



JUNE 2006

DIESEL MECHANIC: OCCUPATIONAL SKILL SHORTAGE ASSESSMENT

2004 Situation: Genuine skill shortage

Current Situation: Genuine skill shortage

Short-term Outlook: Genuine skill shortage

1 Executive Summary

1.1 Results from the 2005 Survey of Employers who have Recently Advertised suggest employers have had considerable difficulty in filling diesel mechanic positions in New Zealand. Only 21% of positions were filled within ten weeks of advertising and there was an average of only 1.1 suitable applicants for every diesel mechanic vacancy. This report considers these survey results in the context of trends in the demand for and supply of diesel mechanics.

Table 1: Employer Survey Indicators, 2005

	Fill Rate	Average Number of Suitable Applicants
Diesel Mechanics	21%	1.1
All Trades Surveyed	37%	1.0

Source: Survey of Employers who have Recently Advertised, Department of Labour.

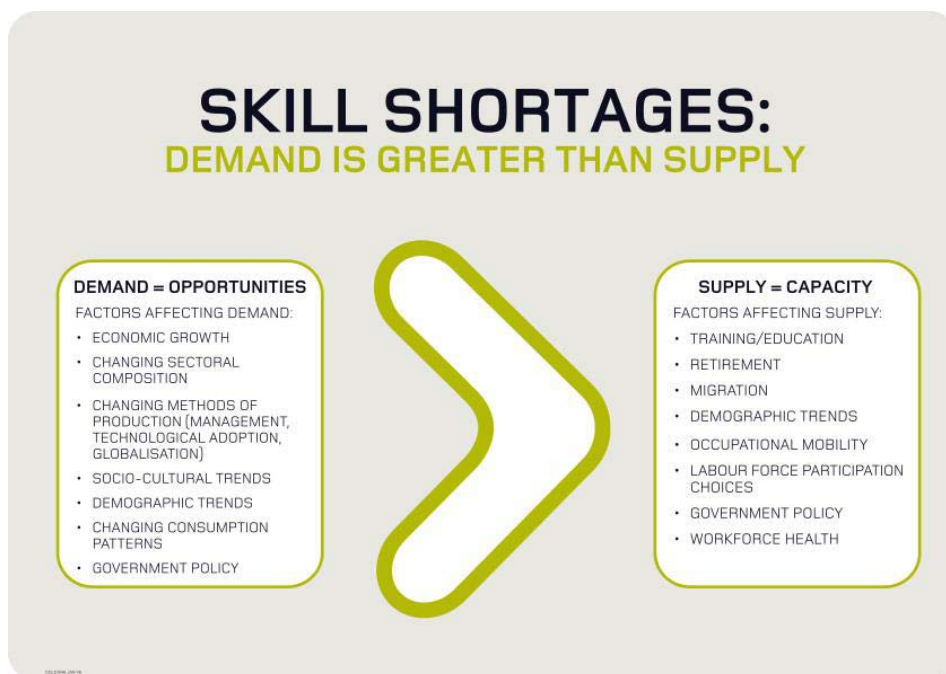
1.2 Growth in the demand for diesel mechanics has been driven by a number of factors including growth in the number of registered trucks and buses, a growing preference for diesel engine vehicles and an increase in the use of road freight transportation in New Zealand. The data available suggest that demand for diesel mechanics has been high since 2001.

1.3 There were 192 newly qualified diesel mechanics in 2005, over double the number recorded in 2001. However, this equates to a training rate of only 1.8% which will only just cope with retirements from the occupation (1.5% per annum) let alone account for growing demand and existing shortages. Continued increases in new enrolments mean that the number of trainees achieving qualifications is likely to increase in the future, and thus boost the supply of qualified diesel mechanics.

- 1.4 Due to the on-going disparity between the levels of supply and demand, the Department of Labour has assessed the diesel mechanic occupation as experiencing a **genuine skill shortage**.
- 1.5 The demand for diesel mechanics will continue to grow over the next few years on the back of strong growth in the number of diesel vehicles being registered. While training data shows an increase in the number of trainees achieving the nationally recognised qualification for diesel mechanics, supply through training and to a lesser extent, inward migration, will battle to keep pace with rising demand for diesel mechanics, let alone diminish the extent of the current shortage. The Department of Labour therefore expects shortages to persist over the short-term.

2 Introduction

- 2.1 The purpose of this report is to investigate skill shortages for diesel mechanics in New Zealand.
- 2.2 The following section presents key findings from the Department of Labour's (the Department's) *Survey of Employers who have Recently Advertised* (SERA). This survey provides an indication of employer's success in filling advertised vacancies for diesel mechanics as well as other information on their recruiting experiences. The next two sections investigate trends in the demand for, and supply of, diesel mechanics. The penultimate section presents some of the issues that arise from the matching of demand and supply in the labour market, such as wage rates. Finally, the 'Assessment' section considers all the information presented in the report and provides a view on whether the occupation is in shortage, and if so, the type of shortage being experienced. A short-term outlook for the shortage situation is also offered.



- 2.3 Further background to this occupational report, including a discussion of the methodology; a glossary of terms; and an overview of the Department's *Survey of Employers who have Recently Advertised*, including the survey questionnaire, can be found in the 'Background and technical note' at <http://www.dol.govt.nz/publications/jvm/trades/2005/background.asp>.
- 2.4 ***Diesel Mechanics in New Zealand***
- 2.4.1 Diesel mechanics are classified as machinery mechanics (code 72311 in the New Zealand Standard Classification of Occupations). They repair and maintain the diesel engines that power transportation equipment such as heavy trucks, buses, locomotives and other heavy vehicles, as well as mobile equipment such as road graders and forklifts.

- 2.4.2 The Department estimates that there were approximately 10,400 diesel mechanics employed in New Zealand in 2005. Census figures indicate that almost the entire diesel mechanic workforce is male (98%) and is employed full time (98%).

3 **Survey of Employers who have Recently Advertised**

- 3.1 This section presents the key SERA findings of employers' experiences in recruiting diesel mechanics.
- 3.2 The SERA allows the Department to gain insights into skill shortages by investigating how difficult it is for employers to fill vacancies. A 'fill rate' is calculated for each occupation – this being the proportion of vacancies included in the SERA sample which were filled with an adequately qualified and experienced person within ten weeks of advertising. Occupations with fill rates lower than 80% are typically regarded as being in shortage, while fill rates lower than 40% usually indicate that the occupation is in acute shortage.

Table 2: SERA Results for Diesel Mechanics and All Trades Surveyed, August 2005

	Number of Employers	Number of Vacancies	Fill Rate¹	Average Number of Suitable Applicants per Vacancy
Diesel Mechanics	50	87	21%	1.1
All Trades Surveyed	885	1480	37%	1.0

Source: Survey of Employers who have Recently Advertised, Department of Labour.

1 The 'All Trades Surveyed' fill rate and average number of suitable applicants per vacancy figures were both weighted to compensate for any under or over sampling of individual trade worker occupations in the 2005 survey.

- 3.3 Results from the 2005 SERA show that only 21% of diesel mechanic vacancies included in the survey were filled within ten weeks of being advertised, down from 55% in 2004. The fill rate for diesel mechanics was below the fill rate for all surveyed trade occupations (37%). There was an average of 1.1 suitable applicants for each diesel mechanic vacancy compared with an average of 1.0 for all trade occupations surveyed.

4 **Demand for Diesel Mechanics**

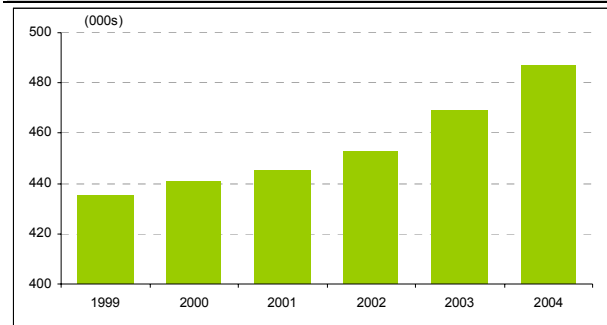
- 4.1 This section investigates trends in the demand for diesel mechanics and the factors underlying these trends. Demand is measured by the number of diesel mechanics required by employers at current wage rates.

4.2 **Historical Demand**

- 4.2.1 The demand for diesel mechanics is closely linked to the number of registered trucks and buses, and the growth in road freight transportation in New Zealand.

4.2.2 Data from Land Transport New Zealand shows a steady increase in the total number of truck and bus registrations (see Figure 1). Between 1999 and 2004, the number of registered buses and trucks has grown by 2.2% per annum on the back of strong growth in the economy. There has also been an increase in the proportion of all registered vehicles which are diesel-powered. In 1999 diesel vehicles made up 14.6% of all registered vehicles. This increased to 17.8% in 2004.

Figure 1: Total Number of Trucks and Buses in NZ Fleet



Source: Land Transport New Zealand.

4.2.3 According to the Ministry of Transport, New Zealand's geography, low population density, and its commodity-based economy make it highly dependent on road transport. Freight transportation by truck is also an intermediary for other forms of transportation such as rail and air. From 1996 to 2001, the vehicle-kilometres travelled by goods vehicles increased by 34% for light goods vehicles and 19% for heavy goods vehicles¹. This substantial increase in freight movement by road has been mainly due to increased demand for just-in-time deliveries and growth in trade.

4.2.4 A number of factors, however, have moderated the demand for diesel mechanics:

- The expense of repairing many older vehicles was greater than the cost of purchasing new vehicles following the removal of import tariffs in 1998, and the subsequent increasing volumes of imported vehicles available to New Zealanders;
- A reduction in the price of vehicle parts, leading to the replacement of those parts rather than their repair; and
- Technological improvements which mean that many vehicles require less frequent servicing and repair.

4.2.5 Data from the Household Labour Force Survey show that there has been an upward trend in the employment of *machinery mechanics and fitters* (the broad occupational group into which diesel mechanics fall) since 2001². The number employed grew by an average of 3.5% per annum in the four years to December 2005 (see Table 3). This was driven by strong employment growth in 2004 and 2005, which coincided with strong growth in the number of registered trucks and buses. Another measure that can be used to assess demand is the total distance travelled by the heavy vehicle fleet. Heavy vehicles travelling greater distance require more routine servicing and repairs. The total distance travelled by heavy

¹ Ministry of Transport, April 2002, 'Transport for New Zealand: Overview'.

² Due to the close association of the constituent occupations in the broad occupational group, the trend at this broader is considered to be reflective of the trend for diesel mechanics.

vehicles increased strongly between 2001 and 2003, with 11% growth recorded over this time period³.

Table 3: Annual Average Employment of Machinery Mechanics and Fitters, 2001-2005, December Years (000's)

	2001	2002	2003	2004	2005	Annual Growth in Employment
Machinery Mechanics and Fitters	25.6	29.0	27.5	28.3	34.4	3.5%

Source: Household Labour Force Survey, Statistics New Zealand.

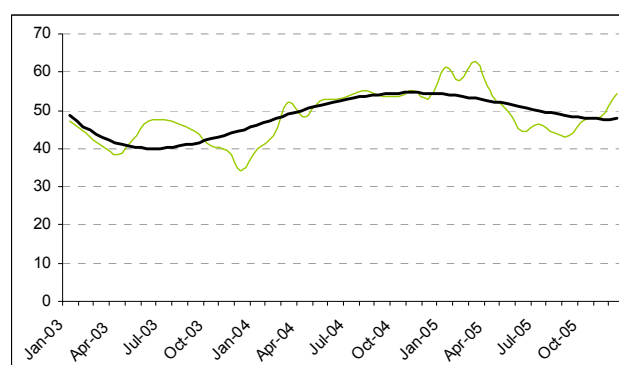
4.3 **Future Demand**

4.3.1 Demand for diesel mechanics is likely to continue growing over the short-term. Strong growth in the number of truck and bus registrations in recent years suggests that there will be ongoing demand for diesel mechanics. In addition, the number of cars powered by diesel engines is expected to increase in the future. In 2002, the Ministry of Transport predicted that the total number of diesel cars would increase by 44% between 2000 and 2015 compared to an increase of only 23% for petrol-fuelled cars. The Ministry also predicted an increase of 68% in the number of light commercial diesel vehicles and a 38% increase in the number of heavy commercial diesel vehicles over the same period, with the caveat that energy efficiency targets, improved transport options and other pressures may change this trend⁴. Rapidly changing technological advances, particularly in electronic control systems found in heavy diesel vehicles, will also increase demand for diesel mechanics.

4.4 **Changes in Market Conditions**⁵

4.4.1 The Department's Job Vacancy Monitor shows that between mid-2003 and late 2005, the three-monthly moving average for job advertisements in this field grew strongly (see Figure 2). However, from early 2005, the number of advertised vacancies for diesel mechanics has shown a slight downward trend indicating that while the market for diesel mechanics is still tight, recruitment conditions for employers may have eased slightly in recent months.

Figure 2: Number of Advertised Vacancies for Diesel Mechanics



Source: Job Vacancy Monitor, Department of Labour.

³ T.H. Mueller and P.H. Bass, Transport Engineering Research New Zealand, March 2004, 'Profile of the Heavy Vehicle Fleet: Update 2004'.

⁴ Ministry of Transport, April 2002, 'Transport for New Zealand: Overview'.

⁵ Analysis of the Job Vacancy Monitor suggests that it is an indicator of change in labour market tightness, or change in the degree of difficulty of recruiting staff. An increase in vacancies typically indicates increasing difficulty in recruiting staff and vice versa. While changes in demand usually dictate changes in labour market tightness, it can also be affected by changes in supply conditions, such as a rise in net migration.

5 Supply of Diesel Mechanics

5.1 This section investigates the various sources contributing to the supply of diesel mechanics. Supply is measured by the number of people willing and able to work as diesel mechanics at current wage rates.

5.2 *Training - National Certificate (Level 4) Qualifications and Equivalent*

5.2.1 This section investigates the growth in supply of *fully qualified* diesel mechanics through training. It considers two sources of supply:

1. The award of The National Certificate in Motor Industry (Automotive Heavy Engineering)⁶ Level 4 by the New Zealand Motor Industry Training Organisation Incorporated (MITO). This is the nationally recognised qualification for diesel mechanics which is designed by MITO to meet the needs of employers of diesel mechanics in the motor industry.
2. The award of the National Certificate in Motor Industry (Automotive Heavy Engineering) Level 4 by other providers such as polytechnics.

There were no non-national certificate qualifications at the equivalent level of the National Certificate Level 4 awarded over this time period.

5.2.2 Table 5 shows that the vast majority of National Certificate qualifications for diesel mechanics are awarded by MITO. In 2005, 192 trainees achieved the National Certificate, over double the number in 2001 (75). New enrolments for this qualification have risen from 251 in 2001 to 453 in 2005, an increase of over 200 (see Table 4). This suggests an increase in future achievements of the National Certificate is likely.

Table 4: Number of Trainees Enrolled for the National Certificate in Motor Industry (Automotive Heavy Engineering) Level 4

	National Certificate in Motor Industry (Automotive Heavy Engineering) Level 4 (MITO)		National Certificate in Motor Industry (Automotive Heavy Engineering) Level 4 (Other Providers)		Total	
	Total Enrolled	New Enrolments	Total Enrolled	New Enrolments	Total Enrolled	New Enrolments
2001	848	249	8	2	856	251
2002	1011	375	9	3	1020	378
2003	1043	334	12	4	1055	338
2004	1063	426	10	4	1073	430
2005	948	448	11	5	959	453

Source: New Zealand Motor Industry Training Organisation (Inc.), Tertiary Education Commission. Some figures were estimated by the Department.

⁶ The National Certificate in Automotive Heavy Engineering includes separate strands in Agricultural Equipment, Plant and Equipment and Road Transport.

Table 5: Number of Trainees Achieving the National Certificate in Motor Industry (Automotive Heavy Engineering) Level 4

	National Certificate in Motor Industry (Automotive Heavy Engineering) Level 4 (MITO)	National Certificate in Motor Industry (Automotive Heavy Engineering) Level 4 (Other Providers)	Total
2001	70	5	75
2002	85	5	90
2003	101	8	109
2004	146	11	157
2005	181	11	192

Source: New Zealand Motor Industry Training Organisation (Inc.), Tertiary Education Commission. Some figures were estimated by the Department.

- 5.2.3 The training rate for diesel mechanics is given in Table 6. This indicator provides an approximate measure of the rate at which the supply of fully qualified diesel mechanics can potentially grow through training. The training rate is calculated by expressing the number of persons achieving the relevant qualification as a percentage of total employment in that occupation. The training rate for diesel mechanics has increased in the last four years from 0.8% in 2001 to 1.8% in 2005. The training rate for diesel mechanics is lower than the average training rate of 3.3% for all trades analysed by the Department.

Table 6: Training Rate for Diesel Mechanics, 2001-2005

	Diesel Mechanics	All Trades ⁷
2001	0.8%	2.0%
2002	0.9%	2.2%
2003	1.1%	2.2%
2004	1.5%	2.7%
2005	1.8%	3.3%

Source: Department of Labour.

5.3 Migration

- 5.3.1 New Zealand has experienced a net migratory inflow of 363 *machinery mechanics and fitters* (NZSCO Minor Group 723) in the four years to December 2005, coinciding with the strengthening of the domestic economy. However, this follows a net outflow of 346 for this group in the previous four-year period (see Table 7). The net increase in the past four years has been mainly driven by an increase in arrivals. Since migration statistics are only recorded at the broader 3-digit category of *machinery mechanics and fitters*, the data must be interpreted with caution as it includes occupations other than diesel mechanics. However, diesel mechanics represent about a third of this category indicating there was most likely a net gain of diesel mechanics over the period. In addition, many

⁷ The training rates for 'all trades' were calculated for the 14 trade occupations that were examined in-depth using data from the SERA Intensive 2005. As the composition of occupations being examined changes from year-to-year, so will the training rates.

employers interviewed in the 2005 SERA Intensive mentioned that diesel mechanics were coming into the country.

Table 7: Permanent and Long-term Arrivals, Departures and Net Migration of Machinery Mechanics and Fitters, 1998-2005 December Year End

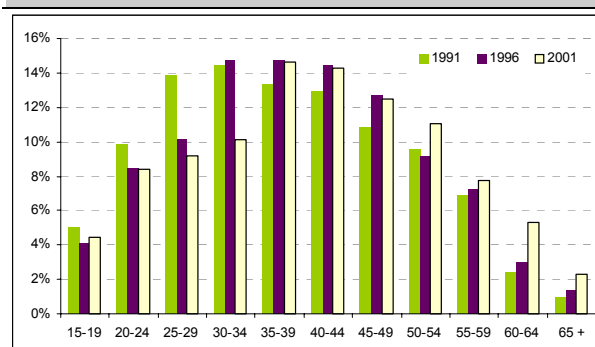
	1998	1999	2000	2001	2002	2003	2004	2005
Arrivals	223	185	127	196	260	312	285	402
Departures	290	324	205	258	189	211	225	271
Net Migration	-67	-139	-78	-62	71	101	60	131

Source: External Migration, Statistics New Zealand. This data is only available at the broad (3-digit) occupational level 'machinery mechanics and fitters'. Diesel Mechanics comprise about a third of this broader group (37% in the 2001 Census).

5.4 Retirements

5.4.1 Based on 2001 Census data, it is estimated that approximately 1.5% of the diesel mechanic workforce retires each year (assuming a retirement age of 65). This equates to about 160 diesel mechanics per annum. This is higher than the average retirement rate for all trade occupations (1.3%). Census data shows an ageing of diesel mechanics occurred between 1991 and 2001 (see Figure 3).

Figure 3: Age Profile of Diesel Mechanics, 1991-2001



Source: Census of Population and Dwellings, Statistics New Zealand.

The percentage of diesel mechanics under 30 years of age decreased from 29% in 1991 to 22% in 2001, while the proportion in all age groups over 50 increased. By 2001 over half of all diesel mechanics were 40 years of age or older and the average age was 41, up from 38 in 1991. As the diesel mechanic workforce ages, the number of diesel mechanics retiring each year will increase, especially in an occupation where the physical demands of the job mean that many leave the occupation before the age of 65.

5.5 Occupational Detachment⁸

5.5.1 Employers were asked if they thought diesel mechanics left the occupation to go and do something different more or less than in other occupations. Of the fourteen employers who answered this question, seven thought they left at about the same rate as in other occupations, five thought they left at a higher rate, and two thought they left at a lower rate.

⁸ 'Occupational detachment' refers to individuals who choose not to continue practising in their occupation but retain a connection to the occupation (e.g. move into a management or supervisory role, or retain professional registration), or who leave the occupation entirely (e.g. by changing occupation or withdrawing from the labour market).

- 5.5.2 This suggests that occupational detachment may have a small impact on supply for this occupation, with some employers saying this may be because of factors such as dirty working conditions and relatively higher wages available in closely associated occupations and overseas.

6 Matching of Supply and Demand

- 6.1 This section considers some of the issues that arise from the labour market matching of the supply of diesel mechanics with the demand for diesel mechanics.

6.2 *Salaries*

- 6.2.1 Diesel mechanic wages are relatively high compared with other trades. The Labour Cost Index (LCI) measured an average hourly wage of \$22.65 for diesel mechanics compared with an average wage for all trade workers of \$19.81 (see Table 8). According to the LCI, wages of diesel mechanics have increased by 3.5% in the twelve months to June 2005, compared with 4.8% in all trades.

Table 8: Average Hourly Wage Rates for Diesel Mechanics⁹

	June 2004	June 2005
Diesel Mechanics	\$21.89	\$22.65
All Trades	\$18.90	\$19.81

Source: Labour Cost Index, Statistics New Zealand.

7 Assessment

- 7.1 This section considers all the information presented in this report on employers' recruiting experiences, supply and demand trends, and matching issues and offers a view on whether there is a shortage of diesel mechanics and the type of shortage. A short-term outlook for the shortage situation is also offered.

- 7.2 Demand for diesel mechanics has continued to grow strongly over the last few years and is expected to rise in the future as the truck and bus fleet increases and the number of vehicles powered by diesel engines increases. While the growth in supply of diesel mechanics has increased in recent years, it still remains at a relatively low level. In the early 2000's, supply through training was potentially growing by less than 1%, although this had risen to 1.8% in 2005. This only just compensates for the number of diesel mechanics retiring (1.5% per annum). Supply

Box 1: Skill Shortage Definitions

Genuine Skill Shortage

Occurs when employers have difficulties filling their job vacancies because there are not enough individuals with the required skills in the potential labour market to fill the positions on offer.

Recruitment and Retention Difficulty

Occurs when there is a considerable supply of individuals with the required skills in the potential labour market but they are unwilling to take up employment at current levels of remuneration and conditions of employment. Retention problems are often a major contributor to this condition.

⁹ The data shown from the LCI are unadjusted mean hourly rates. Caution should be taken with interpreting this information due to the relatively small sample sizes, particularly at the occupational level. Furthermore, the LCI is designed to measure changes in, rather than the actual level of, wage and salary rates.

was probably complemented by a small amount of net inward migration but occupational detachment probably would have resulted in a loss of supply. As demand growth has exceeded supply growth an acute shortage of diesel mechanics has resulted. This is reflected in the extremely low fill rate of 21%. The disparity that has developed as demand has outgrown supply indicates that the diesel mechanic shortage is a **genuine skill shortage** (see Box 1 for definition).

- 7.3 The demand for diesel mechanics will continue to grow over the next few years on the back of strong growth in the number of diesel vehicles being registered. While training data shows an increase in the number of trainees achieving the nationally recognised qualification for diesel mechanics, supply through training and to a lesser extent, migration, will battle to keep pace with rising demand for diesel mechanics, let alone diminish the current shortage. The Department therefore expects shortages to persist over the short-term.

For queries regarding this report please contact simon.hall@dol.govt.nz or info@dol.govt.nz.

Disclaimer: The Department of Labour has made every effort to ensure that the information contained in this report is reliable, but makes no guarantee of its accuracy or completeness and does not accept any liability for any errors. The information and opinions contained in this report are not intended to be used as a basis for commercial decisions and the Department accepts no liability for any decisions made in reliance on them. The Department may change, add to, delete from, or otherwise amend the contents of this report at any time without notice. The material contained in this report is subject to Crown copyright protection unless otherwise indicated. The Crown copyright protected material may be reproduced free of charge in any format or media without requiring specific permission. This is subject to the material being reproduced accurately and not being used in a derogatory manner or in a misleading context. Where the material is being published or issued to others, the source and copyright status should be acknowledged. The permission to reproduce Crown copyright protected material does not extend to any material in this report that is identified as being the copyright of a third party. Authorisation to reproduce such material should be obtained from the copyright holders.