



Report to:
Venture Taranaki

TARANAKI INDUSTRY PROJECTIONS

2006 – 2026

Final Report

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1 Executive Summary

This report was commissioned by Venture Taranaki Trust to provide an overview of the Taranaki region economy. It looks at the historical growth of industries in the region to 2006, with a more in-depth analysis of key industry sectors. It then provides employment and GDP projections by industry to 2026.

There are 104,000 people who live in the Taranaki region. From this, 45,200 Full Time Equivalents (FTEs) were employed in 12,800 businesses in 2006 producing \$4.38 billion in GDP. Taranaki makes up 2.5 percent of national employment and contributes 2.8 percent of national GDP.

The key industries that drive the Taranaki economy are the oil and gas, and agriculture sectors, and their associated secondary industries such as food processing and engineering. As such, the region employs a far larger proportion of workers in these industries than New Zealand.

Taranaki has achieved steady rises in employment and GDP in the region over the last five years despite flat population growth. On a GDP per capita basis, Taranaki is well ahead of the national average, although regional employment and GDP growth (where population is not taken into account) has not been as rapid as national growth. Based on the region's industry structure, we project the Taranaki economy to grow at a faster rate than nationally over the next 20 years.

The Taranaki region is benefiting from a fundamental shift in the global economy. The effects of globalisation and the addition of an extra two billion people into the global workforce via India and China has driven down manufacturing prices. Increased activity, along with a growing middle class has seen the demand for energy and commodities increase significantly over the last five years. BERL does not see this demand changing in the future. We actually see a fundamental shift, where rote manufacturing becomes the new commodity as Asia drives production costs down. Meanwhile, the growing middle class sees the demand for western commodity goods, particularly dairy and meat, continue to increase. The Taranaki region, with its agriculture, food processing (meat and dairy) and energy focus, is well placed to take advantage of this fundamental shift.

This positive shift cannot rely solely in increases in participation or productivity and will require an increase in employment, which should encourage population growth in the region. Increased population will flow through to the population-based industries (education, health, cultural and personal services). There are glimpses of this in the latest census numbers

where the population arrested a decline from the previous five-years and actually increased by 2,000 people.

Employment

Agriculture, including dairy cattle farming, is the biggest employer in the region, accounting for 16 percent of FTEs in 2006. The three manufacturing industries – food processing, engineering and other manufacturing – together accounted for a further 18 percent of Taranaki employment.

Despite slower than national population growth, employment growth in Taranaki averaged a solid 2.4 percent per annum over the last five years. This compares to growth of 3.4 percent per annum in New Zealand. This indicates higher labour force participation is occurring in the region in order to meet the demand for labour.

Employment over the last five years has grown rapidly across a range of industries including traditional strengths such as oil and gas (8 percent per annum) and engineering (4.1 percent per annum), but also in services such as business, finance and property services (6.8 percent per annum) and hospitality (5.2 percent per annum).

GDP

Static population growth and an industry mix with a high proportion of lower GDP industries distorts GDP growth in the region compared to nationally. Taking into account the region's slow population growth and relative proportion of low GDP per FTE industries, it has done very well in terms of its GDP performance. Further, looking at a similar measure, GDP per capita, Taranaki is significantly better off than nationally (\$42,000 vs. \$38,700).

Taranaki GDP growth over the last five years was 1.7 percent per annum, which was less than national GDP growth of 3.7 percent per annum. The lower GDP growth rate in Taranaki is strongly linked to lower employment growth and industry composition. Activity has been strong and the individual industries have recorded strong growth. Rising house prices and economic activity has seen strong GDP growth in construction (10.5 percent per annum), communications services (9.5 percent per annum) and a number of other industries from transport and storage to hospitality, business, finance and property services.

The importance of primary and processing industries in Taranaki is once again clear from the far higher proportions of GDP that they contribute to the region compared to what is seen nationally. Although it employs just two percent of FTEs, mining (oil and gas) produces 17

percent of the region's GDP. Agriculture production produces 9.5 percent of the region's GDP, while food processing (mostly dairy and meat) contributes a further 9.9 percent.

Key sectors

The report considers eight key sectors in greater depth. The oil and gas sector in Taranaki is significant from a regional and national perspective. It accounts for 90 percent of all oil and gas employment and GDP in New Zealand. It has the highest employment multiplier among the seven key sectors; for every FTE created in the sector, a further 2.66 FTEs are created in the Taranaki economy. Further, the oil and gas industry exports 85 percent of its output.

The dairy sector produced 17 percent of Taranaki GDP in 2006. Although Taranaki contributes just three percent of New Zealand's GDP, the region produced 14 percent of national dairy GDP and employment. A wide range of industries rely on the dairy sector to consume their outputs. More than 60 percent of dairy output is exported from the region.

The meat processing, engineering and other manufacturing sectors (ie all manufacturing except dairy) in Taranaki employed 6,900 FTEs between them in 2006, 15 percent of all Taranaki employment. More than two-thirds of output from these three sectors was exported, equivalent to 21 percent of all Taranaki exports.

Education in Taranaki employed 2,520 FTEs in 2006, or one in 18 FTEs. As this sector is built around teaching and support staff, 67 percent of inputs are in the form of wages and other household income. The Taranaki public sector (excluding education) employed around 4,900 FTEs in 2006, or 11 percent of Taranaki FTEs.

Tourism has grown faster than the regional average over the last five years achieving 2.8 percent per annum employment growth, 2.7 percent per annum GDP growth and 2.8 percent per annum business growth. While tourism growth has been impressive within the region, it has not matched the national figures of 3.5 percent per annum, 3.8 percent per annum, and 4.2 percent per annum respectively. However, this may be more a case of an under-developed tourism industry as opposed to the growth in actual tourist numbers. This suggests significant growth potential for the tourism industry.

Projections

Taranaki's economy is expected to grow faster than the national economy over the next 20 years. The projections indicate the growing importance (and potential) of the oil and gas sector. The share of employment and GDP accounted for by oil and gas could well double over the next 20 years.

Associated industries such as engineering, as well as the other manufacturing, hospitality, and transport and storage industries are also likely to see rapid expansion. Along with business, finance and property services growth, these industries are expected to add around 16,500 FTEs, or 77 percent, of the region's employment growth by 2026.

Particularly strong gains in GDP are expected in oil and gas; business, finance and property services; engineering; other manufacturing; and wholesale and retail trade. These five industries will contribute 83 percent of the increase in GDP in the region over the next 20 years.

Employment is expected to grow by 2.0 percent per annum to 2026, while labour productivity gains could see GDP grow by 4.7 percent per annum.

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2 Introduction

This report looks at the Taranaki economy through three different aspects. First, it summarises the recent economic performance in Taranaki. Second, it takes an in-depth look at seven key sectors in the region. Third, it forecasts how the regional economy could look in 2011, 2016 and 2026.

Chapter 3 provides a summary of current economic activity in Taranaki, looking specifically at employment and GDP growth across 19 industries.

Eight key sectors within the Taranaki economy are analysed in chapter 4. Some of these sectors are identical to the 19 industries discussed in chapter 3, while others are made up of more or less industries. A wide range of indicators are looked at for each sector, including where each sector sources its inputs, and where each sector's outputs go. The eight sectors analysed are:

- oil and gas
- dairy
- meat processing
- engineering
- other manufacturing
- education
- public sector
- tourism.

Projections of the Taranaki economy are provided in chapter 5. These projections present a picture of what employment and GDP in each of the 19 industries could be in 2011, 2016 and 2026. The analysis is based largely on the assumption that future growth trends will mirror the region's recent¹ performance relative to national growth.

The Appendices explain employment multiplier analysis as well as the assumptions used in the national and regional growth projections. They also include a 19 industry analysis of business units in Taranaki.

¹ The last five years

3 Taranaki Industry Structure and Performance

This section sets out the Taranaki region's current industry structure and performance in terms of employment and GDP. The analysis looks at the changes in industry structure between 2001 and 2006. The Taranaki region's growth is compared to that of New Zealand, at aggregate and at industry-by-industry levels.

3.1 Taranaki population

Employment and GDP should be considered in light of the population demographic in the region. Population growth has been significantly slower than nationally as shown in Table 3.1. This makes Taranaki's performance over the past five years even more impressive.

Table 3.1 Population trend, 1996 – 2006

Census Night Population Count	1996	2001	2006	Increase or Decrease (-)		Increase or Decrease (-)	
				Number	Percent	Number	Percent
Taranaki Region	106,569	102,684	104,697	-3,885	-3.6	2,013	2.0
Total New Zealand	3,681,546	3,820,749	4,143,282	139,203	3.8	322,533	8.4

Source: Statistics New Zealand, Census

In New Zealand, a large proportion of growth has been in population-based, service-focused industries. In Taranaki, population growth has not been in the same league as in New Zealand. Although these industries have been growing fast in Taranaki as well, they are off a smaller base and, therefore, they have not impacted significantly on the regional totals.

Therefore, while employment and GDP growth in Taranaki have been slower than the national average over the last five years, this is an impressive performance considering the region's population trends.

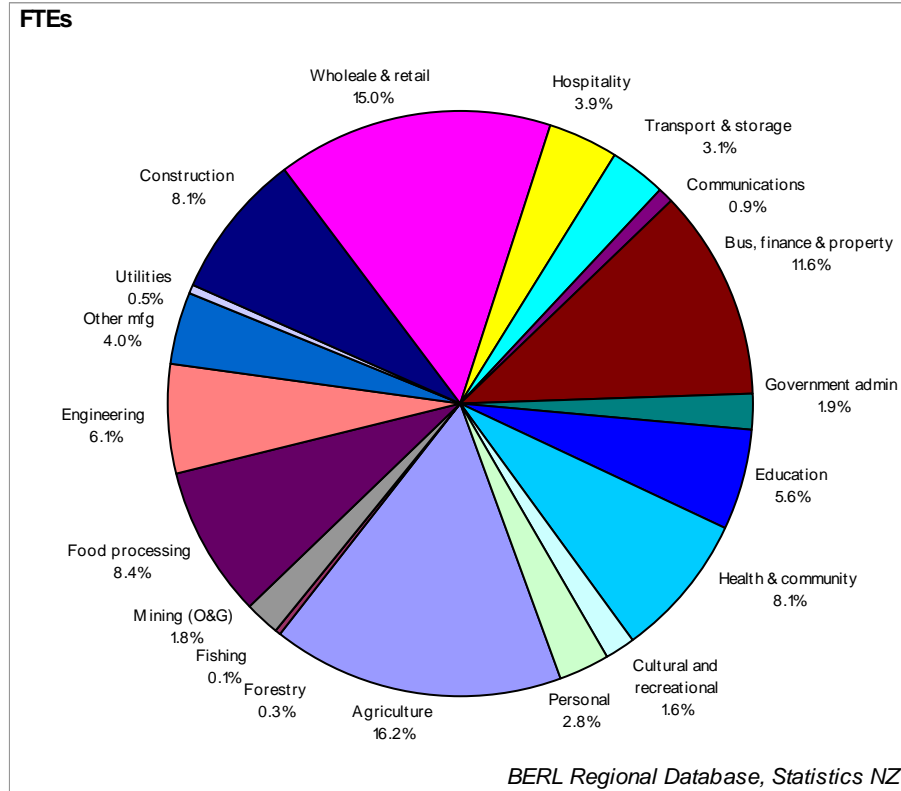
Further, there has been a turnaround in Taranaki's population demographics. After declining between 1996 and 2001, the population grew in the last five years by 2,000 people (2.0 percent). This will impact positively on the region's performance going forward, especially as it provides the resources/clients to support the high growth/value added service sectors.

3.2 Taranaki employment

In 2006, the Taranaki region employed just over 45,200 FTEs, which is around 2.5 percent of national employment. The majority of the region's employment is in the manufacturing and agriculture sectors. Employment growth in the region has accelerated substantially since 2001, compared with earlier performance, indicating a positive change in the Taranaki region's economic performance.

Figure 3.1 shows the proportion of employment in the Taranaki region accounted for by various industries in 2006.

Figure 3.1 Taranaki FTEs, 2006

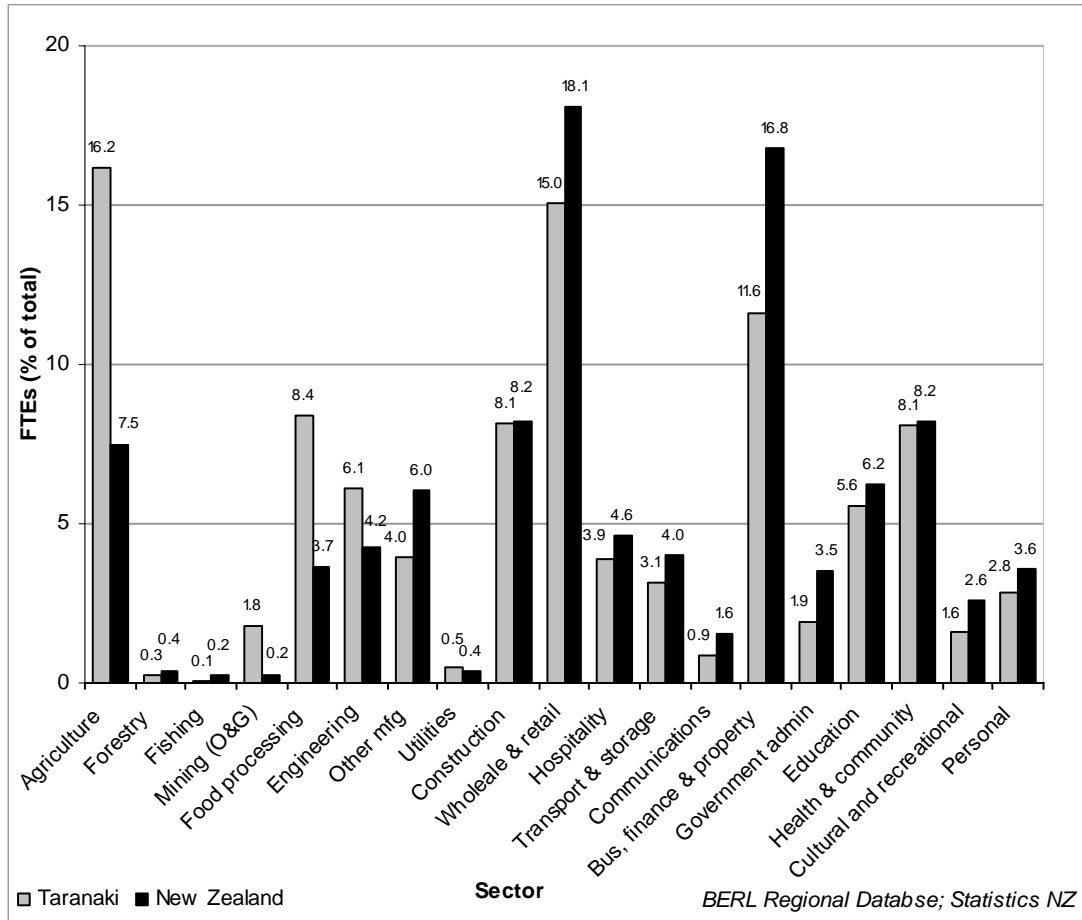


The three manufacturing industries – food processing, engineering, and other manufacturing – together provided 18 percent of Taranaki’s employment. Agriculture accounted for 16 percent of all employment in the region. The manufacturing and agriculture industries are related in that close to half of manufacturing employment is in food processing.

The next largest industry was wholesale and retail trade, at 15 percent of employment, while finance and business services (12 percent), construction (8.1 percent), and health and community services (8.1 percent) were also major players.

However, the share of employment accounted for by each industry at a regional level relative to the national picture provides a better description of important industries in the region. Figure 3.2 shows the proportion of employment in each industry in Taranaki compared to the New Zealand average.

Figure 3.2 Comparison of employment by industry, 2006



From this we can see that a significantly higher proportion of employment in the Taranaki region is in agriculture, food processing, engineering, and mining. Conversely, Taranaki has a relatively low proportion of employment in business, finance and property services; wholesale and retail trade, and most of the service industries.

These relative proportions are important when we consider employment growth.

Table 3.2 presents FTE employment numbers for Taranaki broken down by industry between 2001 and 2006. It also provides a national comparison for total employment.

Table 3.2 Taranaki FTEs, 2001 – 2006

Industry	Employment Number FTEs				%pa change		
	2001	2004	2005	2006	2005	2006	2001 to 2006
Agriculture	7,395	7,167	6,943	7,307	-3.1	5.2	-0.2
Forestry	133	138	137	119	-0.9	-12.8	-2.2
Fishing	42	42	37	34	-12.2	-7.8	-3.9
Mining (O&G)	555	649	745	817	14.7	9.7	8.0
Food processing	3,732	3,820	3,889	3,785	1.8	-2.7	0.3
Engineering	2,247	2,299	2,554	2,753	11.1	7.8	4.1
Other manufacturing	1,771	2,008	1,801	1,794	-10.3	-0.4	0.3
Utilities	286	298	320	237	7.5	-26.1	-3.7
Construction	2,463	2,971	3,439	3,680	15.7	7.0	8.4
Wholesale & retail trade	6,368	6,791	6,922	6,803	1.9	-1.7	1.3
Hospitality	1,364	1,557	1,714	1,757	10.0	2.5	5.2
Transport & storage	1,221	1,392	1,394	1,414	0.1	1.5	3.0
Communications	346	380	448	402	18.0	-10.2	3.0
Business, finance & property svs	3,782	4,618	4,843	5,253	4.9	8.5	6.8
Government administration	747	776	867	877	11.8	1.1	3.3
Education	2,376	2,570	2,664	2,518	3.6	-5.5	1.2
Health & community svs	3,586	3,527	3,681	3,664	4.4	-0.5	0.4
Cultural & recreational svs	598	644	642	731	-0.3	13.8	4.1
Personal svs	1,066	1,201	1,280	1,275	6.5	-0.3	3.7
Taranaki	40,078	42,849	44,321	45,221	3.4	2.0	2.4
New Zealand	1,532,525	1,690,949	1,751,699	1,809,041	3.6	3.3	3.4

source:BERL Regional Database, Statistics NZ

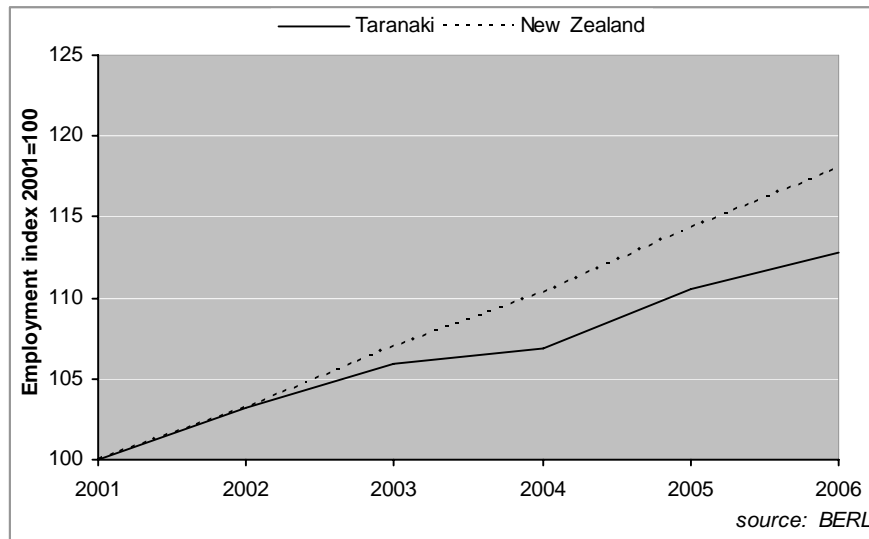
Over the last five years, the Taranaki region averaged employment growth of 2.4 percent per annum compared to 3.4 percent per annum for New Zealand. While regional growth was lower than that seen nationally, much of this was likely a result of supply side constraints – a shortage of labour due to lower population growth.

The fastest employment growth over the last five years in percentage terms was in construction, which grew from around 2,460 FTEs to 3,680 FTEs, an increase of 8.4 percent per annum. Other particularly strong performers were mining (8.0 percent per annum, almost all within oil and gas); business, finance and property services (6.8 percent per annum); hospitality, which accounts for most of the tourism industry (5.2 percent per annum); engineering (4.1 percent per annum); and cultural and recreational services (4.1 percent per annum).

Only four of the 19 industries experienced falls in employment over the period. The largest industry, agriculture, saw a decline of 0.2 percent per annum (around 90 FTEs). Other industries where employment fell were fishing (-3.9 percent per annum); utilities (-3.7 percent per annum); and forestry (-2.2 percent per annum).

Figure 3.3 shows the trend in employment growth in the Taranaki region compared to New Zealand employment growth between 2001 and 2006.

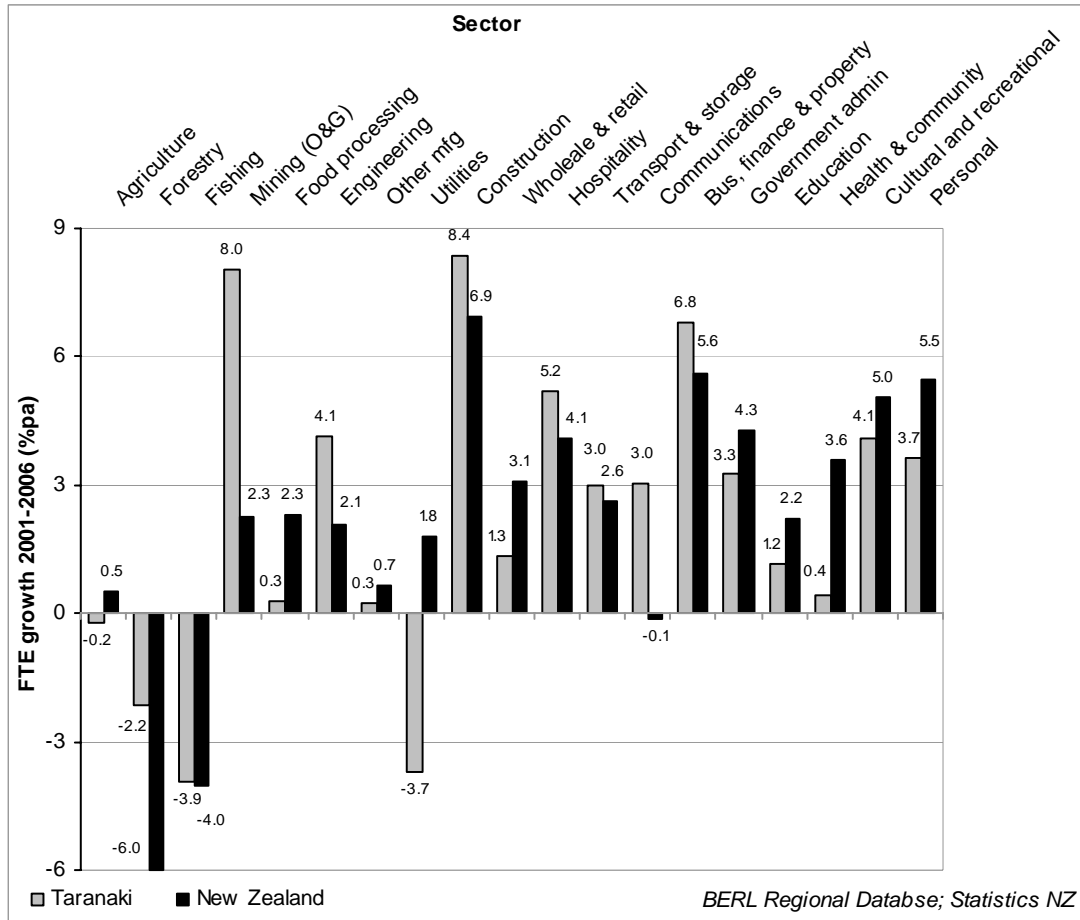
Figure 3.3 Employment trend, 2001 – 2006



Employment growth in Taranaki has broadly mirrored that of New Zealand over the last five years, apart from a dip between 2003 and 2004. What makes this remarkable is that employment growth has been achieved despite lower population growth.

Figure 3.4 compares employment growth in Taranaki and New Zealand at the 19-industry level over the last five years.

Figure 3.4 Comparison of employment growth by industry, 2001 – 2006



The general national trend is lower employment growth in the primary industries, while growth is highest in services as well as construction, wholesale and retail trade, and hospitality. A lot of this is due to increasing productivity in the primary sector, but also the growth in demand for services industries, driven in large part by global trends and population.

The Taranaki region tends to follow the national trends in each industry. It has, however, seen substantially stronger growth in mining (oil and gas) and engineering, two of the region's traditional strengths. In addition, other industries such as construction; hospitality; and business, finance and property services have added jobs at a faster rate than New Zealand as a whole.

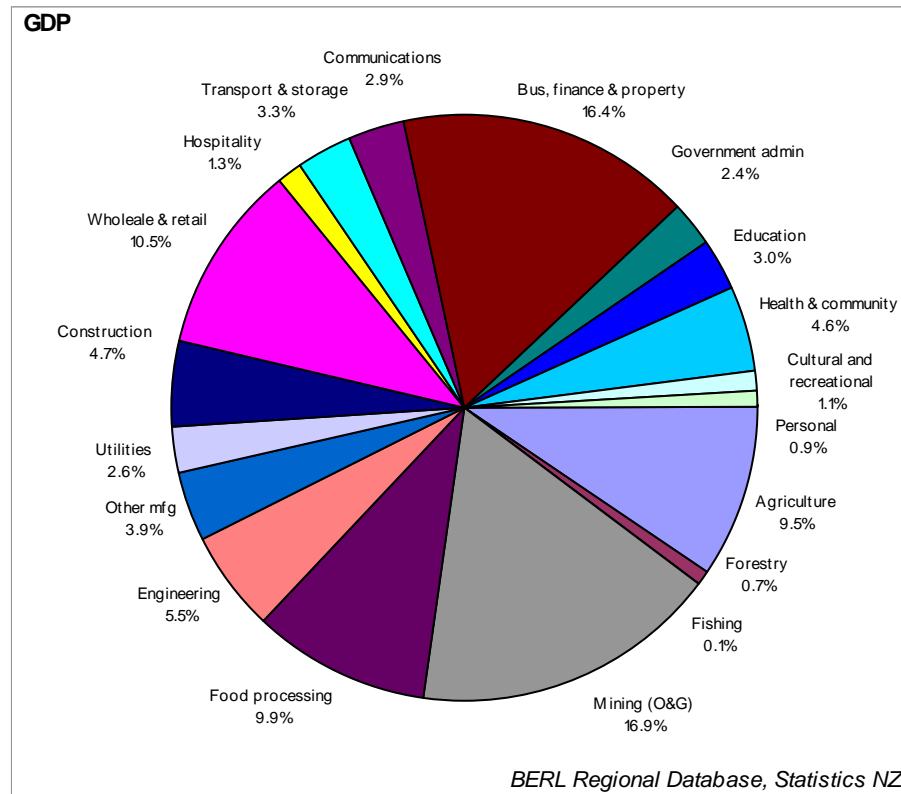
While the region has seen significant falls in employment in two of its smaller industries, forestry and fishing, this has been against a background of even greater drops at a national level. Utilities employment fell at 3.7 percent per annum while there was some growth nationally (1.8 percent per annum).

3.3 Taranaki GDP

The Taranaki economy generated around \$4.38 billion in GDP, or 2.8 percent of national GDP, in 2006.

Figure 3.5 shows the composition of the Taranaki region's GDP in 2006.

Figure 3.5 Taranaki GDP, 2006

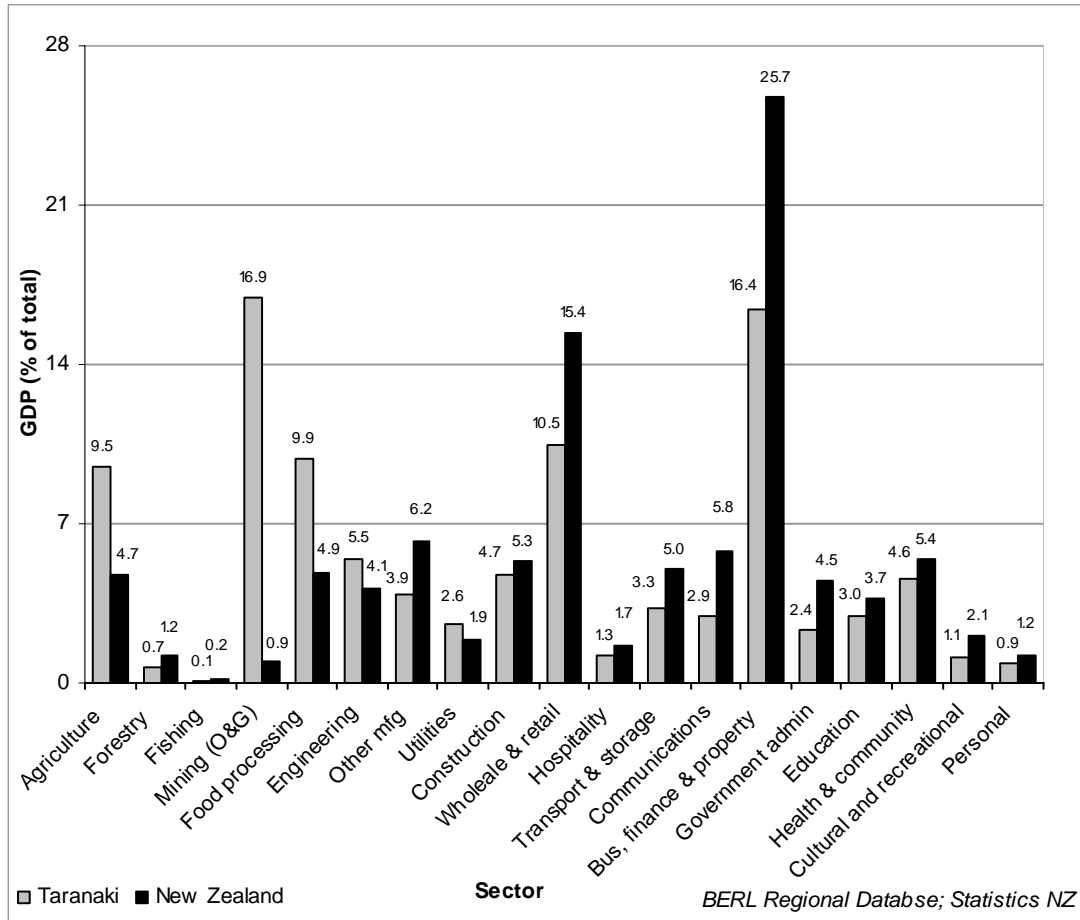


Mining (oil and gas) makes the biggest contribution to the region's GDP, accounting for 16.9 percent. This is followed by business, finance and property (16.4 percent), wholesale and retail trade (10.5 percent), food processing (9.9 percent) and agriculture (9.5 percent).

The proportion of GDP accounted for by mining (oil and gas) is unique in New Zealand. Similarly, agriculture, food processing and engineering are all relatively higher than nationally.

Figure 3.6 compares the relative contributions to GDP of each industry in Taranaki and New Zealand in 2006.

Figure 3.6 Comparison of GDP by industry, 2006



Mining (oil and gas) stands out as having the most significant difference from the national situation. In the region, it accounts for 17 percent of GDP, whereas nationally it accounts for less than 1.0 percent. Again, this highlights the importance of the oil and gas sector to the Taranaki region. Similarly, food processing, agriculture, and engineering make relatively high contributions to GDP at the regional level.

Within the Taranaki region, most of the retail, business and people services make a relatively smaller contribution to GDP than is seen nationally. This is due to the disproportionately large contribution of the primary and manufacturing sectors in the Taranaki economy as well as the smaller population base of the region.

Table 3.3 presents the annual change in GDP for Taranaki broken down by industry between 2001 and 2006. It also provides an overall GDP picture for New Zealand.

Table 3.3 Taranaki GDP, 2001 – 2006

Industry	Value Added or GDP ('06, \$m)				%pa change		
	2001	2004	2005	2006	2005	2006	2001 to 2006
Agriculture	408	411	416	415	1.1	-0.2	0.3
Forestry	24	27	29	30	6.6	5.9	4.6
Fishing	3	3	3	3	-9.9	5.6	-0.9
Mining (O&G)	881	771	794	741	3.0	-6.7	-3.4
Food processing	413	434	425	432	-2.0	1.6	0.9
Engineering	187	202	223	240	10.5	7.6	5.1
Other manufacturing	171	192	173	171	-9.7	-1.5	0.0
Utilities	152	149	158	115	6.4	-27.0	-5.4
Construction	126	180	203	207	12.5	2.1	10.5
Wholesale & retail trade	388	445	465	459	4.7	-1.4	3.4
Hospitality	44	48	55	55	15.5	-0.8	4.6
Transport & storage	112	139	141	143	1.6	1.5	5.0
Communications	82	109	137	128	25.3	-5.9	9.5
Business, finance & property svs	576	680	672	718	-1.1	6.9	4.5
Government administration	84	91	105	103	14.7	-1.4	4.3
Education	118	132	134	130	1.8	-3.2	2.0
Health & community svs	185	190	199	201	5.1	1.0	1.7
Cultural & recreational svs	42	44	44	49	0.5	12.1	3.2
Personal svs	34	37	39	38	5.3	-3.4	2.5
Taranaki	4,028	4,283	4,415	4,379	3.1	-0.8	1.7
New Zealand	130,236	147,128	152,541	155,885	3.7	2.2	3.7

source:BERL Regional Database, Statistics NZ

Taranaki GDP growth over the last five years, at 1.7 percent per annum, has been below that of New Zealand (3.7 percent per annum). This is largely the result of slower employment growth, itself due to lower population growth.

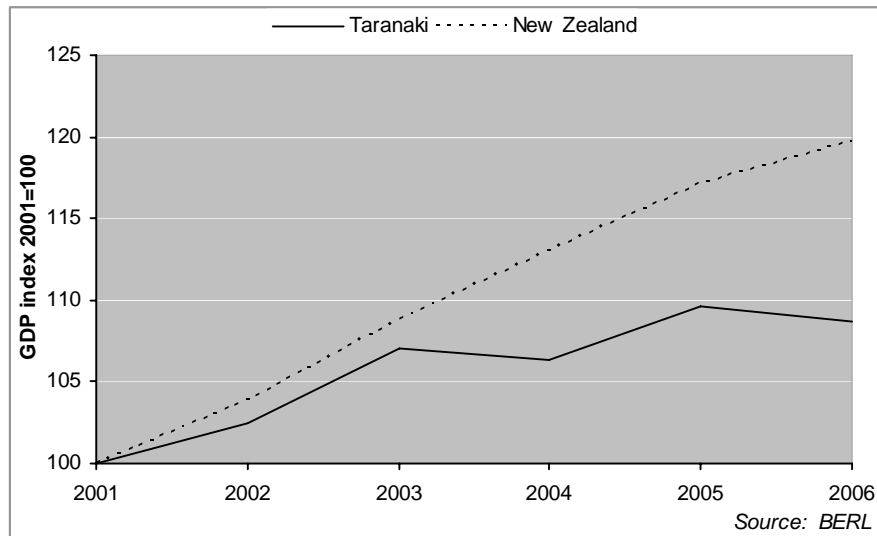
The fastest growth rate has been in the construction industry, which averaged 10.5 percent per annum, followed by communications, at 9.5 percent per annum. Major growth has also occurred in engineering (5.1 per cent per annum); transport and storage (5.0 percent per annum); hospitality (4.6 percent per annum); and business, finance and property services (4.5 percent per annum).

GDP has decreased in three industries, namely utilities (-5.4 percent per annum), mining (-3.4 percent), and fishing (-0.9 percent per annum) and has remained constant in one (other manufacturing).

Interestingly, forestry (4.6 percent per annum) and agriculture (0.3 percent per annum) have both seen GDP rise despite falling employment, indicating a sharp improvement in labour productivity.

Figure 3.7 shows the trend in GDP growth in the Taranaki region compared to New Zealand GDP growth between 2001 and 2006.

Figure 3.7 GDP trend, 2001 – 2006



The GDP trend shows increasing divergence between New Zealand and Taranaki GDP growth. The region saw its GDP climb in line with national growth between 2001 and 2003, before seeing a fall over the next year. This fall coincides with lower employment growth during the 2004 year, a year in which the resident population began to fall after three years of growth.

Taranaki's GDP growth picture appears at odds with economic activity in the region, where you would expect a much better GDP performance relative to the rest of the country. However, this does not suggest poor performance and, in light of the region's population and industry structure, suggests very good performance.

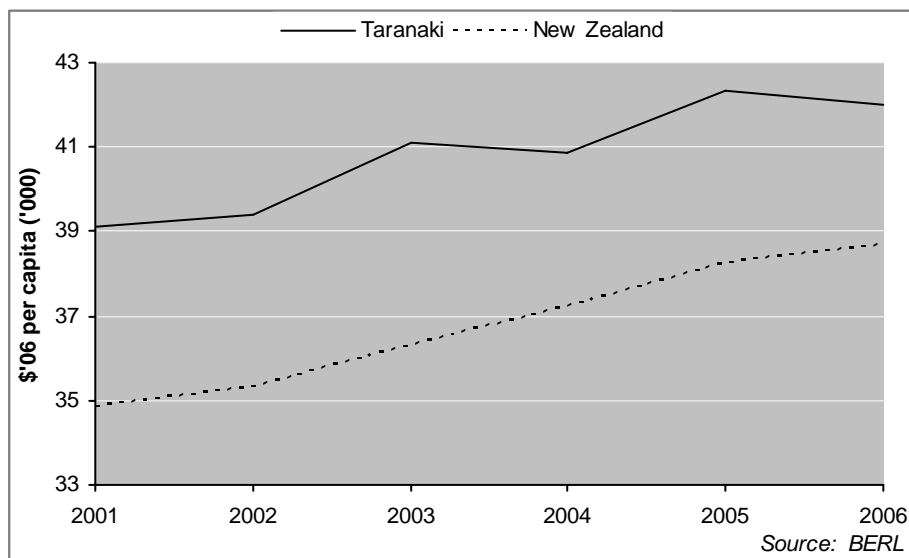
The first factor is that Taranaki has a relatively static population and the labour market is therefore very tight. Hence, growth is coming more from productivity gains than it is from increased employment. In the long run, the productivity gains will provide the region, and its businesses, with a competitive advantage.

Second, compared to nationally, Taranaki's major industries have a relatively lower GDP per FTE ratio. It also has a smaller proportion of the economy involved in business and financial services, which is a high GDP sector. GDP growth in the business services and communication sector has been faster in Taranaki than nationally. But, because these sectors account for such a small proportion of the region's total GDP, the gain has not been as high as nationally

An alternate way of looking at GDP, taking into account population growth, is GDP per capita. This is presented in Figure 3.8, which shows changes in GDP per capita over the

last five years. Taranaki GDP per capita has remained substantially above that of New Zealand as a whole across the five years. In 2006, it stood at \$42,000, compared to \$38,700 for New Zealand.

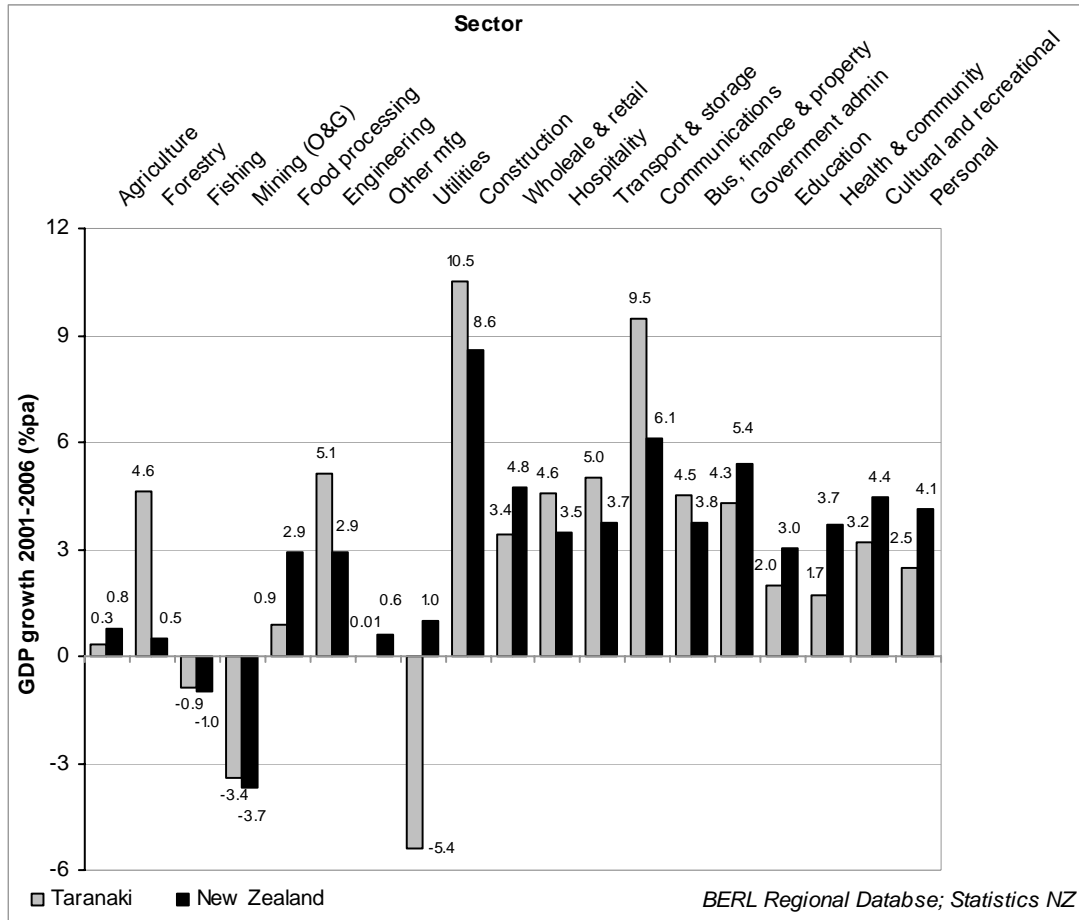
Figure 3.8 GDP per capita trend, 2001 – 2006



There has been some convergence in GDP per capita between Taranaki and the rest of the country. However this is due more to the faster growth in the rest of the economy than a slowing in the Taranaki region's economy.

Compared to nationally, Taranaki has performed well in most industries apart from population based ones such as retail, education, health and recreational services. Figure 3.9 compares the five-year annual average GDP growth rates of Taranaki and New Zealand for each industry.

Figure 3.9 Comparison of GDP growth by industry, 2001 – 2006



Taranaki has managed above national average growth in GDP in several industries over the last five years. These include construction; communications; engineering; forestry; transport and storage; hospitality; and business, finance and property services. While GDP fell in three industries, this was at a lower rate than nationally in two.

The fall in mining (oil and gas) was due to inactivity in the early 2000's. This been arrested in the later years. In 2006, mining GDP grew by close to 17 percent. The utilities industry also grew faster than the national average in 2006.

3.4 Summary of Taranaki Industry structure and performance

The employment and GDP figures reveal three main players in the Taranaki economy – agriculture, mining (oil and gas) and manufacturing (made up of food processing, engineering, and manufacturing). A large proportion of processing and engineering/manufacturing is related to the agriculture and mining industries. These

industries (dairy and oil and gas in particular) are all recovering in the later half of the observation period driven by increasing global demand and the associated prices.

While agriculture and mining continue to dominate the regional economy, significant growth in employment and / or GDP is occurring in services, such as business, finance and property services; communications, and hospitality.

Slower growth in population-based industries such as education, health, cultural and personal services reflects the static population in the region.

4 Taranaki's Key Sectors

This section discusses eight key sectors in the Taranaki region. The discussion of each sector describes the:

- sector's contribution to regional employment, GDP and business units
- increase in total regional employment brought about by an increase of one FTE in each key sector (the key sector's employment multiplier)
- sources of the key sector's inputs, such as from industries in the region, imports, and wages and other household income
- allocation of the key sector's outputs, such as to industries in the region, exports and consumption
- industries that provide the most input into each key sector
- industries most reliant on each key sector to absorb their outputs.

4.1 Approach

Each sector's contribution to employment, GDP and business units was determined using the BERL regional database. Definitions of each of the eight key sectors were decided in discussion with Venture Taranaki. These sectors are oil and gas, dairy, meat processing, engineering, other manufacturing, education, the public sector, and tourism.

The tourism sector analysis uses a different approach. Because tourism cuts across a number of industries it could not be analysed the same way as the other industries. For the tourism analysis we use the Tourism Satellite account to determine the size of the sector in the region. Projections are based on those provided by the Tourism Research Council.

Multiplier analysis² was used to calculate the economic impact of increasing employment by one FTE in each key industry. This allowed us to estimate that, for example, an increase in employment of one FTE in the dairy sector in Taranaki will create an *additional* 1.51 FTEs in the region (ie one FTE creates 2.51 FTEs in total).

Input-output tables were used to determine the sources and allocation of the key industries' inputs and outputs respectively.

² Multiplier analysis is explained in the Appendices.

For example, within the dairy sector in Taranaki, 47 percent of inputs come from industries in the region, 21 percent of inputs are imported from other parts of New Zealand or overseas, 18 percent comes from other inputs, and 15 percent comes from wages and other household income. On the dairy sector outputs side, 60 percent is exported out of Taranaki, 38 percent feeds into other industries in the region, 1.1 percent is consumed locally, and 0.6 percent is allocated to other outputs.

Similarly, input-output tables were used to determine which industries provide the most input into each of the seven key sectors and how reliant those industries are on key sectors to absorb their outputs.

For instance, as mentioned above, 47 percent of dairy sector inputs come from industries within the region. An immediate question is - which industries provide those inputs? Not surprisingly, 36 percent of all inputs are provided by the dairy cattle farming industry. This means that of all inputs required by the dairy sector in Taranaki, 36 percent comes from the dairy cattle farming industry.

Knowing that the dairy cattle farming industry provides 36 percent of inputs to the dairy sector; a further question would be - how reliant is the dairy cattle farming industry on the dairy sector? The input-output tables indicate that 97 percent of the dairy cattle farming industry's output feeds into the dairy sector. In other words, the dairy cattle farming industry is reliant on the dairy sector to absorb nearly all its outputs.

4.2 Oil and gas sector

The oil and gas sector in Taranaki is made up of four industries at the 114 industry level.³ The industries are oil and gas exploration, oil and gas extraction, services to mining, and other mining and quarrying.⁴

Table 4.1 shows the contribution of the oil and gas sector to the Taranaki economy and to the national oil and gas sector in 2006.

Table 4.1 Taranaki oil and gas sector

Taranaki Oil & gas sector	Total	% of regional	% of national oil and gas
Employment (FTEs)	817	1.81	90.45
GDP (\$mn)	741	16.93	89.68
Business units	57	0.45	41.01

source: BERL regional database, Statistics NZ

The oil and gas sector directly employed 817 FTEs in the region in 2006. Regionally, it provided a relatively small proportion of all employment (1.8 percent) and business units (0.45 percent). However, its direct contribution to regional GDP was large, at \$741 million, or 17 percent, in 2006.

The Taranaki region is currently home to close to all New Zealand's oil and gas production. As a result, it accounted for 90 percent of all the oil and gas sector's employment and GDP in New Zealand in 2006.

Growth in this sector is likely to be strong over the next several years as a result of ongoing project work and rising demand for fuel. The sector is expected to play an increasingly dominant role in the regional economy. More detail on likely rises in employment and GDP are introduced in the projections in section 5.

The oil and gas sector has a particularly high employment multiplier of 3.66. This means that creating one additional FTE within the sector will result in a further 2.66 FTEs in the region.

Table 4.2 presents the make-up of the Taranaki oil and gas sector's inputs and outputs. It also shows the sector's contribution to each category of regional inputs and outputs.

³ The 114 industries are based on the Australia and New Zealand Standard Industrial Classification (ANZSIC) codes, which classify the various industries in the economy.

Table 4.2 Taranaki oil and gas sector total inputs and outputs

Taranaki Oil & gas sector	% of sector	% of regional
Inputs		
Intermediate inputs	20.34	2.55
Imports	17.35	4.16
Wages and other household income	6.45	3.87
Other inputs	55.87	24.92
Outputs		
Intermediate outputs	14.20	1.78
Exports	85.48	17.54
Household and government consumption	0.07	0.03
Other outputs	0.25	0.29

source: BERL, Butcher & Associates

Other inputs (which includes depreciation, taxes and profits) make up 56 percent of the sector's inputs, and 25 percent of the region's other inputs. A little over 20 percent of the sector's inputs come from industries within the region, as explained in more detail below. A further 17 percent of inputs in the oil and gas sector in Taranaki are imported, accounting for 4.2 percent of all Taranaki imports. Wages and other household income accounts for 6.5 percent of inputs into the oil and gas sector.

The oil and gas sector exports 85 percent of its output to the rest of New Zealand and overseas. Oil and gas exports account for nearly 18 percent of all Taranaki exports. The oil and gas sector supplied 14 percent of its outputs to industries in the Taranaki region.

A number of industries provide inputs to the oil and gas sector. Table 4.3 presents the top ten industries by contribution to oil and gas sector inputs in Taranaki.

Table 4.3 Taranaki oil and gas major input industries

Taranaki Oil & gas sector	% of sector inputs
Oil & gas extraction	6.77
Ancillary services to construction	2.44
Non building construction	1.31
Oil & gas exploration	1.21
Other mining and quarrying	0.89
Wholesale trade	0.85
Technical services	0.84
Services to mining	0.82
Road freight transport	0.65
Electricity generation	0.63

source: BERL, Butcher & Associates

⁴ The reason for including services to mining and other mining and quarrying is that in the Taranaki region, 98 percent and 75 percent of these industries' respective outputs feed directly into the oil and gas sector (ie exploration and extraction).

The oil and gas extraction industry provides the largest proportion of inputs to the oil and gas sector, at 6.8 percent. In other words, 6.8 percent of all inputs required by the oil and gas sector are provided by the oil and gas extraction industry.

The second and third-largest contributors to the oil and gas sector's inputs are ancillary services to construction and non building construction. These industries contribute 2.4 percent and 1.3 percent of oil and gas inputs respectively.

The top-ten oil and gas input industries are rounded out by various mining, technical, business, and transport services, as well as wholesale trade. These trade-related industries are typically associated with primary industries. Together, the top ten input industries supply 16.4 percent of all industry inputs into the oil and gas sector.

However, some industries are more reliant on the oil and gas sector than others in that a significant proportion of their outputs are purchased as inputs into the sector.

Table 4.4 presents the ten industries most reliant on the oil and gas sector in terms of the portion of their total output contributed to the oil and gas sector in Taranaki.

Table 4.4 Taranaki industries reliant on oil and gas

Taranaki Oil & gas sector	% of contributor industry output
Services to mining	98.31
Other mining and quarrying	74.76
Computer services	28.63
Non building construction	20.36
Other business services	18.76
Insurance	14.77
Ancillary services to construction	14.36
Other non-metallic mineral product manufacturing	13.71
Air transport, services to transport and storage	10.68
Technical services	9.83

source: BERL, Butcher & Associates

Of particular note are the services to mining and the other mining and quarrying industries. These two industries are very dependent on the oil and gas sector in Taranaki, with 98 percent and 75 percent respectively of all output in these industries acting as inputs to the oil and gas sector.

Computer services, non-building construction, and other business services each contribute more than one-sixth of their output to the oil and gas sector.

4.3 Dairy sector

The dairy sector in Taranaki is made up of two industries at the 114 industry level. The two industries are dairy cattle farming and dairy product manufacturing.

Table 4.5 shows the contribution of the dairy sector to the Taranaki economy and to the national dairy sector in 2006.

Table 4.5 Taranaki dairy sector

Taranaki Dairy sector	Total	% of regional	% of national dairy
Employment (FTEs)	6,155	13.61	13.78
GDP (\$mn)	732	16.71	14.42
Business units	2,909	22.74	16.11

source: BERL regional database, Statistics NZ

The dairy sector employed around 6,160 FTEs in Taranaki in 2006 (14 percent of regional employment) in more than 2,900 businesses (23 percent of regional businesses). Between them, these employees produced \$732 million in GDP, or 17 percent of regional GDP.

The importance of the Taranaki dairy sector to the national dairy picture is evident from the fact that it accounts for around 14 percent of national dairy employment and GDP. In addition, it provides more than 16 percent of the national dairy sector's business units.

Projecting changes in the dairy sector is difficult due to the fact that, at least on the manufacturing side, the sector is dominated by a few large businesses. A decision to expand or reduce operations by any one of the major players can have a large impact on the sector in the region. It is important to keep this in mind when projecting likely changes.

Based on recent performance of the sector, employment growth is expected to be relatively modest over the next 20 years, with stronger gains on the manufacturing side than the farming side. Nevertheless, rises in labour productivity should see a steady increase in dairy sector GDP. More detail on likely rises in employment and GDP are introduced in section 5.

The employment multiplier in the dairy sector in Taranaki is relatively high, at 2.51. In other words, creating one new dairy FTE will lead to 1.51 further FTEs being employed in the region.

This is largely the result of a very high employment multiplier within dairy product manufacturing, which relies on inputs from many other industries. Therefore, increasing employment by one FTE in dairy product manufacturing requires substantial increases in

production within its supply industries, with the result that those industries must also employ more workers.

Table 4.6 presents the make-up of the Taranaki dairy sector's inputs and outputs. It also shows the sector's contribution to each category of regional inputs and outputs.

Table 4.6 Taranaki dairy sector total inputs and outputs

Taranaki Dairy sector	% of sector	% of regional
Inputs		
Intermediate inputs	46.56	10.83
Imports	20.55	9.14
Wages and other household income	14.63	16.28
Other inputs	18.26	15.16
Outputs		
Intermediate outputs	38.24	8.89
Exports	60.04	22.82
Household and government consumption	1.13	0.96
Other outputs	0.58	1.25

source: BERL, Butcher & Associates

Almost 47 percent of the sector's inputs come from industries within the region, as explained in more detail below. The sector imports nearly 21 percent of its inputs from outside the region. This represents 9.1 percent of the region's total imports. Other inputs such as depreciation and operating surpluses account for 18 percent of inputs.

Wages and other household income accounts for close to 15 percent of dairy sector inputs. The size of the dairy sector in Taranaki ensures that dairy sector wages and other household income represent 16 percent of all wages and other household income in the region.

As much as 60 percent of the sector's output is exported to the rest of New Zealand or overseas. The dairy sector is the largest export industry in Taranaki, accounting for nearly 23 percent of the region's exports. Just over 38 percent of the sector's outputs feed into industries in the Taranaki region.

Table 4.7 presents the top ten industries by contribution to dairy sector inputs in Taranaki.

Table 4.7 Taranaki dairy major input industries

Taranaki Dairy sector	% of sector inputs
Dairy cattle farming	36.19
Wholesale trade	1.13
Fertiliser manufacturing	0.98
Electricity generation	0.89
Dairy product manufacturing	0.60
Finance	0.60
Other farming	0.50
Sheep and beef cattle farming	0.45
Services to agriculture, hunting and trapping	0.43
Other horticulture	0.41

source: BERL, Butcher & Associates

A large portion of the inputs for the dairy sector in Taranaki is, not surprisingly, provided by the dairy cattle farming industry, at 36 percent of all inputs.

A distant second is wholesale trade, followed by fertiliser manufacturing, which each provide around 1.0 percent of inputs into the dairy sector. The top ten input industries account for 42 percent of all dairy sector inputs. This suggests that inputs come from a wide range of industries.

However, a number of industries are reliant on the dairy sector for a significant proportion of their activity. Table 4.8 presents the industries most reliant on the dairy sector in terms of the portion of their total output contributed to the dairy sector.

Table 4.8 Taranaki industries reliant on dairy

Taranaki Dairy sector	% of contributor industry output
Dairy cattle farming	96.69
Veterinary services	45.37
Mixed cropping	38.23
Other horticulture	35.17
Services to agriculture, hunting and trapping	30.96
Other farming	27.91
Plastic product manufacturing	24.58
Horse and dog racing	24.01
Fertiliser manufacturing	18.84
Other food manufacturing	18.25
Other fruit	14.97
Waste disposal, sewerage and drainage svcs	14.19
Accounting services	11.43
Finance	11.03
Personal and other community services	10.80

source: BERL, Butcher & Associates

The importance of the dairy sector within the Taranaki region is evident from the fact that it accounts for more than ten percent of production by at least 15 industries in the region.

These include primary-based industries such as dairy cattle farming and veterinary services, and a range of general business-related industries.

Almost all of the dairy cattle farming industry's production feeds into the dairy sector in Taranaki. Almost half of Taranaki veterinary services are inputs into the dairy sector. The dairy sector accounts for more than one-third of mixed cropping and other horticulture production in the region. It also absorbs more than one-quarter of outputs from services to agriculture, hunting and trapping, and other farming.

4.4 Meat processing sector

The meat processing sector in Taranaki is made up of three industries at the 114 industry level. The industries are meat processing, poultry processing; and bacon, ham and smallgood manufacturing.

Table 4.9 shows the contribution of the meat processing sector to the Taranaki economy and to the national Meat processing sector in 2006.

Table 4.9 Taranaki meat processing sector

Taranaki Meat processing sector	Total	% of regional	% of national meat processing
Employment (FTEs)	1,959	4.33	7.48
GDP (\$mn)	169	3.87	7.78
Business units	15	0.12	4.89

source: BERL regional database, Statistics NZ

The sector employed 1,960 FTEs in 2006, producing \$169 million in GDP through 15 businesses. The importance of the sector to the region is highlighted in its 4.3 percent contribution to all regional employment, and the fact that it produces 3.9 percent of regional GDP. The sector accounts for just 0.12 percent of regional businesses. This indicates that at a local level, the sector is dominated by a few large businesses.

Taranaki is also home to a large proportion of the national meat processing sector, with 7.5 percent of all employment in the sector and 7.8 percent of national meat processing GDP. The region has 4.9 percent of all meat processing businesses in New Zealand.

As with the dairy sector, projecting changes in the meat processing sector is difficult due to the fact that the sector is dominated by a few large businesses. A decision to expand or reduce operations by any one of the major players can have a large impact on the sector in the region. It is important to keep this in mind when projecting likely changes.

Based on recent performance, employment in meat processing is expected to grow modestly over the next 20 years. Coupled with slight rises in labour productivity, this should result in GDP growth of a little over 3.0 percent per annum over the next 20 years. More detail on likely rises in employment and GDP are introduced in section 5.

The employment multiplier for the meat processing sector is 2.31. In other words, for every FTE created in the sector, a further 1.31 are created elsewhere in the region. This implies that a number of industries are dependent on the meat processing sector to absorb their outputs, as shown later in this section.

Table 4.10 presents the make-up of the Taranaki meat processing sector's inputs and outputs. It also shows the sector's contribution to each category of regional inputs and outputs.

Table 4.10 Taranaki meat processing sector total inputs and outputs

Taranaki Meat processing sector	% of sector	% of regional
Inputs		
Intermediate inputs	37.30	2.38
Imports	38.00	4.64
Wages and other household income	13.75	4.20
Other inputs	10.95	1.89
Outputs		
Intermediate outputs	6.41	0.41
Exports	87.24	9.11
Household and government consumption	6.54	1.51
Other outputs	-0.19	-0.11

source: BERL, Butcher & Associates

The sector imports 38 percent of all inputs, accounting for 4.6 percent of all Taranaki imports. Almost as much of its inputs (37 percent) are provided by industries in the region. Nearly 14 percent of inputs into the meat processing sector are through wages and other household income, which equates to 4.2 percent of regional wages and other household income.

The importance of the sector to the region is clear from the fact that it exports 87 percent of its outputs, representing 9.1 percent of Taranaki exports. Very little of the sector's outputs (6.4 percent) feeds into industries in the region.

Table 4.11 presents the top ten industries by contribution to meat processing sector inputs in Taranaki.

Table 4.11 Taranaki meat processing major input industries

Taranaki Meat processing sector	% of sector inputs
Sheep and beef cattle farming	15.74
Other farming	3.53
Road freight transport	2.86
Dairy cattle farming	2.86
Meat processing	2.66
Services to agriculture, hunting and trapping	1.48
Mixed cropping	1.22
Electricity generation	1.15
Wholesale trade	1.05
Personal and other community services	0.65

source: BERL, Butcher & Associates

Not surprisingly, the sheep and beef cattle farming industry provides the biggest portion of inputs to the meat processing sector, at almost 16 percent. A variety of other primary-related industries along with road freight transport fill the top five places.

The top ten industries together provide 33 percent of meat processing sector inputs.

Table 4.12 presents the industries most reliant on the meat processing sector in terms of the portion of their total output contributed to the meat processing sector in Taranaki.

Table 4.12 Taranaki industries reliant on meat processing

Taranaki Meat processing sector	% of contributor industry output
Sheep and beef cattle farming	80.39
Other farming	54.27
Mixed cropping	38.37
Services to agriculture, hunting and trapping	29.59
Horse and dog racing	24.30
Road freight transport	14.79
Water supply	14.18
Plastic product manufacturing	9.28
Other fruit	9.05
Other horticulture	7.38

source: BERL, Butcher & Associates

More than four-fifths of the Sheep and beef cattle farming industry feeds into the meat processing sector. More than half of other farming outputs are absorbed by meat processing, along with 38 percent of mixed cropping. Services to agriculture, hunting and trapping; horse and dog racing; road freight transport; and water supply each contribute at least 14 percent of their outputs to meat processing.

4.5 Engineering sector

The engineering sector consists of nine industries at the 114 industry level. These industries can be split into two broad groups: metal product manufacturing; and machinery and equipment manufacturing.

Table 4.13 shows the contribution of the engineering sector to the Taranaki economy and to the national engineering sector in 2006.

Table 4.13 Taranaki engineering sector

Taranaki Engineering sector	Total	% of regional	% of national engineering
Employment (FTEs)	2,753	6.09	3.58
GDP (\$mn)	240	5.48	3.75
Business units	282	2.20	2.94

source: BERL regional database, Statistics NZ

The sector employed 2,750 FTEs in 2006, or 6.1 percent of all regional employment. Engineering in Taranaki produced \$240 million in GDP (5.5 percent of the regional figure) through 282 businesses (2.2 percent of the region's businesses).

Seen in a national light, Taranaki provided 3.6 percent of all engineering employment through 2.9 percent of engineering businesses. It contributed 3.8 percent of national engineering GDP.

Engineering is expected to see strong employment growth over the next 20 years. Coupled with modest labour productivity growth, the sector's contribution to GDP should grow solidly out to 2026. More detail on likely rises in employment and GDP are introduced in Section 6.

The engineering sector in Taranaki has an employment multiplier of 1.62. For every new FTE created in the industry, a further 0.62 FTEs are created within the region.

Table 4.14 presents the make-up of the Taranaki engineering sector's inputs and outputs. It also shows the sector's contribution to each category of regional inputs and outputs.

Table 4.14 Taranaki engineering sector total inputs and outputs

Taranaki Engineering sector	% of sector	% of regional
Inputs		
Intermediate inputs	26.07	1.34
Imports	40.25	3.94
Wages and other household income	25.33	6.21
Other inputs	8.35	1.56
Outputs		
Intermediate outputs	16.01	0.82
Exports	67.85	5.68
Household and government consumption	3.83	0.71
Other outputs	12.31	5.80

source: BERL, Butcher & Associates

The engineering sector imports 40 percent of its inputs from outside the region, accounting for 3.9 percent of all Taranaki imports. More than 25 percent of the engineering sector's inputs are in the form of wages and other household income, which equates to 6.2 percent of all wages and other household income in Taranaki. Industries within the region provide 26 percent of the inputs required by the engineering sector.

Almost 68 percent of the engineering sector's outputs are exported from Taranaki, which equates to 5.7 percent of all exports from the region. Around 16 percent of the sector's outputs are absorbed by other industries in the region.

Table 4.15 presents the top-ten industries by contribution to the engineering sector inputs in Taranaki.

Table 4.15 Taranaki engineering major input industries

Taranaki Engineering sector	% of sector inputs
Structural, sheet and fabricated metal product mfg	6.60
Wholesale trade	5.77
Electricity generation	2.96
Road freight transport	1.20
Property ownership and mgt and real estate	0.65
Technical services	0.65
Ancillary services to construction	0.58
Business administrative and mgnt services	0.57
Retail trade	0.53
Basic metal manufacturing	0.51

source: BERL, Butcher & Associates

The engineering sector draws 6.6 percent of its inputs from the structural, sheet and fabricated metal product manufacturing industry. Wholesale trade supplies the next most, at 5.8 percent. Electricity generation supplies 3.0 percent of inputs, while road freight transport supplies 1.2 percent.

The ten industries which provide the most inputs to the Engineering sector together provide 20 percent of these inputs.

Table 4.16 presents the industries most reliant on the engineering sector in terms of the portion of their total output contributed to the engineering sector in Taranaki.

Table 4.16 Taranaki industries reliant on engineering

Taranaki Engineering sector	% of contributor industry output
Glass and glass product and ceramic mfg	24.34
Structural, sheet and fabricated metal product mfg	17.98
Wholesale trade	7.23
Plastic product manufacturing	6.21
Other mining and quarrying	6.18
Rubber manufacturing	6.16
Services to finance and insurance	5.19
Road freight transport	4.99
Employment, security and investigative services	4.96
Business administrative and mgnt services	4.00

source: BERL, Butcher & Associates

The engineering sector absorbs outputs from a wide variety of industries, but no one industry is dependent on engineering to absorb the bulk of its production. The glass and glass product and ceramic manufacturing industry supplies 24 percent of its output to the engineering sector in Taranaki. Almost one-fifth of structural, sheet and fabricated metal product manufacturing industry production feeds into engineering.

4.6 Other manufacturing sector

The other manufacturing sector as defined in this section of the report includes 28 industries at the 114 industry level. It does not include dairy product manufacturing, meat processing, and engineering, which are dealt with separately, but does include other food processing.⁵

The sector includes all other food manufacturing (six industries); textile, clothing, footwear and leather manufacturing (four industries); wood and paper product manufacturing (three industries); printing, publishing and recorded media (two industries); chemical manufacturing (eight industries); non-metallic mineral product manufacturing (two industries); and manufacturing not elsewhere classified (three industries).

Table 4.17 shows the contribution of the other manufacturing sector to the Taranaki economy and nationally in 2006.

Table 4.17 Taranaki other manufacturing sector

Taranaki Other manufacturing	Total	% of regional	% of national other manufacturing
Employment (FTEs)	2,155	4.77	1.55
GDP (\$mn)	202	4.62	1.49
Business units	262	2.05	1.92

source: BERL regional database, Statistics NZ

The other manufacturing sector employed around 2,160 FTEs in Taranaki in 2006, or 4.8 percent of all regional employment. These FTEs produced \$202 million in GDP (4.6 percent of the regional GDP) through 262 businesses (2.1 percent of regional businesses).

Taranaki supplied 1.6 percent of all other manufacturing employment in New Zealand, contributing 1.5 percent of national other manufacturing GDP. The region had 1.9 percent of all other manufacturing businesses in New Zealand.

Employment in the sector is expected to rise faster than overall Taranaki employment out to 2026. Along with modest labour productivity increases, this should result in robust GDP growth. More detail on likely rises in employment and GDP are introduced in section 5.

The employment multiplier for other manufacturing in Taranaki is 1.59. For every FTE created in the other manufacturing sector, 0.59 FTEs are created in related industries in the region.

⁵ Note that this is slightly different from in the 19 industry analysis, where other manufacturing excludes all food processing.

Table 4.18 presents the make-up of the Taranaki other manufacturing sector's inputs and outputs. It also shows the sector's contribution to each category of regional inputs and outputs.

Table 4.18 Taranaki other manufacturing sector total inputs and outputs

Taranaki Other manufacturing	% of sector	% of regional
Inputs		
Intermediate inputs	26.75	1.77
Imports	42.42	5.37
Wages and other household income	19.62	6.21
Other inputs	11.22	3.11
Outputs		
Intermediate outputs	29.04	1.92
Exports	61.36	6.63
Household and government consumption	7.87	1.89
Other outputs	1.74	1.06

source: BERL, Butcher & Associates

The sector imports 42 percent of inputs from outside the Taranaki region. These imports account for 5.4 percent of all Taranaki imports. Meanwhile, 27 percent of inputs come from industries within the region.

Wages and other household income makes up 20 percent of all inputs in the other manufacturing sector. This income is 6.2 percent of all household income in Taranaki.

More than 61 percent of production in the other manufacturing sector is exported out of the region. These exports represent 6.6 percent of Taranaki exports. The sector supplies 29 percent of its outputs to industries in the region.

Table 4.19 presents the top ten industries by contribution to other manufacturing sector inputs in Taranaki.

Table 4.19 Taranaki other manufacturing major input industries

Taranaki Other manufacturing	% of sector inputs
Wholesale trade	4.20
Fertiliser manufacturing	3.07
Forestry	2.21
Road freight transport	2.06
Log sawmilling and timber dressing	1.88
Electricity generation	1.29
Other industrial chemical manufacturing	1.29
Gas supply	1.07
Oil & gas extraction	0.87
Bakery, sugar and confectionery manufacturing	0.84

source: BERL, Butcher & Associates

The other manufacturing sector received inputs from a variety of sources. This included 4.2 percent of inputs from wholesale trade, 3.1 percent from fertiliser manufacturing, 2.2 percent from forestry and 2.1 percent from road freight transport.

Gas supply; electricity generation; other industrial chemical manufacturing; and log sawmilling and timber dressing each provided more than 1.0 percent of other manufacturing inputs.

Table 4.20 presents the industries most reliant on the other manufacturing sector in terms of the portion of their total output contributed to the sector in Taranaki.

Table 4.20 Taranaki industries reliant on other manufacturing

Taranaki Other manufacturing	% of contributor industry output
Forestry	44.02
Fertiliser manufacturing	16.69
Log sawmilling and timber dressing	14.18
Road freight transport	11.02
Waste disposal, sewerage and drainage svcs	8.88
Plastic product manufacturing	8.83
Bakery, sugar and confectionery manufacturing	8.44
Other industrial chemical manufacturing	8.16
Printing and services to printing	7.63
Other non-metallic mineral product manufacturing	7.24

source: BERL, Butcher & Associates

The other manufacturing sector is particularly important to the forestry industry, which contributes 44 percent of all its outputs to the sector in Taranaki. Industries that rely on other manufacturing to absorb large portions of their production also include fertiliser manufacturing (17 percent); log sawmilling and timber dressing (14 percent); and road freight transport (11 percent).

4.7 Education sector

The education sector is made up of four industries at the 144 industry level. The industries are pre-school education, primary and secondary education, post-school education, and other education.

Table 4.21 shows the contribution of the education sector to the Taranaki economy and to the national education sector in 2006.

Table 4.21 Taranaki education sector

Taranaki Education sector	Total	% of regional	% of national education
Employment (FTEs)	2,518	5.57	2.24
GDP (\$mn)	130	2.97	2.24
Business units	256	2.00	3.08

source: BERL regional database, Statistics NZ

The education sector employed around 2,520 FTEs in Taranaki in 2006, accounting for 5.6 percent of all regional employment. The sector contributed \$130 million in GDP through 256 businesses. This represented 3.0 percent of the region's GDP and 2.0 percent of all businesses in the region.

The Taranaki education sector provided 2.2 percent of national education employment, through 3.1 percent of national education business units. The region contributed 2.2 percent of national education sector GDP.

Employment in education is likely to rise at a steady rate over the next 20 years. Slight gains in labour productivity will see the sector's GDP growth averaging just below national GDP growth to 2026. More detail on likely rises in employment and GDP are introduced in section 5.

The education sector in Taranaki has an employment multiplier of 1.24. For every one FTE added to the education sector, 0.24 further FTEs are added in other industries. The multiplier is relatively low compared to the other key industries discussed in this section. This is because most of the education-related employment is captured within the education sector.

Table 4.22 presents the make-up of the Taranaki education sector's inputs and outputs. It also shows the sector's contribution to each category of regional inputs and outputs.

Table 4.22 Taranaki education sector total inputs and outputs

Taranaki Education sector	% of sector	% of regional
Inputs		
Intermediate inputs	13.94	0.23
Imports	14.67	0.46
Wages and other household income	66.64	5.28
Other inputs	4.74	0.73
Outputs		
Intermediate outputs	7.84	0.13
Exports	59.39	1.61
Household and government consumption	32.61	1.96
Other outputs	0.16	0.02

source: BERL, Butcher & Associates

As this is a sector which is built around teaching and support staff, it is no surprise that wages and other household income (salaries) provides the bulk (67 percent) of the inputs into the sector. This income accounts for 5.3 percent of all wages and other household income in the region.

Around 15 percent of education inputs are imported from outside the Taranaki region, the lowest proportion among the seven key sectors in this section. This equates to just 0.46 percent of total Taranaki imports.

On the other hand, as much as 59 percent of the sector's outputs are exported, accounting for 1.6 percent of all Taranaki exports. Government and households in the region consume a further 33 percent of the sector's outputs.

Table 4.23 presents the top ten industries by contribution to education sector inputs in Taranaki.

Table 4.23 Taranaki education major input industries

Taranaki Education sector	% of sector inputs
Electricity generation	1.53
Other education	1.50
Bars, clubs, cafes and restaurants	1.00
Other sport and recreational services	0.98
Wholesale trade	0.93
Finance	0.65
Personal and other community services	0.63
Business administrative and mgnt services	0.46
Other community care services	0.44
Pest control and cleaning services	0.41

source: BERL, Butcher & Associates

The education sector draws on a wide range of industries for its inputs, with the result that no single industry dominates its inputs. Electricity generation and other education each provide

1.5 percent of education sector inputs in Taranaki. Bars, clubs, cafés and restaurants; and other sport and recreational services each contribute around 1.0 percent of inputs into the education sector.

Various business, personal and community services round out the top ten supply industries, which together supply ten percent of the sector's inputs.

Table 4.24 presents the industries most reliant on the education sector in terms of the portion of their total output contributed to the education sector in Taranaki.

Table 4.24 Taranaki industries reliant on education

Taranaki Education sector	% of contributor industry output
Other education	9.48
Pest control and cleaning services	5.03
Other sport and recreational services	4.57
Lotteries, casinos and other gambling	3.45
Pre-school education	2.86
Other community care services	2.20
Bars, clubs, cafes and restaurants	2.01
Other transport equipment manufacturing	1.95
Child care services	1.50
Personal and other community services	1.48

source: BERL, Butcher & Associates

It is worth noting that no single industry contributes more than ten percent of its total output to the education sector. Other education supplies 9.5 percent of its output to the education sector, while 5.0 percent of pest control and cleaning services output feeds into education.

4.8 Public sector

In this report, the public sector is made up of ten industries at the 114 industry level. These industries can be grouped into three broader categories. The categories are health services (three industries), community services (three industries) and local and central government (four industries). Education is excluded as this is dealt with in another section.

Table 4.25 shows the contribution of the public sector to the Taranaki economy and its portion of the national public sector in 2006.

Table 4.25 Taranaki public sector

Taranaki Public sector	Total	% of regional	% of national public sector
Employment (FTEs)	4,931	10.90	2.10
GDP (\$mn)	313	7.14	1.95
Business units	548	4.28	2.65

source: BERL regional database, Statistics NZ

The public sector in Taranaki employed 4,930 FTEs in 2006, or 11 percent of all regional employment. These FTEs produced \$313 million in GDP (7.1 percent of regional GDP) through 548 business units (4.3 percent of regional business units).

At a national level, Taranaki provided 2.0 percent of public sector GDP through 2.1 percent of public sector employment at 2.7 percent of public sector business units.

Moderate growth in employment in the public sector is likely to 2026. Lower than average labour productivity gains are expected to result in GDP increases below the regional and national averages. More detail on likely rises in employment and GDP are introduced in section 5.

The public sector in Taranaki has an employment multiplier of 1.46. For every one FTE added to the public sector, 0.46 further FTEs are added in other industries. While this multiplier is higher than for the education sector on its own, it is still significantly lower than the other industries discussed in this section.

Table 4.26 presents the make-up of the Taranaki public sector's inputs and outputs. It also shows the sector's contribution to each category of regional inputs and outputs.

Table 4.26 Taranaki public sector total inputs and outputs

Taranaki Public sector	% of sector	% of regional
Inputs		
Intermediate inputs	23.81	1.20
Imports	21.63	2.08
Wages and other household income	49.12	11.81
Other inputs	5.44	2.33
Outputs		
Intermediate outputs	9.64	0.48
Exports	41.85	3.44
Household and government consumption	47.47	8.64
Other outputs	1.04	0.48

source: BERL, Butcher & Associates

Household income accounts for 49 percent of all public sector inputs in Taranaki. The relatively large size of the sector ensures that it represents 12 percent of all household income in the region.

Almost one-quarter of the sector's inputs come from industries in the region. The public sector imports 22 percent of its inputs from outside the region, accounting for 2.1 percent of total regional imports.

Close to half of the sector's outputs are consumed within the region, while 42 percent of outputs are exported. These exports equate to 3.4 percent of all exports from Taranaki.

Table 4.27 presents the top ten industries by contribution to public sector inputs in Taranaki.

Table 4.27 Taranaki public sector major input industries

Taranaki Public sector	% of sector inputs
Medical, dental and other health services	4.06
Non building construction	1.76
Personal and other community services	1.36
Property ownership and mgt and real estate	1.11
Business administrative and mgnt services	1.01
Bars, clubs, cafes and restaurants	0.99
Wholesale trade	0.96
Electricity generation	0.94
Other community care services	0.94
Finance	0.94

source: BERL, Butcher & Associates

As was the case with the education sector, the public sector draws on a wide range of industries for its inputs. The result is that no single industry dominates its inputs. Medical, dental and other health services provides 4.1 percent of all inputs into the public sector in Taranaki. Non-building construction is next with 1.8 percent. Personal and other community

services, property ownership and management and real estate; and business administrative and management each provide more than 1.0 percent of public sector inputs.

The top-ten input industries together provide 14 percent of all public sector inputs.

Table 4.28 presents the industries most reliant on the public sector in terms of the portion of their total output contributed to the public sector in Taranaki.

Table 4.28 Taranaki industries reliant on public sector

Taranaki Public sector	% of contributor industry output
Child care services	35.22
Waste disposal, sewerage and drainage svcs	29.71
Medical, dental and other health services	21.82
Other community care services	14.17
Non building construction	10.92
Pest control and cleaning services	10.24
Personal and other community services	9.75
Veterinary services	9.49
Accommodation for the aged	8.17
Computer services	8.05

source: BERL, Butcher & Associates

More than one-third of the child care services industry output feeds into the Taranaki public sector. Around 30 percent of waste disposal, sewerage and drainage services output and 22 percent of medical, dental and other health services output in Taranaki are inputs into the public sector.

A range of other industries rely on public sector demand for at least ten percent of their output. These industries include other community care services, non-building construction, and pest control and cleaning services.

4.9 Tourism

Tourism cannot be analysed in the manner of other industries as tourism is not an industry in itself but affects a proportion of activity across a number of industries. Its impact on certain industries, for example, accommodation, is greater than on other industries, for example, mining.

The direct contribution of tourism to the regional economy is calculated using proportions of industry FTES, GDP and business units that can be directly attributed to tourism, as provided by Statistics New Zealand's Tourism Satellite Account.

The contribution of tourism to the local economy comes from three sources: tourism-characteristic industries, such as accommodation, restaurants, transport services, and cultural and recreational services; tourism-related industries, specifically the retail trade; and all other industries, including everything from police services to mining.

Table 4.29 presents the direct contributions of each of these three sources to Taranaki tourism.

Table 4.29 Tourism summary indicators, 2006

Tourism	FTEs		GDP (06\$m)		Business units	
		%		%		%
Tourism-characteristic industries	1,170	2.6%	73.7	1.7%	242	1.9%
Tourism-related industries	500	1.1%	24.5	0.6%	110	0.9%
All non-tourism-related industries	777	1.7%	81.0	1.9%	229	1.8%
Taranaki	2,447	5.4%	179.2	4.1%	580	4.5%
New Zealand	115,694	6.4%	8,295	5.3%	23,566	5.3%

source:BERL Regional Database, Tourism Satellite Account

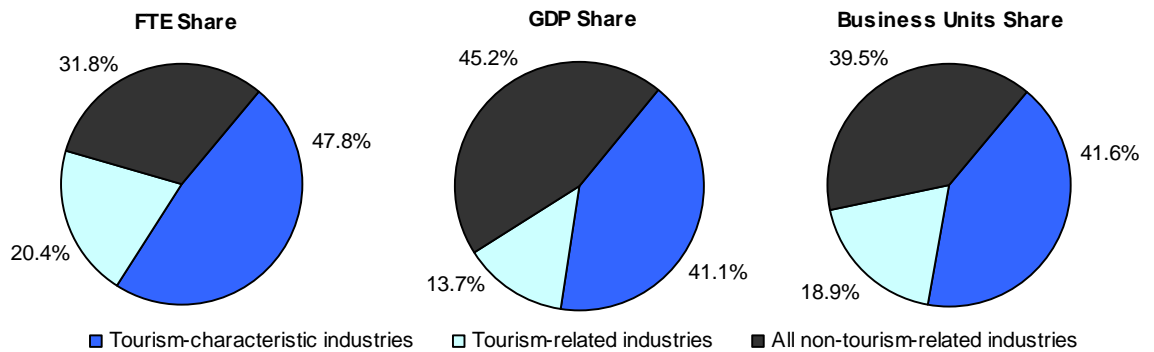
Tourism accounts for approximately 5.4 percent of employment in Taranaki, or 2,450 FTEs, slightly below the national average of 6.4 percent.

Around 4.1 percent of regional GDP, or \$179 million, is directly contributed by the tourism sector, compared to 5.3 percent at a national level.

Around 580 business units, or 4.5 percent of the regional total, are directly related to the tourism sector. This is a similar proportion to the 5.3 percent contribution of the tourism sector seen nationally.

Figure 4.1 shows what portions of total tourism employment, GDP and businesses are contributed by each of tourism-characteristic, tourism-related and all other industries.

Figure 4.1 Contributions to employment, GDP and business units



source:BERL Regional Database, Statistics NZ

Tourism-characteristic industries provide almost half of all direct tourism employment in the region, with one-fifth provided by tourism-related industries and one-third by other industries.

Interestingly, non-tourism-related industries provide the largest share of regional tourism GDP, at 45 percent, and almost as many business units as tourism-characteristic industries, at 40 percent.

Table 4.30 presents the recent performance of the tourism sector in Taranaki and New Zealand.

Table 4.30 Recent performance of tourism sector, 2001 – 2006

Indicator	2001	2004	2005	2006	%pa change		
					2005	2006	2001 to 2006
Employment (FTEs)							
Taranaki	2,128	2,322	2,401	2,447	3.4	1.9	2.8
New Zealand	97,587	108,679	110,685	115,694	1.8	4.5	3.5
Value added or GDP ('06, \$m)							
Taranaki	157	173	178	179	3.0	0.8	2.7
New Zealand	6,894	7,792	8,140	8,295	4.5	1.9	3.8
Business units							
Taranaki	505	562	571	580	1.7	1.6	2.8
New Zealand	19,200	22,302	23,092	23,566	3.5	2.1	4.2

source:BERL Regional Database, Tourism Satellite Account

While growth in tourism in Taranaki has been lower than the New Zealand average across all three indicators, its increasing importance is clear from the fact that tourism growth has exceeded Taranaki growth as a whole.

Growth in tourism employment in Taranaki over the last five years was higher than for the regional economy overall, at 2.8 percent per annum compared with 2.4 percent per annum. While this was below national tourism employment growth (3.5 percent per annum).

Employment growth within the tourism-characteristic industries has been very strong, particularly in hospitality, which has achieved 5.2 percent per annum since 2001.

Similarly, tourism GDP growth has averaged 2.7 percent per annum over the five years, compared to average GDP growth for Taranaki of 1.7 percent per annum. The hospitality industry in particular, achieved 4.6 percent per annum GDP growth since 2001.

The number of businesses engaged primarily in tourism-linked activity has grown at 2.8 percent per annum over the five years, the same rate as overall business numbers in the region. Again, most growth has been in the hospitality industry.

5 Industry Projections

Economic development is a long-term exercise. Changes in business and consumer behaviour evolve over lengthy periods of time. Similarly, changes in inter-industry, regional and global relationships have gradual impacts on the characteristics of a regional economy. In addition, changes in the policy environment – whether favourable or otherwise – can have further effects on the long-term composition of business activity in a region.

Within this context, BERL presents a scenario based on the assumption that economic development in Taranaki is likely to be similar in the future to what it has been in the recent past, compared with national economic development trends and global demand (see appendix – section 6.2). Some modifications to the region's recent relative economic performance have been included where we believe recent development patterns are unlikely to continue. These modifications are discussed in greater detail in the Appendices.

5.1 Employment projections

Table 5.1 presents a forecast of employment growth in Taranaki to 2011, 2016 and 2026.

Table 5.1 Forecast employment growth in Taranaki

Industry	Employment Number FTEs				%pa change			
	Actual	Forecast			2006 to 2011	2011 to 2016	2016 to 2026	2006 to 2026
	2006	2011	2016	2026				
Agriculture	7,307	7,095	7,071	7,267	-0.6	-0.1	0.3	0.0
Forestry	119	126	136	167	1.0	1.6	2.0	1.7
Fishing	34	37	40	51	1.3	1.7	2.5	2.0
Mining (O&G)	817	1,284	1,769	3,357	9.5	6.6	6.6	7.3
Food processing	3,785	3,575	3,555	3,787	-1.1	-0.1	0.6	0.0
Engineering	2,753	3,387	4,321	7,142	4.2	5.0	5.2	4.9
Other manufacturing	1,794	2,130	2,742	5,056	3.5	5.2	6.3	5.3
Utilities	237	236	243	261	-0.1	0.6	0.7	0.5
Construction	3,680	4,883	5,229	4,875	5.8	1.4	-0.7	1.4
Wholesale & retail trade	6,803	7,362	7,933	9,091	1.6	1.5	1.4	1.5
Hospitality	1,757	1,953	2,217	3,156	2.1	2.6	3.6	3.0
Transport & storage	1,414	1,629	1,903	2,664	2.9	3.2	3.4	3.2
Communications	402	423	444	511	1.0	1.0	1.4	1.2
Business, finance & property svcs	5,253	5,965	6,793	8,868	2.6	2.6	2.7	2.7
Government administration	877	950	1,033	1,218	1.6	1.7	1.7	1.7
Education	2,518	2,812	3,140	3,919	2.2	2.2	2.2	2.2
Health & community svcs	3,664	3,461	3,282	3,030	-1.1	-1.1	-0.8	-0.9
Cultural & recreational svcs	731	780	836	975	1.3	1.4	1.6	1.4
Personal svcs	1,275	1,359	1,438	1,609	1.3	1.1	1.1	1.2
Taranaki	45,221	49,445	54,126	67,004	1.8	1.8	2.2	2.0
New Zealand	1,809,041	2,004,774	2,196,086	2,625,947	2.1	1.8	1.8	1.9

source: BERL Regional Database, CGE Model, Statistics NZ

Regional employment growth is expected to average around 2.0 percent per annum over the next 20 years. This would take employment from its 2006 level of 45,200 FTEs to 49,400 FTEs in 2011, 54,100 FTEs in 2016, and 67,000 FTEs in 2026. Growth in employment is

expected to be above the 1.9 percent per annum experienced nationally over the same period.

The most employment growth is expected to occur in mining (almost exclusively oil and gas-related). Over the 20 years, employment in the industry is expected to quadruple, to around 3,360 FTEs. This assumes rapid growth over the next few years with the current projects under development, with slower (but still substantial) growth from 2011 through to 2026.

Over the period to 2011, strong growth is also expected in construction (5.8 percent per annum), engineering (4.2 percent per annum), other manufacturing (3.5 percent per annum) and transport and storage (2.9 percent per annum). Meanwhile employment in agriculture, food processing, health and community services and utilities is likely to fall by a total of around 600 FTEs over the five-year period.

Between 2011 and 2016, oil and gas is likely to be the leader in employment growth again. However, other industries such as other manufacturing, at 5.2 percent per annum, engineering, at 5.0 percent per annum, transport and storage, at 3.2 percent per annum, and hospitality, at 2.6 percent per annum, will also experience accelerated growth. Declines in agriculture and food processing employment will slow.

From 2016 to 2026, employment is expected to grow faster than in New Zealand as a whole. Other manufacturing employment is expected to surge 6.3 percent per annum, with engineering employment growing 5.2 percent per annum. Hospitality and transport and storage will also see growth of over 3.0 percent per annum. Meanwhile, both food processing and agriculture employment growth will return to positive territory.

5.2 GDP projections

Table 5.2 presents a forecast of GDP growth in Taranaki to 2011, 2016 and 2026.

Table 5.2 Forecast GDP growth in Taranaki

Industry	Value Added or GDP ('06, \$m)				%pa change			
	Actual	Forecast			2006 to	2011 to	2016 to	2006 to
	2006	2011	2016	2026	2011	2016	2026	2026
Agriculture	415	463	521	654	2.2	2.4	2.3	2.3
Forestry	30	37	45	67	3.9	4.1	4.1	4.0
Fishing	3	3	4	6	4.2	4.2	4.5	4.4
Mining (O&G)	741	1,269	1,865	4,144	11.4	8.0	8.3	9.0
Food processing	432	438	466	561	0.3	1.3	1.9	1.3
Engineering	240	317	433	808	5.7	6.4	6.4	6.3
Other manufacturing	171	218	300	625	5.0	6.6	7.6	6.7
Utilities	115	128	142	175	2.2	2.1	2.1	2.1
Construction	207	254	293	343	4.2	2.9	1.6	2.6
Wholesale & retail trade	459	527	598	755	2.8	2.6	2.4	2.5
Hospitality	55	64	76	120	3.1	3.6	4.6	4.0
Transport & storage	143	176	217	341	4.2	4.3	4.6	4.4
Communications	128	153	179	242	3.5	3.2	3.1	3.2
Business, finance & property svcs	718	857	1,010	1,380	3.6	3.3	3.2	3.3
Government administration	103	118	133	169	2.6	2.5	2.4	2.5
Education	130	151	174	233	3.0	2.9	2.9	2.9
Health & community svcs	201	198	195	194	-0.3	-0.3	-0.1	-0.2
Cultural & recreational svcs	49	57	65	84	2.9	2.7	2.7	2.7
Personal svcs	38	43	48	59	2.5	2.2	2.0	2.2
Taranaki	4,379	5,469	6,766	10,961	4.5	4.3	4.9	4.7
New Zealand	155,885	182,406	214,401	284,417	3.2	3.3	2.9	3.1

source: BERL Regional Database, CGE Model, Statistics NZ

The economy of the region is expected to undergo strong gains in GDP over the three periods under consideration, with GDP growth of 4.7 percent per annum to 2026. This could see GDP rise to \$5.47 billion by 2011 from its 2006 level of \$4.38 billion, and on to \$6.77 billion by 2016 and \$10.9 billion by 2026. This would grow the region's share of national GDP to 3.9 percent in 2026 from 2.8 percent in 2006.

One primary assumption driving this projection is that both employment and labour productivity will surge in the oil and gas industry. This industry is characterised by particularly high labour productivity (GDP per FTE) already, at \$907,000 per FTE, compared with \$96,800 per FTE for the region as a whole. As a result, strong growth in this industry would push up Taranaki's average labour productivity very rapidly. This would produce the strong GDP growth projected in our model.

The most startling consequence of such growth in the oil and gas industry is that it could well account for 38 percent of all GDP in Taranaki by 2026, from its current level of 17 percent.

In the period from 2006 to 2011, strong employment growth coupled with above-average labour productivity growth could see oil and gas GDP grow by 11.4 percent per annum, adding almost \$530 million in GDP. While this figure dominates gains in other industries,

there are also likely to be significant increases in GDP in engineering (5.7 percent per annum), other manufacturing (5.0 percent per annum), construction (4.2 percent per annum) and transport and storage (4.2 percent per annum).

Between 2011 and 2016, GDP growth in oil and gas is expected to slow somewhat, but will remain strong, at 8.0 percent per annum. Robust growth in other manufacturing and engineering will continue.

The fastest overall regional growth is expected between 2016 and 2026. Oil and gas GDP is expected to continue to rise dramatically, while other manufacturing will almost match oil and gas growth in percentage terms, reaching 7.6 percent per annum. Engineering (6.5 percent per annum), hospitality (4.6 percent per annum) and transport and storage (4.6 percent per annum) are expected to grow rapidly as well.

According to the Tourism Research Council, total tourism visitor nights in the Taranaki region are expected to rise at a rate of 1.6 percent per annum, to reach 2.59 million in 2013. The share of total visits to the region accounted for by international visitors is expected to rise from 31.3 percent to 35.5 percent. Total visitor expenditure is expected to rise at a faster 3.2 percent per annum, partly as a result of the increase in overseas visitors, who tend to spend more per visit. By 2013, total tourism expenditure is expected to reach \$300 million per year, up from its current \$241 million.

5.3 Summary of projections

The oil and gas story is the most significant in this projection. The Taranaki region is inextricably linked to the oil and gas industry, with the industry's importance to employment and GDP (especially) in the region expected to rise dramatically over the next 20 years. The sector is forecast to make up almost 40 percent of the region's GDP by 2026 from 17 percent in 2006. These effects will flow through to engineering, which exhibits growth of 6.3 percent per annum over the forecast period.

Regional employment growth is expected to lead national growth, especially over the ten years from 2016 to 2026. Moreover, regional GDP growth is expected to be significantly higher than national, driven by the oil and gas sector as well as growth in other high productivity sectors such as manufacturing.

Almost all industries are likely to experience gains in employment over the next 20 years.

GDP increases will be even more solid across the board, as even industries with slow employment growth improve labour productivity. For example, agriculture is likely to see GDP rise by 2.3 percent per annum despite flat employment growth. Health and community services is the only industry likely to see a decline, and a relatively small one at that, falling 0.2 percent per annum. In other industries, GDP growth rates are expected to vary between 1.3 percent per annum for food processing and 9.0 percent per annum in oil and gas out to 2026.

6 Appendices

6.1 Multiplier analysis method

This multiplier analysis uses multipliers derived from inter-industry input-output tables for the Taranaki region. The Taranaki region input-output tables have been derived from the national input-output tables and other data by Butcher Partners, Canterbury - a recognised source for regional input-output tables and multipliers.⁶

Multipliers allowed us to identify the direct, indirect and induced effects in terms of Full Time Equivalent (FTE) employment.

Employment Impact multipliers

Employment impact multipliers determine the number of FTE roles that are created for every \$1 million spent in an industry for one year. It provides a measure of total labour demand associated with Gross Output.

An FTE is the percentage of time an employee works represented as a decimal. A full-time position is 1.00; a part-time position is 0.50.

Direct, indirect and induced effects

The underlying logic of multiplier analysis is relatively straightforward. An initial expenditure (**direct** effect) in an industry creates flows of expenditures that are magnified, or “multiplied”, as they flow on to the wider economy. This occurs in two ways:

- The industry purchases materials and services from supplier firms, who in turn make further purchases from their suppliers. This generates an **indirect** effect.
- Persons employed in the direct development and in firms supplying services earn income (mostly from wages and salaries, but also from profits) which, after tax is deducted, is then spent on consumption. There is also an allowance for some savings. These are the **induced** effects.

⁶ For a discussion on regional input output tables and the validity and reliability of the Butcher input output tables see *Statistics New Zealand (2003) Regional Input Output Study*.

Hence, for any amount spent in an area (**direct** effect), the actual output, and therefore employment, generated from that spend is greater once the flow on activity generated (**indirect** and **induced** effects) is taken into account.

Leakages

Generally the more developed, or self sufficient, an industry in a region is, the higher the multiplier effects. Conversely, the more reliant an industry is on supply inputs from outside the region, the lower the multipliers. These outside factors can be referred to as “leakages”.

To put this another way, if a house was purchased in The Taranaki region, and all the materials and labour were sourced in The Taranaki region, and all the materials and labour that went into making the housing materials were made in The Taranaki region and so forth, and then the labour spent their wages or salaries in The Taranaki region, again on goods or services produced solely in The Taranaki region, then all the multiplier effects would be captured by The Taranaki region. Where inputs or outputs come from outside The Taranaki region, leakages are said to exist, and the multiplier effect is reduced.

Limitations of multiplier analysis

Partial equilibrium analysis

Multiplier analysis is only a “partial equilibrium” analysis, assessing the direct and indirect effects of the development being considered, without analysing the effects of the resources used on the wider national and regional economy.

In particular, it assumes that the supply of capital, productive inputs and labour can expand to meet the additional demand called forth by the initial injection and the flow on multiplier effects, without leading to resource constraints in other industries. These constraints would lead to price rises and resulting changes in overall patterns of production between industries.

To assess inter-industry impacts in full would require economic modelling within a “general equilibrium” framework. Applying such models becomes more relevant where the particular development is considered significant within the overall economy.

Regions and boundaries

The smaller or less defined a region and its boundaries, the less accurate the multiplier analysis will be. Similarly, the easier it is to move across boundaries, the less accurate the analysis will be. For example, at the national level, the multipliers will be very accurate as it is easy to determine the inputs and outputs crossing through the New Zealand borders.

Similarly, it would also be more accurate to determine a north island/south island split. As smaller regions without obvious geographic boundaries are selected, a higher level of assumptions needs to be made and the multipliers become less accurate. For example, an individual could work in the Auckland region but live in the Waikato region and spend a large proportion of his/her recreation money in the Bay of Plenty region.

For any regional analysis the level of accuracy will have to be accepted. As a rule of thumb, the larger and more defined the region, the more accurate the analysis will be.

6.2 BERL projections method

6.2.1 National projections

This section summarises the main assumptions and projection results used in this report. The projections are based on the economic environment in 2006, and assume that the environment will develop out to 2011, 2016 and 2026 in a similar way to the recent past. That is, the projections reflect the recent past and do not anticipate that any major departures from the current environment will have a substantial impact over the projected horizons.

Table 6.1 summarises FTE employment, GDP, projected employment, and GDP growth from 2006 out to the 2011, 2016 and 2026 horizons. The national economy is projected to continue expanding, growing by 3.2 percent per annum between 2006 and 2011, before drifting down to 3.0 percent per annum growth to 2016 and 2.9 percent per annum to 2026. These projections capture the effects of an expansion in New Zealand's capital stock, population growth and an increasing labour supply.

Table 6.1 National employment and GDP projections

	Actual 2006	Forecast			%pa change			
		2011	2016	2026	2006 to 2011	2011 to 2016	2016 to 2026	2006 to 2026
New Zealand								
Employment (FTEs)	1,809,041	2,004,774	2,196,086	2,625,947	2.1	1.8	1.8	1.9
Value Added or GDP ('06 \$m)	156,088	182,406	211,556	280,372	3.2	3.0	2.9	3.0

source: BERL Regional Database, CGE Model, Statistics NZ

The expansions are driven by growth in the consumption, investment and export components of output. Nominal consumption is projected to climb from a 2006 base of 94.3 percent of disposable income to 97.1 percent in 2011, where it plateaus out to 2016 before falling back to 94.3 percent in 2026. This implicitly assumes that policies such as Kiwi Saver will not have any net impacts on consumption over the timeframe, as increased saving may be offset by lower taxes.

Real investment climbs from 23.9 percent of real GDP to 25.2 percent in 2011 and 25.4 percent in 2016. The increase over the next ten years is driven by a substantial investment programme by the government in transport infrastructure and construction. As the initial impact of the programme flows through, real investment is projected to ease to 21.4 percent by 2026.

Export volume and price growth are expected to combine to drive up export receipts by 5.3 percent per annum to 2011, 5.8 percent per annum between 2011 and 2016 and 6.0 percent per annum between 2016 and 2026. The higher growth rate out to 2026 reflects New Zealand's increasing global competitiveness as the skilled labour force and capital base expand.

Below the macroeconomic level, growth in export volumes for particular industries varies. For example, volumes within primary industries such as wool producers, and among manufacturers, are projected to expand at a modest rate of 1.2 percent per annum to 2011. In contrast, tourism-related exporting industries are projected to expand by 4.5 percent per annum. Similar variation can be expected to 2016 and 2026.

Overall, employment levels will track the growth projected for the economy and for the particular industries influenced by this expansion. FTE employment is projected to expand by approximately 192,000 over the five-year period between 2006 and 2011, which equates to an average annual rate of 38,500 or 2.1 percent per annum. Employment in primary industries, such as agriculture, is expected to remain static or decline. Growth in government investment and exports will drive ahead employment in fabricated manufacturing, building and government, education and health industries.

Over the 20-year period, employment growth is expected to average 1.9 percent per annum growth. The range across industries will vary from 0.6 percent per annum in the primary sector, to 2.2 percent per annum in manufacturing and 1.9 percent per annum in services.

6.2.2 Regional Projections

Population growth in Taranaki has been below the national average over the last five years, but is assumed to grow in line with Statistic New Zealand's high growth projection out to 2026.

By and large, the projections assume that regional industries will maintain the same growth rates relative to national growth as seen over the past five years. Where this is unlikely to be the case, further assumptions have been introduced.

- Oil and gas performance is particularly hard to forecast, as it depends on the level of exploration and success thereof. The industry is likely to experience substantial growth over the next few years, but there is little certainty that this growth will continue unabated to 2026. We have therefore slowed expected growth rates, particularly between 2011 and 2026.
- Printing, publishing and recorded media; and machinery and equipment manufacturing in Taranaki have both seen growth substantially higher than the national average in recent years. This is assumed to slow somewhat.
- Rubber and plastic products manufacturing; other manufacturing; electricity generation and supply; water supply; water and rail transport; communications services; finance and insurance; education; and hospitals, nursing homes, aged accommodation and other community care are assumed to grow at the national rate. Some of these industries have been growing faster than the national average in Taranaki, and others have been growing at a slower pace in the recent past.

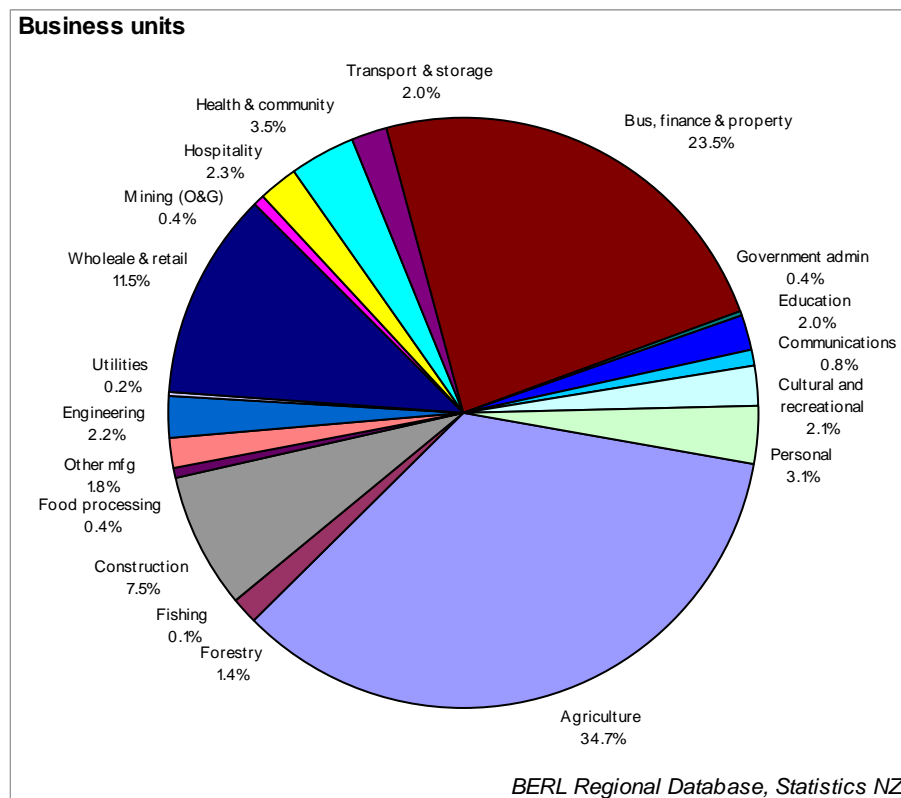
6.3 Taranaki business units

Business units has not been included in the main report. However, it is likely to be of use for policy analysis and has been added here for that purpose and for completeness.

Taranaki had 12,800 business units in 2006 across all sectors, or around 2.9 percent of the national total.

Figure 6.1 shows the proportion of businesses within different industries in Taranaki.

Figure 6.1 Taranaki business units, 2006

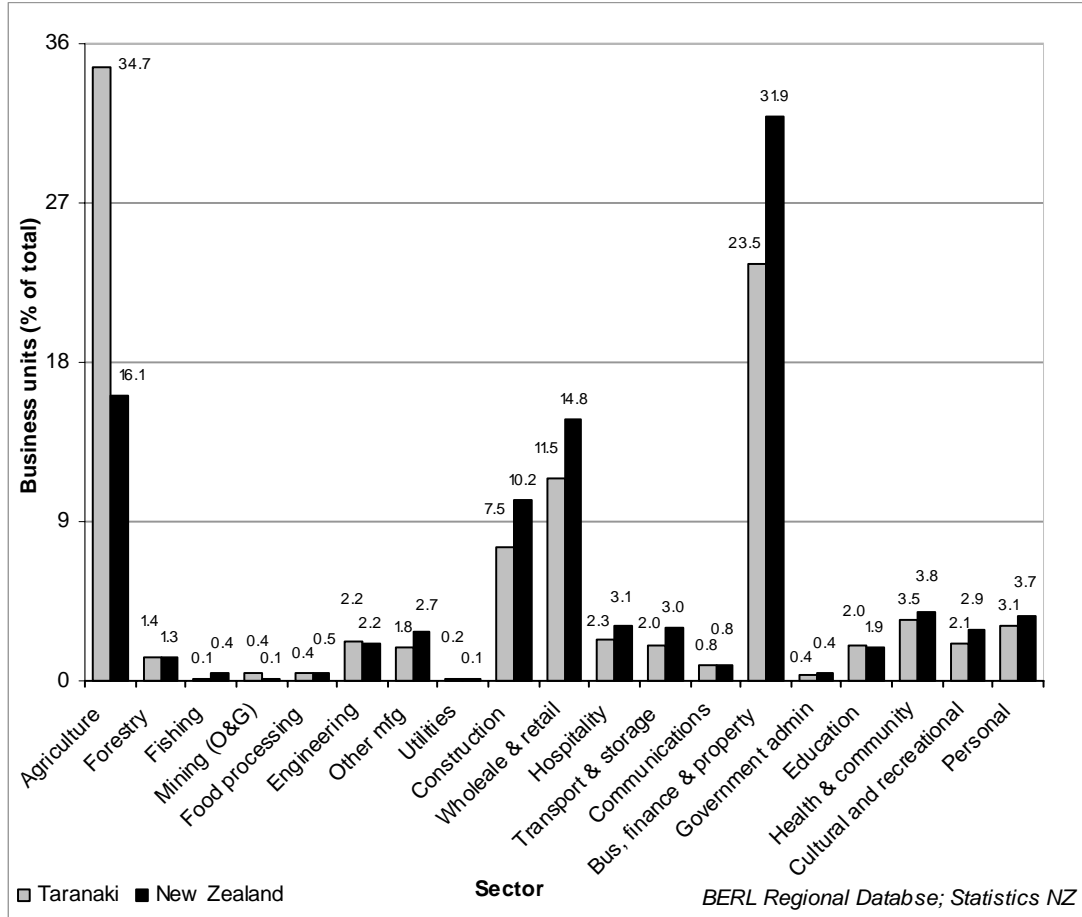


Agriculture accounted for 35 percent of all businesses. Business, finance and property services provided one-quarter of businesses, while wholesale and retail trade had 11 percent.

The three manufacturing industries – food processing, engineering and other manufacturing, together represented just 4.4 percent of Taranaki businesses. This indicates that the average business size within manufacturing is relatively large, as the sector accounts for 18 percent of regional employment.

Figure 6.2 compares the proportion of businesses accounted for by each industry in Taranaki with the national situation.

Figure 6.2 Comparison of business units by industry, 2006



The relative importance of agriculture is clear in that it accounted for double the proportion of businesses in Taranaki as in New Zealand as a whole. On the other hand, the business, finance and property services industry makes up a far larger portion of all businesses nationally than in Taranaki.

Table 6.2 summarizes the change in the number of business units within each industry in Taranaki over the last five years. It also shows overall New Zealand business units growth.

Table 6.2 Taranaki business units, 2001 – 2006

Industry	Business Units (number)			%pa change			
	2001	2004	2005	2006	2005	2006	2001 to 2006
Agriculture	4,282	4,552	4,505	4,438	-1.0	-1.5	0.7
Forestry	192	191	181	174	-5.2	-3.9	-1.9
Fishing	22	23	23	19	0.0	-17.4	-2.9
Mining (O&G)	37	40	47	57	17.5	21.3	9.0
Food processing	41	40	42	50	5.0	19.0	4.0
Engineering	267	273	266	282	-2.6	6.0	1.1
Other manufacturing	231	236	244	236	3.4	-3.3	0.4
Utilities	25	24	21	20	-12.5	-4.8	-4.4
Construction	704	799	866	963	8.4	11.2	6.5
Wholesale & retail trade	1,414	1,444	1,457	1,465	0.9	0.5	0.7
Hospitality	242	286	296	297	3.5	0.3	4.2
Transport & storage	238	254	259	262	2.0	1.2	1.9
Communications	96	102	109	108	6.9	-0.9	2.4
Business, finance & property svcs	2,081	2,799	2,861	3,011	2.2	5.2	7.7
Government administration	51	53	53	49	0.0	-7.5	-0.8
Education	254	255	254	256	-0.4	0.8	0.2
Health & community svcs	404	420	427	442	1.7	3.5	1.8
Cultural & recreational svcs	247	261	270	267	3.4	-1.1	1.6
Personal svcs	332	372	378	397	1.6	5.0	3.6
Taranaki	11,160	12,424	12,559	12,793	1.1	1.9	2.8
New Zealand	368,080	421,468	432,613	443,369	2.6	2.5	3.8

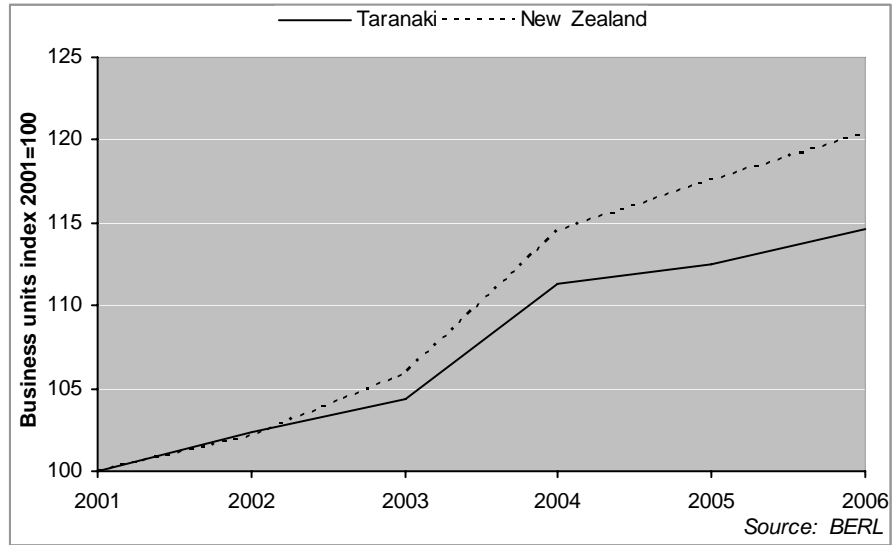
source:BERL Regional Database, Statistics NZ

The biggest growth in percentage terms in the number of business units over the five years occurred in mining (9.0 percent per annum, almost exclusively in oil and gas); business, finance and property services (7.7 percent per annum), construction (6.5 percent per annum); hospitality (4.2 percent per annum); and food processing (4.0 percent per annum).

Only four of the 19 industries have seen the number of business units fall. These included utilities (-4.4 percent per annum), fishing (-2.9 percent per annum), forestry (-1.9 percent per annum); and government administration (-0.8 percent per annum).

Figure 6.3 compares business unit growth rates for Taranaki and New Zealand over the period from 2001 to 2006.

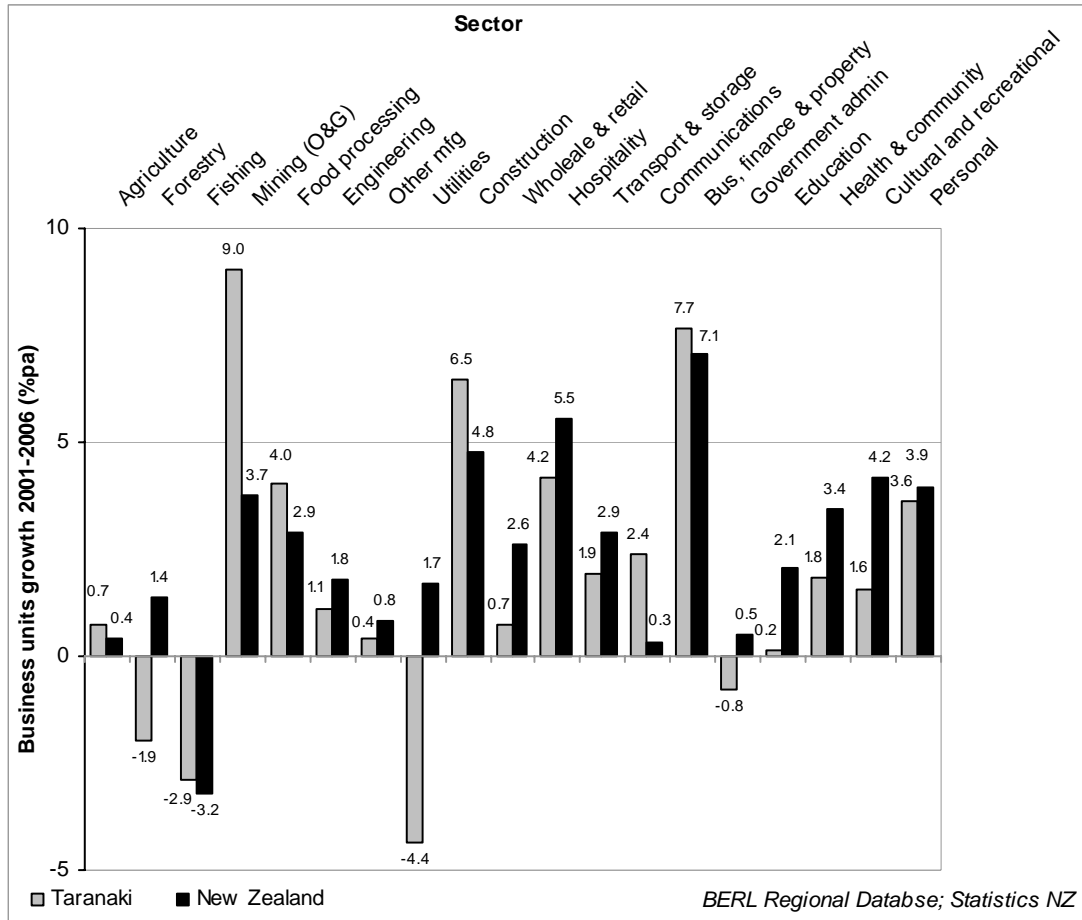
Figure 6.3 Business units trend, 2001 – 2006



Overall, business unit growth has been quite similar in New Zealand and Taranaki over the last five years.

Figure 6.4 compares annual growth rates for the number of business units in each industry in Taranaki and New Zealand for the period from 2001 to 2006.

Figure 6.4 Comparison of business units growth by industry, 2001 – 2006



Growth in the number of business units exceeded the national average in mining; construction; business, finance and property services; food processing; communications; and agriculture.

The number of business units fell most in utilities, fishing and forestry, while there was also a small decline in the number of government administration business units.

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