

February 2005

## SKILL SHORTAGE ASSESSMENT OCCUPATION: SHEET- METAL WORKER

**Current situation:** Skill shortage  
**Short-term outlook:** Skill shortage

### Executive summary

1. The Survey of Employers who have Recently Advertised (SERA) suggests that there is currently a severe shortage of sheet-metal workers in New Zealand. Less than four out of ten sheet-metal worker vacancies included in SERA were filled within six weeks of advertising. This report considers these survey results in the context of trends in the demand for and supply of sheet-metal workers.

*Table 1: employer survey indicators*

|                     | Fill rate | Average number of suitable applicants |
|---------------------|-----------|---------------------------------------|
| Sheet-metal workers | 38%       | 0.6                                   |
| All trades surveyed | 41%       | 0.7                                   |

Source: Department of Labour, SERA

2. Despite strong output growth in its two main employing sectors, employment of sheet-metal workers declined between 1991 and 2001, and remained static between 2001 and 2004. This can be partly explained by an uptake in labour-saving technology. However, the Department of Labour (DoL) believes that a supply constraint arising from net migratory outflows and a fall off in apprenticeship training in the 1990s have also contributed to declining employment of sheet-metal workers. Output growth trends are set to continue and demand for sheet-metal workers will pick up slightly. However, this may not translate into increased employment due to severe constraints on the supply of sheet-metal workers.
3. Achievements of the national certificate level 4 qualification for sheet-metal workers have fluctuated around low levels for the past three years. This level is only sufficient to compensate for retirements, which occur at a similar rate. The supply of sheet-metal workers has further been diminished by net outward migration with approximately 3% to 4% of the workforce leaving New Zealand over the past six years (1998-2003). Together, this information suggests that the supply of sheet-metal workers has been diminishing. Supply-side factors have caused the current shortage and, given recent new national certificate level 4 enrolment trends, the supply is not expected to increase in the short term.
4. Shortages of sheet-metal workers are likely to persist and possibly worsen. Demand will rise slightly but supply is unlikely to grow due to low levels of trainees achieving national certificate level 4 coupled with losses from retirement, occupational wastage and possibly migration.

## Introduction

The purpose of this report is to investigate shortages of sheet-metal workers in New Zealand. The report aims to give an assessment of whether there is a shortage of sheet-metal workers and to provide an insight into the demand and supply factors that contribute to the situation. This report also offers an outlook for shortages in this occupation.

Sheet-metal workers (code 72122 under the New Zealand Standard Classification of occupations) are skilled tradespeople who make, install and repair a range of light metal products such as vents, machine guards, vats and aircraft bodywork. They are also known as light metal fabrication engineers. The Department of Labour estimates that there were approximately 3,800 sheet-metal workers employed in New Zealand in 2003.

A background and technical note to this report is available from DoL. The note provides an overview of the broader Job Vacancy Monitoring Programme, of which this report is an output. It also provides a brief description of the employer survey conducted for this report and explanations of indicators and definitions used in the report.

## Demand for sheet-metal workers

### *Historical demand*

Employment of sheet-metal workers has been in long term decline. Table 1 shows that between 1991 and 2001, employment of sheet-metal workers declined by 4.4% per annum.

*Table 1: employment growth of sheet-metal workers, 1991 to 2001*

| Occupation         | Annual growth |           |           |
|--------------------|---------------|-----------|-----------|
|                    | 1991-1996     | 1996-2001 | 1991-2001 |
| Sheet-metal worker | -4.0%         | -4.8%     | -4.4%     |
| All trades         | 0.0%          | -0.4%     | -0.2%     |
| All occupations    | 3.2%          | 1.2%      | 2.2%      |

Source: Statistics New Zealand, Census of Population and Dwellings 1991, 1996 and 2001

Household Labour Force Survey (HLFS) data suggests that employment of *metal moulders, sheet-metal and related workers* (the broad category grouping in which sheet-metal workers are included) has not grown materially between 2001 and 2004 (table 2)<sup>1</sup>. This is despite strong growth in output (4.5% per annum over the period March 2001 to March 2004) and modest growth in aggregate employment in the *metal product manufacturing* and *machinery and equipment manufacturing* sectors (which employed 96% of sheet-metal workers in 2001). The lack of growth in sheet-metal worker employment may be partly explained by the increased use of labour-saving tools and machinery by sheet-metal workers in their regular tasks (resulting in the same tasks taking less time to complete), as well as manufacturers making increasing use of automated manufacturing systems (resulting in fewer sheet-metal workers being needed), all of which has the effect of reducing demand for sheet-metal workers. However, the DoL also believes that severe supply constraints resulting from a rapid fall off in apprenticeship training in the 1990s and net outward migration over the same

<sup>1</sup> Due to the close association of these occupations, the trend at the broad occupational group level is considered to be reflective of the trend for sheet-metal workers.

period, have also contributed to the lack of growth in employment of sheet-metal workers.

*Table 2: employment of metal moulders, sheet-metal and related workers, 2001-2004 June years*

|  | 2001 | 2002 | 2003 | 2004 |
|--|------|------|------|------|
| <b>Metal moulders, sheet-metal and related workers</b> | 15.2 | 16.6 | 16.3 | 15.4 |

Source: Statistics New Zealand, Household Labour Force Survey

### ***Future demand***

Demand for metal products is likely to remain strong over the next year. Therefore demand for sheet-metal workers will pick up slightly. However, the availability of skilled sheet-metal workers will determine whether this demand translates into employment growth.

### ***Summary***

Despite output growth in its two main employing sectors, employment of sheet-metal workers declined between 1991 and 2001, and has remained static between 2001 and 2004. This can be partly explained by an uptake in labour saving technology. However DoL believes that supply constraints resulting from net migratory outflows and the fall off in apprenticeship training in the 1990s have also contributed to declining employment of sheet-metal workers. Output growth is set to continue and demand for sheet-metal workers will pick up slightly. However, this may not translate into increased employment if the supply of sheet-metal workers remains constrained.

## **Supply of sheet-metal workers**

### ***Training – National certificate (Level 4) qualifications and equivalent***

This section investigates the growth in supply of *fully qualified* sheet-metal workers through training. It considers three sources of supply:

1. The award of the National Certificate in Engineering Fabrication – Light (Level 4) by the NZ Engineering, Food and Manufacturing Industry Training Organisation (Competenz). This is the nationally recognised qualification for sheet-metal workers which is designed by Competenz to meet the needs of employers of sheet-metal workers. It takes an average of three years to achieve.
2. The award of the National Certificate in Engineering Fabrication – Light (Level 4) by other providers such as polytechnics.
3. The award of qualifications apart from national certificates which are deemed to be equivalent to the national certificate in terms of level and number of credits.

Table 3 shows that the national certificate awarded by Competenz accounts for the vast majority of qualifications at this level. Achievements for this qualification have fluctuated at low levels since 2001. Total enrolments have increased slightly between 2002 and 2003, which may indicate a very small increase in the number of trainees achieving the national certificate in the future. There were no non-national certificate qualifications at the equivalent level of the national certificate awarded over this time period. A list of national certificate level 4 and equivalent qualifications and the proportion of trainees enrolled for these qualifications is provided in Appendix 1.

*Table 3: number of trainees achieving the National Certificate in Engineering Fabrication – Light, Level 4*

|      | National Certificate in Engineering (Fabrication – Light) Level 4 (Competenz) | National Certificate in Engineering Fabrication – Light Level 4 (Other providers) | Total         |
|------|---|---|---------------|
| 2001 | 39  | Not available   | Not available |
| 2002 | 25  | 3   | 28            |
| 2003 | 40  | 4   | 44            |

Source: NZ Engineering, Food and Manufacturing Industry Training Organisation, Tertiary Education Commission

*Table 4: enrolments for National Certificate in Engineering Fabrication – Light, Level 4*

|      |                | National Certificate in Engineering (Fabrication – Light) Level 4 (Competenz) | National Certificate in Engineering (Fabrication – Light) Level 4 (Other providers) | Total         |
|------|----------------|---|---|---------------|
| 2001 | Total enrolled | 394   | Not available   | Not available |
|      | New enrolments | 165   | Not available   | Not available |
| 2002 | Total enrolled | 428   | 107   | 535           |
|      | New enrolments | 135   | Not available   | Not available |
| 2003 | Total enrolled | 470   | 87  | 557           |
|      | New enrolments | 114   | Not available   | Not available |

Source: NZ Engineering, Food and Manufacturing Industry Training Organisation, Tertiary Education Commission

Training rate indicators are given in table 5. A comparison of the number of trainees achieving the national certificate (NC level 4) with the number of sheet-metal workers employed yields a training rate of only 1.2%. This indicator provides a crude measure of the rate at which the supply of fully qualified sheet-metal workers can potentially grow through training.<sup>2</sup> This training rate for sheet-metal workers is considerably lower than the average training rate of 1.8% for all trades surveyed. By comparison, the 2003 training rate for sheet-metal workers in New South Wales (NSW), Australia is substantially higher (5.8%), as is the average NSW training rate for all trades (2.8%).

---

<sup>2</sup> This assumes that there is full employment of sheet-metal workers. This is a reasonable assumption in the current environment of low unemployment and skill shortages.

Table 5: sheet-metal worker training rates, 2003

| Indicator   | Explanation   | Sheet-metal worker (NZ) | All SERA trades surveyed (NZ) | Sheet-metal worker (NSW, Australia) | All trades (NSW, Australia) |
|---|---|-------------------------|-------------------------------|-------------------------------------|-----------------------------|
| <b>Training rate (national certificate L4 and equivalent)</b>           | Number of trainees achieving relevant national certificates (level 4) and equivalent non-national certificate qualifications expressed as a percentage of employment in that occupation.    | 1.2%                    | 1.8%                          | 5.8%                                | 2.8%                        |
| <b>Training enrolment rate (national certificate L4 and equivalent)</b> | Number of trainees enrolled for relevant national certificates (level 4) and equivalent non-national certificate qualifications expressed as a percentage of employment in that occupation. | 14.8%                   | 16.1%                         |                                     |                             |
| <b>Training enrolment rate (all related training)</b>                   | Number of trainees enrolled in all relevant courses expressed as a percentage of employment in that occupation.   | 22.7%                   | 30.5%                         |                                     |                             |

Source: Department of Labour (New Zealand) and Department of Employment and Workplace Relations (Australia)

### Training – Other related qualifications and courses

While the level 4 national certificate and equivalent non-national certificates may be regarded as the qualification required to be a *fully qualified* sheet-metal worker, there are other lower level qualifications available in sheet-metal working (such as Certificate in Engineering Fabrication, Level 2). These qualifications may be regarded as adequate to some employers of sheet-metal workers, especially during times of acute skill shortages. They are also of significance as these qualifications may staircase trainees towards the national certificate level 4 qualifications. Credits obtained in these qualifications may be recognised towards a national certificate level 4, should the trainee later wish to become a fully qualified tradesperson. A list of these qualifications and the number of trainees enrolled in courses leading to these qualifications is provided in Appendix 1.

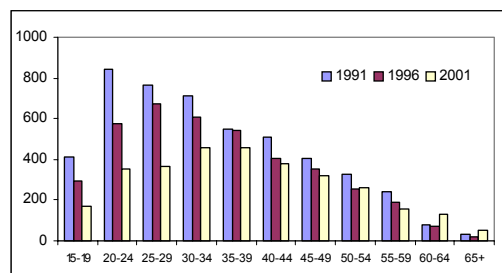
Training in these courses is reflected in the training enrolment rate (all related training) which compares the number of trainees enrolled in all sheet-metal worker-related training with the number of employed sheet-metal workers. The enrolment rate (all related training) is measured at 14.8% for 2003 (table 5).

A number of other government-funded vocational educational and training programmes (including Training Opportunities, Youth Training and Skill Enhancement Training) offer trades related training which lead to credit achievement on the National Qualifications Framework<sup>3</sup>. One person was enrolled for courses related to sheet-metal working under these programmes in 2003 (see Appendix 1).

### Training – employer perceptions

Employers interviewed as part of SERA confirmed that the number of trainees achieving the national certificate level 4 was low in New Zealand, saying that there were limited numbers of young people entering the occupation. The perception among employers is that a large number of skilled sheet-metal workers were retiring and too few young people

Figure 1: age profile of sheet-metal workers



Source: Statistics New Zealand, Census

<sup>3</sup> Enrolments in these programmes are not included in the training enrolment rate (all related training)

were entering the trade to replace those leaving. Figure 1 shows the large decline in the numbers employed in the younger age groups between 1991 and 2001. For example, in 1991, 17% of sheet-metal workers employed were aged between 20 and 24. This dropped to 11% in 2001.

### **Migration**

Migration data for sheet-metal workers is presented at the broader occupational group level of *metal moulders, sheet-metal and related workers*.

Between 1998 and 2004, New Zealand experienced a net outflow of 514 *metal moulders, sheet-metal and related workers* (table 5). This amounted to between 3% and 4% of the workforce over that period. With economy-wide net inward migration expected to slow considerably during 2005, the DoL expects the net outflow of sheet-metal workers to continue in 2005.

*Table 5: permanent and long term (PLT) annual arrivals, departures and net migration of metal moulders, sheet-metal and related workers, June years*

|                      | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------------------|------|------|------|------|------|------|------|
| <b>Arrivals</b>      | 226  | 127  | 152  | 136  | 158  | 146  | 124  |
| <b>Departures</b>    | 304  | 341  | 299  | 250  | 119  | 130  | 140  |
| <b>Net migration</b> | -78  | -214 | -147 | -114 | 39   | 16   | -16  |

Source: Statistics New Zealand, External Migration

Employers had mixed feelings about the employment of sheet-metal workers from overseas. Some of them reported positive experiences employing migrants, while others found migrants an unsuitable source of skilled labour for language, cultural and type of work-experience reasons.

### **Retirement**

Approximately 1.2% of sheet-metal workers retire each year<sup>4</sup>. This amounts to a loss of between 40 and 50 sheet-metal workers each year.

### **Summary**

Achievements of the national certificate level 4 qualification for sheet-metal workers have fluctuated around low levels for the past three years. This is reflected in a very low training rate of 1.2% per annum, which is only sufficient to compensate for retirements, which occur at a similar rate. The supply of sheet-metal workers has been further diminished by net outward migration with approximately 3% to 4% of the workforce leaving New Zealand over the past six years (1998-2003). Together, this information suggests that the supply of sheet-metal workers has been diminishing. Supply-side factors have caused the current shortage and, given recent new national certificate level 4 enrolment trends, the supply is not expected to increase in the short term.

## **Employer recruitment experiences**

### ***Is there a shortage of sheet-metal workers?***

Results from SERA suggest that there is a severe shortage of sheet-metal workers in New Zealand. Only 38% of advertised positions were filled within six weeks. Furthermore, there was an average of only 0.6 suitable applicants for each sheet-metal worker vacancy included in SERA.

<sup>4</sup> Estimated from the 2001 population census.

Table 6: SERA results for sheet-metal workers

|                     | Number of employers | Number of Positions | Positions filled | Fill rate | Suitable applicants | Average number of suitable applicants |
|---------------------|---------------------|---------------------|------------------|-----------|---------------------|---------------------------------------|
| Sheet-metal worker  | 17                  | 26                  | 10               | 38%       | 15                  | 0.6                                   |
| All trades surveyed | 240                 | 453                 | 186              | 41%       | 337                 | 0.7                                   |

Source: Department of Labour, SERA

Employers interviewed in the SERA reported that the shortage of sheet-metal workers had resulted in them struggling to meet orders, turning down work and losing money. They were coping with these shortages by using unskilled or semi-skilled labour that is only able to do certain aspects of the work. This increases the burden on skilled staff who have to train new entrants and perform the more 'skilled' aspects of the work. Businesses were also making more use of overtime, contracting out work. A few even mentioned they had resorted to poaching skilled staff from other businesses.

### What are employers paying?

Data from the Labour Cost Index (LCI) suggest that wage rates for sheet-metal workers are relatively low<sup>5</sup>. The June 2004 survey measured the average wage of sheet-metal workers at \$16.85 per hour, compared with an average of \$19.54 for all trade occupations. However, comparing June 2003 and June 2004 LCI data shows that wages for sheet-metal workers have increased by 7.2%. The average increase measured by the LCI for all trades over this period was 4.3%. This is an indication that employers of sheet-metal workers have responded to shortages in the occupation by increasing wages.

Table 7: average hourly wage rates

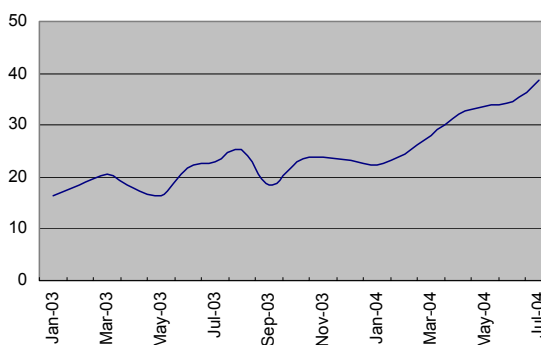
|                    | Mean    |
|--------------------|---------|
| Sheet-metal worker | \$16.85 |
| All trades         | \$19.54 |

Source: Statistics New Zealand, LCI

### Changes in market conditions

The DoL's Job Vacancy Monitor (figure 2) shows growth in the number of advertised vacancies for sheet-metal workers since the series began in January 2003. This suggests that recruiting conditions have become more difficult over time, a conclusion which is supported by views of employers included in the SERA Extensive. Employers were asked whether it was harder or easier to fill their recent vacancies for sheet-metal workers compared with twelve months earlier. A

Figure 2: advertised sheet-metal worker vacancies



Source: Department of Labour, Job Vacancy Monitor

<sup>5</sup> The Labour Cost Index is designed to produce indicative rather than statistically accurate estimates of the wage levels.

net 33%<sup>6</sup> of employers felt it was harder.

## Outlook

There is currently a severe shortage of sheet-metal workers in New Zealand and this situation is set to continue. While demand for sheet-metal workers will probably rise, supply will continue to be constrained. Indeed, DoL estimates suggest that the supply of sheet-metal workers is diminishing over time. Training is occurring at a level that is not even sufficient to replace sheet-metal workers that are retiring. Supply is being further depleted through net outward migration. It is also probable that a significant number of sheet-metal workers move into other occupations because the wages being offered to sheet-metal workers are low compared with other trades. DoL concludes that the current severe shortages are likely to persist and may even worsen in the short term, and there is little evidence to suggest that the situation will improve in the medium term.

For further information, contact:

Hamsa Lilley, ph. 04-915 4465, [hamsa.lilley@dol.govt.nz](mailto:hamsa.lilley@dol.govt.nz)

Andrew Whiteford, ph. 04-915 4568, [andrew.whiteford@dol.govt.nz](mailto:andrew.whiteford@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.

---

<sup>6</sup> The net estimate is calculated by subtracting the percentage of employers who found it harder to fill the vacancy from the percentage of employers who found it easier to fill the vacancy. This sum is then divided by one less the percentage of employers who did not answer this question.

## APPENDIX 1. TRAINING ENROLMENTS FOR SHEET-METAL WORKER TRADE: 2003

### Enrolments in National Certificate Level 4 and equivalent qualifications

| Qualification Title                               | Qualification Code | Provider Name                       | Level | Credits | Share of Enrolments (%) |
|---|--------------------|-------------------------------------|-------|---------|-------------------------|
| NC in Engineering Fabrication - Light Fabrication | NC5237             | COMPETENZ                           | 4     | 285     | 99.2%                   |
| NC in Engineering Fabrication                     | NC5237             | The Open Polytechnic of New Zealand | 4     | 285     | 0.8%                    |
| Total   |                    |                                     |       |         | 100.0%                  |

### Enrolments in other qualifications

| Qualification Title   | Qualification Code | Provider Name                               | Level | Credits | Share of Enrolments (%) |
|---|--------------------|---|-------|---------|-------------------------|
| MIT Certificate In Engineering Trades                           | MN4414             | Manukau Institute of Technology             | 1     | 40      | 0.5%                    |
| NC in Architectural Aluminium Joinery                           | na                 | COMPETENZ                                   | 2     | 76      | 14.4%                   |
| Certificate in Welding, Machining and Fabrication -             | MA4198             | Universal College of Learning               | 2     | 131     | 0.8%                    |
| Certificate in Pre-Apprenticeship Engineering                   | BP3193             | Bay of Plenty Polytechnic                   | 2     | 124     | 2.1%                    |
| Waiariki Certificate in Introduction to Welding and Fabrication | WR2754             | Waiariki Institute of Technology            | 2     | 43      | 4.0%                    |
| Certificate in Engineering (Fabrication)                        | CH3879             | Christchurch Polytechnic Inst of Tech       | 2     | 68      | 7.2%                    |
| MIT Certificate in Fabrication Trades, Entry                    | MN4432             | Manukau Institute of Technology             | 2     | 60      | 1.1%                    |
| NC in Architectural Aluminium Joinery                           | na                 | COMPETENZ                                   | 3     | 101     | 22.3%                   |
| NC in Joinery - Aluminium Fabrication                           | na                 | Joinery ITO                                 | 3     | 96      | 1.1%                    |
| Certificate in Engineering (light)                              | NT4540             | Northland Polytechnic                       | na    | na      | 3.5%                    |
| Certificate in Fabrication and Welding                          | HV4142             | Wellington Institute of Technology          | na    | 121     | 4.3%                    |
| NZ Welding School   | PC3246             | Certificate in Welding & Fabrication Skills | na    | 76      | 36.4%                   |
| Northland Certificate in Fabrication and Welding                | PC3026             | Rural Training Solutions Ltd (Whangarei)    | na    | 121     | 0.8%                    |
| Community Education - Metal Trades General Hobby Courses        | G52323             | Universal College of Learning               | na    | na      | 1.6%                    |
| Total   |                    |   |       |         | 100.0%                  |