Employment profile and future demand for crane operators in New Zealand

A report for Opportunity Training

Prepared by Infometrics Ltd

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Executive summary

Slightly more than 1000 crane operators were employed in New Zealand in 2006. They were employed across a number of different industries; almost a half were employed directly or indirectly in the construction industry and a quarter in the manufacturing industry. Between 2001 and 2006, the number of employed crane operators grew by over 40% due to the construction boom over that period.

Strong employment growth was measured across all age groups in the five years to 2006. The highest concentration of crane operators is in the 40-45 year category.

The proportion of crane operators who identified themselves as Maori increased from 24.6% in 2001 to 29.6% in 2006. Pacific Peoples also made up a greater proportion of the workforce in 2006 than in 2001 (7.6% and 6.1% respectively).

The crane operator workforce has become more highly qualified over the past five years. A quarter held a vocational qualification in 2006, up from 12% in 2001.

Most crane operators were employed in the north island in 2006 (76%) and almost a third were employed in the Auckland region. Employment in the North Island has also been growing faster than in the South Island. The number of crane operators employed in the North Island was up 50% between 2001 and 2006, compared to 15% in the South Island.

A survey of employers of crane operators revealed a vacancy rate of 7%. Across the economy as a whole it is estimated that 70 ready-to-fill crane operator vacancies existed on 1 June 2008.

Although the total number of employed crane operators is likely to have fallen slightly since 2006 due to a slowdown in the construction industry, growth in employment is expected to turn positive again in the coming years. We expect an extra 70 crane operator positions to be created between 2008 and 2013. Growth in employment of crane operators is likely to arise from a recovery in the construction industry in the outer years of the forecast period and some growth in the transport industry.

About 60% of crane operators aged 60 years or older are expected to retire over the next five years. This amounts to about 10 crane operators retiring each year. We estimate that approximately 15 crane operators emigrated from New Zealand in the twelve months to April 2008. This level of emigration could be sustained over the next three years. A total of about 130 crane operators will need to be replaced due to retirement or departure from New Zealand between 2008 and 2013.

A total of about 200 positions will need to be filled over the next five years due to the combined effect of new jobs being created and existing positions being vacated. Replacement will create substantially more job openings than new job creation.

Introduction

This report provides an employment profile of crane operators in New Zealand. It describes the characteristics of the workforce in terms of numbers employed, qualification attainment, and regional and ethnic distribution. The report offers a view of the outlook for the major employing industries of crane operators. In turn, this informs our view of the future demand for the occupations. Finally the report investigates the extent of future job openings arising from the need to replace employees who leave their jobs.

Employment profile of crane operators

Employment by industry

Crane operators are employed across a number of industries. In 2006 the highest proportion was employed in construction (32%) followed by manufacturing (25%). A significant proportion is also employed in Transport and Storage (14%) and Property and Business Service (14%). Employment in the latter industry is concentrated in the Plant Hire sub-industry, which probably provides services to the construction industry. Consequently close to half of all crane operators are employed directly or indirectly by the construction industry.

Table 1. Employment of crane operators by broad industry, 2006

Industry	Persons employed	Proportion of total
Agriculture, Forestry and Fishing	24	2%
Mining	18	2%
Manufacturing	258	25%
Electricity, Gas and Water Supply	3	0%
Construction	333	32%
Wholesale Trade	45	4%
Retail Trade	9	1%
Accommodation, Cafes and Restaurants	6	1%
Transport and Storage	141	14%
Communication Services	3	0%
Finance and Insurance	21	2%
Property and Business Services	144	14%
Government Administration and Defence	6	1%
Education	3	0%
Health and Community Services	0	0%
Cultural and Recreational Services	6	1%
Personal and Other Services	6	1%
Total	1026	100%

Source: Estimated from Population census, Statistics New Zealand

Employment by occupation

The number of crane operators employed in New Zealand stayed more or less constant between 1996 and 2001 as activity in the construction industry was steady over this period. The construction boom during the

2000s resulted in strong growth in demand for crane operators between 2001 and 2006. Employment of crane operators increased from 732 in 2001 to 1026 in 2006, an increase of 40%.

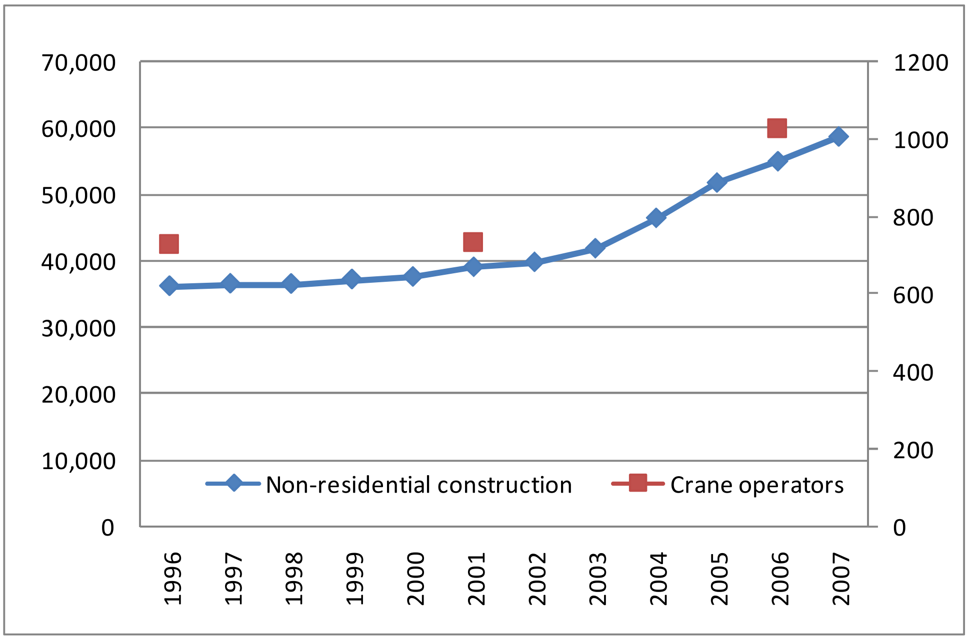
Table 2. Employment of crane operators

Year	Employment
1996	729
2001	732
2006	1026

Source: Population census, Statistics New Zealand

The strong relationship between employment of crane operators and employment in the non-residential construction industry is shown in the figure below.

Figure 1. Relationship between employment of crane operators and employment in non-residential construction

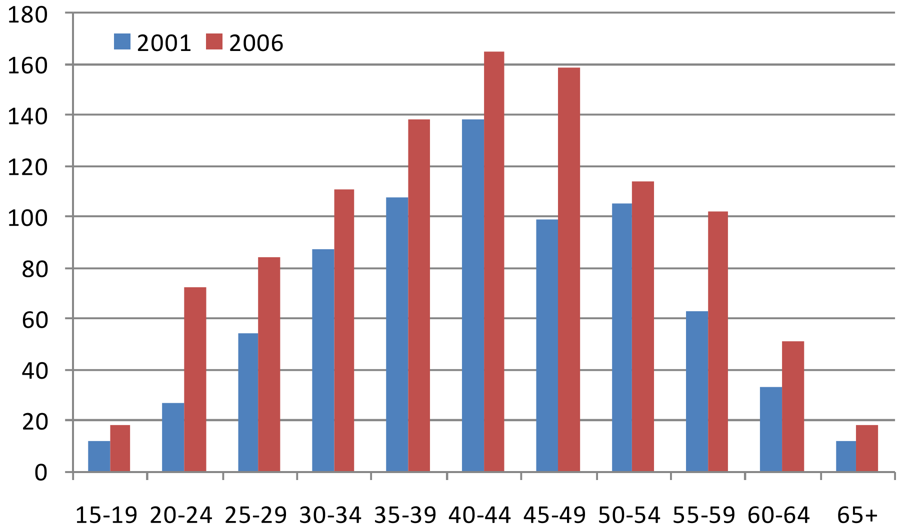


Source: Infometrics estimates and Population census, Statistics New Zealand

Age profile

Figure 2 shows strong growth in employment in each 5-year age category between 2001 and 2006. Particularly strong increases were measured in the 20-24 year category and the 45-49 year category. In both years the highest concentration of workers is in the 40-45 year category and there is no obvious ageing in the crane-operator workforce over the five years to 2006.

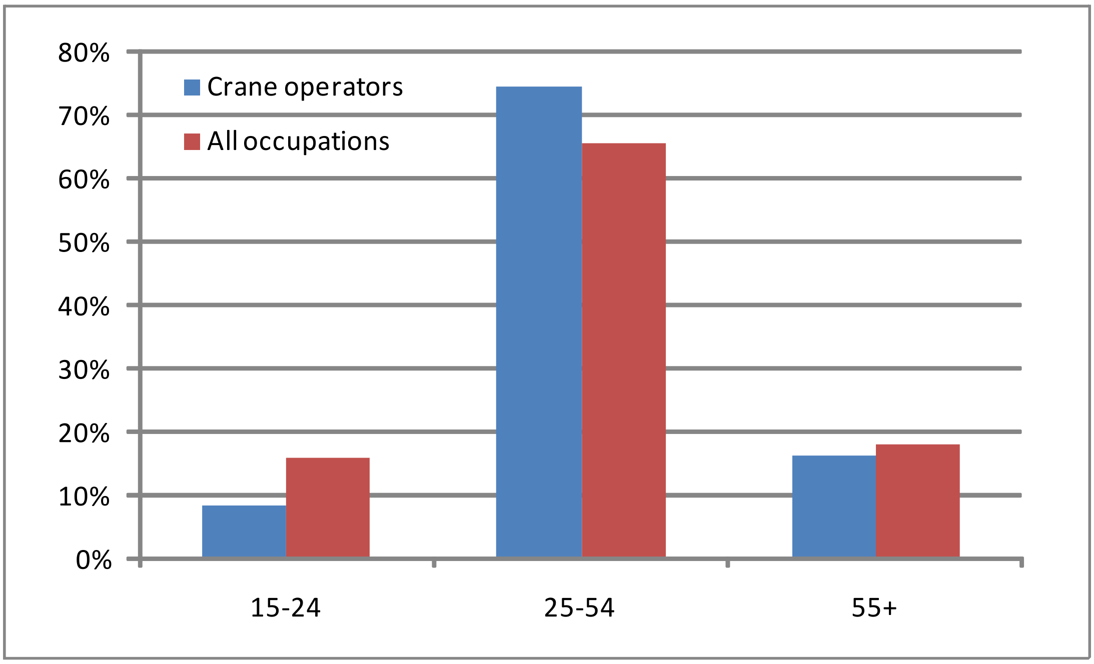
Figure 2. Employment of crane operators by 5-year age category, 2001 and 2006.



Source: Population census, Statistics New Zealand

Figure 3 shows that crane operators have a slightly different age profile to the workforce as a whole. There are proportionally fewer crane operators in the 15-24 year age category, considerably more in the 25-54 and fewer in the 55 years and over category. This suggests that over the next decade retirement will have a smaller impact on the crane operator workforce than on the New Zealand workforce as a whole. However, there are a substantial number of crane operators in the older age categories that are likely to retire in the coming years. The issue of replacement of existing crane operators is dealt with in the section on future replacement demand.

Figure 3. Proportion of persons employed by age category, 2006



Source: Population census, Statistics New Zealand

Ethnicity

A considerable increase in the proportion of crane operators who identified themselves as Maori was measured between 2001 and 2006. The proportion increased from 24.6% to 29.6% (see Table 3). An increase of crane operators who identified themselves as Pacific was also measured, from 6.1% in 2001 to 7.6% 2006. Changes in the classification of ethnicity between the 2001 and 2006 census[1] do not allow an accurate measure of the proportion of European crane operators.

Table 3. Ethnic composition of crane operators, 2001 and 2006

	Maori	Pacific Peoples	Other
2001	24.6%	6.1%	69.3%
2006	29.6%	7.6%	62.8%

Source: Population census, Statistics New Zealand

Qualifications

An increase in qualification levels of crane operators was measured between 2001 and 2006. The proportion with vocational qualifications (Certificate levels 1-4 and diplomas level 5 and 6) increased from 12% in 2001 to 25% in 2006. The proportion with no post school qualifications declined from 86% to 74% over the five year period. A negligible proportion had degrees.

Table 4. Number and proportion of crane operators by qualification, 2001 and 2006

	No post school qualification	Vocational	Degree or Higher	Total
2001	628	89	15	732
2006	761	252	14	1026
2001	86%	12%	2%	14%
2006	74%	25%	1%	26%

Source: Population census, Statistics New Zealand

Region

The vast majority (76%) of crane operators were employed on the North Island in 2006. Almost one-third of all crane operators were employed in the Auckland region. The second highest proportion were employed in Canterbury (10%) followed by Wellington (9%), Waikato (9%) and Bay of Plenty (8%).

[1] Persons who recorded their Ethnicity as 'New Zealander' were included in the European category in 2001 whereas they were included in the 'Other' category in 2006.

Most regions experienced strong growth in employment of crane operators between 2001 and 2006. Growth was substantially higher in the North Island than in the South Island. Highest growth was measured in Nelson (200%), Northland (105%) and Tasman (100%) although this growth was off a relatively small base. Southland was the only region to experience a decline in employment over the five year period.

Table 5. Employment of crane operators by region, 2001 and 2006

	2001	2006	% growth (2001-2006)	Regional share of national (2006)
Northland	22	45	105%	4%
Auckland	246	332	35%	32%
Waikato	48	94	96%	9%
Bay of Plenty	59	82	39%	8%
Gisborne	0	8	-	1%
Hawke's Bay	29	45	55%	4%
Taranaki	40	49	23%	5%
Manawatu-Wanganui	18	33	83%	3%
Wellington	55	90	64%	9%
North Island	517	778	50%	76%
Tasman	4	8	100%	1%
Nelson	7	21	200%	2%
Marlborough	7	12	71%	1%
West Coast	7	12	71%	1%
Canterbury	92	98	7%	10%
Otago	33	37	12%	4%
Southland	63	57	-10%	6%
South Island	213	245	15%	24%
New Zealand	732	1026	40%	100%

Source: Population census, Statistics New Zealand

Current shortfall of crane operators

A survey was conducted among members of the Crane Association to establish the current shortfall of crane operators in New Zealand. An e-mail questionnaire was sent to members asking how many ready-to-fill vacancies they had and the number of crane operators they employed as at 1 June 2008. Twenty nine employers responded who collectively employed 220 crane operators and had 16 ready to fill vacancies. This number of vacancies relative to employment amounts to a vacancy rate of 7.3%. If this vacancy rate is applied to total employment of crane operators it is estimated that there were 70 vacancies in New Zealand at 1 June 2008.

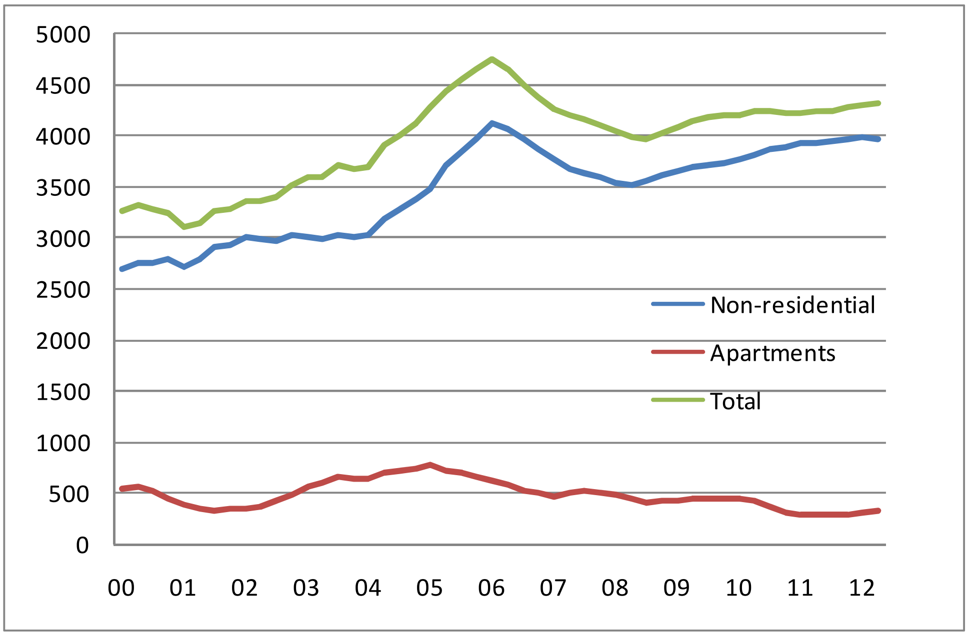
Future new demand for crane operators

An earlier section of this report showed that employment of crane operators is concentrated in a few industries. The future demand for crane operators is closely linked to the prospects in those industries. Close to half of all crane operators are employed directly or indirectly in the construction industry and special attention is given to this industry. Prospects in the Manufacturing and Transport and Storage industries are also considered.

Construction industry

This section focuses on the prospects for the non-residential and apartment construction sectors of the construction industry as most construction related crane operators are employed in these sub-industries. Activity in these sub-industries peaked in 2006 at the end of a five-year construction boom (see Figure 4). Since then activity has declined and is expected to bottom out in mid-2008 after which growth will resume. However, over the next five years the level of activity is not expected to regain the heights of the mid 2000s.

Figure 4. Non-residential and apartment construction work put in place (1995/96 $m)



Source: Infometrics estimate and Statistics New Zealand

The following factors contribute to our view of future growth in the non-residential and apartment construction industries:

- In late 2007 there was a run of consents for large government-funded projects, along with a few private sector developments. These will start translating into construction activity during 2008. Large consents granted over the last nine months include office buildings in Wellington (total $96m), an extension to Ngawha geothermal power station ($69m), work on Auckland's art gallery ($60m), a hostel for Victoria University ($43m), an apartment building in Wellington ($33m), Foodstuffs distribution centre

($30m), Rimutaka prison extensions ($27m), and work at Waikato Hospital ($26m).

- Non-residential construction activity outside of the non-government sector is unlikely to match activity in the government sector over the next year. Persistently high interest rates imply that financing new projects will still be expensive, and in an environment where overall domestic economic activity is soft, the appetite for new developments will remain muted.

- The slowing of employment growth over the next few years will slow the growth for commercial buildings (the size of the workforce is a major driver the demand for workspace). Employment is likely to grow by 1.3%pa over the next two years which is substantially slower than the 1.9% recorded over the last decade.

- The slowing of household spending (one of the main drivers of the current economic slowdown) will dampen the growth in demand for retail space. Retailers are likely to defer any expansion plans until demand conditions start to improve (most likely late 2008 or early 2009). Growth in retail space will be much less rapid than during the consumption boom of the last 5-6 years.

- The demand for accommodation buildings will show modest growth. The tourism sector is under pressure from the high value of the New Zealand dollar and high oil prices. The number of visitors to New Zealand is expected to grow by no more than 2.5%pa over the next three years. The $27m consent for work on Rimutaka prison which was issued in December 2007 will provide some impetus to the accommodation building sector.

- Strong growth in industrial building construction is forecast over the next few years driven mainly by the construction of new facilities for the food manufacturing industry. For example, Fonterra has been building a new cheese plant neat Timaru, and a new milk powder plant is planned at Edendale in Southland. Construction activity is likely to be concentrated in provincial areas, with high commodity prices for agricultural products offsetting the effect of the exchange rate on profits. Urban manufacturers (eg in Manukau) will continue to struggle.

- Weakness in the domestic economy is likely to stunt overall growth in infrastructure work over the next two years. Out into 2009, activity will recover strongly, with growth hitting 14%pa by the end of the year. Some of the acceleration will be due to projects put in train by Labour prior to the election, while some of the growth will be fed by National's willingness to partner with the private sector to get work done (we predict a change of government in late 2008).

- Stadium building for the Rugby World Cup in Auckland, Dunedin, and Christchurch is in various stages of planning, and there are a number of other sport-related projects in the pipeline as well. These projects should help lift activity from the middle of 2009.

- There is little scope for any substantial lift in apartment building activity over the next 2-3 years.
    - Oversupply in many regions will mean that demand will simply not be sufficient for developers to be able to go ahead with new projects.
    - Ongoing increases in construction costs, through rising material costs, consent fees, and development levies, will have a negative impact on the viability of apartment construction. Although traditional housing developments face these costs as well, the affordability of housing in new subdivisions may actually improve over the next couple of years as land prices come under downward pressure. Land prices are not a major factor in the final price of apartments.
    - Low rental yields and high interest rates hit investor demand for apartments more heavily than traditional housing. Without the land component associated with traditional housing, apartments are unlikely to enjoy capital gains to anywhere near the same extent. So a substantial improvement in rental yields will be necessary before investor interest in apartments is likely to be rekindled.

Beyond 2010, we expect growth in overall non-residential construction activity to be gradual. History shows that the non-residential building sector in New Zealand typically has periods of very strong expansion followed by some contraction and then an extended period of flat or relatively slow growth, before the next boom begins. Moderate medium-term prospects for employment growth and economic growth, combined with tighter credit conditions than those prevailing over the last five years, will prevent another building boom within the next five years. These factors will also be reflected in slower property price growth, with the possibility of some price falls, which will limit construction growth for commercial and industrial buildings.

We also see little scope for a turnaround in the apartment market over the next five years. Although the proportion of people living in apartments in the Auckland metropolitan area remains lower than for comparable cities in Australia, factors such as credit availability, quality issues, development levies, and overinflated sales prices (off the plan or for initial sales) will all limit apartment construction over the next five years. Outside Auckland, current oversupply issues are likely to persist until at least 2011, preventing any further growth in activity.

Manufacturing

The manufacturing industry offers limited opportunities for employment growth in New Zealand. We estimate that the manufacturing industry will grow on average by 2.4%pa between 2008 and 2013. Improvements in productivity will result in employment in the industry only growing by a modest 0.4%pa.

The manufacturing industry will remain under pressure into 2009 from high interest rates and the high exchange rate which make New Zealand’s products less competitive in the international market. Manufacturing should rebound from the middle of 2009 as interest rates fall and the New Zealand dollar weakens. The industry will be buoyed by robust growth in both Australia and China. The Emissions Trading Scheme will impose some constraint on the manufacturing industry, especially the metal product and machinery manufacturing sub-industries.

Our view on the future performance of the manufacturing industry is informed by the following considerations:

Historical performance

Activity in the manufacturing industry recovered in the year to March 2008 (rising by 0.6%pa), after falling sharply over the previous two years. The industry has averaged 0.5% growth over the past five years – a poor performance largely related to the strong local currency over the past three years.

The recovery in the March 2008 year primarily occurred in metal product (up 6.0%pa) and machinery and equipment (6.0%pa) manufacturing. Other manufacturing types have struggled as weak dairy volumes and low meat prices dampened the level of food manufacturing activity.

Next few years

Over the year to March 2009, manufacturing growth is expected to be limited (around 1.0%pa) A high exchange rate, elevated interest rates, and slowing domestic economic conditions will take their toll on the industry.

Interest rates will begin to ease towards the end of 2008, providing a lower exchange rate environment heading into 2009. As a result, growth in the industry is expected to recover to about 2.8% over the year to March 2010.

Emissions Trading Scheme

An over-riding issue for the manufacturing industry in the outer years of our forecast period is the emissions trading scheme, which is due to be introduced in the manufacturing industry by January 2010. Also important is the implementation of the emissions trading scheme in the electricity generation industry, which is scheduled to occur in 2010. Manufacturing is extremely energy intensive and the scheme will have a significant impact on input costs for the manufacturing industry.

The emissions trading scheme will have a material impact on the cost of creating manufactured goods – leading to lower levels of activity and weaker levels of investment. Even though the scheme does not come into effect until 2010, the uncertainty surrounding the scheme creates risks that will limit plant and machinery investment in the industry.

The impact of the emissions trading scheme is likely to be particularly severe for the metal product manufacturing, as the industry is forced to take on the liability associated with its high emissions profile. Furthermore, the lack of product differentiation in the industry will stop them being able to pass on much of this cost increase through price rises.

If the emissions trading scheme goes forward, demand for new plant and capital in the manufacturing industry will be significantly negatively affected – including the demand for additional cranes and crane drivers.

Transport

The transport industry has grown strongly in the past in line with growth in merchandise trade. It will continue to grow over the next five years as trade continues to expand. Being a relatively labour intensive industry it will continue to create new employment opportunities in New Zealand.

Activity in the transport sector of the economy was estimated to have risen by a sizable 3.9% over the year to March 2008 while employment in the industry rose by 2.4%. A slowing domestic economy and high fuel prices are expected to put the brakes on growth in transport over the next twelve months, rising by 1.3% in the year to March 2009. A gradual recovery in economic activity will see growth accelerate to 2.3% by 2010 and 4.2% by 2013.

In terms of demand for cranes, the outlook for ports is of special interest. The main factors that are expected to influence activity at the port level are merchandise trade volumes and the Government's sea change policy.

The value of total merchandise trade rose 5.8% over the March 2008 year, with an 8.0% increase in export values and a 3.9% increase in import values. However, when the two main growth industries (dairy and oil) are removed from the figures, the value of exports turns out to be 0.6% lower than year earlier levels. Furthermore, the increase in dairy values was the result of extremely strong price growth – with the quantity of dairy sales down 8.6% on a year earlier.

The volume of merchandise trade is expected to grow slowly over the coming years as a softening domestic economy reduces growth in imports. Furthermore, the impact of drought is expected to restrain the volume of agricultural products exported over the next 6-12 months.

The Government's sea change policy received a significant amount of funding in this year's budget ($36m over the next three years). The purpose of this policy is to "revitalise coastal shipping" – making it a more attractive option for transporting goods around New Zealand.

If the sea change policy is successful, the quantity of domestic shipping is likely to increase markedly – which would require a significant amount of infrastructural investment in ports, including investment in cranes.

Implications for future demand for crane operators

The above sections indicate the demand for crane operators in the manufacturing and transport industries will grow over the next five years and that demand in the construction industry will recovering from 2009 onwards following a sharp fall off in activity since 2006. The net result of these forces is that total demand for crane operators is expected to recover from 2008 onwards and by 2013 will slightly exceed the peak reached in 2006.

Table 6 shows that shows that employment of crane operators is expected to grow from 960 in 2008 to 1030 by 2013. This suggests that a net 70 new positions will be created over the forecast period.

Table 6. Employment of crane operators, 2006-2013

Year	Employment	Change in number of jobs from previous year
2006	1 030	
2007	970	-60
2008	960	-10
2009	970	10
2010	990	20
2011	1 000	10
2012	1 010	10
2013	1 030	20
2008-2013		70

Source: Infometrics estimates

Future Replacement Demand for Crane Operators

Job openings in an occupation are a result of both employment growth (new demand) and the need to replace workers who leave the occupation (replacement demand). This section provides estimates of future replacement demand for crane operators ie the net number of positions that will come open due to individuals leaving the crane operating occupation due to retirement and emigration.

Analysis of the age structure of employment in the crane operating occupation from the Population Census shows that about 60% of persons aged 60 years or older are expected to retire over the following five years. This suggests that approximately 10 crane operators are expected to retire each year over the next five years.

Analysis of External Migration data suggests that about 15 crane operators emigrated from New Zealand in the twelve months to April 2008. This level of emigration could be sustained over the next three years. Departure growth is expected to slow by mid 2008, as departures have reached a critical mass. However, the prevalence of a material gap in living standards between New Zealand and Australia will keep departure numbers elevated relative to recent history.

Table 7. Projected replacement demand, 2008-2013

	2008-2013
Retirements	50
Departures from NZ	80
Total	130

Table 7 shows that about 130 crane operators will need to be replaced due to retirement or departure from New Zealand between 2008 and 2013.

Total Future Demand for Crane Operators

It is estimated that approximately 200 positions for crane operators will open over the next five years due to new positions being created and vacated positions needing filling. Replacement demand will considerably exceed new demand for crane operators. Under the outlook for the construction, manufacturing and transport industries that has been outlined above it is estimated that a total of about 70 new positions for crane operators will be created in New Zealand over the next five years. By contrast about 130 positions will need filling through replacement.

Table 8. Total future demand for crane operators

	2008-2013
New jobs	70
Replacement demand	130
Total	200

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