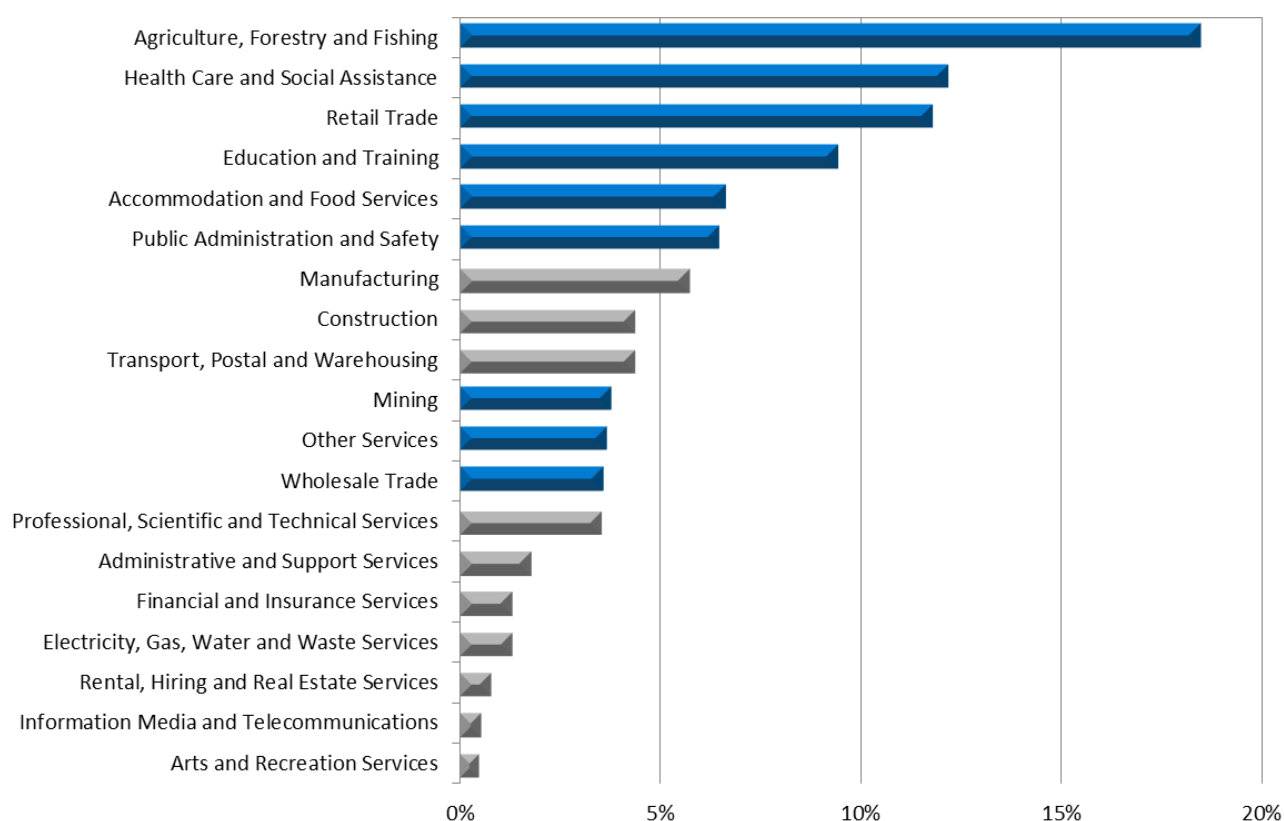
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Parkes regional economy demonstrates regional specialisation at one or more ANZSIC level within 11 industry divisions (Figure A14.2 and Table A14.7).

Figure A14.2 Percentage of employment in each industry division (ANZSIC Level 1) in the Parkes regional economy
Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A14.3), important growth industries in the Parkes regional economy are shown to be:

¹¹³ Total includes service pensions not shown in table

- supermarket and grocery stores; and
- machinery and equipment repair and maintenance.

However these industries are population serving and business enabling respectively. Population serving industry sectors tend to grow and shrink in line with the performance of the key industry sectors because these sectors attract the population core for the other industries to cater to.

Other important, yet potentially declining industries in the Parkes regional economy that can be characterised as key industry sectors (making use of local endowments) are sheep, beef cattle and grain farming; metal ore mining; accommodation; and rail freight transport.

In actual (unadjusted) terms employment in accommodation increased moderately over the period, indicating that accommodation may be an area of stronger competitive advantage for Parkes.

While in actual terms employment in metal ore mining rose strongly over the period, however at a rate slower than across the state. More recently weakening commodity prices and lower than expected increases in demand for commodities have resulted in many mining operations being scaled back, suspended or postponed.

Sheep, beef cattle and grain farming is a key industry sector in the Parkes regional economy making use of the regions superior agricultural land. This is despite employment declining. This may be a consequence of short term variable climatic conditions. Or is reflective of broader changes to the agricultural industry, partly from increasing levels of openness and trade and technological advances that have culminated in greater capital intensity, larger farm sizes (benefitting from greater economies of scale) and subsequently less demand for labour.

Road freight transport and pharmaceutical and other store-based retailing are not industry sectors of specialisation but exhibited employment growth and may be emerging industries. Growth in road freight transport may be indicative of an emerging competitive advantage due to the Parkes regions strategic location for freight.

Figure A14.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Parkes regional economy

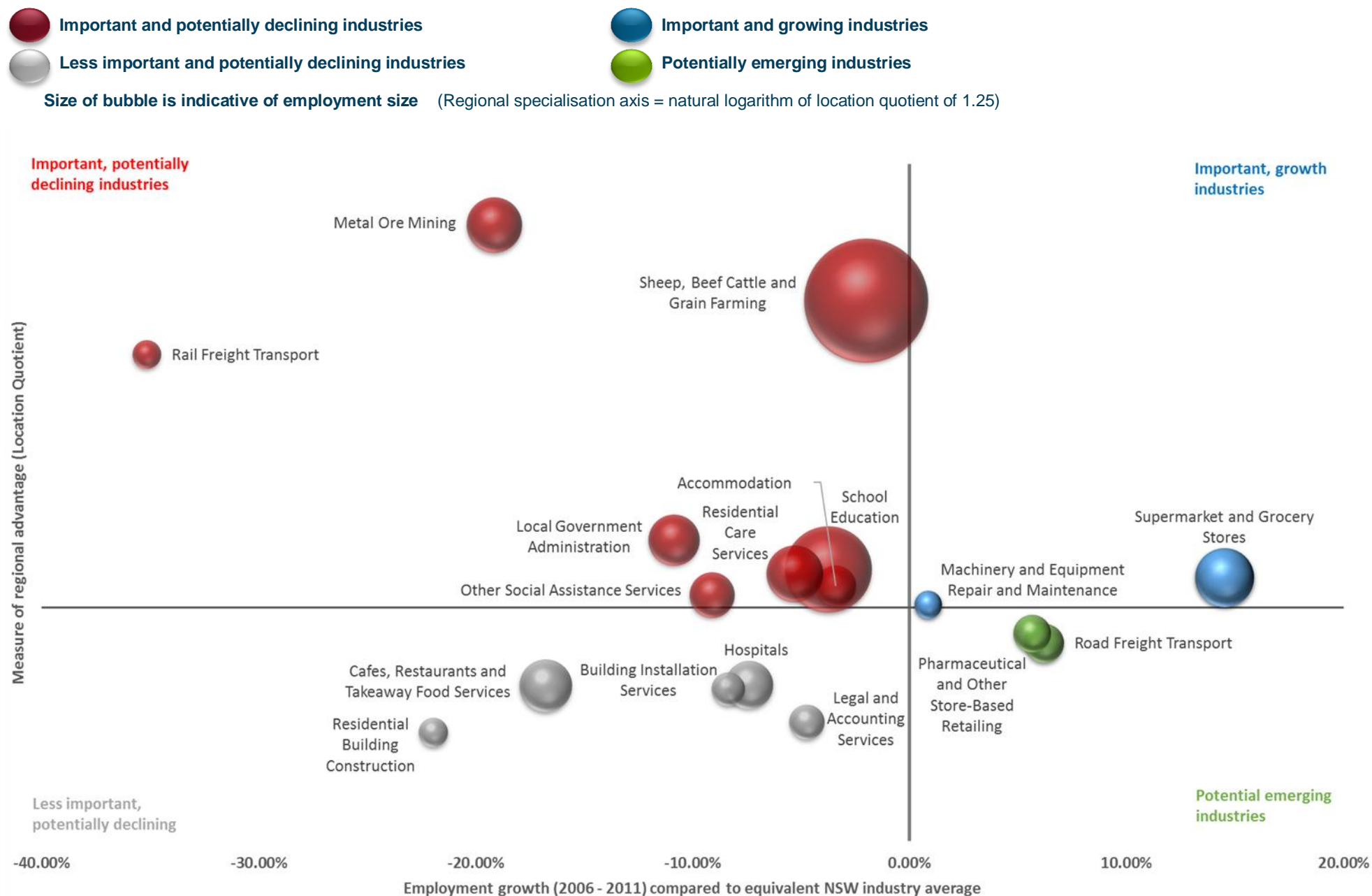
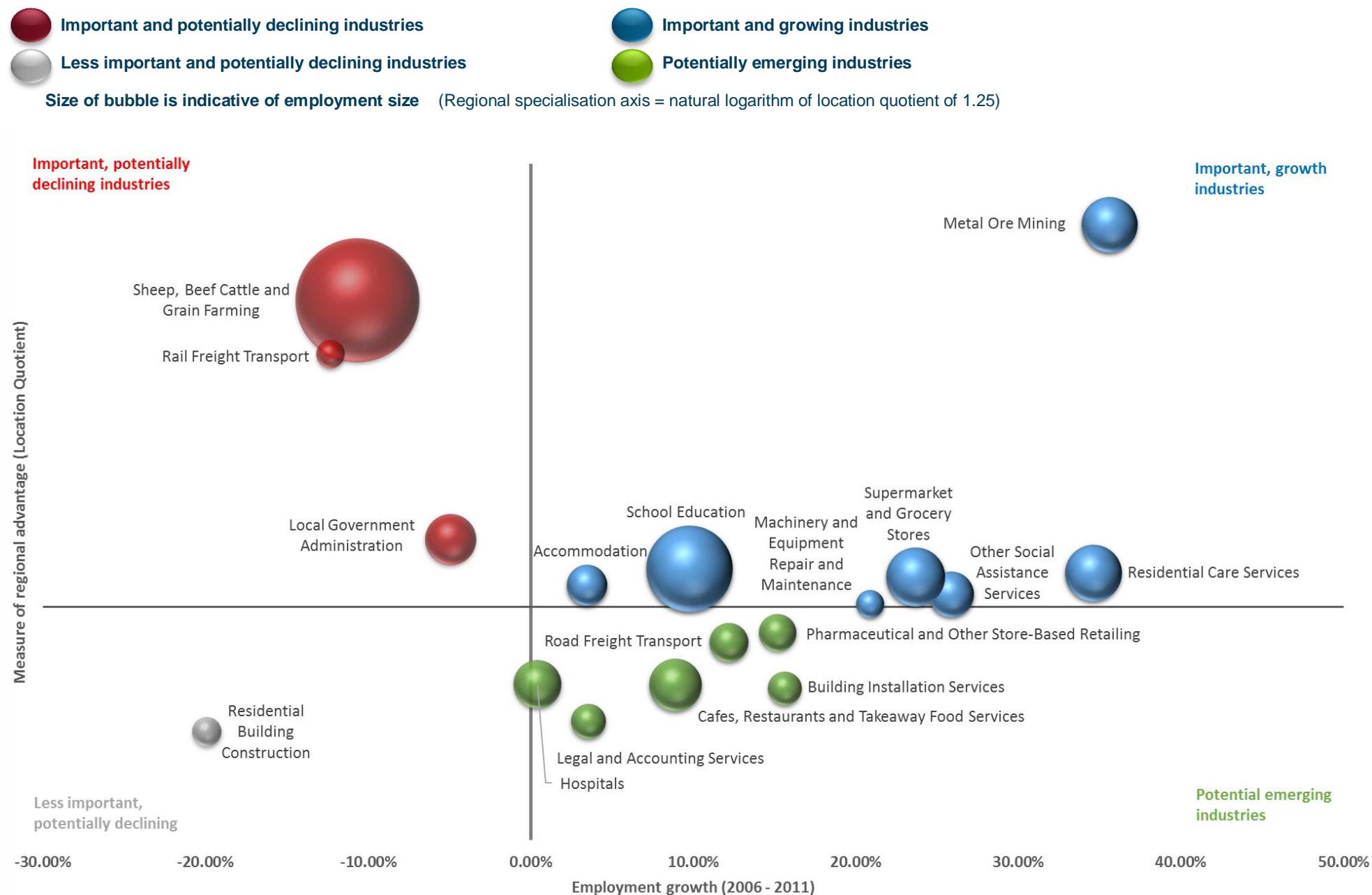


Figure A14.4 Regional advantage and regional employment growth for key industries - Parkes regional economy



Disaggregation of data shows detail about industries of specialisation (Table A14.7).

Table A14.7 Industries of regional specialisation in detail - Parkes regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing					
	1	2,102	18.47%	-0.5%	8.03
Agriculture	2	2,031	17.84%	-0.5%	8.65
Sheep, Beef Cattle and Grain Farming	3	1,899	16.68%	-2.0%	12.07
Grain-Sheep or Grain-Beef Cattle Farming	4	1,021	8.89%	0.9%	31.81
Other Grain Growing	4	374	3.29%	-3.7%	16.30
Sheep Farming (Specialised)	4	268	2.36%	1.2%	9.79
Beef Cattle Farming (Specialised)	4	145	1.27%	-12.3%	2.68
Mining	1	460	3.77%	-27.7%	3.79
Metal Ore Mining	2/3	384	3.38%	-19.1%	21.13
Copper Ore Mining	4	288	2.54%	-26.7%	78.43
Wholesale Trade					
Basic Material Wholesaling	2	177	1.56%	-7.0%	1.92
Retail Trade					
Food Retailing	2	488	4.29%	10.8%	1.27
Motor Vehicle and Motor Vehicle Parts Retailing	2	148	1.30%	-2.3%	1.67
Supermarket and Grocery Stores	3/4	429	3.77%	14.5%	1.56
Department Stores	3/4	120	1.05%	-0.8%	1.48
Accommodation and Food Services					
Accommodation	2/3/4	203	1.78%	-3.4%	1.47
Clubs (Hospitality)	3/4	116	1.02%	-3.3%	1.27
Public Administration and Safety					
Public Administration	2	613	5.38%	-13.7%	1.42
Local Government Administration	3/4	322	2.83%	-10.9%	2.06
State Government Administration	3/4	231	2.02%	-14.9%	1.49
Education and Training					
Preschool and School Education	2	967	8.49%	-4.0%	1.64
School Education	3	920	8.08%	-2.8%	1.67
Primary Education	4	390	3.43%	-0.6%	1.64

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Secondary Education	4	367	3.23%	9.8%	1.81
Combined Primary and Secondary Education	4	164	1.45%	-45.2%	1.65
Health Care and Social Assistance					
Social Assistance Services	2	422	3.88%	-4.9%	1.36
Residential Care Services	2/3	391	3.43%	-5.2%	1.59
Other Social Assistance Services	3/4	251	2.21%	-9.1%	1.37
Child Care Services	3/4	185	1.63%	-13.2%	1.31
Aged Care Residential Services	4	368	3.24%	-9.3%	1.69
Other Services					
Repair and Maintenance	2	271	2.38%	-4.4%	1.31
Automotive Repair and Maintenance	3	169	1.48%	-2.7%	1.36
Other Automotive Repair and Maintenance	4	119	1.05%	-1.3%	1.59

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

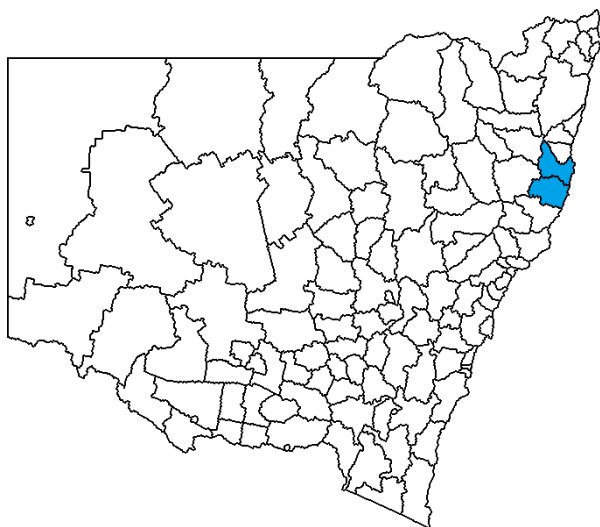
To start the process the most likely industry sectors for the Parkes regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A14. These are indicative only and are best selected based on the addition of local knowledge.

Box A14	Probable 'key industry sectors' in Parkes
<ul style="list-style-type: none"> • Mining <p>Mineral deposit endowments establish mining as an industry of specialisation in Parkes. However, recent commodity price weakness may challenge the short-term viability of this industry.</p> • Agriculture <p>Superior agricultural land endowments in Parkes provide a competitive advantage in agriculture.</p> • Tourism <p>Accommodation as a proxy for tourism is an industry of specialisation. Event based attractions (Parkes Elvis Festival) and other man made tourist attractions are endowments that may underpin this competitive advantage.</p> • Road and rail freight transport <p>Although both small specialisations Parkes central location to key Australian markets and near key transport infrastructure position it with a competitive advantage.</p> 	

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 15 Port Macquarie regional economy



Defining the regional economy

The ESS for Port Macquarie-Hastings LGA (Table A15.1) indicates that five per cent of jobs are filled by labour from outside the LGA, and of these, 34 per cent are filled by residents of Kempsey LGA (Table A15.2). Kempsey LGA is the largest source of labour outside the LGA for Port Macquarie-Hastings LGA.

Of Kempsey LGA jobs which are filled by workers from outside the LGA, 54 per cent are filled by people from Port Macquarie-Hastings LGA (Table A15.2). Port Macquarie and Kempsey are about a 45 minute drive from one another or 50 km's (Table A1.3).

The deeper labour market in Port Macquarie suggests that Port Macquarie is a regional centre and that Kempsey is likely to be a residential satellite.

Table A15.1 Employment capacity, sufficiency and containment - Port Macquarie regional economy LGAs (2011)

	Port Macquarie -Hastings	Kempsey	Greater Taree	Nambucca
Local labour force	26,375	8,980	15,717	1,294
Number of jobs in local area	23,302	8,799	13,973	816
Number of local jobs held by locals	22,136	7,564	12,587	637
Employment self-containment (ESC)	0.84	0.84	0.80	0.49
Jobs Housing Balance (JHB)	0.88	0.98	0.89	0.63
Employment self-sufficiency (ESS)	0.95	0.86	0.90	0.78

Given the proximity of other local government areas, further analysis of Port Macquarie and Kempsey employment patterns is required to determine which centre they are most linked to (Table A15.2).

Table A15.2 Employment linkages between LGAs around Port Macquarie – number and proportion of workers

LGA in which workers are living	Working in Port Macquarie- Hastings	Working in Kempsey	Working in Greater Taree	Working in Nambucca	Working in Great Lakes
Port Macquarie-Hastings (no.)	-	666	242	8	33
Port Macquarie-Hastings proportion	-	19.1%	7%	0.2%	0.9%
Kempsey (no.)	402	-	12	134	7
Kempsey proportion	37%	-	1.1%	12.3%	0.6%
Greater Taree (no.)	304	28	-		1,157
Greater Taree proportion	11.2%	1%	-		42.7%
Nambucca (no.)	16	246	5	-	
Nambucca proportion	1.3%	20%	0.4%	-	

Over 37 percent of all Kempsey workers that are employed outside of the Kempsey LGA are employed in the Port Macquarie-Hastings LGA (Table A15.2). The strong link with Port Macquarie and the relatively weak links with Taree and Nambucca provide further evidence that Kempsey is likely to be a residential satellite of Port

Macquarie. Consequently, the Port Macquarie regional economy is defined as the Port Macquarie-Hastings LGA and the neighbouring LGA of Kempsey.

Regional overview

Table A15.3 Summary by LGA - Port Macquarie regional economy

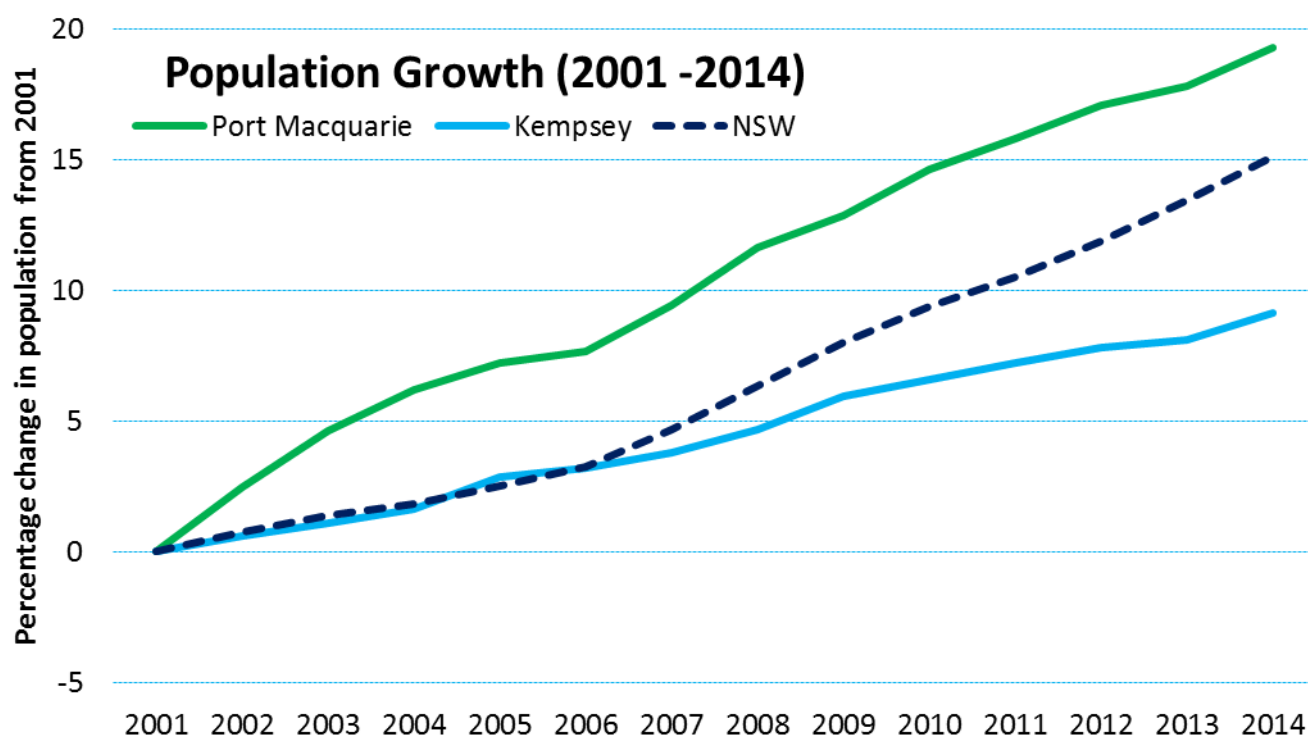
Local Government Area	Area (Ha)	Population Estimate*	Distance to Port Macquarie from main town (km)	Estimated Gross Regional Product+
Port Macquarie-Hastings	368,300	77,481	-	\$3,143m
Kempsey	337,570	29,643	50.6	\$1,261m
Total	705,870	107,124	-	\$4,404m

*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Port Macquarie regional economy has a population of approximately 107,100. Population grew by 16 per cent (15,000 persons) from 2001 to 2014 which was at a faster rate than NSW (15 per cent), although still below the rate of growth experienced in Sydney (18 per cent).

Figure A15.1 Population growth - Port Macquarie regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Port Macquarie regional economy is no exception with an aged dependency ratio¹¹⁴ of 43% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

¹¹⁴ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A15) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

As is the case for many NSW coastal regions aged dependency ratios have also risen, on account of older persons relocating to the coast for retirement or lifestyle reasons, this is particularly the case for Port Macquarie. The trend of retirees moving to the coast has been supported by lower cost of land or rent and the draw of beaches and a warm climate, among a myriad of other factors.

Snapshot A15. Composition of resident population (2014)

	Port Macquarie	NSW
Ratios (%)		
Aged Dependency Ratio ^A	43	24
Youth Dependency Ratio ^B	31	28
Dependency Ratio ^C	74	52
Proportion^D (%)		
Young Persons (15 to 34)	19	27
Older Persons (65+)	25	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A15.4 Income (Australian Taxation Office data) - Port Macquarie regional economy

	Port Macquarie	Sydney ¹¹⁵	NSW
Average Taxable Income (1994-95) - Adjusted ¹¹⁶	\$38,700	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$41,600	\$62,100	\$56,600
Change	\$2,900	\$9,500	\$7,300
Increase in Real Wage (%)	7.6	18.1	14.8

Real wages grew by 7.6 in the Port Macquarie regional economy between 1994-95 and 2012-13.

Despite being better off the Port Macquarie regional economy was less well-off compared to the NSW average (14.8 per cent).

Table A15.5 Educational attainment (population aged 15 years and over, 2011 Census) - Port Macquarie regional economy

	Port Macquarie (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	7.3	23.5	18.4
Advanced or Graduate Diploma	6.9	10.7	9.8
Certificate Qualification	19.2	14.6	17.7
Population with a Post-School Qualification	33.4	48.7	45.8

¹¹⁵ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

¹¹⁶ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

The skills base of the Port Macquarie regional economy is less formally qualified than NSW, on average with a smaller proportion of the workforce having attained any post-school qualification.

Table A15.6 Welfare dependency (population aged 15 years and over, 2013) - Port Macquarie regional economy

	Port Macquarie (%)	Sydney (%)	NSW (%)
Aged Pension	22.5	9.8	12.6
Disability Support Pension	7.7	3.2	4.4
Newstart Allowance	5	3	3.5
Total ¹¹⁷	36.8	16.5	21.3

A significantly larger proportion of persons in the Port Macquarie regional economy are dependent on social welfare, than compared to NSW on average. This is partly attributable to the regions older population, and attractiveness of the region to retirees.

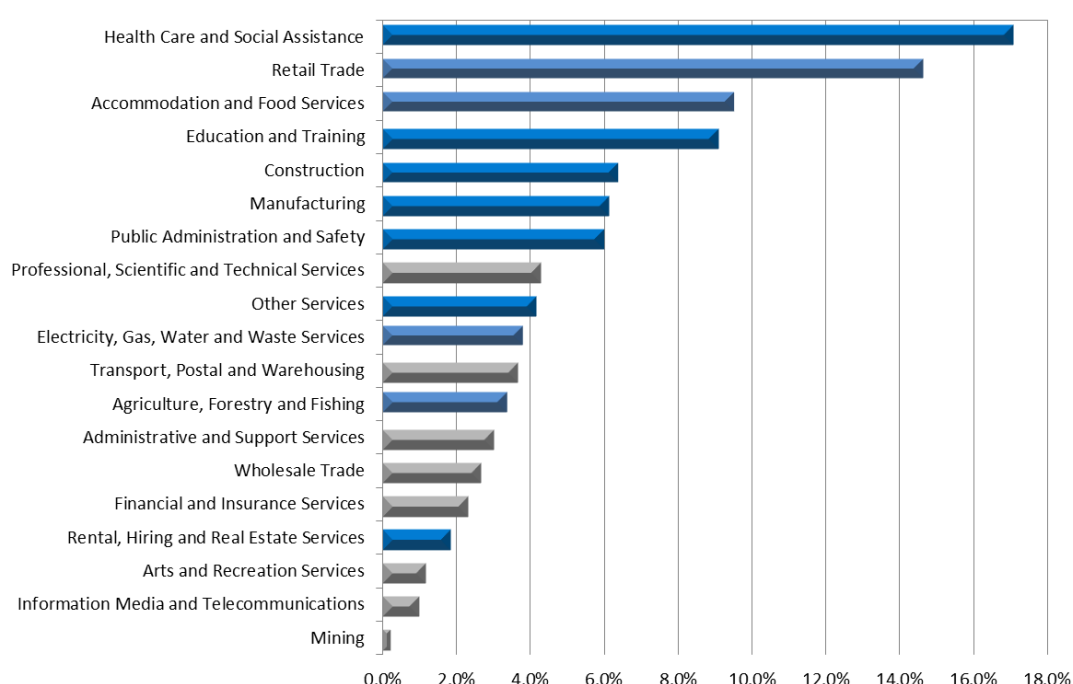
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Port Macquarie regional economy demonstrates regional specialisation at one or more ANZSIC level within eleven industry divisions (Figure A15.2) and Table A15.7.

Figure A15.2 Percentage of employment in each industry division (ANZSIC Level 1) in the Port Macquarie regional economy
Blue bars indicate regional specialisation (LQ larger than 1.25) at one or more ANZSIC level within the division.



¹¹⁷ Total includes service pensions not shown in table

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A15.3), important growth industries in the Port Macquarie regional economy are shown to be:

- electricity distribution;
- accommodation;
- pharmaceutical and other store based retailing;
- other social assistance services; and
- allied health services.

Those industries that make use of a region's locational endowments, such as accommodation and electricity distribution in the case of Port Macquarie (beaches, natural beauty, man-made attractions and location to other regions) can be broadly defined as key industry sectors because they tend to drive growth. The other sectors of the economy tend to exist to support the population (such as retail, health and education), and without the key sectors there would be no population for the other sectors to support.

However, since the 2011 Census the specialisation in electricity distribution in Port Macquarie may have weakened, or ceased noting that Essential Energy who are the major employer in Port Macquarie is reputed to have made 1,000 job cuts across its entire operations and intends to cut 800-1,300 jobs in 2015-2018.

Important, yet potentially declining industries in the Port Macquarie regional economy which leverage the regions endowments and underpin growth were not evident. All potentially declining industries were predominantly engaged in activities that are population serving.

Sheep, beef cattle and grain farming is not an industry sector of specialisation but exhibited employment growth and may be an emerging industry. However caution should be adopted when interpreting these figures as employment growth declined in unadjusted (absolute) terms, just at a slower rate than the competitive NSW industry average, potentially due to more advantageous climatic conditions.

Figure A15.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Port Macquarie regional economy

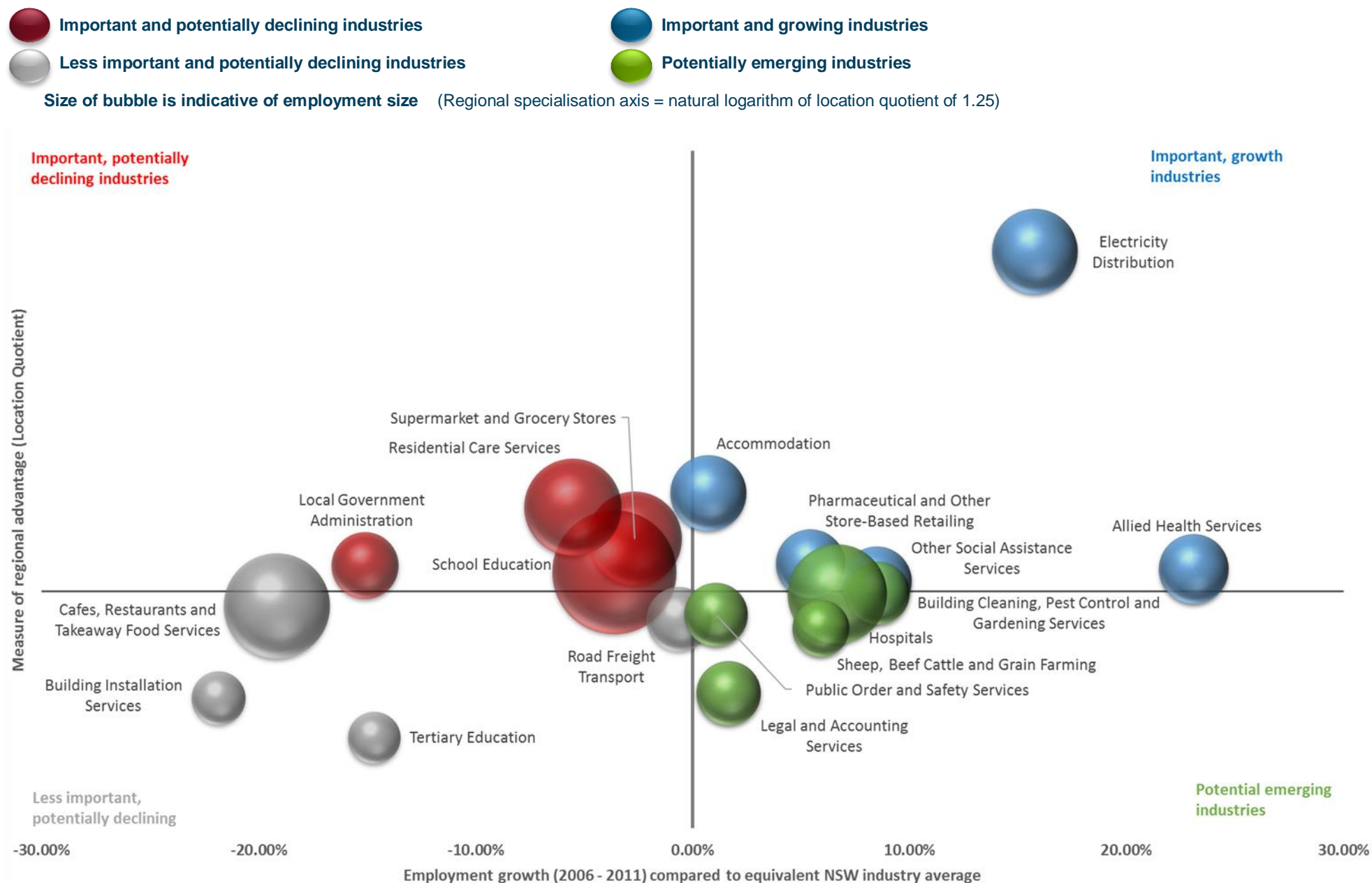
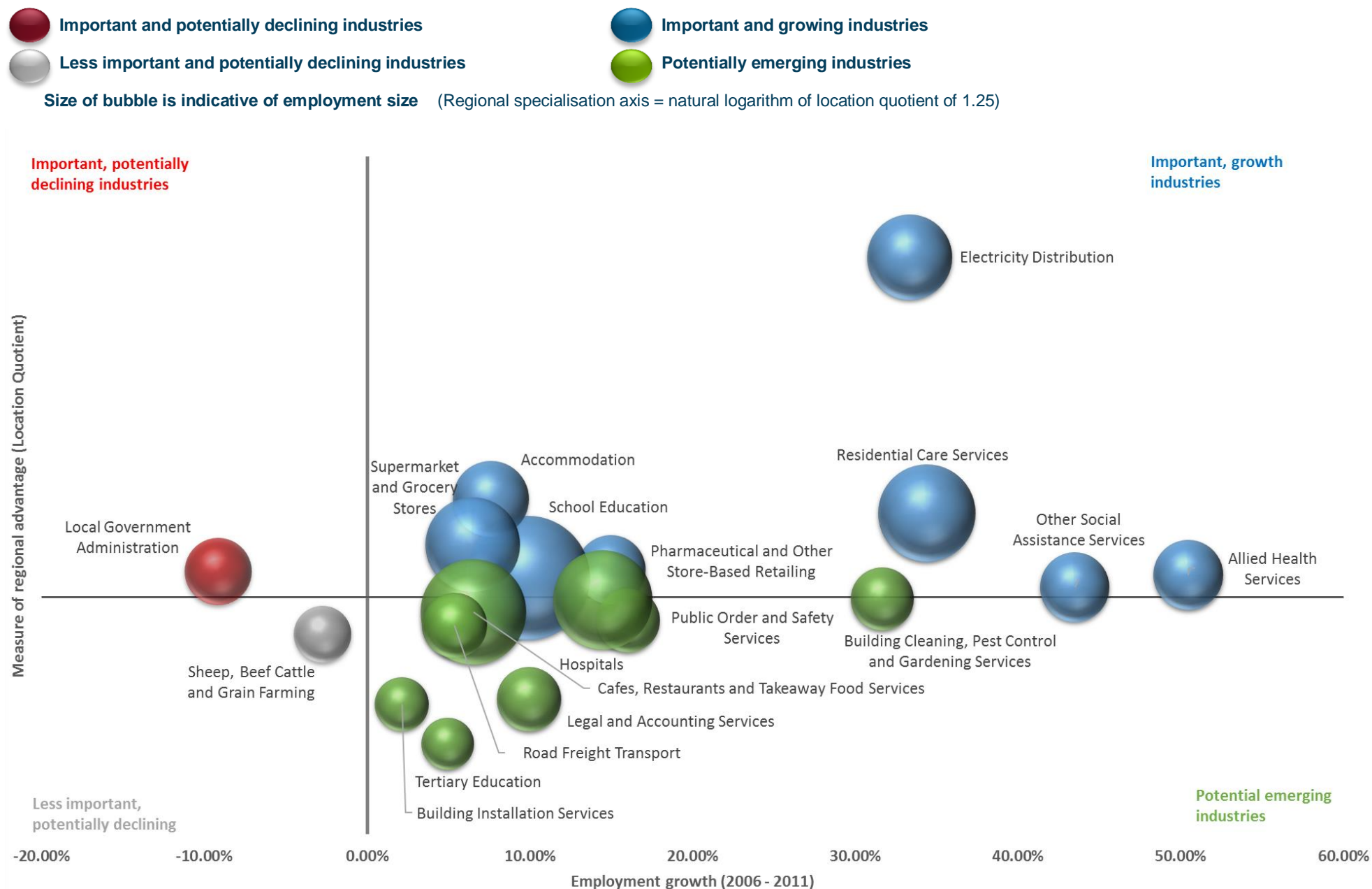


Figure A15.4 Regional advantage and regional employment growth for key industries - Port Macquarie regional economy



Disaggregation of data shows detail about industries of specialisation (Table A15.7).

Table A15.7 Industries of regional specialisation in detail - Port Macquarie regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing	1	1,086	3.38%	-1.3%	1.47
Agriculture	2	906	2.82%	1.2%	1.37
Beef Cattle Farming (Specialised)	4	444	1.38%	-2.5%	2.90
Manufacturing					
Wood Product Manufacturing	2	394	1.23%	1.7%	2.55
Electricity, Gas, Water and Waste Services	1	1,221	3.80%	11.7%	3.36
Electricity Supply	2	1,082	3.37%	14.3%	5.37
Electricity Distribution	3	1,025	3.19%	15.8%	7.24
Electricity Distribution	4	1,023	3.18%	15.2%	7.20
Construction					
Heavy and Civil Engineering Construction	2	362	1.13%	122.7%	1.64
Heavy and Civil Engineering Construction	3	363	1.13%	125.0%	1.64
Retail Trade	1	4,693	14.61%	-9.1%	1.37
Other Store-Based Retailing	2	2,479	7.71%	-13.4%	1.27
Food Retailing	2	1,691	5.26%	-2.5%	1.56
Motor Vehicle and Motor Vehicle Parts Retailing	2	354	1.10%	-10.2%	1.42
Supermarket and Grocery Stores	3	1,273	3.96%	-2.7%	1.64
Pharmaceutical and Other Store-Based Retailing	3	673	2.10%	5.4%	1.44
Specialised Food Retailing	3	406	1.26%	-8.5%	1.32
Hardware, Building and Garden Supplies Retailing	3	345	1.07%	-2.5%	1.78
Supermarket and Grocery Stores	4	1,270	3.95%	-3.0%	1.64
Pharmaceutical, Cosmetic and Toiletry Goods Retailing	4	353	1.10%	-7.9%	1.40
Accommodation and Food Services	1	3,050	9.49%	-11.9%	1.38
Accommodation	2	810	2.52%	0.6%	2.07
Accommodation	3	811	2.52%	0.7%	2.08
Clubs (Hospitality)	3	441	1.37%	8.5%	1.71
Takeaway Food Services	4	875	2.72%	-22.1%	1.28
Accommodation	4	810	2.52%	0.6%	2.07
Clubs (Hospitality)	4	441	1.37%	8.5%	1.71

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Rental, Hiring and Real Estate Services					
Real Estate Services	3	414	1.29%	-13.3%	1.30
Real Estate Services	4	414	1.29%	-13.7%	1.29
Public Administration and Safety					
		-	-	-	-
Local Government Administration	3	631	1.96%	-15.1%	1.43
Central Government Administration	3	391	1.22%	38.7%	1.44
Local Government Administration	4	631	1.96%	-15.1%	1.43
Central Government Administration	4	392	1.22%	38.9%	1.44
Education and Training					
		-	-	-	-
Preschool and School Education	2	2,306	7.18%	-5.1%	1.39
School Education	3	2,172	6.76%	-3.6%	1.38
Primary Education	4	1,051	3.27%	1.7%	1.54
Secondary Education	4	886	2.76%	-7.1%	1.53
Technical and Vocational Education and Training	4	346	1.08%	-8.4%	1.48
Health Care and Social Assistance					
	1	5,482	17.06%	5.5%	1.43
Medical and Other Health Care Services	2	1,511	4.70%	8.1%	1.39
Residential Care Services	2	1,335	4.16%	-5.6%	1.93
Social Assistance Services	2	1,242	3.87%	3.3%	1.35
Residential Care Services	3	1,338	4.16%	-5.5%	1.93
Allied Health Services	3	683	2.13%	23.1%	1.40
Other Social Assistance Services	3	681	2.12%	8.5%	1.32
Child Care Services	3	563	1.75%	-0.7%	1.41
Medical Services	3	556	1.73%	-0.9%	1.41
Aged Care Residential Services	4	1,253	3.90%	-3.8%	2.04
Other Social Assistance Services	4	680	2.12%	7.8%	1.31
Child Care Services	4	563	1.75%	-0.8%	1.41
General Practice Medical Services	4	444	1.38%	6.5%	1.54
Other Services					
		-	-	-	-
Automotive Repair and Maintenance	3	476	1.48%	-1.0%	1.36
Personal Care Services	3	350	1.09%	-9.7%	1.30
Hairdressing and Beauty Services	4	347	1.08%	-7.0%	1.32

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

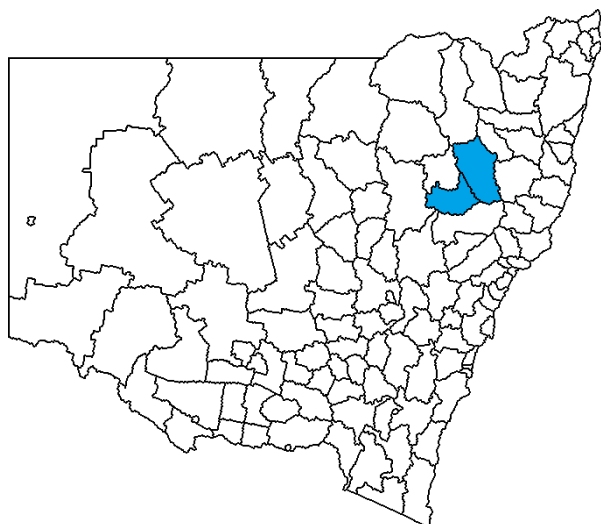
To start the process the most likely industry sectors for the Port Macquarie regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A15. These are indicative only and are best selected based on the addition of local knowledge.

Box A15	Probable 'key industry sectors' in Port Macquarie
•	<p>Health care</p> <p>This industry sector directly employs 9% of the workforce in the Port Macquarie regional economy. It draws its competitive advantage from the regions pleasant climate, beaches which in turn attract retirees that demand these services.</p>
•	<p>Aged care</p> <p>Similar to health care this industry derives advantage from regional endowments that attract retirees. This industry directly employs 4% of the workforce of the regional economy.</p>
•	<p>Tourism</p> <p>Accommodation as a proxy for tourism is an industry of specialisation with locational endowments such as beaches, sporting grounds and a pleasant climate creating the competitive advantage.</p>

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 16 Tamworth regional economy



Defining the regional economy

The ESS for Tamworth (Table A16.1) indicates a high proportion of Tamworth jobs are filled by local residents, with about five per cent of jobs filled by labour from outside the LGA. The Tamworth ESC estimates that approximately 12 per cent of the local labour force travel out of the area for work. In comparison, the ESC for Liverpool Plains shows that more than 25 per cent of the local labour force travel outside of the area for work. This analysis suggests that Tamworth is a regional centre and that Liverpool Plains is likely to be residential satellite.

Table A16.1 Employment capacity, sufficiency and containment in Tamworth regional economy LGAs (2011)

	Tamworth	Liverpool Plains
Local labour force	24,122	2,983
Number of jobs in local area	22,127	2,605
Number of local jobs held by locals	21,107	2,201
Employment self-containment (ESC)	0.88	0.74
Jobs Housing Balance (JHB)	0.92	0.87
Employment self-sufficiency (ESS)	0.95	0.84

Further analysis of the linkages between Tamworth and the Liverpool Plains reveals that roughly 50 per cent of all Liverpool Plains workers that are employed outside of the Liverpool Plains LGA are employed in the Tamworth LGA (Table A16.2). The strong link with Tamworth and the relatively weak links to all other LGAs provides further evidence suggesting that the employment market of Tamworth is a regional centre and that the Liverpool Plains is likely to be a regional satellite. **Consequently, the Tamworth regional economy is defined as the Tamworth LGA and the neighbouring LGA of Liverpool Plains.**

Table A16.2 Employment linkages between LGAs around Tamworth – number and proportion of workers

LGA in which workers are living	Working in Tamworth	Working in Liverpool Plains	Working in Gunnedah
Tamworth (no.)	-	241	186
Tamworth proportion	-	10.3%	8.0%
Liverpool Plains (no.)	343	-	63
Liverpool Plains proportion	49.5%	-	9.1%
Gunnedah (no.)	147	58	-
Gunnedah proportion	19.3%	7.6%	-

Regional overview

Table A16.3 Summary by LGA - Tamworth regional economy

Local Government Area	Area (Ha)	Population Estimate*	Distance to Tamworth from main town (km)	Estimated Gross Regional Product+
Tamworth	988,420	60,495	-	\$2,800
Liverpool Plains	508,230	7,819	101	\$372
Total	1,496,650	68,314	-	\$3,172

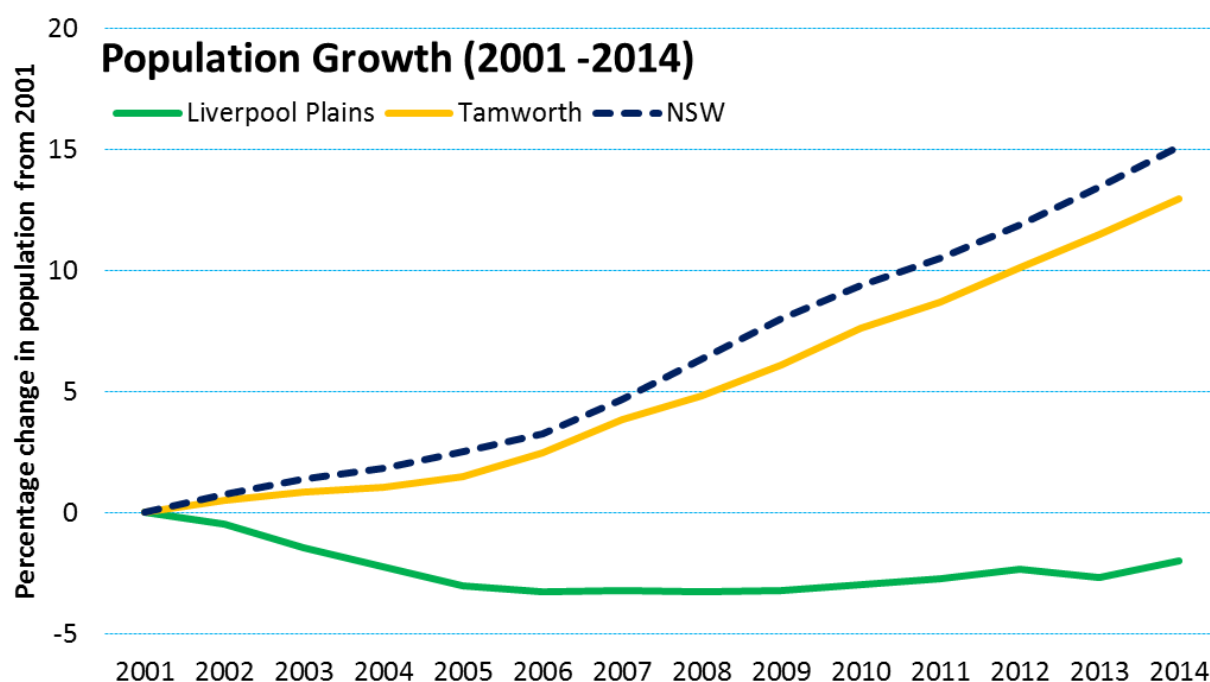
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Tamworth regional economy has a population of approximately 68,300. Population grew by 11 per cent (6,300 persons) from 2001 to 2014 which was at a slower rate than both NSW (15 per cent) and Sydney (18 per cent).

By local government area, the larger Tamworth LGA accounted for the entirety of the region's population growth, with the smaller satellite town of the Liverpool Plains recording a decline in population (minus two per cent).

Figure A16.1 Population growth - Tamworth regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Tamworth regional economy is no exception with an aged dependency ratio¹¹⁸ of 29% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A14) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

¹¹⁸ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Snapshot A16. Composition of resident population (2014)

	Tamworth	NSW
Ratios (%)		
Aged Dependency Ratio ^A	29	24
Youth Dependency Ratio ^B	33	28
Dependency Ratio ^C	62	52
Proportion^D (%)		
Young Persons (15 to 34)	24	27
Older Persons (65+)	18	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A16.4 Income (Australian Taxation Office data) - Tamworth regional economy

	Tamworth	Sydney ¹¹⁹	NSW
Average Taxable Income (1994-95) - Adjusted ¹²⁰	\$41,700	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$44,200	\$62,100	\$56,600
Change	\$2,500	\$9,500	\$7,300
Increase in Real Wage (%)	6.1	18.1	14.8

Real wages grew by 6.1 per cent in the Tamworth regional economy between 1994-95 and 2012-13. This was despite real wages falling in the Liverpool Plains by -1.6 per cent over the same period.

Despite being better off, on average, the Tamworth regional economy was less well-off compared to NSW on average (14.8 per cent).

Table A16.5 Educational attainment (population aged 15 years and over, 2011 Census) - Tamworth regional economy

	Tamworth (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	7	23.5	18.4
Advanced or Graduate Diploma	6	10.7	9.8
Certificate Qualification	17.9	14.6	17.7
Population with a Post-School Qualification	30.9	48.7	45.8

The skills base of the Tamworth regional economy is less formally qualified than NSW, on average with a smaller share of the population having attained any level of post-school qualification.

Table A16.6 Welfare dependency (population aged 15 years and over, 2013) - Tamworth regional economy

	Tamworth (%)	Sydney (%)	NSW (%)
Aged Pension	16.1	9.8	12.6
Disability Support Pension	5.8	3.2	4.4
Newstart Allowance	4.6	3	3.5
Total ¹²¹	27.3	16.5	21.3

¹¹⁹ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

¹²⁰ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

A larger proportion of people in the Tamworth regional economy are dependent on social welfare compared to the NSW average.

Industries of regional specialisation

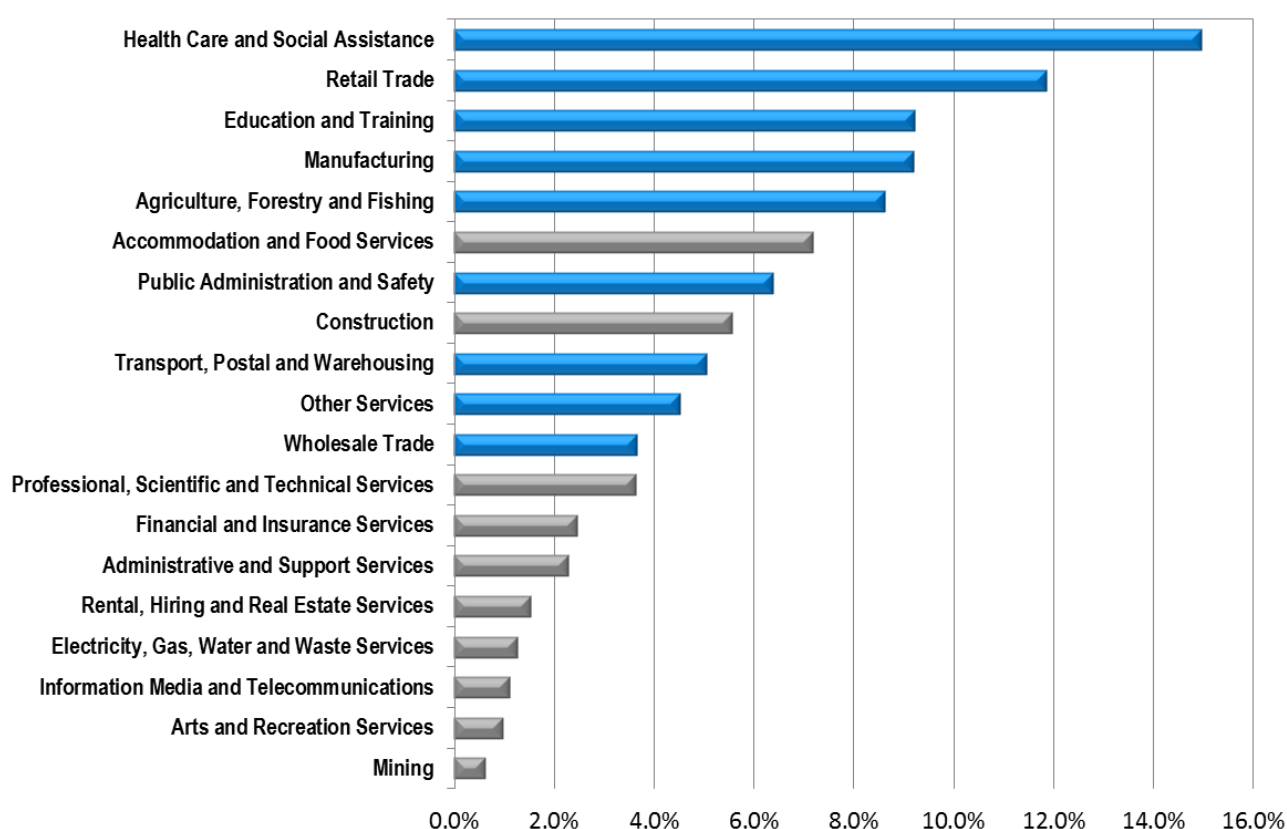
The evidence from the pilot study suggests that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries concurrently, particularly for smaller regional economies as resources will be stretched more thinly. Therefore when the aim is to maximise local economic growth there is a need to target efforts to only a few industries of key specialisation, notwithstanding the need to spread a regional economy's exposure to the fortunes of individual industries.

Industries that make use of a region's endowments (natural, man-made or locational) can be broadly defined as key industry sectors because they tend to be the 'engines of growth'. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Tamworth regional economy demonstrates regional specialisation at one or more ANZSIC level within nine industry divisions (Figure A16.2) and Table A16.7.

Figure A16.2 Percentage of employment in each industry division (ANZSIC Level 1) - Tamworth regional economy

Blue bars indicate regional specialisation (LQ larger than 1.25) at one or more ANZSIC level within the division.



When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A16.3), the important growth industry in the Tamworth regional economy is shown to be:

- other social assistance services.

However other social assistance services primarily operates to serve the broader population base and is not typically, an originator of regional economic growth, instead following changes in population composition.

¹²¹ Total includes service pensions not shown in table

Important, yet potentially declining industries in the Tamworth regional economy that could be characterised as key sectors were identified as sheep, beef cattle and grain farming, meat and meat product manufacturing (mostly poultry) and road freight transport.

Despite declining in employment relative to the respective NSW industry average meat and meat product manufacturing grew in absolute terms.

Sheep, beef cattle and grain farming is a key industry sector in the Tamworth regional economy making use of the regions superior agricultural land. This is despite employment declining. This may be a consequence of short term variable climatic conditions. Or is reflective of broader changes to the agricultural industry, partly from increasing levels of openness and trade and technological advances that have culminated in greater capital intensity, larger farm sizes (benefitting from greater economies of scale) and subsequently less demand for labour.

Allied health services, employment services and building installation services are not industry sectors of specialisation but exhibited employment growth and may be emerging industries. However each of these sectors primarily exist to support the population and are unlikely to be strong drivers of sustainable economic growth.

Figure A16.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Tamworth regional economy

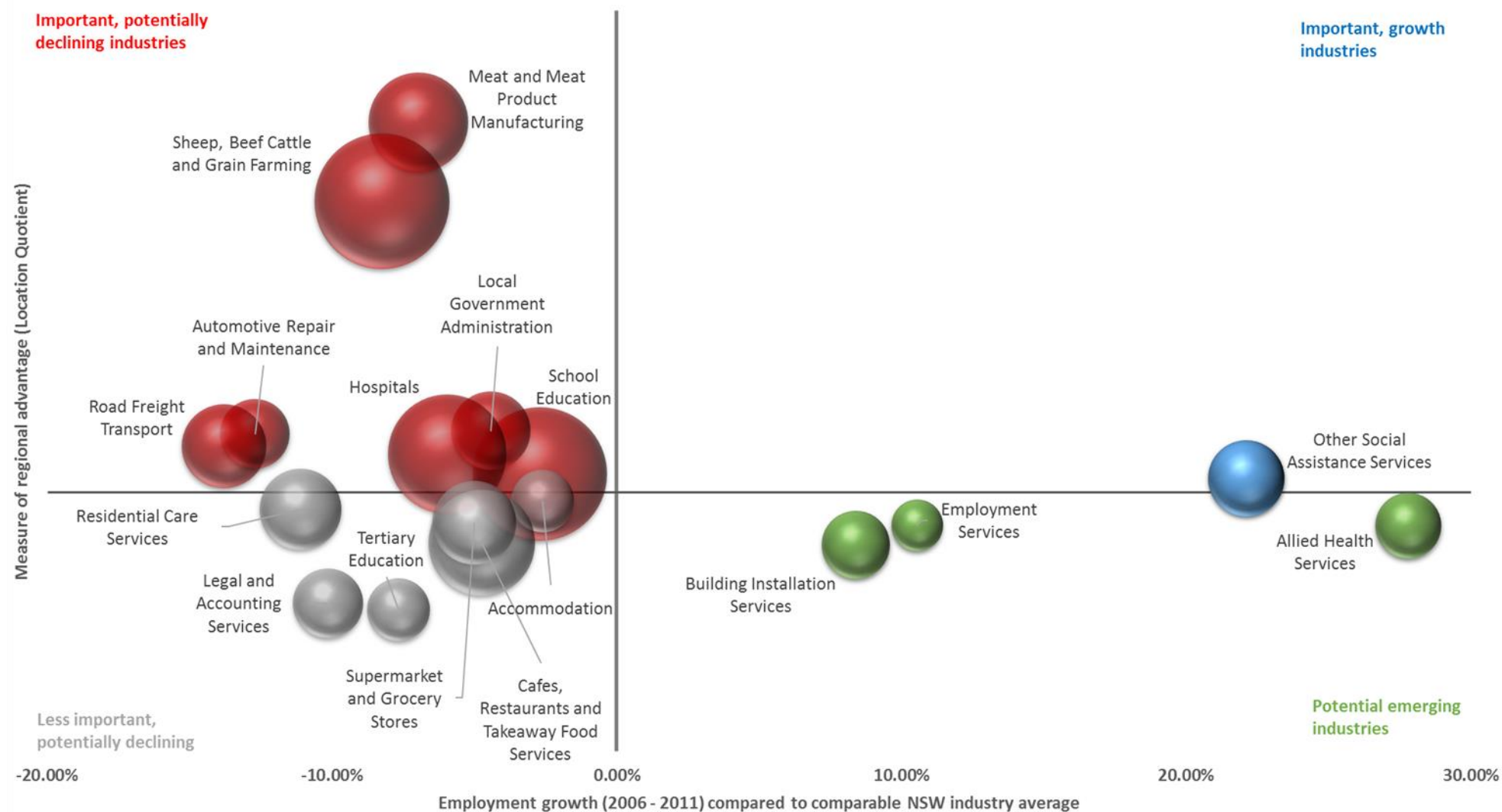
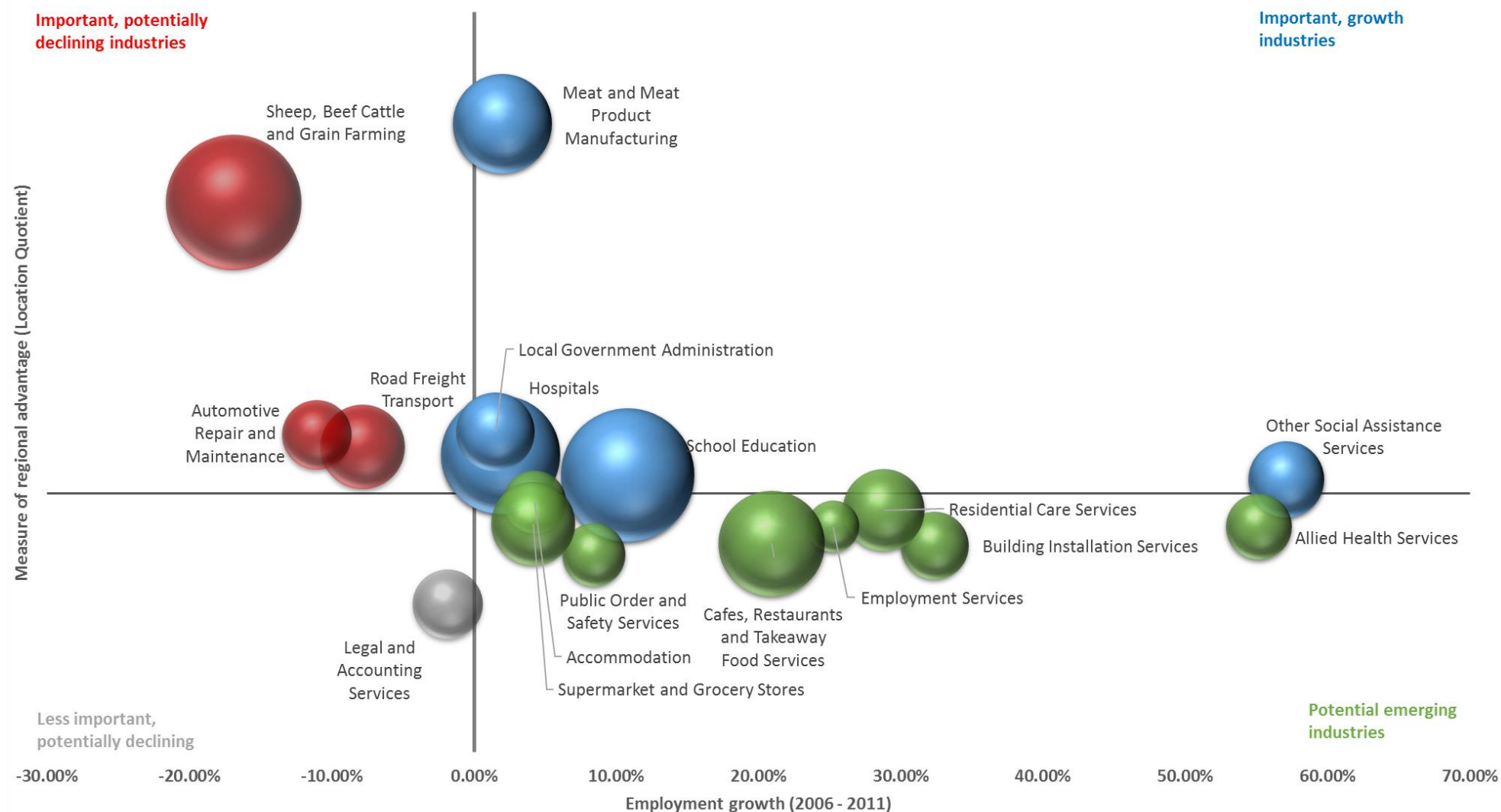


Figure A16.4 Regional advantage and regional employment growth for key industries - Tamworth regional economy



Disaggregation of data shows detail about industries of specialisation (Table A16.7).

Table A16.7 Industries of regional specialisation in detail - Tamworth regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing					
	1	2,134	8.62%	-9.7%	3.75
Agriculture	2	2,052	8.29%	-9.9%	4.02
Sheep, Beef Cattle and Grain Farming	3	1,694	6.85%	-8.2%	4.95
Beef Cattle Farming (Specialised)	4	838	3.39%	-13.0%	7.12
Sheep-Beef Cattle Farming	4	259	1.05%	-11.4%	5.94
Grain-Sheep or Grain-Beef Cattle Farming	4	249	1.01%	-0.2%	3.57
Manufacturing					
Food Product Manufacturing	2	1,185	4.79%	-8.4%	2.81
Meat and Meat Product Manufacturing	3	906	3.66%	-7.0%	7.19
Meat Processing	4	541	2.19%	-18.8%	9.01
Poultry Processing	4	369	1.49%	11.3%	7.36
Wholesale trade					
Basic Material Wholesaling	2	319	1.29%	1.2%	1.58
Retail Trade					
Motor Vehicle and Motor Vehicle Parts Retailing	2	341	1.38%	3.7%	1.77
Motor Vehicle Retailing	3	256	1.03%	-2.4%	1.84
Pharmaceutical, Cosmetic and Toiletry Goods Retailing	4	251	1.02%	1.3%	1.29
Transport, Postal and Warehousing		-	-	-	-
Road Transport	2	803	3.25%	-17.1%	1.41
Road Freight Transport	3	657	2.65%	-13.8%	1.56
Road Freight Transport	4	657	2.66%	-14.0%	1.56
Public Administration and Safety		-	-	-	-
Local Government Administration	3	570	2.30%	-4.4%	1.67
Local Government Administration	4	571	2.31%	-4.1%	1.67
Education and Training		-	-	-	-
Preschool and School Education	2	1,761	7.12%	-1.1%	1.37
School Education	3	1,651	6.67%	-2.7%	1.36
Secondary Education	4	794	3.21%	7.9%	1.78
Technical and Vocational Education	4	307	1.24%	-3.5%	1.71

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
and Training					
Health Care and Social Assistance					
	1	3,703	14.96%	-1.3%	1.26
Hospitals	2	1,300	5.25%	-6.0%	1.50
Social Assistance Services	2	889	3.59%	9.7%	1.25
Hospitals	3	1,302	5.26%	-6.0%	1.50
Other Social Assistance Services	3	532	2.15%	22.1%	1.34
Hospitals (except Psychiatric Hospitals)	4	1,304	5.27%	-6.2%	1.51
Other Social Assistance Services	4	533	2.15%	21.7%	1.34
Other Services		-	-	-	-
Repair and Maintenance	2	643	2.60%	-12.7%	1.43
Automotive Repair and Maintenance	3	443	1.79%	-12.7%	1.65
Other Automotive Repair and Maintenance	4	297	1.20%	-10.0%	1.81

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

To start the process the most likely industry sectors for the Tamworth regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A16. These are indicative only and are best selected based on the addition of local knowledge.

Box A16	Probable 'key industry sectors' in Tamworth
•	<p>Agriculture</p> <p>Superior agricultural land endowments provide competitive advantage in agriculture.</p> <p>•</p> <p>Food product manufacturing</p> <p>Meat processing and poultry processing account for the majority of this specialisation, benefiting from being close to the raw agricultural products.</p> <p>•</p> <p>Road freight transport</p> <p>Competitive Advantage is underpinned by the proximity to other markets, with the potential existing to build on this specialisation.</p>

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 17 Tweed regional economy



Defining the regional economy

The Tweed LGA is located along the NSW-Queensland border, only a 40 minute drive to the larger population centre of the Gold Coast in Queensland. The ESS for Tweed indicates a moderate proportion of local jobs are filled by local residents, with about 20 per cent of jobs filled by labour from outside the LGA. The ESC indicates that approximately 40 per cent of the local labour force work outside of the Tweed LGA.

Table 17.1 Employment capacity, sufficiency and containment in Tweed regional economy LGAs (2011)

	Tweed
Total local workers (working anywhere)	30,965
Number of jobs in local area	24,164
Number of local jobs held by locals	18,507
Employment self-containment (ESC)	0.60
Jobs Housing Balance (JHB)	0.75
Employment self-sufficiency (ESS)	0.80

Further analysis of Tweed employment linkages indicates that 9,032 employed persons, residing in the Tweed, travel out of NSW (presumably to Queensland) to work. In addition the vast majority of the external workforce in Tweed (those persons working in the Tweed LGA but living elsewhere) reside in a state other than NSW (3,890 persons). The evidence of strong linkages between other states (predominantly Queensland) and the Tweed LGA is indicative of the Tweed being regional satellite of the Gold Coast, with the Gold Coast representing a regional centre. Because this analysis is concentrating on NSW regions the Tweed LGA is considered in isolation, despite the inter-relationship with the Gold Coast. **Consequently, the Tweed regional economy is defined as the Tweed LGA.**

Table A17.2 Employment linkages between LGAs around Tweed Heads – number and proportion of workers

LGA in which workers are living	Working in Tweed	Working in Byron	Working in Other States	Working in Ballina	Place of Work Undefined
Tweed (no.)	-	583	9,032	132	2,138
Tweed proportion	-	17.0%	n.a.	3.9%	62.4%
Byron (no.)	488	-	937	701	546
Byron proportion	18.8%	-	n.a.	26.9%	21.0%
Other States (no.)	3,890	214	-	99	n.a
Other States proportion	n.a.	n.a.	-	n.a.	n.a

Region overview

Table A17.3 Summary by LGA - Tweed regional economy

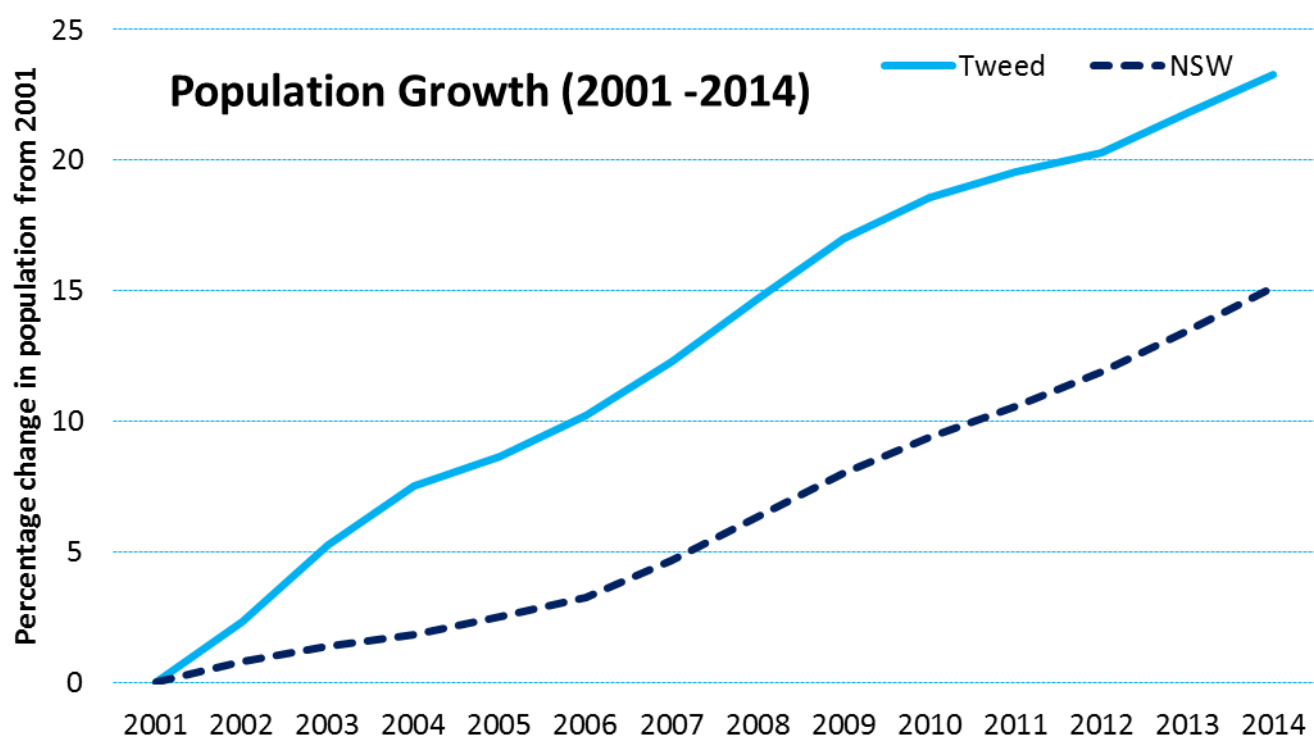
Local Government Area	Area (Km ²)	Population Estimate*	Distance to Tweed township from main town (km)	Estimated Gross Regional Product+
Tweed	1,321	91,210	-	\$2,885

*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Tweed regional economy has a population of approximately 91,200. Population grew by 23.3 per cent (17,200 persons) from 2001 to 2014 which was at a faster rate than both NSW and Sydney.

Figure A17.1 Population growth - Tweed regional economy



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. The Tweed regional economy is no exception with an aged dependency ratio¹²² of 40% compared to the 24% state average. The NSW Intergenerational Report (2016) projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Like most regional areas, the age group of 15 to 34 was under-represented (see Snapshot A17) because many young people move from the region to pursue higher education and employment opportunities in larger cities, with some of this group returning to the region later in their lives.

As is the case for many NSW coastal regions aged dependency ratios have also risen, on account of older persons relocating to the coast for retirement or lifestyle reasons. The trend of retirees moving to the coast has been supported by lower cost of land or rent and the draw of beaches and a warm climate, among a myriad of other factors.

¹²² The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

Snapshot A17. Composition of resident population (2014)

	Tweed	NSW
Ratios (%)		
Aged Dependency Ratio ^A	40	24
Youth Dependency Ratio ^B	29	28
Dependency Ratio ^C	69	52
Proportion^D (%)		
Young Persons (15 to 34)	21	27
Older Persons (65+)	22	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A17.4 Income (Australian Taxation Office data) - Tweed regional economy

	Tweed	Sydney ¹²³	NSW
Average Taxable Income (1994-95) - Adjusted ¹²⁴	\$38,749	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$43,060	\$62,100	\$56,600
Change	\$4,310	\$9,500	\$7,300
Increase in Real Wage (%)	11.1	18.1	14.8

Real wages grew by 11.1 per cent in the Tweed regional economy between 1994-95 and 2012-13.

Despite being better off the Tweed regional economy was less well-off compared to the NSW average (14.8 per cent).

Table A17.5 Educational attainment (population aged 15 years and over, 2011 Census) - Tweed regional economy

	Tweed (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	9.8	23.5	18.4
Advanced or Graduate Diploma	8.6	10.7	9.8
Certificate Qualification	21.7	14.6	17.7
Population with a Post-School Qualification	40.1	48.7	45.8

In Tweed the proportion of the population with a bachelor or postgraduate degree as their highest level of post-school qualification is less than the State average.

Table A17.6 Welfare dependency (population aged 15 years and over, 2013) - Tweed regional economy

	Tweed (%)	Sydney (%)	NSW (%)
Aged Pension	20.5	9.8	12.6
Disability Support Pension	7.1	3.2	4.4
Newstart Allowance	5.1	3	3.5
Total ¹²⁵	34.6	16.5	21.3

¹²³ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

¹²⁴ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

¹²⁵ Total includes service pensions not shown in table

A larger proportion of Tweed regional economy residents are dependent on social welfare, than in NSW on average. This is partly due to the region's population profile, with a greater share of residents meeting the age requirement to receive a pension.

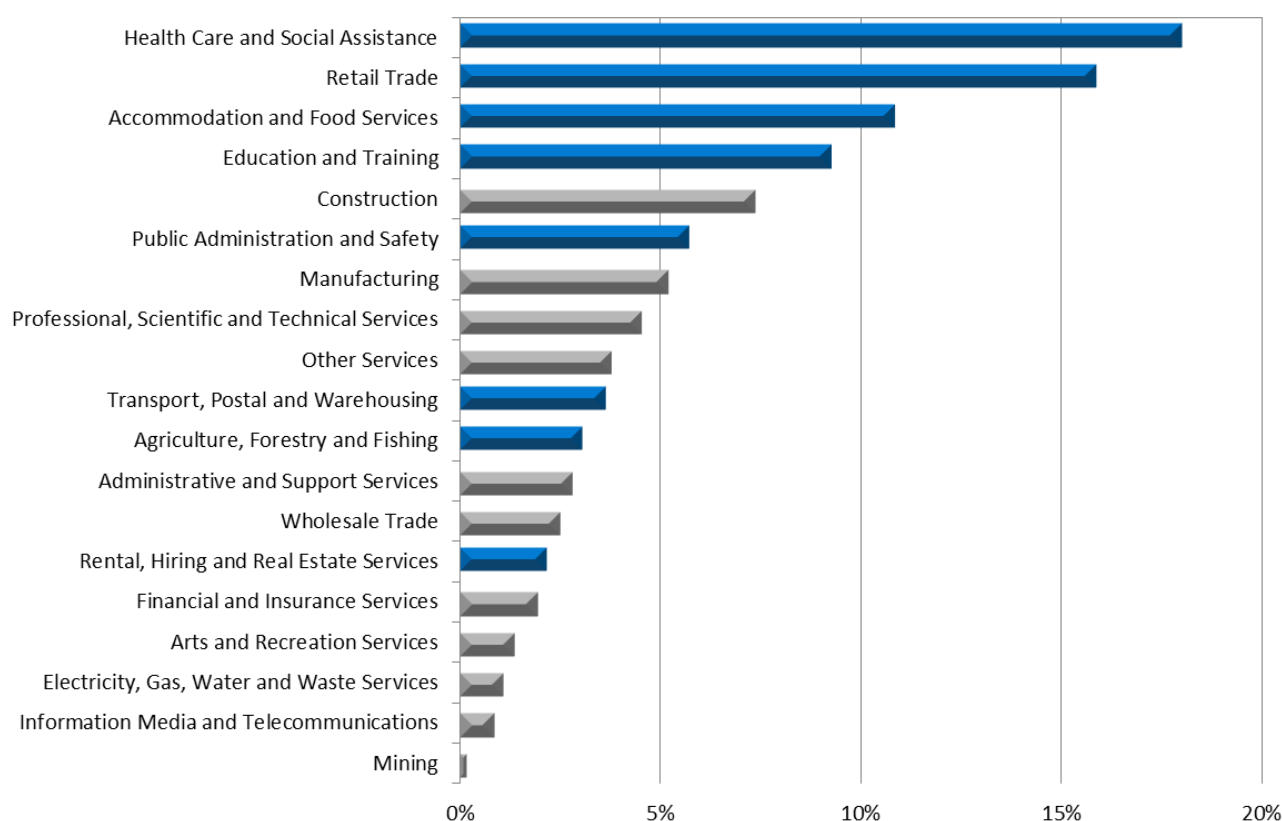
Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Tweed regional economy demonstrates regional specialisation at one or more ANZSIC level within eight industry divisions (Figure A17.2 and Table A17.7).

Figure A17.2 Percentage of employment in each industry division (ANZSIC Level 1) in the Tweed regional economy
Blue bars indicate regional specialisation (LQ ≥ 1.25) at one or more ANZSIC level within the division.



When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A17.3), important growth industries in the Tweed regional economy are shown to be:

- residential care services (mostly aged care);
- accommodation; and
- healthcare (hospitals and allied health services).

Of these industries only accommodation (as a proxy for tourism) is traditionally classified as a key industry sector (engine of growth). The remaining sectors predominantly exist to service the population base and tend to grow/decline in step with the performance of the engines of growth.

However, despite ordinarily being considered a population servicing industry, healthcare¹²⁶ may be leveraging the locational endowments (natural amenity, beaches, and temperate climate) of the Tweed regional economy. Noting the large share of retirees and 'sea changers' that have actively chosen to relocate to the region as they near retirement. In the absence of a locational advantage it would be expected that this population cohort, if choosing to relocate would spread itself more thinly across more locations.

Similarly residential care services (predominantly aged care) is shown to be an important growth industry and recorded strong employment growth reflective of the possible advantage in attracting retirees. Where government investment is able to overcome barriers and attract interstate retirees or retain those that would otherwise have left it is plausible to classify this as a key industry sector.

Other social assistance services, building installation services and tertiary education are not industry sectors of specialisation but exhibited employment growth and may be emerging industries. Of these sectors only tertiary education is likely to be a key industry sectors, with the others existing primarily to enable the engines of growth or support the population.

¹²⁶ The healthcare industry as defined in this report includes: hospitals; medical services; pathology and diagnostic imaging services; allied health services and other health care services.

Figure A17.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Tweed regional economy

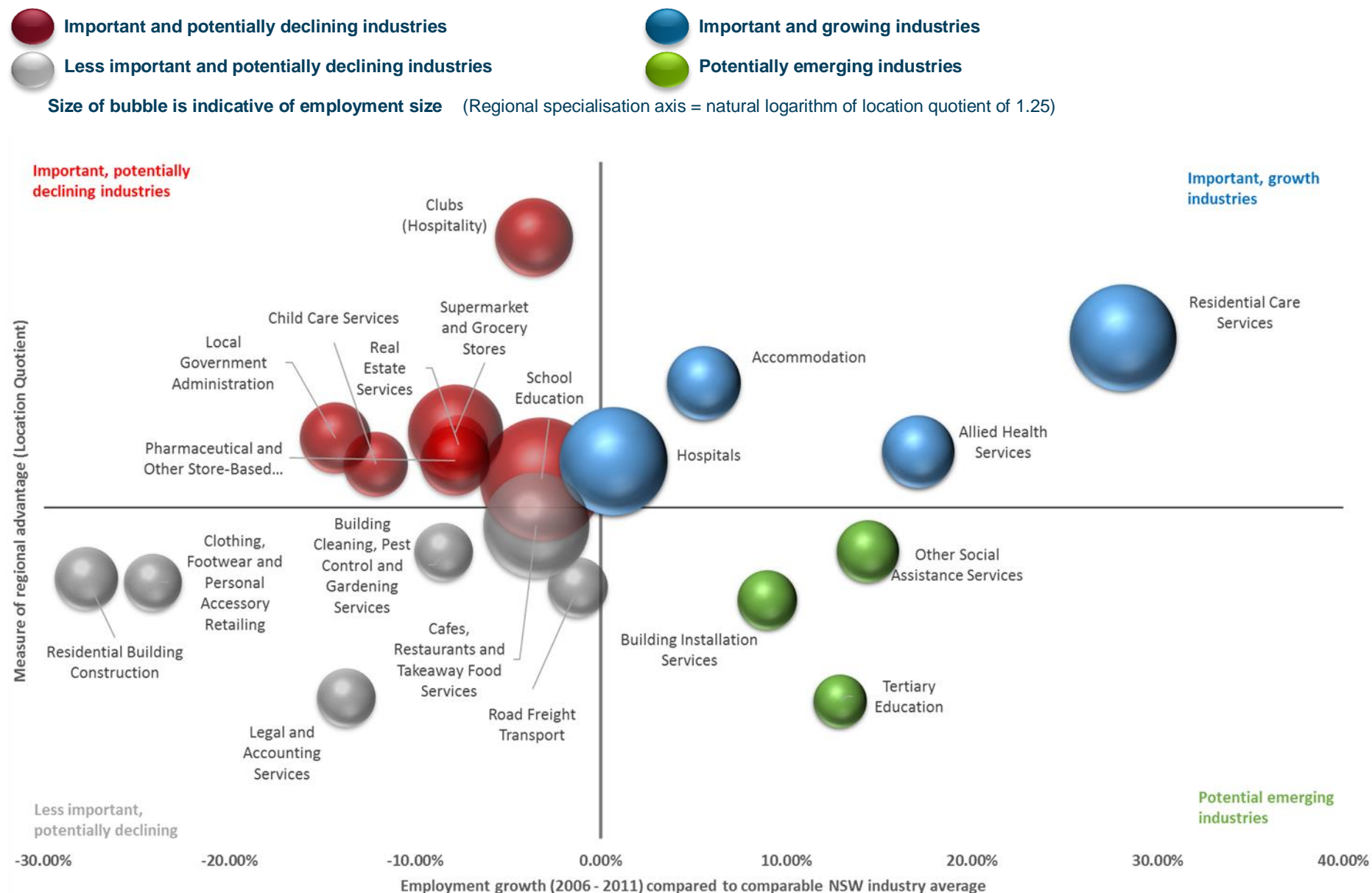
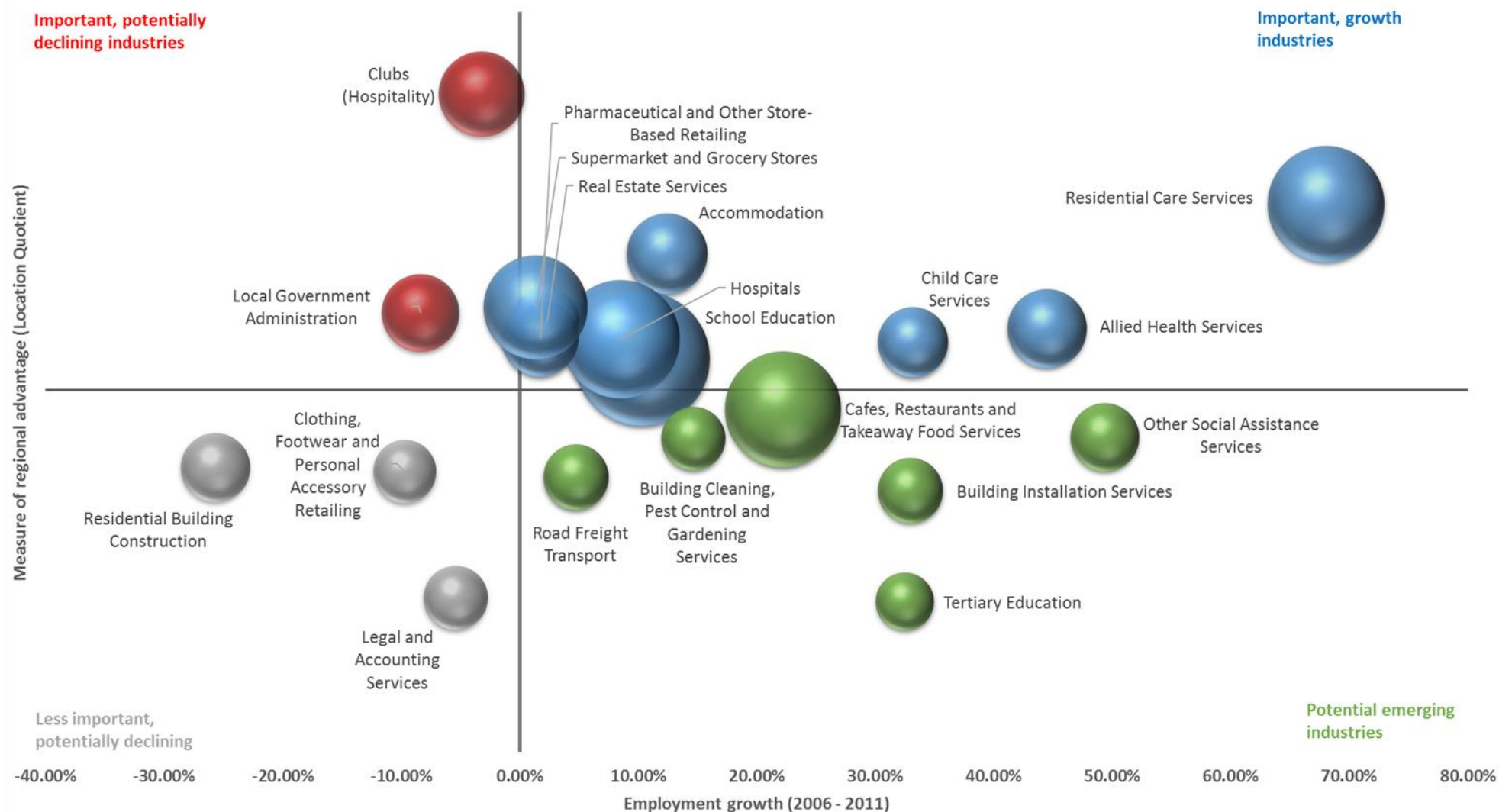


Figure A17.4 Regional advantage and regional employment growth for key industries - Tweed regional economy



Disaggregation of data shows detail about industries of specialisation (Table A17.7).

Table A17.7 – Industries of regional specialisation in detail - Tweed regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing	1	705	3.04%	-8.4%	1.32
Agriculture	2	650	2.80%	-7.5%	1.36
Retail Trade	1	3,671	15.84%	-7.6%	1.49
Other Store-Based Retailing	2	1,935	8.35%	-8.0%	1.37
Food Retailing	2	1,281	5.53%	-8.7%	1.64
Motor Vehicle and Motor Vehicle Parts Retailing	2	301	1.30%	-13.1%	1.67
Supermarket and Grocery Stores	3/4	925	3.99%	-7.8%	1.65
Pharmaceutical and Other Store-Based Retailing	3	501	2.16%	-7.8%	1.49
Specialised Food Retailing	3	357	1.54%	-9.8%	1.61
Department Stores	3/4	261	1.13%	7.8%	1.58
Hardware, Building and Garden Supplies Retailing	3	246	1.06%	-17.6%	1.76
Pharmaceutical, Cosmetic and Toiletry Goods Retailing	4	279	1.20%	-8.2%	1.53
Accommodation and Food Services	1	2,514	10.85%	-7.0%	1.58
Food and Beverage Services	2	1,955	8.44%	-10.2%	1.49
Accommodation	2/3/4	557	2.41%	5.4%	1.98
Clubs (Hospitality)	3	632	2.73%	-3.6%	3.40
Takeaway Food Services	4	632	2.73%	6.0%	1.28
Transport, Postal and Warehousing					
Road Passenger Transport	3	262	1.13%	-19.1%	1.89
Rental, Hiring and Real Estate Services	1	503	2.17%	-5.1%	1.28
Property Operators and Real Estate Services	2	418	1.80%	-7.6%	1.38
Real Estate Services	3/4	361	1.56%	-7.7%	1.58
Public Administration and Safety					
Local Government Administration	3/4	517	2.23%	-14.3%	1.62
Central Government Administration	3/4	344	1.48%	-8.7%	1.76

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Education and Training					
Preschool and School Education	2	1,661	7.17%	-3.0%	1.38
School Education	3	1,575	6.80%	-3.2%	1.39
Primary Education	4	765	3.30%	-5.0%	1.56
Secondary Education	4	592	2.55%	1.0%	1.42
Health Care and Social Assistance					
	1	4,169	17.99%	7.5%	1.51
Hospitals	2/3	1,204	5.20%	0.7%	1.48
Residential Care Services	2/3	1,171	5.05%	28.0%	2.34
Allied Health Services	3	541	2.33%	17.1%	1.54
Child Care Services	3/4	422	1.82%	-12.1%	1.47
Hospitals (except Psychiatric)	4	1,201	5.18%	0.2%	1.48
Aged Care Residential Services	4	1,112	4.80%	24.4%	2.51

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

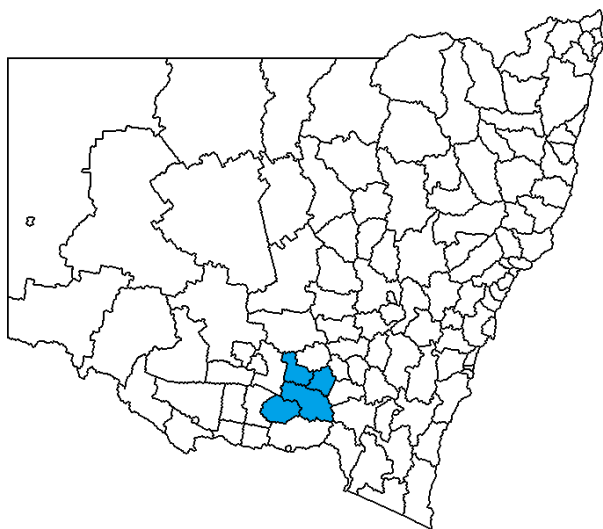
To start the process the most likely industry sectors for the Tweed regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A17. These are indicative only and are best selected based on the addition of local knowledge.

Box A17	Probable 'key industry sectors' in Tweed
•	<p>Health care</p> <p>This industry sector directly employs 10% of the workforce in the Tweed regional economy. It draws its competitive advantage from the regions pleasant climate, beaches and lower cost of land/rent. In turn this attracts retirees that demand health care services.</p> <p>•</p> <p>Aged care</p> <p>Similar to health care this industry derives advantage from regional endowments that attract retirees. This industry directly employs 5% of the workforce of the regional economy.</p> <p>•</p> <p>Tourism</p> <p>Accommodation as a proxy for tourism is an industry of specialisation with locational endowments such as beaches and a pleasant climate creating the competitive advantage.</p>

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 18 Wagga Wagga regional economy



Defining the regional economy

The ESS for Wagga Wagga (Table A18.1) indicates that 10 per cent of Wagga Wagga jobs are filled by labour from outside the LGA, and of these, 51 per cent are filled by residents of Junee, Coolamon and Lockhart (Table A15.2).

A Jobs Housing Balance (JHB) close to one is usually associated with a regional centre, with more people commuting into the LGA to work than commuting out. The low JHBs for Junee, Coolamon and Lockhart suggest that these regions may be residential satellites, with residents commuting to work in other LGAs. The deeper labour market of Wagga Wagga (26,164 jobs) also suggests that it is a regional centre.

Table A18.1 Employment capacity, sufficiency and containment in Wagga Wagga regional economy LGAs (2011)

	Wagga Wagga	Junee	Coolamon	Lockhart
Local labour force	28,230	2,102	1,636	1,294
Number of jobs in local area	26,164	1,604	998	816
Number of local jobs held by locals	23,618	1,220	833	637
Employment self-containment (ESC)	0.84	0.58	0.51	0.49
Jobs Housing Balance (JHB)	0.93	0.76	0.61	0.63
Employment self-sufficiency (ESS)	0.90	0.76	0.83	0.78

Over 50 per cent of all Junee, Coolamon and Lockhart workers that are employed outside of their respective LGA are employed in the Wagga Wagga LGA (Table A18.2). The strong link with Wagga Wagga and the relatively weak links with all other LGAs suggests each region is a residential satellite to the regional centre of Wagga Wagga. **Consequently, the Wagga Wagga regional economy is defined as the Wagga Wagga LGA and neighbouring LGAs of Junee, Coolamon and Lockhart.**

Table A18.2 Employment linkages between LGAs around Wagga Wagga – number and proportion of workers

LGA in which workers are living	Wagga Wagga	Junee	Coolamon	Lockhart	Greater Hume	Temora
Wagga Wagga (no.)	-	216	95	106	59	15
Proportion	-	5.7%	2.5%	2.8%	1.6%	0.4%
Junee (no.)	523	-	20			33
Proportion	63.8%	-	2.4%			4%
Coolamon (no.)	441	34	-	5		26
Proportion	59.4%	4.6%	-	0.7%		3.5%
Lockhart (no.)	344	6		-	59	
Proportion	55.3%	1.0%		-	9.5%	

Regional overview

Table A18.3 Summary by LGA - Wagga Wagga regional economy

Local Government Area	Area (Km ²)	Population Estimate*	Distance to Wagga from main town (km)	Estimated Gross Regional Product+
Wagga Wagga	4,826	62,799	-	\$3,154m
Junee	2,030	6,297	37.1	\$182m
Coolamon	2,433	4,308	42.0	\$114m
Lockhart	2,895	3,080	65.2	\$98m
Total	12,184	76,484	-	\$3,548m

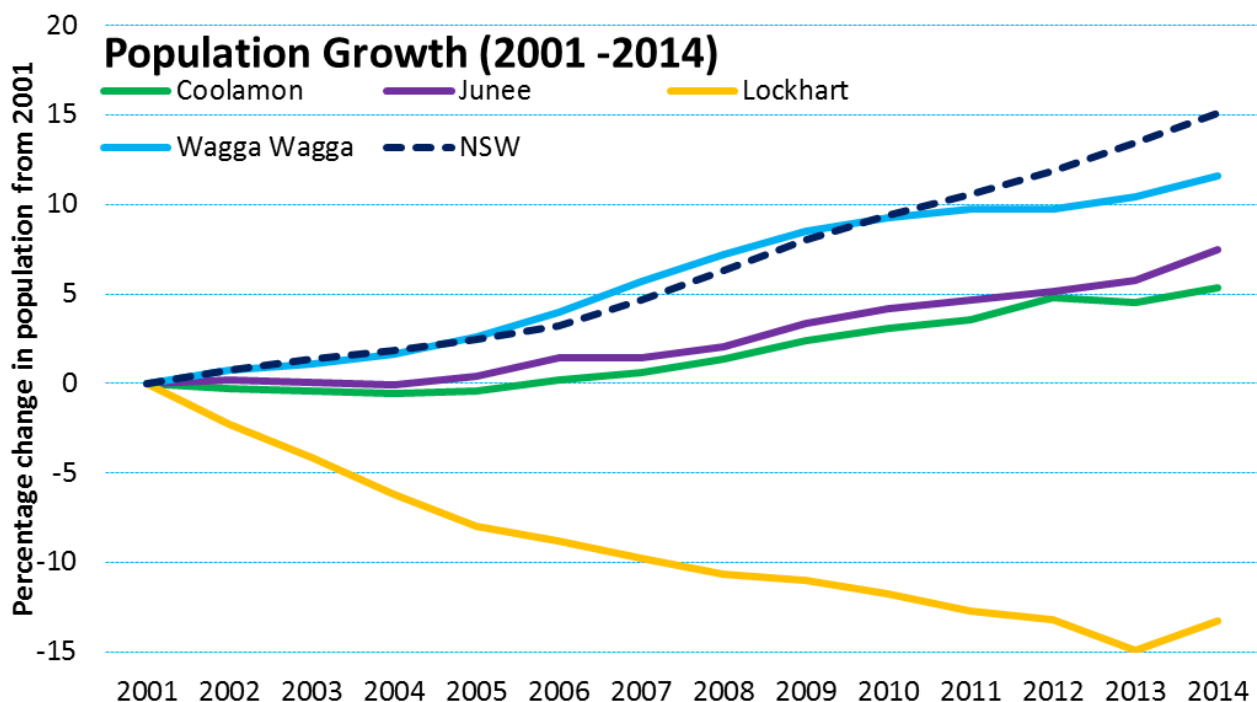
*As at 2014, from ABS 3218.0 Regional Population Growth, Australia + from <http://economic-indicators.id.com.au/>

Population dynamics

The Wagga Wagga regional economy has a population of approximately 76,500. Population grew by 10 per cent (6,700 persons) from 2001 to 2014 which was at a slower rate than in both NSW (15 per cent) and Sydney (18 per cent).

By local government area, the larger regional centre of Wagga Wagga accounted for a majority of the region's population growth (97 per cent), with marginal growth recorded in the satellite LGAs of Coolamon and Junee, whilst Lockhart recorded a decline in population (-13 per cent).

Figure A18.1 Population growth - Wagga Wagga regional economy LGAs



Source: ABS.Stat, Estimated Resident Population by LGA (ASGS 2014) 2001 to 2014, viewed 6 April 2016.

Resident Profile

Since 1970 the median age in NSW has been increasing, the ageing of the population is especially pronounced in the regions. However, the Wagga Wagga regional economy is an exception with an aged dependency ratio¹²⁷ of 23% compared to the 24% state average. The NSW Intergenerational Report (2016)

¹²⁷ The ratio of people aged 65 and over to those between 15 and 64 (the traditional working population).

projects that regional aged dependency ratios are expected to increase over the next 15 years as the population ages.

Unlike most regional areas, the age group of 15 to 34 was over-represented (see Snapshot A18) because many young people are attracted to the region to study at the Charles Sturt University Wagga Wagga campus and are counted in the population statistics. Past trends indicate that most of this group leaves the region soon after completion of their studies.

Snapshot A18. Composition of resident population (2014)

	Wagga Wagga	NSW
Ratios (%)		
Aged Dependency Ratio ^A	23	24
Youth Dependency Ratio ^B	31	28
Dependency Ratio ^C	54	52
Proportion^D (%)		
Young Persons (15 to 34)	29	27
Older Persons (65+)	15	15

Source: ABS

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64

D The proportion of the population aged 15 to 34 or 65+

Social indicators

Table A18.4 Income (Australian Taxation Office data) - Wagga Wagga regional economy

	Wagga Wagga	Sydney ¹²⁸	NSW
Average Taxable Income (1994-95) - Adjusted ¹²⁹	\$43,500	\$52,600	\$49,300
Average Taxable Income (2012-13)	\$48,900	\$62,100	\$56,600
Change	\$5,400	\$9,500	\$7,300
Increase in Real Wage (%)	12.3	18.1	14.8

Real wages grew by 12.3 per cent in the Wagga Wagga regional economy between 1994-95 and 2012-13.

Despite being better off the Wagga Wagga regional economy was less well-off compared to the NSW average (14.8 per cent).

Table A18.5 Educational attainment (population aged 15 years and over, 2011 Census) - Wagga Wagga regional economy

	Wagga Wagga (%)	Sydney (%)	NSW (%)
Bachelor or Postgraduate Qualification	9.5	23.5	18.4
Advanced or Graduate Diploma	6.1	10.7	9.8
Certificate Qualification	17.4	14.6	17.7
Population with a Post-School Qualification	33.1	48.7	45.8

The skills base of the Wagga Wagga regional economy is less formally qualified than NSW, on average.

Table A18.6 Welfare dependency (population aged 15 years and over, 2013) - Wagga Wagga regional economy

¹²⁸ Sydney is defined to be consistent with the definition of the Greater Sydney Commission. This includes 41 LGAs.
<http://www.gsc.nsw.gov.au/en/District-Plans/Sydney-districts>

¹²⁹ Taxable income inflated by Consumer Purchasing Index (CPI) change to 2012-13 prices.

	Wagga Wagga (%)	Sydney (%)	NSW (%)
Aged Pension	12.6	9.8	12.6
Disability Support Pension	4.8	3.2	4.4
Newstart Allowance	3.1	3	3.5
Total ¹³⁰	21.3	16.5	21.3

Wagga Wagga has a similar resident profile to NSW (see Snapshot A18), likewise it has a similar proportion of the population reliant on welfare payments with 21.3 per cent respectively.

Industries of regional specialisation

The Enablers project found that attempts to implant industries into regional economies without an underlying specialisation in that industry are unlikely to succeed. Similarly it is difficult to sustain competitive advantage in many industries at once, particularly for smaller regional economies as resources will be stretched more thinly. As such when the aim is to boost local economic growth efforts are best targeted to only a few industries of key specialisation, typically between 2 to 4 for smaller economies.

Industries that make use of a region's natural and/or built endowments can be broadly defined as key industry sectors because they tend to be the 'engines of growth' and exhibit competitive advantage. The other sectors of the economy tend to exist to support either the key sectors (enabling industries) or the population (such as retail, health and education). Without the key sectors there would be no population for the other sectors to support.

The Wagga Wagga regional economy demonstrates regional specialisation at one or more ANZSIC level within nine industry divisions (Figure A18.2) and Table A18.7.

The effects of some government policy changes are harder to predict, such as the proposed deregulation of the tertiary education sector. Charles Sturt University was estimated to have contributed 2151 equivalent full-time jobs to the Wagga Wagga LGA in 2013 (including 754 EFT jobs from flow-on effects) representing 9.09% of full-time employment. The main industry sectors impacted were retail trade; health care & social assistance and hospitality. The University was estimated to have provided \$170.9 million (7.86%) of the Wagga Wagga LGA gross regional product.

When employment growth compared to the respective NSW industry average is also taken into consideration (Figure A18.3), the 'important growth' industry evident in the Wagga Wagga regional economy is:

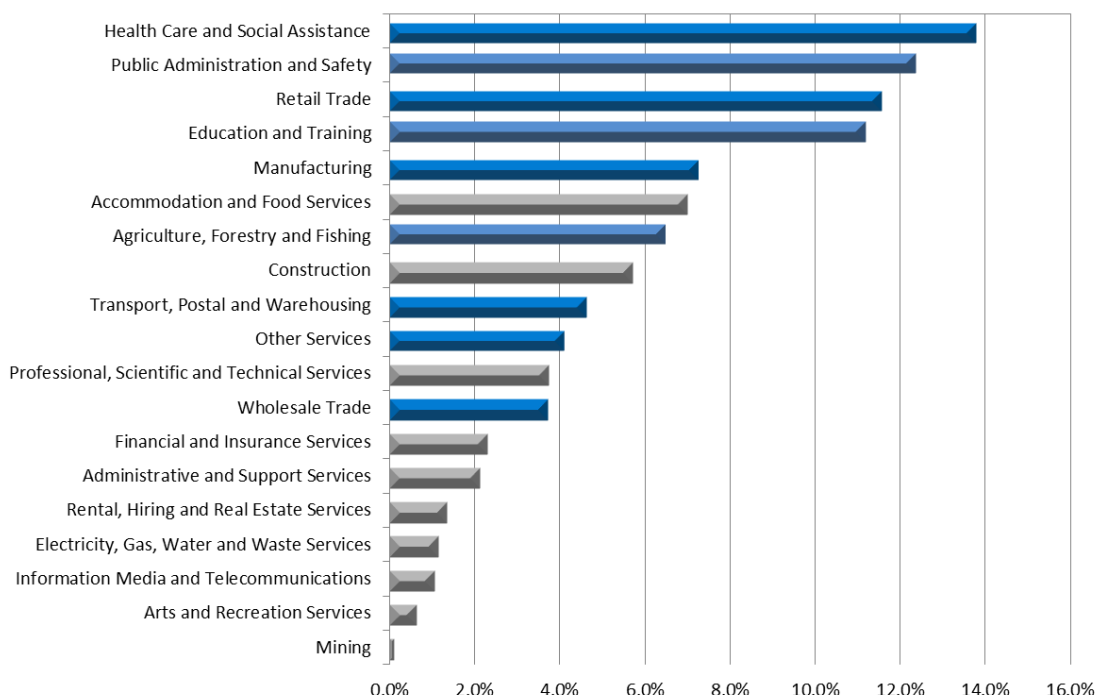
- medical services.

Important, yet potentially declining industries in the Wagga Wagga regional economy were identified as: defence; sheep, beef cattle and grain farming; meat and meat product manufacturing; tertiary education; road freight transport; automotive repair and maintenance; and public order and safety services.

Of the potentially declining specialisations the following are the most likely to be key industry sectors that make use of an locational endowment: sheep, beef cattle and grain farming; meat product manufacturing; and road freight transport are possible key industry sectors. The other industry sectors are largely population serving and independently are unlikely to be the main drivers of growth.

¹³⁰ Total includes service pensions not shown in table

Figure A18.2 Percentage of employment in each industry division (ANZSIC Level 1) in the Wagga Wagga regional economy
Blue bars indicate regional specialisation (LQ larger than 1.25) at one or more ANZSIC level within the division.



Sheep, beef cattle and grain farming is a key industry sector in the Wagga Wagga regional economy making use of the regions superior agricultural land. This is despite employment declining. This may be a consequence of short term variable climatic conditions. Or is reflective of broader changes to the agricultural industry, partly from increasing levels of openness and trade and technological advances that have culminated in greater capital intensity, larger farm sizes (benefitting from greater economies of scale) and subsequently less demand for labour.

Allied health services, building installation services, residential care services and legal and accounting services are not industry sectors of specialisation but exhibited employment growth and may be emerging industries. However, these sectors exist to support either the population (i.e. retail, health and education) or are 'enabling industries' (i.e. legal and accounting services). Population serving sectors tend to grow/decline based on the success of engine industries and it is therefore

Figure A18.3 Regional advantage and regional employment growth relative to NSW industry average for key industry sectors - Wagga Wagga regional economy

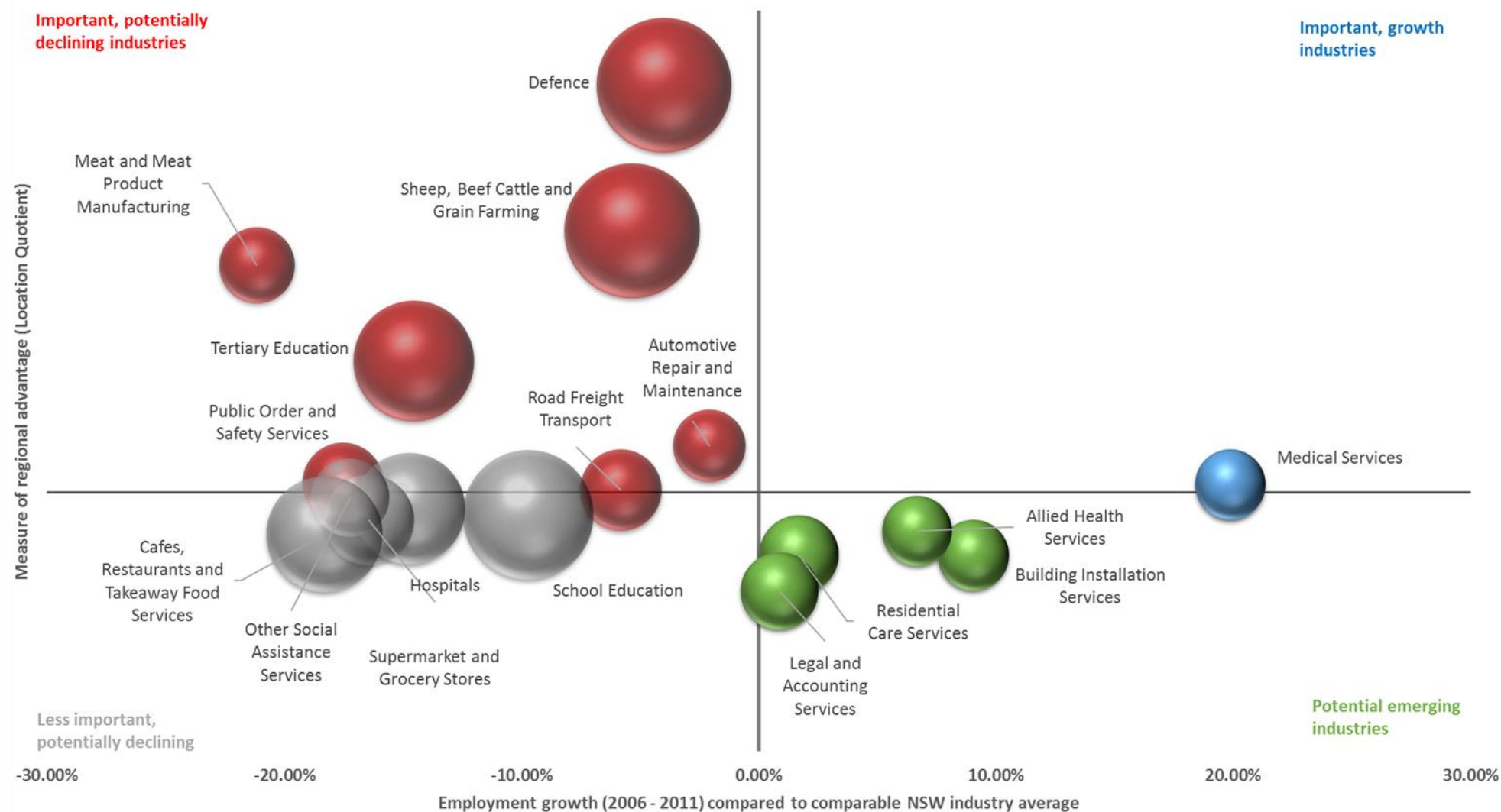
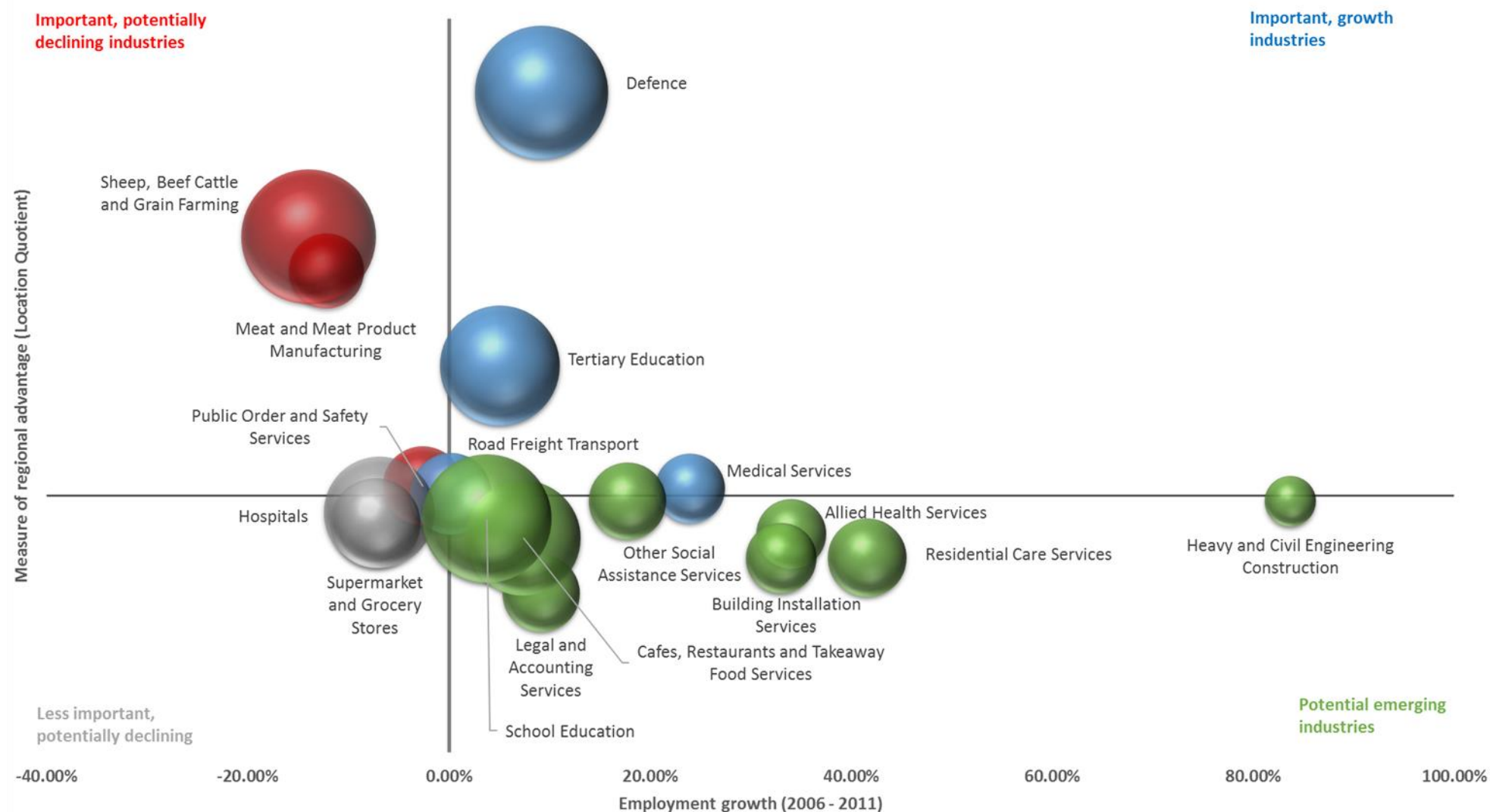


Figure A18.4 Regional advantage and regional employment growth for key industries - Wagga Wagga regional economy



Disaggregation of data shows detail about industries of specialisation (Table A18.7).

Table A18.7 Industries of regional specialisation in detail - Wagga Wagga regional economy
(industries with LQ ≥1.25, employment size ≥1%)

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Agriculture, Forestry and Fishing					
	1	1,917	6.47%	-5.6%	2.82
Agriculture	2	1,857	6.27%	-5.0%	3.04
Sheep, Beef Cattle and Grain Farming	3	1,762	5.95%	-5.3%	4.30
Grain-Sheep or Grain-Beef Cattle Farming	4	748	2.53%	-6.1%	8.95
Other Grain Growing	4	362	1.22%	0.1%	6.05
Manufacturing					
Food Product Manufacturing	2	814	2.75%	-25.1%	1.61
Meat and Meat Product Manufacturing	3	552	1.86%	-21.2%	3.65
Meat Processing	4	548	1.85%	-23.5%	7.63
Wholesale trade					
Basic Material Wholesaling	2	335	1.13%	-4.7%	1.39
Retail Trade					
Motor Vehicle and Motor Vehicle Parts Retailing	2	319	1.08%	-12.1%	1.38
Transport, Postal and Warehousing					
Road Freight Transport	3	638	2.15%	-5.8%	1.26
Road Freight Transport	4	641	2.16%	-5.4%	1.27
Public Administration and Safety					
	1	3,654	12.34%	-7.2%	2.02
Defence	2	1,745	5.89%	-4.1%	8.55
Public Order, Safety and Regulatory Services	2	624	2.11%	-16.7%	1.29
Defence	3	1,746	5.90%	-4.0%	8.56
Public Order and Safety Services	3	617	2.08%	-17.5%	1.31
Local Government Administration	3	551	1.86%	-8.2%	1.35
State Government Administration	3	543	1.83%	-11.1%	1.35
Defence	4	1,746	5.90%	-3.9%	8.52
Local Government Administration	4	551	1.86%	-8.3%	1.35
State Government Administration	4	543	1.83%	-11.1%	1.35
Correctional and Detention Services	4	310	1.05%	2.5%	3.80

Industry	ANZSIC code level	Number employed	Employment size (%)	Employment change compared to industry average for NSW (%)*	Location Quotient in 2011
Education and Training	1	3,312	11.18%	-10.7%	1.37
Tertiary Education	2	1,402	4.73%	-14.6%	2.32
Tertiary Education	3	1,402	4.73%	-14.5%	2.32
Higher Education	4	1,056	3.57%	-15.3%	2.72
Secondary Education	4	718	2.42%	10.2%	1.35
Technical and Vocational Education and Training	4	354	1.19%	-14.3%	1.64
Health Care and Social Assistance					
Social Assistance Services	2	1,065	3.60%	-17.7%	1.26
Child Care Services	3	475	1.61%	-24.6%	1.29
Medical Services	3	470	1.59%	19.9%	1.30
Child Care Services	4	474	1.60%	-25.3%	1.29
Other Services					
Repair and Maintenance	2	689	2.33%	-5.8%	1.28
Automotive Repair and Maintenance	3	500	1.69%	-2.1%	1.56
Other Automotive Repair and Maintenance	4	338	1.14%	2.3%	1.72

Indicative key local industry sectors

Typically regional economies are thought to be able to sustain a small number of specialisations with a comparative advantage that potentially underpin local economic growth.

It is envisaged that local planners, businesses and governments devise what these key sectors are in their economy and if available endowments may allow for future specialisation. Emerging industries are best targeted only when they would make use of a local endowment to derive comparative advantage in the future.

To start the process the most likely industry sectors for the Wagga Wagga regional economy, as indicated by the regions specialisations as at the 2011 Census and consideration of local endowments, are indicated in Box A18. These are indicative only and are best selected based on the addition of local knowledge.

Box A18	Probable 'key industry sectors' in Wagga Wagga
<ul style="list-style-type: none"> • Agriculture 	Superior agricultural land endowments provide competitive advantage in agriculture.
<ul style="list-style-type: none"> • Food product manufacturing 	Meat processing accounts for the majority of this specialisation, benefiting from being close to the raw agricultural products.
<ul style="list-style-type: none"> • Higher education 	Specialisation due to the Charles Sturt University Wagga Wagga campus.

However, once identified the small number of key specialisations should form the focus of future local economic development strategies. This focus may change over time and endowments change and comparative advantages strengthen/weaken.

By overcoming challenges faced by the key industry sectors growth in the other sectors of the economy is likely to follow driven by increased demand for local inputs and an increase in local expenditure flowing on to population serving industries.

Appendix 19 Market failure

'Market failure' refers to a situation when a market left to itself fails to allocate resources efficiently. Where market failures exist, there is a potential role for government to improve outcomes for the community, the environment, businesses and the economy.

There are four major types of 'market failure' that may provide a justification for government intervention:

Public goods

Public goods exist where provision of a good (product, service, resource) for one person means it is available to all people at no extra cost and consumption of the good by one person does not affect the good's availability to others. This makes it impossible to recoup the costs of provision by extracting payment from users.

The definition of a public good should not be confused with phrases such as 'public benefit', 'good for the public', 'public interest' or 'publicly produced goods'. Examples of public goods include national defence, law enforcement, clean air, street lights and flood control dams.

Externalities

Externalities are costs or benefits which are imposed on others by the actions of an individual or firm, and their existence can result in too many or too few goods and services being produced than is efficient.

Governments often try to address negative externalities through:

- regulation that mandates corrective measures;
- persuasion (e.g. advertising campaigns to 'Do the right thing' and not litter);
- establishing property rights in the externality; or
- taxing activities that generate negative externalities.

Information failure

Information failures occur where there is insufficient or inadequate information about such matters as price, quality and availability for firms, investors and consumers to make informed decisions. In some instances, markets can address these problems through intermediary products, for example consumers purchasing advisory services.

An information failure does not necessarily arise simply because businesses and consumers have less than perfect information. Ideally, information should be acquired until the cost of obtaining more information outweighs the expected benefit from doing so. Information failures occur when the cost or benefit of obtaining information is uncertain and so information is not obtained to this optimal level.

Information asymmetry is a subset of information failure; it occurs when one party to a transaction has more or better information than the other party. Typically, it is the seller that knows more about the product than the buyer, however, it is possible for the reverse to be true. Information asymmetry can prevent parties from making fully informed decisions.

Regulation requiring information disclosure or placing restrictions on dangerous goods can be used to address information asymmetry. For example, when providing financial advice, financial service providers are required to disclose information about significant benefits and risks, and the fees and charges associated with the financial products, as well as any remuneration they receive in relation to the services offered.

Imperfect competition and market power

Market power exists when one buyer or seller in a market has the ability to exert significant influence over the quantity of goods or services traded, or the price at which they are traded.

In perfectly competitive markets, individual market participants have no market power. The ability of a firm to raise its price above competitive levels is limited by the existence or the threat of competition.

The existence of market power can result in economic inefficiency because it may:

- allow firms to increase prices without a commensurate reduction in demand; and
- restrict competition by creating barriers to entry by other firms.

Examples of market power include natural monopoly (where it is more efficient for one business to supply the entire market, i.e. it would generally be inefficient to have two distributors of water, each with their own system of pipes running down every street) and oligopoly (where a small number of firms control the market). Where market power exists, governments may intervene to correct the operation of the market or set prices at a competitive level.

Appendix 20 Methodology for table 6.1

The appendix is broken up into three sections: Firstly a clarifying note to the process adopted for dealing with challenges currently addressed by the Australian Government. Secondly an overview of the selection criteria for the 12 key industry sectors identified in Chapter 6. Thirdly a summary of the methods applied in assessing the significance of each 'challenge' to businesses in the identified industry sectors.

Table 6.1 Enablers with greatest potential for return in key industry sectors

Key													
		Challenge											
Skills	General skills	Agriculture	Mining	Food product manufacturing	Beverage manufacturing	Wood product manufacturing	Wholesaling	Accommodation	Road freight transport	Vocational education	Higher education	Health care	Aged care
	Training quality												
	Training provider scale												
Infrastructure	Road, rail and air transport												
	Utilities												
	Other public infrastructure												
Regulation	Workplace, health and safety												
	Environmental												
	Land use and planning												

A General skills issues arise because individuals can't capture all the benefits from training and businesses that train staff risk having them poached

B Training quality issues arise when training is not of sufficient quality to enable students to find work in that industry.

C Training provider scale issues arise where there is natural monopoly among training providers in a regional economy.

D Utilities include gas, water, electricity, waste and telecommunications infrastructure.

E Other public infrastructure includes all other infrastructure projects that are not road, rail, air or utilities related, for example hospital construction.

Accompanying note to Table 6.1

Forms of market failure or regulatory issues that are predominantly addressed (adequately) by the Australian Government are not emphasised as challenges in Table 6.1. This is because additional investment by the NSW Government is unlikely to offer significant returns to the NSW community. For example the identified challenge of information asymmetry relating to capital markets is currently acquitted by the Australian Government through HECS-HELP and VET FEE-HELP programs. The scope for any additional intervention from the NSW Government is limited as the challenge is mostly addressed, with returns to investment likely to be negligible or represent a net cost.

Identifying the relevant 'key industry sectors'

Key industry sectors are those with an identifiable comparative advantage derived from a local endowment that provides a regional economy with a distinct advantage in production of the good/service.

Industries were methodically screened and assessed as being: ‘engines of growth’ (key sectors), ‘enabling industries’ or ‘populating serving’. In keeping with the following definitions:

- Engine sectors of the economy drive growth in the other sectors and are generally derive advantage from a local endowment (endowments can be natural or built and do change over time).
- Enabling sectors provide inputs to the engine sectors (for example machinery repair services provided for a mining or agricultural businesses that are key industry sectors). Typically enabling sectors grow based on the success of the key industry sector/s they are predominantly supporting.
- Population serving sectors are those that exist predominantly to service the population and include activities such as: retail, education (excluding tertiary), residential construction and health care. These businesses tend to grow in line with the population, which is initially drawn to the region (directly or indirectly via enabling businesses) by the local key industry sectors.

Following this process of categorisation 143 industry sectors at the ANZSIC group level were identified as being possible key industry sectors, 27 were possible enabling industries and 122 were possible population serving.

To create more meaningful ‘industry sectors’ industry groups that operate under the same large segment of the economy and/or shared a similar business type were aggregated.

Of the key industries that remained only some of these specialisations were relevant to the regional economies examined as part of the Growth Enablers project. For example (excluding population serving aspects) financial services is a key industry sector in metropolitan Sydney however, not in the regions examined. Only industry sectors with an identified specialisation in one or more of the regional economies examined were relevant.

The definitions adopted for the key industry sectors examined in Chapter 6 of this report are set out in Figure A.20.1:

Figure A. 20.1 - Definition of key industry sectors

Industry	ANZSIC Code
Mining	Division B
Agriculture	Subdivision 01
Food manufacturing	Subdivision 11
Wood manufacturing	Subdivision 14
Wholesale	Subdivision 33 - 38
Accommodation	Subdivision 44
Health care	Subdivision 84 and 85
Beverage manufacturing	Group 121
Road freight transport	Group 461
Vocational education	Class 8101
Higher education	Class 8102
Aged care	Class 8601

Identification of the enablers with greatest potential for return

Skills challenges

General skills

Because some of the benefits from tertiary education spillover to unrelated parties, the market for tertiary education will invoke less than the socially optimal level of training as the individual paying for the training is not able to capture the full benefit. This is known as an externality market failure. Government contributions to students undertaking studies (such as the Smart & Skilled vouchers) partly address this issue; future work could look to examine the sufficiency of current government involvement.

Industry sectors more reliant on skilled labour are likely to suffer most adversely from this externality market failure, with less skilled labour available than socially optimal, less innovation and slower adoption of new technologies.

The industry sectors that were identified as being most exposed to this particular market failure are those industries with a higher proportion of their occupational structure requiring skills.

Sectors were defined as being more heavily 'skill reliant' based on occupation data from the 2011 Census by industry sector. Occupations are categorised by the Australian and New Zealand Standard Classification of Occupations (ANZSCO) by their average skill requirement from a skill level of 1 (highest) to 5 (lowest). Occupations that were predominantly categorised as requiring skill levels 1 to 3 were set as the cut off to identify the most heavily skill reliant sectors.

Industry sectors with 60 per cent or more of their employees being comprised of skilled labour (skill level 1 to 3) were identified as having the greatest exposure to this market failure and are therefore likely to benefit the most from actions taken to alleviate the challenge.

Training quality

Information asymmetry is likely to culminate in a conflict of interests between the student (principal) and the education training provider (agent). The education provider has a strong profit incentive, while the student is likely to desire a good quality training product that improves their employability prospects or earning capacity. This consequences of this misalignment are exacerbated by the lack of information regarding the quality of different training options, even among 'reputable' firms the quality of training courses vary widely.

Recourse for students is limited in taking action against sub-standard or low quality training providers, with the sunk nature of training dis-incentivising action under consumer protection legislation, particularly where a single unit of study among a broader qualification is at fault.

This principle-agent problem is likely to result in the provision of higher levels of low-quality or irrelevant training, with the profit incentive of training providers misaligned with that of students, who are not easily able to ascertain provider or course quality prior to commencing study. In the context of universities this problem, at least in part, is addressed through the Australian Government's involvement in the sector, in both its regulatory and oversight roles. However for technical and vocational education training there is scope for the NSW Government to assess if current regulation is sufficient.

This market failure results in more training being offered that is irrelevant to industry and dissuades high quality training providers because students are not in a position to adequately determine quality prior to commencing study. Therefore lower-quality and subsequently lower cost courses are more likely to attract students. The effects of this flow on to industry as graduates are more likely to have irrelevant skills and less practical knowledge and graduates are less likely to be able to secure employment as a result.

This issue, for the NSW Government is of most relevance in the vocational education and training markets, i.e. not higher education. Industries that are comprised of a higher proportion of occupations relying on skills most likely to be derived from vocational education and training providers were identified as ANSZCO skill levels 2 and 3. Three industry sectors had more than a quarter of their workforce engaged in occupations

predominantly classified as skill level 2 or 3 and are assessed as being the most exposed to this market failure. These industry sectors are the most likely to benefit from intervention that alleviates this challenge and are identified in Table 6.1.

Training provider scale

Training provider scale issues arise when there is a local natural monopoly in training provision in that regional economy. This is the case when it is more efficient for one single training provider to service the entire region that it would be for two or more, primarily due to economies of scale.

Industry sectors were identified as being most exposed to this challenge if more than 25% of its workforce is comprised of occupations predominantly classified as ANZSCO skill level 2 or 3. These industries, in regional economies are the most exposed to this challenge and are most likely to benefit from intervention that addresses the possible inefficiency.

Infrastructure challenges

Governments traditionally have sought to address **natural monopoly**, **public goods** and **network externality** market failures¹³¹ in relation to infrastructure provision, which invariably result in insufficient investment in infrastructure from a societal perspective.

Governments have also intervened for equity reasons to provide a basic level of infrastructure, that would not otherwise be provided, to groups that are on average less able to pay and/or are more costly to supply (such as rural communities). Remoteness and low population density are drivers for the higher cost of infrastructure in regional NSW.

Road, rail and air infrastructure

The industry sectors for which road, rail and air infrastructure are most critical were identified through assessment of NSW input-output cost shares of transport, postal and warehousing. Industry sectors spending a larger proportion of its costs on transport are likely to benefit more from investment in road, rail and air infrastructure.

Investment that is directed to address critical pinch points, increase capacity and provide the requisite level of transport infrastructure that addresses associated natural monopoly, public goods and network externality challenges will be most likely to benefit those industries that spend a larger share on transport.

A cost share of greater than five per cent was set as the qualifying benchmark to determine which industries would benefit most from additional investment in transport infrastructure.

Utilities

Investment in utilities infrastructure would be less than in the best interests of the NSW community in the absence of Government investment and regulation. Therefore the NSW government has actively invested in utilities infrastructure (such as electricity networks, water and waste water infrastructure, gas networks and telecommunications infrastructure). Whether additional investment would generate large positive returns to the NSW community is an area requiring further investigation.

Additional investment in utilities projects is identified as being most likely to benefit industry sectors that acquire a large share of their overall costs towards utilities in the NSW input-output tables.

A cost share greater than two per cent was set as the qualifying benchmark to determine which industries would benefit most from additional investment in utilities infrastructure.

Other public infrastructure

Other public infrastructure includes any other public infrastructure projects that would be under-provided in the absence of government intervention. These include investment in hospitals, school infrastructure and parks as example.

¹³¹ Productivity Commission 2014, Public Infrastructure, Inquiry Report, vol. 1, pp. 60-62, Canberra.

The industry sectors that were determined to be most likely to benefit from additional investment in other infrastructure the Government has an active role in providing were assessed as being most relevant based on historic spending in the 2016/17 NSW Government Budget.

Spending on hospitals and educational infrastructure (including TAFEs) were found to be the most significant of the key industry sectors reported on and are therefore the most likely to benefit from additional investment.

Regulatory challenges

Workplace Health and Safety (WH&S) regulation

WH&S regulation was identified as an impediment to growth by many firms in workshops with regional stakeholder undertaken as part of this report. This is not to suggest the regulation is overly burdensome, any assessment of the appropriateness of regulation is out of scope in this paper and would be an area of future work.

Industry sectors that are likely to benefit most from any reduction or streamlining of WH&S regulation were identified as being those with the highest incidence of fatalities or a frequency rate of serious claims¹³². Figures were calculated from data compiled by Safe Work Australia by industry sector covering between.

Environmental regulation

Regulation pertaining to the environment was identified as an impediment to growth by many firms in workshops with regional stakeholder undertaken as part of this report. This is not to suggest the regulation is overly burdensome, any assessment of the appropriateness of regulation is out of scope in this paper and would be an area of future work.

To assess the industry's most likely to benefit from a reduction, or streamlining of environmental regulation that is found to be unnecessary (if any) a brief review of the main pieces of regulation was undertaken. This revealed 12 separate pieces of environmental legislation for businesses to comply with. The industry sectors that are impacted by each piece of legislation were identified, with the impact assessed as being either 'low', 'medium' or 'high'. Industry sectors that are impacted heavily ('medium' or 'high' impact) by four or more pieces of this legislation were identified as being most likely to benefit from any reduction in, or streamlining of environmental regulation.

Land use/planning regulation

Land use and planning regulation was identified as an impediment to growth by many firms in workshops with regional stakeholder undertaken as part of this report. This is not to suggest the regulation is overly burdensome, any assessment of the appropriateness of regulation is out of scope in this paper and would be an area of future work.

Industry sectors that are most likely to benefit from reduction in or streamlining of land use or planning regulations were those that outlaid the largest share of expenditure on construction.

A cost share, in the NSW I.O. tables, greater than three per cent was set as the qualifying benchmark to determine which industries would benefit most.

¹³² A serious claim is an accepted workers' compensation claim that involves one or more weeks away from work and excludes all fatalities, and all injuries experienced while travelling to or from work.

Appendix 21 Recent industry trends

The main analytical tool of the Growth Enablers project, the Regional Analysis Model (RAM), mainly uses data from the 2006 and 2011 Censuses in order to obtain accurate employment estimates at the detailed local government area (LGA) level. Regional economies were defined according to employment behaviour and economic linkages, using local government areas (LGAs) as the smallest geographic building block.

However, employment output from the 2016 Census will not be available until 2017. In order to determine whether patterns of employment growth in regional economies have continued from 2011 into 2016 the Census data has been compared to other, less geographically detailed, data sources. The reduced level of detail available across these alternative sources means care must be taken in interpretation of findings.

Location quotients and industry size were not included as part of this assessment of recent industry trends.

Methodology

The RAM provides data at the LGA/Regional economy level, and for industries down to the most detailed level (industry class) of the Australian and New Zealand Standard Industrial Classification (ANZSIC).

Reliable data was available at the Statistical Areas Level 4 (SA4 level) only as defined by the Australian Statistical Geography Standard (ASGS) published by the ABS. There are 28 defined SA4s in NSW, which are larger than LGAs and the defined regional economies. In addition, as LGAs are not defined according to the ASGS they may fall between multiple SA4s. For the purpose of this data comparison, LGAs that have less than 25% of their population within an SA4 have been excluded from that SA4.

With reliable data not available at the LGA/regional economy level, the data comparison has been conducted by comparing the regional economy to the SA4 that it lies within.

Table A21.1 Regional economy by Statistical Areas Level 4 (SA4)

SA4	Regional economy	LGAs comprising SA4
Capital Region	Bega	Bega Valley (A)
	Bega	Eurobodalla (A)
	Goulburn	Goulburn Mulwaree (A)
	Goulburn	Upper Lachlan Shire (A)
		Bombala (A)
		Boorowa (A)
		Cooma-Monaro (A)
		Harden (A)
		Palerang (A)
		Queanbeyan (C)
		Snowy River (A)
		Yass Valley (A)
		Young (A)
Central West	Bathurst	Bathurst Regional (A)
	Bathurst	Oberon (A)
	Mudgee	Mid-Western Regional (A)
	Orange	Blayney (A)
	Orange	Cabonne (A)
	Orange	Orange (C)
	Parkes	Forbes (A)
	Parkes	Lachlan (A)
	Parkes	Parkes (A)
		Bland (A)

SA4	Regional economy	LGAs comprising SA4
		Cowra (A) Lithgow (C) Weddin (A)
Coffs Harbour - Grafton	Coffs Harbour Coffs Harbour	Bellingen (A) Coffs Harbour (C) Clarence Valley (A)
Far West and Orana	Broken Hill Broken Hill Dubbo Dubbo Dubbo	Unincorporated Far West Region Broken Hill (C) Dubbo (C) Narromine (A) Wellington (A) Bogan (A) Bourke (A) Brewarrina (A) Central Darling (A) Cobar (A) Coonamble (A) Gilgandra (A) Walgett (A) Warren (A) Warrumbungle Shire (A)
Mid North Coast	Port Macquarie Port Macquarie	Kempsey (A) Port Macquarie-Hastings (A) Unincorporated Far West Region Gloucester (A) Great Lakes (A) Greater Taree (C) Nambucca (A)
Murray	Albury Albury Albury	Albury (C) Corowa Shire (A) Greater Hume Shire (A) Balranald (A) Berrigan (A) Conargo (A) Deniliquin (A) Hay (A) Jerilderie (A) Murray (A) Urana (A) Wakool (A) Wentworth (A)
Hume (Victoria)	Albury Albury	Indigo (S) Wodonga (RC) Alpine (S) Benalla (RC) Mansfield (S) Mitchell (S) Murrindindi (S) Strathbogie (S)

SA4	Regional economy	LGAs comprising SA4
		Towong (S) Wangaratta (RC) Unincorporated Vic
New England and North West	Armidale Armidale Armidale Moree Moree Moree Tamworth Tamworth	Armidale Dumaresq (A) Guyra (A) Uralla (A) Gwydir (A) Moree Plains (A) Narrabri (A) Liverpool Plains (A) Tamworth Regional (A) Glen Innes Severn (A) Gunnedah (A) Inverell (A) Tenterfield (A) Walcha (A)
Richmond - Tweed	Lismore Lismore Lismore Lismore Lismore Tweed	Ballina (A) Byron (A) Kyogle (A) Lismore (C) Richmond Valley (A) Tweed (A)
Riverina	Griffith Griffith Griffith Griffith Wagga Wagga Wagga Wagga Wagga Wagga Wagga Wagga	Griffith (C) Leeton (A) Murrumbidgee (A) Narrandera (A) Coolamon (A) Junee (A) Lockhart (A) Wagga Wagga (C) Carrathool (A) Cootamundra (A) Gundagai (A) Temora (A) Tumbarumba (A) Tumut Shire (A)

Two data sources were used to determine whether the RAM has been consistent from 2006 to 2011:

Labour Force Survey (LFS) Data

- ABS (2016), cat. no. 6291.0.55.003 – Labour Force, Australia, Detailed, Quarterly, May 2016
- Data is at the SA4 level
- Data is at the ANZSIC Division level, the least detailed level
- Data is an annual average of the preceding four quarters (an approximation of a 12 month moving average)
- Analysis has looked at the absolute growth, percentage growth, and compound annual growth rate from May 2011 to May 2016

Job Advertisements Data

- Burning Glass Technologies (2016), Labour Insight™
- Data is at the SA4 level
- Data is at the ANZSIC Group level
- Data has been analysed for financial years
- Analysis has looked at the percentage point growth in the industry share of job adverts in 2012-13 to 2015-16, with change in industry share used to account for a large increase in the total number of job adverts between the two time periods
- N.B. Job adverts data must be used carefully, as a lack of job adverts may not necessarily represent weakness in an industry, for instance if the industry does not use online job postings

Education and Work Microdata from the ABS was considered as a third data source (ABS (2016), cat. no. 6227.0.30.001 - Microdata: Education and Work, May 2015). While the Microdata includes details at the ANZSIC Group and Sub-Division level, the survey nature of the data provided inconsistent and unreliable results. In addition, data was only available at the SA4 level and up to May 2015, so did not provide additional insight.

For comparison, the RAM was used to generate results at both the ANZSIC Division and Group level for each regional economy and the growth rates compared to the two data sources where relevant:

- RAM Division growth compared to LFS Division growth
- RAM Group growth compared to LFS Division growth, and
- RAM Group growth compared to Job Adverts Group growth

Comparisons were made for both absolute employment growth and employment growth less the NSW industry average.

Key findings

While insight at the broadest ANZSIC division level is limited due to insufficient detail it may be useful for comparing broad employment growth patterns. At the ANZSIC division level (least detailed level) a comparison of industry growth post 2011 found that growth patterns were similar in direction across the 19 industry divisions compared to the trends observed from 2006 - 2011 in the RAM. This was the case in both absolute employment growth and employment growth less the relevant NSW industry average.

There was also consistency in absolute employment growth when comparing RAM group growth to the LFS. Job advertisements data tended to be more volatile, with the more detailed ANZSIC group level providing more comparable data but at times less robust data.

Overall, industries within the health care and social assistance division have tended to be the most consistent across regions in employment growth. With less conclusive results for those industries within the education and training, and public administration and safety divisions.

When comparing consistency of regional economies to SA4 results, the most consistent results occurred when regional economies accounted for a large proportion of their respective SA4. For instance, the Lismore and Tweed regional economies, which together accounts for the entire Richmond – Tweed SA4. This minimises the impact of other LGAs influencing employment growth trends in the SA4.

On the other hand, results were less conclusive where multiple regional economies lay within the same SA4 as the individual trends in the different regional economies may be masked upon aggregation. For instance, the Central West SA4 contains four regional economies and a number of undefined LGAs so that SA4 results cannot capture all of the movements in the different regional economies.



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