Chapter 3

Rail occupations and skill shortages

3.1. The Victorian rail system is experiencing unprecedented growth in patronage, while at the same time planning large-scale investments in infrastructure projects that will significantly improve the operation of the overall system. An adequate supply of appropriately skilled and qualified labour will be fundamental to meeting the challenges of these developments. Rail in the future will rely on the retention of skills to support the existing systems, as well as the skills of the next generation of employees who will be responding to the economic, social, environmental and technological challenges of a modern rail system.

The rail industry workforce

3.2. To understand the potential skill shortages in the rail industry, it is necessary to first have knowledge of the various occupations and job roles involved in rail, and the range of skills and qualifications required to undertake these roles successfully. It is also necessary to understand the characteristics of the existing workforce, including its composition by age and gender, and the skills and qualifications currently held. These factors can influence the extent of current and future skill shortages, and the success or otherwise of any workforce strategies devised to respond to them.

Size of the industry

3.3. The Australian Bureau of Statistics estimated that there were approximately 5,150 people employed in the Victorian rail sector in 2006. However, as noted by the Victorian Government, this data adopts a relatively narrow definition of the rail industry. For example, data for tram drivers, perway workers and people operating rail freight terminals has been included in other transport or building and construction industry data, rather than under the rail industry classifications.

3.4. The Committee’s analysis of websites and other information published by major rail organisations reveals at least 8,500 people directly employed in the Victorian rail industry. Metro Trains Melbourne has 3,562 employees, Yarra Trams has 1,987 employees and V/Line Passenger has 1,300 employees. Annual reports show that the Department of Transport, VicTrack and the two regulators (Essential Services

89 Ibid.
90 Supplementary information provided by Metro Trains Melbourne, March 2010.
91 Supplementary information provided by Yarra Trams, March 2010.
92 Supplementary information provided by V/Line Passenger Pty Ltd, July 2009.
Commission and Public Transport Safety Victoria) employ at least 900 people who are directly working in and supporting rail activities. According to the Australasian Railway Association, 1,000 people are employed in rolling stock manufacturing and maintenance in Victoria and another 5,000 to 10,000 are employed in their supply chain. The Committee notes that there are also a significant number of service industry workers supporting the rail industry.

3.5. According to the Australasian Railway Association, over 40,000 people are directly employed in diverse occupations in over 150 rail organisations nationally. In its submission to the inquiry, the association suggested that with the inclusion of people employed in the supply chain and service industries, the number of employees in the rail industry could be as high as 100,000. Therefore, while the rail industry has not been classified as a large employer, it is clearly an important contributor to the Australian economy.

3.6. The Department of Education, Employment and Workplace Relations has reported expected growth in rail industry employment nationally, of 2.1 per cent per annum to 2012–13, or the equivalent of 5,600 new jobs over that period, with continued growth beyond that time.

Job categories and occupations

3.7. The Victorian rail workforce is made up of numerous diverse roles, ranging from non-skilled work through to skilled trades, associate professionals and professional roles.

3.8. The rail industry has classified certain job roles based on their criticality to rail operations. Although many jobs are considered important, the criteria for assessing whether a job is critical include: roles that require skills that organisations have found difficult to source; roles that require skills that require a long time to develop or grow within the organisation; roles that are critical to the core business of the organisation; and roles that constitute a ‘critical mass’ within the organisation. The Committee notes that many of these roles are essential to ensure the safety of the network. These critical job roles are then categorised into four broad job families: engineers; trades and trade equivalents; operations; and professionals (refer Table 3.1).

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93 Australasian Railway Association, Appendix A to Written Submission, April 2009, 3.
94 Australasian Railway Association, Written Submission, April 2009, 1.
95 Department of Education, Employment and Workplace Relations, Written Submission, April 2009, 4.
### Table 3.1 Critical job families and job roles within the rail industry

<table>
<thead>
<tr>
<th>Critical job family</th>
<th>Critical job roles</th>
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<tr>
<td>Engineers</td>
<td>• Electrical and signalling engineers</td>
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<td></td>
<td>• Mechanical engineers</td>
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<td></td>
<td>• Civil engineers</td>
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<td>• Project managers</td>
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<td>Trades or trade equivalents</td>
<td>• Electricians</td>
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<td>• Civil/Perway</td>
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<td>• Mechanical</td>
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<tr>
<td>Operations</td>
<td>• Drivers</td>
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<td>• Train / network controllers or operators</td>
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<td>• Network planners</td>
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<td>• Transit operators</td>
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<tr>
<td>Professionals</td>
<td>• Surveyors</td>
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<td></td>
<td>• Commercial contract managers</td>
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<td></td>
<td>• Business and policy analysts</td>
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</tbody>
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3.9. The 2006 Census of Population and Housing reported that train and tram drivers accounted for 27.9 per cent of rail industry employment in Victoria. Other readily identifiable roles within the industry include customer service staff, authorised officers and track workers. The remaining workforce comprises a broad range of occupations including plant operators, metal fitters and machinists, transport services managers, electricians, structural steel and welding trades workers, supply and distribution managers, contract, program and project administrators, transport and despatch clerks, engineering professionals and accountants.

3.10. Evidence suggests that the occupational mix in the rail industry is changing. A recent study of the Australian rail industry workforce used Census data to investigate changes in employment shares by occupation between 1996 and 2006. The study found that in absolute terms, the greatest falls in employment in the industry were among labourers and related workers. The Committee notes, however, that this apparent decline may be at least partially attributable to the outsourcing of work, as contract workers may not be identified as rail-specific employees within the data.

3.11. The same study also reported a large decrease in the number of middle level production and transport workers, as well as trade professionals, including people in mechanical and fabrication engineering, electrical and electronics engineering and construction. The decline in some trade professionals could be at least partly attributed to the sourcing of rolling stock overseas. Additionally, there was a considerable decrease in employment among middle level service workers. During the same period, the largest increase in employment was among the professional...

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96 ibid., 11.
occupational groups, with increases also recorded for managerial staff and associate professionals.\textsuperscript{98}

**Rail industry qualifications**

3.12. Within the vocational education and training (VET) sector, the main training package relevant to the industry is the Transport and Logistics Training Package. Specific qualifications which sit within this package include rail operations and rail infrastructure. The EE-Oz Training Package also has a range of qualifications relevant to rail infrastructure, including signalling and overhead.

3.13. The higher education qualifications of most interest to the inquiry are mainly engineering qualifications. All Victorian universities currently offer undergraduate degree courses in a range of engineering disciplines. While rail engineering has traditionally been a part of mechanical, civil and electrical engineering, the growth of electronic components within railway systems means that electronic engineering and computing are increasingly relevant.

3.14. There are a small number of rail-specific postgraduate programs available for engineers. Central Queensland University offers rail operations management and railway signalling and telecommunications, the University of Wollongong offers rolling stock engineering, and Queensland University of Technology offers railway infrastructure.

**Worker characteristics**

3.15. The Victorian rail workforce remains predominantly male, with females comprising only 11 per cent of the workforce. An even lower proportion of women are employed in trade and technical roles across the industry.\textsuperscript{99}

3.16. Data from Skills Victoria shows that nearly half of rail sector employees in Victoria (excluding tram workers and rail-related manufacturing employees) have no formal qualifications beyond year 12. Around 28 per cent have certificate I, II or III qualifications and a further 23 per cent hold qualifications at diploma or above levels.\textsuperscript{100} A recent report on skill shortages in the Australian rail transport industry showed a similar qualification profile for the national industry.\textsuperscript{101}

3.17. The Committee acknowledges that the formal qualification profile does not represent the full picture relating to training and skills development in the rail industry. Historically, much training for the rail industry was completed in-house. This was especially the case for occupations such as signallers, schedulers and stationmasters. Therefore, while a large proportion of the industry holds relatively low levels of formal qualifications, this does not suggest that they are necessarily working in unskilled or low skilled roles.

3.18. The Committee heard that, on average, the rail industry workforce is older than workforces in comparable industries, such as manufacturing and building and construction.

\textsuperscript{98} ibid., 5.
\textsuperscript{100} ibid., 12.
\textsuperscript{101} Anusha Mahendran and Alfred Michael Dockery, ‘Skills Shortages – Will they derail the Australian Rail Transport Industry (ARTI)?’ (paper presented at the Path to Full Employment Conference, Newcastle, 4 December 2008), 5.
3.19. Figure 3.1 shows the age profile of the Victorian rail industry workforce in 2008.

![Figure 3.1: Victorian rail industry workforce by age group (%) (2008)](image)


3.20. Skills Victoria reports that the average age of rail industry workers increased from 42.8 years in 2001, to 46 years in 2008. Approximately half of the rail industry workforce is now close to 50 years of age. Based on current trends, the share of the 15 to 19 year-old group is expected to decrease over the next five years, while the proportion of 55 to 59 year-olds will increase significantly.

3.21. Victoria’s rail industry workforce is concentrated in metropolitan Melbourne, where almost 80 per cent of all rail workers are located. The geographical breakdown is similar across the various segments of the industry. The majority of regionally-based rail industry employees work in rail freight transport, however, the number of regionally-based employees in both passenger and freight services is declining.

**Workforce turnover**

3.22. In general, turnover of employees in the rail industry is low. The Committee heard that V/Line Passenger has a turnover rate of around 4.8 per cent, while Connex Melbourne had a turnover rate of around 6 per cent. This compares to an average turnover rate for all industries of 14 per cent. However, the Australasian Railway Association reports that turnover amongst new recruits in the industry is up to five times higher than for any other group of workers in the industry.
3.23. Data provided to the Committee indicates that the majority of the Victorian rail workforce has 10 or more years tenure, with many approaching 30 or more years in the industry. The V/Line workforce profile shows 4.2 per cent of its workforce with 10 to 14 years tenure and 23.2 per cent with 30 or more years in the industry. QR Limited provided the Committee with similar data, with 33 per cent of its employees having less than four years of service, 36 per cent with 5 to 24 years of service and 31 per cent with 25 years or more.

Skill shortages

3.24. While accurate, comprehensive data is not widely available, there is widespread agreement that the rail industry is currently experiencing various skill shortages and recruitment difficulties.

3.25. A submission from the Victorian Government outlined how skill shortages in the rail industry have moved with overall economic conditions. Thus, skill shortages occurred in rail in Victoria during the period of strong economic growth, with the pressure on the availability of labour subsequently easing in line with recent weaker domestic economic conditions. However, the Victorian Government emphasised that while the economic downturn was likely to have a temporary effect on skill and labour shortages, there are underlying systemic factors that have or will have an impact on the availability of labour and skills into the future. These factors, including the ageing workforce and increasing competition for talent, are expected to affect a number of industries.

Definition of skill shortage

3.26. A skill shortage occurs when the demand for workers for a particular occupation is greater than the supply of workers who are qualified, available and willing to work under existing market conditions. Thus, skill shortages exist when employers are unable to fill or have considerable difficulty in filling vacancies for an occupation at current levels of remuneration and conditions of employment, and a reasonably accessible location.

3.27. Skill shortages exist typically for specialised and experienced workers, and can therefore coexist despite relatively high overall unemployment within the occupation. An occupation may be assessed as in shortage even though not all specialisations of the occupation are in shortage, and occupations may be in shortage in some regions and not in others. Skill shortages are different to recruitment difficulties and skill gaps.

3.28. Recruitment difficulties occur when employers have some difficulty filling vacancies for an occupation. There may be an adequate overall supply of workers, but certain employers are still unable to attract and recruit sufficient employees with the required skill set. The recruitment difficulties may be due to characteristics of the industry,
occupation or employer, such as relatively low remuneration, poor working conditions or image, unsatisfactory working hours, location, ineffective recruitment processes, or organisation-specific and highly-specialised skill needs.114

3.29. Skill gaps exist where an organisation’s existing employees lack the required qualifications, experience and/or specialised skills to meet its skill needs. Skill gaps may occur even after recent recruitment efforts, particularly where there is not a large pool of quality applicants, thereby causing an employer to recruit workers who need further training and/or experience.115

3.30. A recent paper published by the National Centre for Vocational Education Research provides a useful typology for classifying skill shortages and associated recruitment difficulties:

- Level 1 shortage: there are few people who have the essential technical skills who are not already using them and there is a long training time to develop the skills.
- Level 2 shortage: there are few people who have the essential technical skills who are not already using them but there is a short training time to develop the skills.
- Skills mismatch: there are sufficient people who have the essential technical skills who are not already using them, but they are not willing to apply for the vacancies under current conditions.
- Quality gap: there are sufficient people with the essential technical skills who are not already using them and who are willing to apply for the vacancies, but they lack some qualities that employers consider important.116

3.31. Evidence to the inquiry generally used the term ‘skill shortage’ in a generalised sense and it was therefore difficult for the Committee to distinguish between genuine (level one and level two) skill shortages and other difficulties experienced by rail organisations in attracting and retaining appropriately skilled employees. Genuine skill shortages, especially where identified as critical to the safety and efficiency of the industry, were of greatest interest to the Committee. Nonetheless, the Committee believes that evidence to the inquiry also provides useful information for addressing associated recruitment and retention difficulties. Therefore, recommendations contained in this report aim to assist the Victorian rail industry to address each of the four types of skill shortages and skill gaps.

115 ibid.
Inquiry into Skills Shortages in the Rail Industry

Measuring skill shortages

3.32. The mapping of skill shortages in Australia largely occurs at a national level. The Department of Education, Employment and Workplace Relations compiles lists of occupations that are considered to have skill shortages, used for advice to job seekers, skilled migration policies and assistance for apprenticeships and traineeships. Occupations are identified for inclusion in this list through monitoring of job advertisements, with organisations contacted to establish how long vacancies take to be filled. In compiling skill shortage data, the department concentrates on those occupations considered ‘highly skilled’—that is, occupations generally requiring three or more years of post-school education and training.117

3.33. Skills identified on the Victorian skill shortage list that are relevant to the rail industry primarily relate to engineering and various trades. Specifically, the list identifies civil engineers, structural engineers, electrical engineers, mechanical engineers, civil engineering associates, electrical engineering associates and mechanical engineering associates as in shortage.118 Other rail-related occupations identified as in shortage include: fitter (general); metal fabricator; sheet metal worker; diesel motor mechanic; lift mechanic; airconditioning mechanic; electrical linesworker; cabler (data and telecommunications); airconditioning and mechanical services plumber; and furniture upholsterer.119

3.34. Employer surveys or consultations are another tool used by industry associations, governments, researchers and others to identify skill shortages. Much of the information about skill shortages in the rail industry derives from such surveys. For example, the Transport and Logistics Industry Skills Council identifies shortages as part of an annual Environmental Scan, using data from a survey of industry.120 A recent Australasian Railway Association report also identified shortages on the basis of the occupational areas in which rail operators reported that they were experiencing, and expected to experience, difficulty in filling vacancies.121 Engineers Australia also conducts a regular survey of engineering companies, which includes questions pertaining to skill shortages in the various engineering disciplines.

3.35. Nonetheless, the Committee notes that it is difficult to quantify skill shortages in any particular industry. Information provided by employers is not always reliable because employers may have an incentive to overstate skill shortages, while others may interpret or respond to skill shortages in different ways.122

3.36. It is also important to recognise that skill shortages may not appear in the form of vacancies, nor as an observed gap between supply and demand for a particular skill. Instead, organisations may adopt less-than-efficient technologies because they judge that they will not be able to find the skills needed for a newer technology. In this case, job vacancies will not be observed, however, the outcome may be a lower

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119 Ibid.
122 Sue Richardson, What is a skill shortage? (Adelaide: National Centre for Vocational Education Research, 2007), 27.
standard than what would otherwise be achievable. Alternatively, an organisation may find that skill shortages result in the promotion of employees beyond their current level of skills and experience. This practice may also result in unsatisfactory outcomes, where workers feel they are unsupported or they experience a frustration of never being on top of the workload or possessing the required skills.

3.37. The Committee also heard that employers may simply 'poach' a worker from another company (either in Australia or overseas) thereby masking the extent of skill shortages in the industry. However, the Committee heard that this is becoming increasingly difficult given the global shortage of some occupations, including railway signalling engineers. As noted by the Australasian Railway Association, it is evident that rail and other industries from across the globe are poaching Australian and New Zealand resources to help rectify their own skills deficit.

3.38. Given the difficulties associated with measuring skill shortages, it is usual for a range of stakeholders to be involved in monitoring the availability of skills, as well as a range of other factors that may provide an early indication of emerging skills shortages. Some of these indicators include: rising wages; low unemployment; persistent vacancies; increasing use of paid or unpaid overtime; increasing use of temporary workers; employment of people with lower levels of formal qualifications and/or experience; and changes to work practices.

Skill shortages in the rail industry

3.39. Despite the difficulties in identifying and measuring skill shortages, inquiry participants agreed that the Victorian rail industry is facing skill shortages in a range of occupations. These skill shortages reflect a nationwide shortage in the rail industry, the broader transport industry and, in some instances, the broader economy.

3.40. According to the Australasian Railway Association, approximately 40 per cent of rail industry employees working in roles identified as critical to the industry are predicted to leave the industry over the next five years. As a result, significant shortages across most job families are anticipated.

3.41. Inquiry participants identified a number of general areas and specific rail occupations in which shortages already exist, or are expected to develop. These include: project managers, engineers (including railway signalling and infrastructure engineers), train or network controllers, technical workers, track workers and maintenance trades. An environmental scan undertaken by the Transport and Logistics Industry Skills Council in 2009 identified shortages for a similar range of rail-related occupations, but also identified a current shortage of train and tram drivers, although this does not currently appear to be a problem in Victoria.

3.42. Qualitative analysis undertaken by the Department of Transport indicates that growth in rail services over the medium term is likely to further increase demand for labour. 

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123 ibid., 19.
across a range of rail occupations, particularly engineers, drivers, diesel mechanics, infrastructure managers, signalling technicians, safety inspectors and network controllers.\textsuperscript{127}

3.43. Using the typology of skill shortages outlined earlier in the chapter, the Committee observes that the shortage of drivers, engineers, project managers, technicians and trades workers are classified as level one shortages. Level two shortages include signallers, safeworking and track workers.

**Engineering**

3.44. Professional bodies, researchers and industry and government representatives highlighted engineering professionals as a key area of skill shortage in the Victorian rail industry. Engineers in the rail industry work in a wide range of disciplines, including civil, electrical, mechanical and industrial engineering. These professionals are critical for the effective design, project management and delivery of railway infrastructure projects, and the ongoing maintenance of infrastructure and rolling stock.

3.45. The Victorian Government noted in its submission that the shortage of engineers represents a long-term concern for the economy.\textsuperscript{128} Engineers Australia reported that based on a conservative estimate, up to 70,000 retirements may have occurred from the engineering profession by the time of the 2011 Census of Population and Housing. Over the same time, only 45,000 Australians will have graduated from engineering studies.\textsuperscript{129} In a recent Engineers Australia survey, 82 per cent of engineering companies reported moderate to severe consequences due to a shortage of engineers, from moderate or severe monetary consequences, to project delays and even cancellation of projects.\textsuperscript{130}

3.46. The CRC for Rail Innovation told the Committee that generalised skill shortages in the engineering profession present a particular challenge for the rail industry, which faces both a dwindling supply of skilled labour and strong competition from other industries for these highly sought-after skill sets.\textsuperscript{131} The Victorian Government identified engineering shortages of greatest concern within the rail industry as being track and civil engineers, project managers and railway signalling engineers.\textsuperscript{132}

3.47. Rail operators and other companies also provided anecdotal evidence regarding a shortage of professional engineers. In one example, V/Line Passenger described taking three years to recruit a qualified structural engineer, eventually attracting a suitable candidate from interstate.\textsuperscript{133} Coffey Rail, a specialist rail engineering consulting firm, stated that difficulty recruiting experienced engineers and technicians is likely to mean that an increasing number of specialist engineering positions within the company will be filled through overseas appointments.\textsuperscript{134} V/Line Passenger told

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\textsuperscript{127} Victorian Government, Written Submission, July 2009, 9.
\textsuperscript{128} ibid., 10.
\textsuperscript{129} Engineers Australia, Victorian Division, Written Submission, May 2009, 5.
\textsuperscript{130} ibid., 6–7.
\textsuperscript{131} CRC for Rail Innovation, Written Submission, April 2009, 4.
\textsuperscript{133} V/Line Passenger Pty Ltd, Written Submission, July 2009, 8.
\textsuperscript{134} Coffey Rail Pty Ltd, Written Submission, April 2009, 6.
the Committee that the shortage of engineers is exacerbated by the long lead times from initial training through to full on-the-job competency.\textsuperscript{135}

3.48. Published research reveals that the shortage of engineers in the rail industry has existed for some time. A 1999 Engineers Australia study concluded that Australia was experiencing a shortage of railway engineers in several specialisations, with 34 per cent of surveyed organisations reporting difficulty in recruiting professional engineers, and more anticipating recruitment difficulties.\textsuperscript{136} The report found that the most acute shortages of railway engineering specialisations were in signalling and communications, rolling stock, and track and structures. Localised shortages were also occurring in the areas of train control, data handling and on-board electronics, noise and vibration, overhead line design, and rail logistics.\textsuperscript{137}

3.49. In 2006, the Australasian Railway Association sought feedback from rail operators about the areas in which vacancies were most difficult to fill, and where difficulties were expected for 2010. The study found that professional engineers were ‘undoubtedly the occupational group that are currently most difficult to attract and retain in rail workforces’.\textsuperscript{138} Within this broad category, shortages were reported as being most acute for railway signalling engineers.\textsuperscript{139} A 2008 Australasian Railway Association report identified that nationwide, the rail industry will need to recruit between 250 and 340 engineers every year for the next five years.\textsuperscript{140}

3.50. Although there is no reliable data reporting the number of engineers entering the rail industry, it is clear that the number of new entrants is below the recruitment targets suggested by the Australasian Railway Association.

3.51. The Committee notes that without successful intervention, the shortage of engineers within the Victorian rail industry is set to worsen over coming years. Information provided by the Australasian Railway Association suggests that across the engineering job family (incorporating four job roles), growth of 22 to 33 per cent in workforce demand is forecast by rail organisations over the period 2008 to 2012.\textsuperscript{141}

\textit{Trades and trade equivalents}

3.52. The trades and trade equivalents job family incorporates four job roles critical to the maintenance and ongoing operation of the rail industry: electricians; signalling; civil/perway; and mechanical.

3.53. Skilled tradespeople were identified by a range of participants as a key area of shortage in the rail industry. For example, three inquiry participants identified track workers as an area of skill shortage.\textsuperscript{142} A submission from the Department of...
Education, Employment and Workplace Relations also reported that there has been a persistent national shortage of a number of trades occupations significant to the rail industry, including metal fitter and machinist, electrician, and structural steel worker and welder.\textsuperscript{143} The Committee heard that one of the factors contributing to the shortage of tradespeople in the rail industry is the relative attractiveness of employment in alternative industries.\textsuperscript{144}

3.54. Shortages of skilled tradespeople have also been identified in a number of recent industry and research reports. A 2006 report found that tradespeople were the occupational group for which shortages were most commonly reported, with 45 per cent of the surveyed operators experiencing shortfalls of tradespeople, particularly electrical tradespeople. Some operators also identified recruitment difficulties in other trade areas, including boilermakers and mechanical tradespeople.\textsuperscript{145}

3.55. The Committee notes that the shortage of tradespeople is widespread across the Australian economy. In 2004, the Australian Industry Group reported that 170,000 tradespeople were predicted to leave the industry over the following five years, with only 40,000 predicted to enter the industry over the same period.\textsuperscript{146}

3.56. The Australasian Railway Association has forecast that by 2012 there will be a national shortage of trades and trade equivalents of between 2,741, assuming trades workers do not retire until age 68, and 4,000 should they retire at age 60.\textsuperscript{147} It has also reported that the industry will require an additional 500 to 700 trades workers each year for the next five years.\textsuperscript{148}

**Operational roles**

3.57. Jobs in the operations family are key to the delivery of safe and efficient rail services. The Australasian Railway Association reports that over the five years to 2012, 20 per cent of the existing operations workforce is expected to leave the industry.\textsuperscript{149} Another 20 per cent are expected to retire.\textsuperscript{150}

3.58. While participants in the inquiry identified skill shortages in a range of operational roles (including train or network controllers, traffic controllers, authorised officers, stationmasters and safeworking personnel), these shortages were of less immediate concern to industry representatives when compared with engineering and trades shortages.

3.59. The operations role to attract most comment was train drivers, which is frequently mentioned as an area of skill shortage within the industry. In 2006, it was reported...
that 27 per cent of operators have difficulties in recruiting or retaining train drivers.\footnote{Anusha Mahendran and Alfred Michael Dockery, ‘Skills Shortages – Will they derail the Australian Rail Transport Industry (ARTI)?’ (paper presented at the Path to Full Employment Conference, Newcastle, 4 December 2008), 15.} Similarly, an environmental scan undertaken by the Transport and Logistics Industry Skills Council in 2009 highlighted train drivers and tram drivers as among occupations in skill demand within the rail industry.\footnote{Transport and Logistics Industry Skills Council, Written Submission, July 2009, 5.} A submission from the Western Australian Department of Education and Training also identified train drivers as an occupation in shortage in that state.\footnote{Department of Education and Training, Western Australia, Written Submission, May 2009, 2.}

3.60. Some participants in the inquiry told the Committee that Victoria is not currently experiencing a shortage of train drivers.\footnote{For example, Mr W. O’Carroll, Manager, HR Services, Connex Melbourne, Transcript of Evidence, Public Hearing, Melbourne, 27 July 2009, 8; Ms N. Sullivan, Head, Learning and Development, Metro Trains Melbourne, Transcript of Evidence, Public Hearing, Melbourne, 3 March 2010, 13.} However, it was emphasised that labour supply for this critical role must be continually monitored. It takes 73 weeks to train a driver for the metropolitan passenger network and any emerging shortages must therefore be quickly identified and addressed to avoid any disruption to services.

3.61. Some participants also identified management and supervision skills as an area of concern.\footnote{Essential Services Commission, Written Submission, May 2009, 7; V/Line Passenger Pty Ltd, Written Submission, July 2009, 10; Department of Education and Training, Western Australia, Written Submission, May 2009, 2; Victorian Government, Written Submission, July 2009, 9.} An Essential Services Commission environmental scan suggested an insufficient supply of operational managers.\footnote{ibid.} A shortage of management expertise was also highlighted by V/Line Passenger, which noted that the company struggles to attract middle managers who possess appropriate ‘experience and judgement’.\footnote{ibid.} V/Line Passenger stated that the difficulty attracting experienced managers is at least partly attributable to the ‘outdated image of rail’ making the industry less attractive for potential applicants.\footnote{ibid.} It also noted that the limited availability of experienced management and supervisory staff has flow-on effects, in terms of the amount of mentoring and support available to less experienced staff.\footnote{ibid.}

### Causes of skill shortages

3.62. The Committee received evidence regarding a wide range of factors contributing to current and potential future skill shortages in the rail industry. These include: prevailing economic conditions in the economy; industry-specific growth; the structure and image of the rail industry; the ageing workforce; health requirements; and education and training factors.

#### Economic climate

3.63. The prevailing economic climate is a key influence on skill shortages in any industry. In times of strong economic growth, a large number of industries and occupations compete for the finite skills available within the labour market. Conversely, as the economic climate begins to deteriorate, there is a slowing in employment growth and more potential workers become available.
3.64. A number of participants observed that recent economic events in Australia and internationally had helped to ease the immediate skill shortages in the rail industry. With reduced opportunities in other industries that compete for similar skill sets, the increased attractiveness of secure employment within the rail industry was seen as a stabilising factor.

3.65. The Department of Education, Employment and Workplace Relations noted that there were ‘substantial increases’ in both the number of applicants for advertised vacancies for skilled occupations relevant to the rail industry during 2009, and in the number of suitable applicants per vacancy. The department suggested that the relaxation of demand nationally was also likely to have occurred within Victoria. However, the Australasian Railway Association argued that while the global economic environment had caused an easing of skill shortages, improvements in the rail industry were limited. It suggested that although some skilled workers had been displaced from industries such as mining and automotive manufacturing, they were likely to lack the rail-specific skills needed for work in the rail industry. A representative of the Group Training Association of Victoria also argued that skill shortages are likely to become more acute once economic recovery has occurred.

Industry growth

3.66. Recent growth in the Victorian rail industry is expected to continue in coming years. One factor contributing to this growth is the rapid increase in demand for public transport in Melbourne, driven by congestion on the roads, rising fuel prices and environmental concerns. The Australasian Railway Association also highlighted growth in the demand for freight services, although the Committee notes that the potential for growth in the freight sector is more limited than for passenger rail.

3.67. In response to growing demand for rail services, state and federal governments nationwide are making substantial investments in rail infrastructure and rolling stock, resulting in growth in employment in the rail industry. According to the Department of Education, Employment and Workplace Relations, more than 1,000 jobs were added to the Victorian industry over the five years to 2009, representing an increase in employment of 28 per cent. Modelling commissioned by the Victorian Government accords with national projections for employment growth, suggesting a 12 per cent increase in rail industry employment in Victoria over the next six years, or two per cent per annum.

3.68. Qualitative analysis by the Department of Transport suggests that the growth in demand for labour is likely to be across a range of rail industry occupations, with engineers among those occupations likely to see the greatest increase in demand. Engineers Australia agreed that renewal in the rail industry would ‘without doubt’
Chapter 3—Rail occupations and skill shortages

require additional engineering skills. At the same time, higher customer expectations and technological changes are also likely to influence the type and level of skills and knowledge required in the rail industry workforce.

The ageing workforce

3.69. One of the strongest themes to emerge during the inquiry was the impact of the ageing workforce on skill shortages in the rail industry, both in Victoria and nationwide. Corporate knowledge and industry experience are projected to disappear as a large group of long-term employees reach retirement over a short timeframe.

3.70. The Committee heard that this will be exacerbated by the industry’s difficulties in attracting and retaining young people. A representative of the Australian Manufacturing Workers’ Union told the Committee that even where new staff are recruited into a trade area, they are often of the same age as existing employees. The Victorian Government further noted that even if a greater number of young people can be attracted into the industry, there is a likelihood of greater turnover in the workforce in future, as people are now changing careers more often than in the past.

3.71. The Australasian Railway Association has estimated that approximately 40 per cent of the rail industry workforce will leave the industry or retire within the next five years. V/Line Passenger told the Committee that it was already experiencing some of these effects, with increasing attrition over recent years driven largely by retirements. It noted that while the retirement levels were not currently problematic, they had the potential to become a problem over the next ten years. The Victorian Government also anticipated that without intervention, the ageing of the workforce will lead to greater skill shortages in the next five to ten years.

3.72. The Australasian Railway Association has reported that the effects of the ageing workforce will be felt most keenly in some of the core rail occupations, including train drivers, track workers and signalling engineers.

3.73. Engineers Australia believes that the future Australian skills base will not cover retirements, let alone increased demand for engineering expertise driven by growth in the Australian economy, and the transition to a climate friendly, knowledge-based economy. The Australasian Railway Association predicted that by 2012, the shortage of engineers in the rail industry nationwide could be between 1,260 (assuming current engineers do not retire until 68 years of age) and 1,700 (assuming all retire by 60 years of age).

167 Engineers Australia, Victorian Division, Written Submission, May 2009, 5.
168 Australasian Railway Association, Written Submission, April 2009, 4.
171 Australasian Railway Association, Written Submission, April 2009, 5.
173 Ibid., 4.
176 Engineers Australia, Victorian Division, Written Submission, May 2009, 5.
177 Supplementary information provided by the Australasian Railway Association, December 2009.
3.74. Taking into account both projected rail industry growth and increasing retirements, the Australasian Railway Association estimates that the industry will need to recruit an additional 1,450 people year-on-year for the next five years, including 250 to 340 engineers, 500 to 700 tradespeople and 420 to 700 operations staff. Assuming Victoria accounts for 25 per cent of national employment in rail, these estimates translate to a potential requirement for an additional 72 engineers, 150 tradespeople and 140 operational staff in the Victorian rail industry each year.

Health requirements

3.75. Various submissions highlighted the potential for health requirements to influence the nature and extent of skill shortages in the rail industry. Under the Rail Safety Act 2006, all workers in safety critical roles are required to undertake regular health assessments. The Electrical Trades Union of Australia (Victorian Branch) described the consequences of this for some workers:

Failing hearing and eyesight has resulted in staff undertaking different duties. Many are unable to perform their trade and are moved into roles where they are ‘off the tools’.

3.76. The health monitoring system is based on a risk management approach in which the requirements of a job are matched to the health requirements. Two main risk categories have been defined, and then further sub-divided to create four risk categories overall.

3.77. Safety Critical Workers are those whose actions or inactions may cause a serious incident affecting the safety of the public or the rail network. Aspects of employee health relating to on-the-job attentiveness and vigilance are critical. Safety Critical Workers require a comprehensive physical and psychological assessment to detect conditions that may affect safeworking ability, such as heart disease, diabetes, epilepsy, sleep disorders, alcohol and drug dependence, psychiatric disorders and eye and ear problems. A High Level Safety Critical Worker is also required to have a Cardiac Risk Score assessment, which identifies risk of cardiovascular disease and collapse from heart attack or stroke.

3.78. Non-Safety Critical Workers are those whose health and fitness are unlikely to impact directly on the safety of the public or the rail network. However, these workers must be able to protect their own safety and that of fellow workers. Their risk category and their health assessment requirements depend on their likely exposure to moving rolling stock. Employees who operate in an Uncontrolled Environment are required to have a Track Safety Health Assessment, which involves assessment of hearing, vision and mobility, while those who operate in a Controlled Environment are not required to have an assessment for rail safety work, but may be required to have Occupational Health and Safety assessments.

Industry structure

3.79. The Victorian rail industry has experienced a number of significant structural changes over recent decades. In the 1980s, the railways commenced a long process of downsizing and an increasing focus on improvements to industry cost control,
productivity and consequent short-term operational goals. Engineers Australia noted that the key adjustment within the rail sector linked to skill shortages, recruitment and retention ‘was the movement of the industry from a government sector, where adequate engineers were trained as public employees, to a commercial and corporate sector where an environment geared towards graduate training and continuing professional development did not exist’:

Training opportunities in niche rail specialisations disappeared as well as graduate training positions in the public sector. These were not replaced by the private sector.  

3.80. Rail organisations made similar observations. For example, Coffey Rail noted that during the period of government ownership, ‘the view of the Victorian Railways was necessarily long-term, and included ensuring the future availability of a skilled workforce’.  
Similarly, V/Line Passenger stated that ‘decades of under-investment in the industry and endemic staff rationalisations in the 1980s and 1990s has led to a missing generation of rail expertise, an ageing rail workforce and an unattractive image of a seemingly outdated industry’.

3.81. The Committee notes that although the reduced focus on training and development may have arisen due to competitive pressures and the need for rail organisations to remain viable in a re-structured industry, this will become increasingly unsustainable as the existing rail workforce reaches retirement age.

As government agencies and utilities have been privatised or have been outsourced, there has been a fundamental shift in the employment of engineers. Cadetships are virtually non-existent and engineers are now, on the whole, private sector employees and the major responsibility for training engineering graduates has been transferred with them.

3.82. This issue was also documented in a recent paper published by the National Centre for Vocational Education Research:

Australia has a history of providing apprenticeships and informal vocational training through government business enterprises, including the public utilities (electricity, gas and water), the railways, transport and communications, and local government. These enterprises, free of the pressures of intense competition, had a culture of training at the vocational level and made a major contribution to the supply of vocational skills. Many of the people who were trained by these government enterprises subsequently moved into private sector jobs. It has been one of the unintended side effects of the privatisation of these enterprises (and corporatisation of those that remain in public hands) that the new private owners have substantially reduced their commitment to training.

3.83. In particular, many submissions and witnesses throughout the inquiry suggested that a key cause of skill shortages in the rail industry is the reduction in apprenticeships following restructuring in the industry. Coffey Rail described how throughout their training with the Victorian Railways, graduate engineers and apprentices would rotate through a series of work locations where they would be systematically
exposed to the full range of work associated with the development, operation and maintenance of the railway network.\textsuperscript{186} Through this exposure, the necessary knowledge and skills were developed. In contrast, it is difficult for rail operators to provide a comprehensive training and development experience under modern franchising arrangements.

3.84. The Australian Manufacturing Workers’ Union stated that ‘the privatisation process has resulted in a 95 per cent drop in rail industry apprentices’ and suggested that this was due to the cost of training apprentices not being incorporated into the contract tendering process:

Whilst training apprentices is mentioned generally in tendering criteria, it does not seem to be apparent that it is mandatory to train any apprentices when fulfilling the contract.\textsuperscript{187}

3.85. The Australian Manufacturing Workers’ Union further stated that ‘it is also clear that companies operating in the rail industry have not budgeted for the training of apprentices’.\textsuperscript{188} It suggested that the employers believe that they do not get a return on training apprentices until their third year.\textsuperscript{189} The Electrical Trades Union of Australia (Victorian Branch) made similar comments in its submission:

Employers often say that they do not get a return on their investment of apprentices until they reach their third year. As such, companies have had to turn to government for specific additional funding to provide for the employment of apprentices. One such situation occurred when MainCo recognised that it had a problem with staffing and sought government funding for 12 apprentices in the signalling section. These 12 apprentices were employed but funding from government fell through.\textsuperscript{190}

3.86. The Committee recognises that the length of franchise contracts has the potential to influence how organisations invest. Therefore, the Committee believes that the current franchise term of seven years, plus the option to extend for a further eight years, provides a better opportunity for the rail operators to develop and maintain their workforce.

3.87. It is apparent that the current number of apprenticeships on offer in the Victorian rail industry is low, and that the consequences are starting to impact on current infrastructure and investment projects. However, as noted by the Australasian Railway Association, there are a number of factors contributing to the small number of apprenticeships being offered. They include: a lack of suitable supervisors; concern that qualified apprentices will leave the organisation after a considerable investment has been made in them; and a lack of appropriate interface with educational institutions to provide a pool of potential apprentices.\textsuperscript{191}

3.88. The Committee identified the outsourcing of activities such as rolling stock and infrastructure maintenance as another structural factor contributing to the skill shortages within the Victorian rail industry. This issue has also been identified by the Australasian Railway Association:

\textsuperscript{186} Coffey Rail Pty Ltd, Written Submission, April 2009, 4.
\textsuperscript{187} Australian Manufacturing Workers’ Union, Metals Division, Victorian Branch, Written Submission, April 2009, 2.
\textsuperscript{188} Ibid.
\textsuperscript{189} Ibid., 3.
\textsuperscript{190} Electrical Trades Union of Australia, Victorian Branch, Written Submission, April 2009, 3.
In the recession of the 1990s as operators downsized or outsourced aspects of the operations, many skilled employees left the operator and joined consultancies. This resulted in significant loss of skills from the operators, and causes a reliance on outsourcing or use of contractors when skills are required.\textsuperscript{132}

3.89. The Committee recognises the commercial benefits of outsourcing, although it is concerned about an over-reliance on skills provided by contractors and consultancies. Outsourcing and contracting activities can limit the opportunities for sharing of knowledge and expertise between permanent and short-term workers. For example, the existing rail workforce may not have sufficient time to learn from those coming into the industry on short-term contracts, or to apply new skills or develop new work practices. Equally, the contracted employees may not have sufficient time to fully experience or develop an understanding of the rail industry. Additionally, the Committee notes that contracting and consulting firms may take a short-term perspective, meaning that they may have little incentive to develop or maintain rail-specific skills within their business.

\textit{Industry image and culture}

3.90. While not necessarily a primary cause of skill shortages in the rail industry, the Committee heard that the strong workforce culture, together with external perceptions of the industry, are affecting the ability of the industry to attract and retain sufficient skilled workers. Therefore, industry image and culture were identified as a key factor inhibiting the industry's ability to address current skill shortages through attraction and retention strategies. These issues have been covered extensively in recent reports published by the Australasian Railway Association. They were also explored in depth at the Rail Careers Conference attended by representatives of the Committee in May 2009.

3.91. ‘Life-time’ rail workers comprise a significant proportion of the workforce in the majority of rail organisations. Whilst the skills that these workers provide are essential to the safety and efficiency of the rail industry, the industry has identified that the extended tenure of groups of employees ‘creates blockages to innovation and to the ability of aspiring new starters to progress their careers’.\textsuperscript{133}

3.92. Focus group discussions and interviews with rail employees conducted for the Australasian Railway Association have found that internal perceptions of the rail industry consist of both positive and negative sentiment. The most frequently reported positive descriptors of the industry include: growing/ changing; exciting/challenging; opportunity/ revival; community service; fundamental service for the economy; moving forward; renewed enthusiasm; and loyal workforce.\textsuperscript{134} However, there are also a wide range of less positive descriptors of the industry, including: under-funded; fragmented; inwardly focused; old/antiquated; highly regulated; slow moving; short-term focused; identity crisis; and not modern.\textsuperscript{135}

3.93. In contrast to their internal perceptions, rail employees believed that the rail industry had a poor public image and that it received frequent negative publicity that

\textsuperscript{132} ibid., 31.
\textsuperscript{133} ibid., 34.
\textsuperscript{134} ibid., 45.
\textsuperscript{135} ibid., 46.
Inquiry into Skills Shortages in the Rail Industry

perpetuated the poor image. Employees believed that the general public perceive the industry in terms of traditional stereotypes, including: blue collar industry; bureaucratic; public sector; unionised; not ‘sexy’; and male dominated.\textsuperscript{196}

3.94. Evidence to the inquiry suggests that industry representatives believe that a combination of negative perceptions and a lack of awareness of the industry as a potential employer are affecting the rail industry’s ability to recruit. According to the Australasian Railway Association, the effect of media coverage and the extrapolation of consumer experiences to anticipated employment experience are seen as key drivers of these perceptions.\textsuperscript{197} The industry has reported that organisations that consistently receive poor media coverage find it harder to attract people into professional roles, although these same organisations have reasonable success in retaining employees once they have been in the industry for a couple of years.\textsuperscript{198}

3.95. It is also apparent that industry regulation, lack of clear progression opportunities, and perceptions regarding out-dated infrastructure and technology are seen by many in the Victorian rail industry as possible detractors to aspiring young professionals.\textsuperscript{199}

3.96. The Committee notes, however, that the presence of major international companies in the Victorian market provides an opportunity for the local industry to develop and promote exciting and progressive international career opportunities. This should assist in improving the industry’s image and could increase the number of young graduates attracted into the industry.

Education and training system factors

3.97. The Committee heard that demand and supply factors within the education and training system do not allow skill shortages in many rail occupations to be quickly or easily solved. Rail-specific training options within the VET and higher education sectors are relatively limited, while student demand for entry into engineering and other courses associated with critical roles is typically low. Even with such qualifications, new entrants to the industry require substantial lead times to attain a full understanding of their role. Issues associated with the supply and demand for rail industry qualifications are covered in chapter 4.

3.98. It was also noted throughout the inquiry that the current in-house approach to training, together with various aspects of state-based, rail-related legislation, mean that skilled rail personnel often have difficulty relocating and/or transferring their skills and qualifications.

3.99. The Victorian Government also made the observation that ageing in the workforce may influence the number of available trainers, which may also impact on the availability of teachers in the TAFE system.\textsuperscript{200} Competenz also commented on the lack of availability of suitable trainers during the Committee’s investigations in New Zealand.

\textsuperscript{196} ibid.
\textsuperscript{197} ibid., 4.
\textsuperscript{198} ibid., 34.
\textsuperscript{199} Discussions during Rail Careers Conference, Melbourne, May 2009.
\textsuperscript{200} Victorian Government, Written Submission, July 2009, 12.
Chapter 3—Rail occupations and skill shortages

Industry skills audit

3.100. The Committee was disappointed to find that there is no comprehensive or shared picture of occupations, qualifications and skills in the rail industry. It is therefore difficult to determine the extent of any gaps between the level and types of skills currently held and those required in the future.

3.101. The Committee believes that a comprehensive audit of the rail industry workforce, covering the franchisee workforce and other rail operators and maintenance providers, relevant government departments and agencies and the manufacturing and component supply sectors, should be undertaken. Without accurate, reliable data, policy makers and legislators will be unable to respond to persistent skill shortages in the industry. The Committee therefore believes that the Department of Transport should undertake this audit as a matter of priority. The Committee believes that the industry skills audit should cover two key types of data:

− demographic data such as occupations, age, tenure, gender and location dimensions; and

− attraction and retention data such as number of vacancies, areas of critical shortage, new entrants to the industry and turnover rates.

3.102. The Committee recognises that undertaking the industry skills audit will require the cooperation of industry operators in collecting and sharing workforce data. The Committee believes that this data should be collected on an ongoing basis, and published as a rolling three-yearly data set. The Committee also believes that this information should be made available to the Australasian Railway Association to assist in developing a nationwide response to skill shortages.

Conclusion and recommendation

3.103. There are a wide range of occupations and job roles within the rail industry. Many of these roles are highly specialised and require long training periods and/or significant on-the-job experience to attain competency. However, the level of formal qualifications among workers in the industry is relatively low. The workforce is characterised as predominantly male and ageing and the industry experiences a low level of employee turnover.

3.104. While the Committee was unable to quantify existing or projected future skill shortages, anecdotal evidence suggests that there are longstanding shortages in a range of rail occupations in Victoria. Similar skill shortages are experienced by the rail industry nationally and internationally. Competition for highly skilled labour from other industries, especially mining and construction, is said to exacerbate skill shortages in the rail industry.

3.105. The Committee heard that around 40 per cent of the rail workforce was predicted to leave the industry over the five years from 2008 to 2012. The Committee is particularly concerned about ongoing skill shortages in the engineering professions, especially in the critical roles of electrical and signalling engineers and project managers. The Committee is also concerned about ongoing shortages in the trades and trade equivalents, as well as emerging shortages in certain operational roles.
3.106. The Committee believes that a long-term view will be required to effectively address current and emerging skill shortages in the rail industry. Unless the causes of shortages are addressed, there is likely to be an ongoing detrimental impact on the quality and reliability of rail services in Victoria. The Committee therefore believes that a comprehensive, industry-wide workforce development plan covering the period 2010 to 2020 is required. The Committee recognises, however, that strategies aimed at addressing skill shortages are likely to be ineffective, unless the extent of specific skill shortages and skill gaps can be measured, and their causes fully understood. Therefore, the Committee believes that the first step in achieving an effective industry-wide workforce development strategy is the completion of a comprehensive audit of the existing rail workforce.

### Recommendation

3.1 That the Department of Transport, in consultation with the rail industry, undertake a comprehensive audit and analysis of the rail industry workforce. The audit should identify:

- all occupations and job roles;
- location of work undertaken;
- the number and duration of job vacancies;
- employment status, including the number of hours worked, the level of overtime and the current leave liabilities within the industry;
- tenure and workplace turnover;
- relevant demographic indicators such as age, gender and cultural or linguistic background;
- formal qualifications held;
- other relevant skills and industry experience attained through informal training and development and on-the-job experience;
- current and emerging skill shortages and skill gaps; and
- processes to continue monitoring skill needs within the industry.

The audit should cover all major segments of the industry, including operations, maintenance and manufacturing. It should involve the major rail operators and include input from the broader rail industry, including small and medium sized enterprises.