



This document provides a snapshot of skills demand for the rail infrastructure sector in Victoria. For the purposes of this snapshot, the rail infrastructure sector is defined as businesses that specialise in track, power, signalling and communication works that take place in the rail corridor.



Prepared by the Office of the Victorian Skills Commissioner for the Minister for Training and Skills, the Hon, Gayle Tierney MP.

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Foreword

This document provides a snapshot of skills demand for the rail infrastructure sector in Victoria. For the purposes of this snapshot, the rail infrastructure sector is defined as businesses that specialise in track, power, signalling and communication works that take place in the rail corridor. The civil construction of rail infrastructure is not covered in this report. This profile provides a genuine understanding of the current and future (1-3 year horizon) skills and training requirements of the sector, with a focus on the element of the workforce using VET courses and their career pathways.

The success of this work relied on insights from experienced employers within this sector to provide a sector-wide view of skills requirements and workforce challenges. A total of eight people across six employers, spanning a range of services and market segments, were engaged across two separate meetings to develop this skills profile. At both meetings, insights from public data on the rail infrastructure sector were presented and validated with participants.

The meetings provided the opportunity for rail infrastructure employers to input their view of priorities and requirements from the VET system in addressing sector skills issues. This profile can be used by TAFE and training providers to better understand the rail infrastructure sector's priorities in terms of occupation and skill demand to ensure the supply side responds appropriately to VET opportunities.

The Victorian VET system aims to deliver 'real training for real jobs' by providing up to date training for new challenges in the sector. This report is part of a series of sector profiles which will be developed by the Office of the Victorian Skills Commissioner (OVSC). The set of skills demand snapshots will complement the regional skills demand profiles to provide a richer picture of the skills needs of Victorian employers. Insights from consultations will inform Government in terms of where they should be allocating taxpayers money to sectors which value accredited training. A collaborative effort between government, employers and training providers is required to address these challenges.

This profile represents a summary of the views of consulted employers and sector representatives on the current and future needs of the rail infrastructure sector. As such, the Office of the Victorian Skills Commissioner has prepared the report with care and diligence, based on information provided through consultations. Information in the profile has not subsequently been independently verified or audited. Publications on skills in the rail sector, such as the Australasian Railway Association Skills Capability Study, have also been used as inputs in preparation of this profile.

This profile represents a summary of the views of consulted employers and sector representatives on the current and future needs of the rail infrastructure sector.

Acknowledgements

The OVSC would like to acknowledge the time, contribution and insights of participating employers in supporting this process. The findings in this report would not be possible without their shared knowledge, openness, generosity, expertise and commitment.

Table 1: Participating Employers

Member	Organisation
Fusun Yalcin	Coleman Rail
Emma Gray	CPB Contractors
John Mann	Hitachi Rail
Irfan Hameed	John Holland
Narelle Rogers	John Holland
Paul Feris	Lendlease
James Andrews	Lendlease
Nicole Sullivan	Metro Trains Australia

Summary

Victoria's rail infrastructure sector

Approximately **5000-7000 workers** directly employed in the sector



Above average sector growth over the past 10 years



5000km of existing rail reserve, with 450km more proposed



Approximately **600 to 800 additional workers** required by 2022



Four recommended pathways to employment



Acute skills shortages in signalling staff



Career pathways and training

Salary: \$150k - \$200k+	Superintendent
	<p>Experience: 20 + years</p> <p>Skills: extensive rail infrastructure experience, large-scale project management, people management, planning and execution, budgeting, procurement, work well under pressure, health and safety focus</p>

Validated common career and training pathways

Salary: \$100k - \$140k+	<p>Supervisor</p> <p>Experience: 10 + years</p> <p>Key skills: technical skills and experience in area under supervision, people management, coordination, health and safety conscious, ability to coordinate work to plans</p>
	<p>Leading hand</p> <p>Experience: 4 + years</p> <p>Key skills: technical skills and experience in specialist area, leadership, understanding of design documents and drawings, coordination, health and safety planning, communication, problem solving</p>

ON THE JOB TRAINING
Employers also expressed interest in the Certificate IV in Rail Infrastructure

ON THE JOB TRAINING
Employers also expressed interest in the Certificate III in Track Protection

Salary: \$35k - \$60k+	<p>Track labour</p> <p>Experience: 0-4 + years</p> <p>Occupations: track labourer, plant operator (e.g. hi rail), track certifier</p> <p>Requirements: white card, tickets, medical assessment</p>	Salary: \$50k - \$90k+	<p>Signal technician</p> <p>Experience: 0-4 + years</p> <p>Key skills: signal design, ICT skills, math, diagnostics, root cause analysis</p> <p>Requirements: electrician's licence, white card, tickets, medical assessment</p>	Salary: \$35k - \$90k+	<p>Other trades</p> <p>Experience: 0-4 + years</p> <p>Occupations: mechanical fitter, electricians (overhead lines, cable pullers, HV substation electrician)</p> <p>Requirements: white card, tickets, medical assessment</p>	Salary: \$25k - \$70k+	<p>Track protection</p> <p>Experience: 0-4 + years</p> <p>Key skills: safety conscious, maintain focus, hand signals, OH&S requirements</p> <p>Requirements: white card, tickets, medical assessment</p>
	<p>Recommended training pathway</p> <p>Enrol in: Certificate II in Rail Infrastructure or Certificate III in Rail Infrastructure</p>		<p>Recommended training pathway (apprenticeship)</p> <p>Enrol in: Certificate IV in Electrical - Rail Signalling and Certificate III in Electrotechnology Electrician</p>		<p>Recommended training pathway (apprenticeship)</p> <p>Enrol in: Certificate III in Electrotechnology Electrician or Certificate III in Engineering - Electrical / Electronic Trade or Certificate III in Engineering - Mechanical Trade</p>		<p>Recommended training pathway</p> <p>Enrol in: relevant units as identified in RIW matrices</p>

Other courses

Rail Infrastructure qualification not valued by consulted employers (note: units aligned to RIW matrices may be valued):

Diploma of Railway Signalling Systems -

provides training for railway signalling and communications technical officers.

Note: the chart on the previous page outlines the VET qualification pathways. Rail Infrastructure businesses take a unit of competency approach to training and expressed a clear preference for training to be done in partnership with an employer. The Rail Industry Worker National Matrices detail the units of competency requirements for occupation in the rail infrastructure sector. Information provided represents standard industry practice. Wages vary by business and project. Due to an increase in major project work, wages are currently around 20 per cent higher than provided above. The chart shows core entry level roles in the rail infrastructure sector (excluding civil). Additional opportunities exist for concreters, steel fixers, engineers, rail safety, procurement and supply chain professionals, project managers, construction managers and general super intendants.

Recommendations for VET system

- Explore an industry training consortium along large rail infrastructure employers to provide a broader set of experience for apprentices. This may include rotations across different employers.
- Government to work with the sector and schools to facilitate increases in signalling technicians through the Certificate III in Electrotechnology Electrician and Certificate IV in Electrical - Rail Signalling.
- Consider mechanisms that enable rail infrastructure experts from industry to better support training delivery.
- Investigate the merits of Certificate III in Rail Infrastructure as an apprenticeship.
- Ensure the review of the Certificate IV in Rail Infrastructure aligns it to industry needs before promoting among industry to encourage greater use.
- Add the Certificate IV in Electrical - Rail Signalling and Certificate IV in Rail Infrastructure to the funded course list.
- Undertake further research on the utilisation of the Certificate II in Track Protection to determine whether this needs to be considered for inclusion on the Funded Course List.
- Remove courses with no sector demand from the funded course list.
- Investigate the merits of supporting skill sets aligned to the Australian Rail Industry Worker matrices.



1. Sector overview

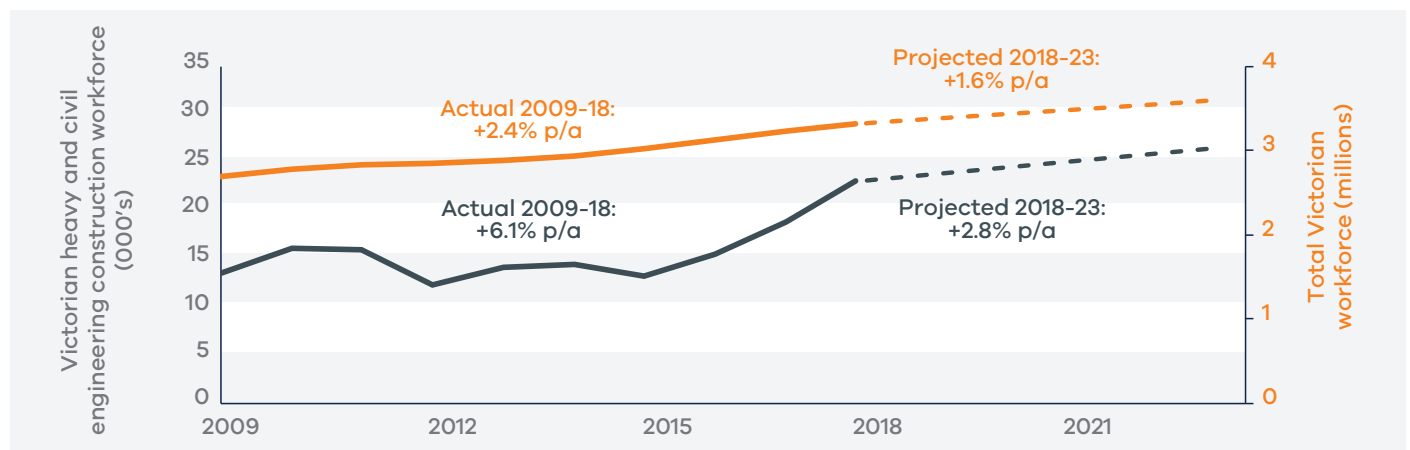
Increased public investment in the rail infrastructure sector has led to above average growth over the past 10 years

Investment in Victoria's rail network has grown steadily over the past decade. Today, Victoria has approximately 5,000km of track worth \$7 billion dollars and signalling and communications equipment valued at \$3.3 billion dollars¹. The workforce that supports these assets can generally be broken into two streams, civil works which encompass the construction and maintenance of stations, bridges and other structures and rail infrastructure which covers the track, power, signalling and communication works that take place in the rail corridor. The focus of this report is on the second stream with civil to be covered under a separate skills demand snapshot.

Every year approximately \$550-\$600 million or approximately 0.2 per cent of the Victorian economy is spent maintaining Victorian rail infrastructure^{2,3,4,5,6}. In addition, rail infrastructure works account for approximately 20 per cent of Victoria's record \$90 billion announced or in progress rail infrastructure-related construction⁷. Consulted employers estimate that there are between 5,000 and 7,000 workers currently employed in rail infrastructure, with around 80 per cent employed through subcontracting or labour hire.

Analysis of Victoria's heavy and civil engineering construction (which covers rail track construction amongst other sectors) indicates workforce growth of over six per cent per annum over the past 10 years, with more moderate growth of around three per cent per annum projected to 2023 (see Figure 1).

Figure 1: Victorian heavy and civil engineering construction workforce growth since 2009



Source: ABS Labour Force Survey, 2019.

Note: the figures above are for the heavy and civil engineering construction industry. This includes rail permanent way construction and other construction sectors, such as road and bridge construction.

Victoria's rail infrastructure industry structure has tiers of businesses and has evolved over time

The structure and ownership of Victoria's rail infrastructure assets has changed significantly over the last 20 years, most notably through the privatisation of rail services in Victoria. The privatisation of Victoria's rail services in 1999 changed the structure of the industry and the nature of work in some occupations, as the government owned Public Transport Corporation was sold in parts to private companies. Significantly, in 2009, 3,800 employees across four organisations came together to take over the Melbourne metropolitan train network as Metro Trains Melbourne.

Today, VicTrack own Victoria's rail infrastructure assets and have franchise agreements to support the development, renewal and maintenance of the rail network with partner organisations, currently through Public Transport Victoria and Metro Trains Melbourne, V/Line, Yarra Trams and Australian Rail Track Corporation. Operations and maintenance contracts are often outsourced by these partner organisations. Tier 1 and tier 2 contractors tender for projects that are commissioned by the Victorian Government and generally do not cross state boundaries.

Currently, there are around 30 Tier 1, Tier 2 and specialist rail and civil businesses operating in Victoria. Some are stand alone, while many are business units of large integrated construction and engineering firms. In addition, there are many small subcontract and labour hire providers that employ a high proportion of the workforce. Tier 1 and 2 businesses usually employ staff to the supervisor level, with subcontractors and labour hire organisations often providing specialist workers below this point.

¹ VicTrack Annual Reports, 2017-2019

² Parliament of Victoria, Victorian Economic Snapshot, 2016-17

³ Metro Performance, 2019

⁴ V/Line Annual Reports, 2015-2018

⁵ Australian Rail Track Corporation Annual Reports, 2015-2018

⁶ Victorian Auditor General's Office, Managing the Performance of Rail Franchisees, 2016

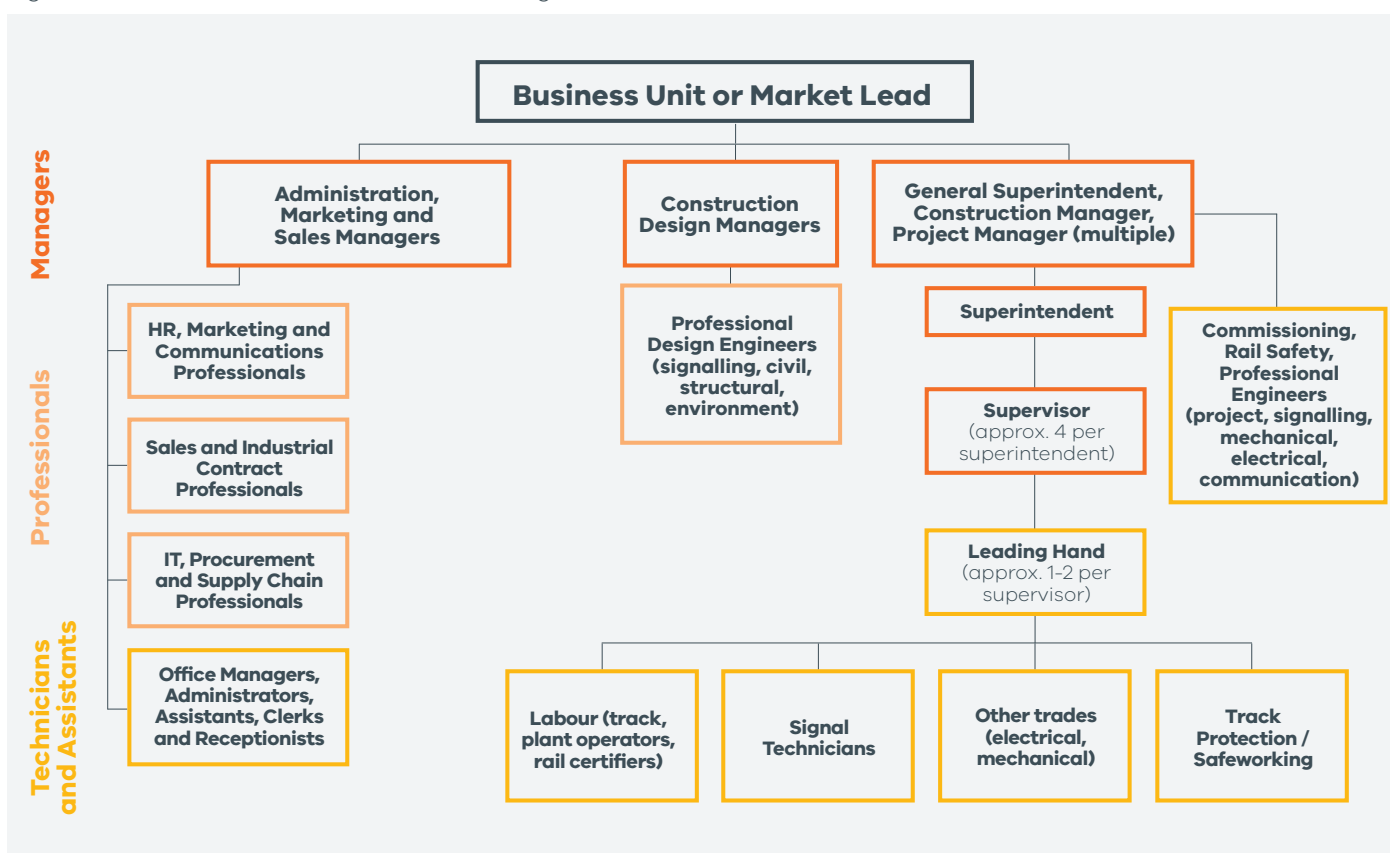
⁷ Victoria Infrastructure Plan Projects Pipeline Refresh, 2018

⁸ Our Projects, Department of Transport, 2019

The technical rail infrastructure workforce organise in specialised teams of 6-12 workers

The entry-level technical rail infrastructure workforce can be broadly segmented into track labour, signal technicians, other trades and track protection. They are organised in specialised teams of 6-12 led by a leading hand, who has at least 4 years' experience. One or two leading hands report to a supervisor with over 10 years' experience. Superintendents with extensive rail experience manage around four supervisors. Organisations differ in their structure above the superintendent role, with general superintendents, project managers and/or construction managers often managing across specialisations and projects. An example organisational structure for a Tier 1 and 2 rail infrastructure business is outlined in Figure 2 below.

Figure 2: Indicative rail infrastructure business organisational structure



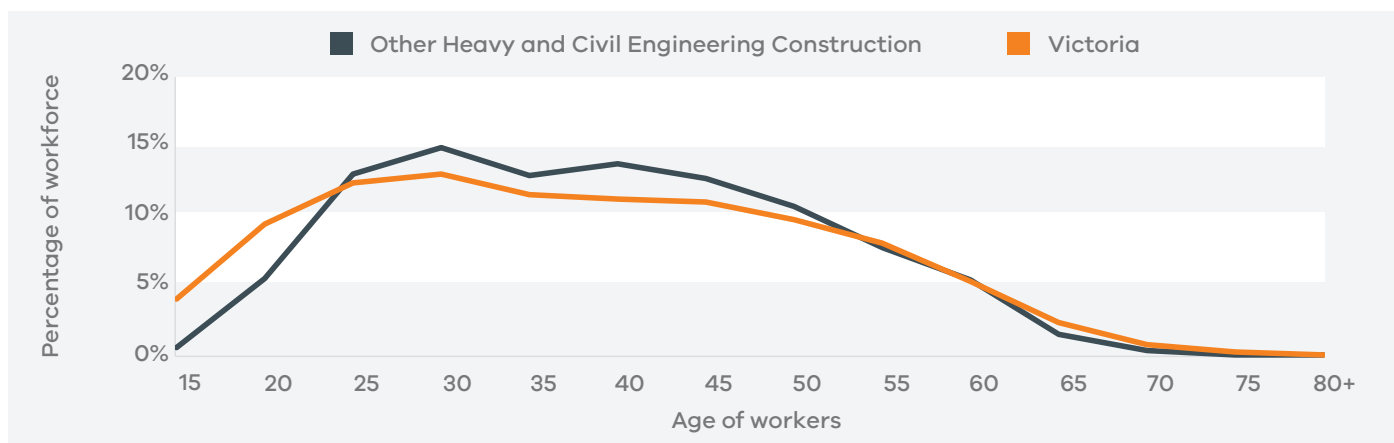
These principals generally subcontract their labour requirements and don't employ directly. Subcontracting and professional services firms provide expertise or workers into one or more of the of the components of the structure in Figure 2. Tier 1 and 2 contractors generally use labour hire and subcontracting below the supervisor level, except for higher risk electrical occupations. Use of labour hire and subcontracting is particularly common for some occupations, such as track labour and track protection.

For rail infrastructure construction, the balance of the specialised teams is highly dependent on the type of project that is delivered. For example, the Murray Basin Rail Project involves 1055km of track upgrades and uses a high proportion of track labour. The Metro Tunnel project, however, uses a higher proportion of civil workers, such as steel fixers and concreters, with relatively few track labourers. Other projects, such as the electrification of the Frankston line, may not use any track labour. There is common demand across all project types for signal technicians and engineers, albeit often for discrete aspects of projects where signalling expertise or commissioning is needed. In rail infrastructure construction, around 80 per cent of the work is civil (performed in the rail corridor) and 20 per cent is rail. This ratio is reversed for operations and maintenance, where around 80 per cent of the work is rail. Another driver of workforce composition is the location of the works. As metropolitan rail is electrified overhead lines workers are required, unlike open track rail in regional areas.

The workforce is focused around major projects and faces aging workforce issues in some occupations

The Victorian rail infrastructure sector employs between 5,000 and 7,000 workers. The workforce is generally older with a higher percentage between 25 and 55 than the Victorian average and a median age of 40 to 45 years (see Figure 3). This is a sector that is dependent on skilled labour, that can often take many years to build up the requisite skills and knowledge across the network. Similarly, once involved in the sector, workers will often spend their career there. However, this is changing, with retirements expected to increase over the next five to 10 years employers are looking to apprentices to fill the emerging need, specifically in signalling and trades related roles. Employers acknowledge there will be increased demand for apprentices, however, beyond the network operators the level of commitment to consistently take on apprentices directly remains unclear.

Figure 3: Victorian other heavy and civil engineering construction and land development and site preparation services (shown as civil) workforce age distribution



Source: ABS Census, 2016

Rail infrastructure work is centred around existing and planned rail reserves. Approximately two thirds of Victoria’s 5,000km of rail reserves are managed by the regional rail operator V/Line, with the remainder in metropolitan Melbourne. The work is highly mobile with workers servicing large geographic areas. No data exists on where they live. However, the distribution of the wider other heavy and civil engineering construction workforce in Victoria, which includes rail permanent way construction and other construction sectors (Figure 4) indicates a likely concentration in metropolitan Melbourne and in regional areas aligned to rail routes.

Figure 4: Geographical other heavy and civil engineering construction workforce distribution



Source: ABS Census, 2016

Although major projects and most of the workforce are state-based, labour movement across states can occur as businesses hire from a national pool of workers. Workers are also sourced from other industries, such as power, defence or car manufacturing. However, this is not currently a priority for rail infrastructure businesses.



RAIL CROSSING
CROSSWAY

2
TRACKS

STOP
ON RED
SIGNAL

KEEP
TRACKS
CLEAR

2. Sector outlook and workforce implications

Recommendations for the VET system:

1. Explore an industry training consortium among large rail infrastructure employers to provide a broader set of experience for apprentices. This may include rotations across different employers.
2. Government to work with the sector and schools to facilitate increases in signalling technicians through the Certificate III in Electrotechnology Electrician and Certificate IV in Electrical - Rail Signalling.

There is a worsening skills crisis in rail infrastructure in Victoria

Over the past five years demand for skilled labour in rail infrastructure has increased to meet resource demands for major Victorian Government infrastructure investments. However, workforce supply has not kept up with the increased demand, leading to skills shortages across the rail infrastructure workforce. These shortages extend beyond the entry level workforce, with unmet demand for management and engineering roles.

Businesses reported difficulty meeting their demand for several occupations in the entry level workforce, including signal technicians, other electrical trades and experienced track labour. The sector has an estimated current shortfall of 150 workers across these roles, including a gap of around 60 signal technicians. Employers identified this longstanding labour gap for signal technicians as the highest area of priority, with shortages in high voltage substation electricians and overhead lines workers also of concern. Employers reported challenges finding skilled track labour workers with 6-12 months track experience, despite competition among job seekers to enter the occupation.

Labour gaps extend beyond the entry level workforce, with shortages in leading hand, supervisor, superintendent and senior management roles. For example, the core of the signalling and superintendent workforce are long-term rail workers with extensive knowledge and breadth of experience. As these workers reach retirement, they are very difficult to replace. This will continue to be a challenge due to the increasing specialisation and fragmentation of the market which inhibits a worker's ability to obtain the breadth or experience required of these roles. Employers will need to consider how they upskill experienced workers to enable them to move into more senior roles.

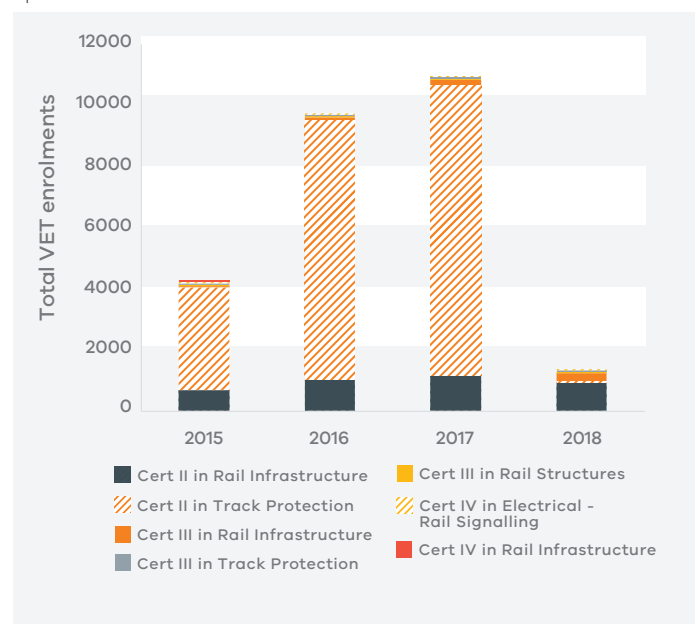
Beyond VET trained workers, engineering management and engineering roles, such as signal design engineers and project engineers, are also experiencing major labour gaps. These occupations typically look to the higher education sector for the supply of new workers.

To address these gaps, there is a need for employers to proactively take on and upskill new workers for the sector. The significant pipeline of rail infrastructure work in Victoria and other parts of Australia has increased competition for the national labour pool and made use of interstate labour a less viable option. In an environment with increased competition for labour, overreliance on sourcing workers from the existing labour pool will exacerbate workforce shortages.

Currently, to fill gaps in the workforce, employers sometimes pay inflated wages to attract workers from competitors or promote workers into positions before they may be ready. However, employers noted that when promoting from within they can at times find it equally challenging to find someone for the vacated role.

Total VET data in Figure 5 shows an inconsistent enrolment pattern in rail infrastructure specific qualifications. Many of the enrolments in qualifications shown in Figure 5 are to undertake individual units from rail infrastructure courses.

Figure 5: Victorian total VET enrolments in rail infrastructure specific courses 2015 to 2018



Source: NCVER, 2018

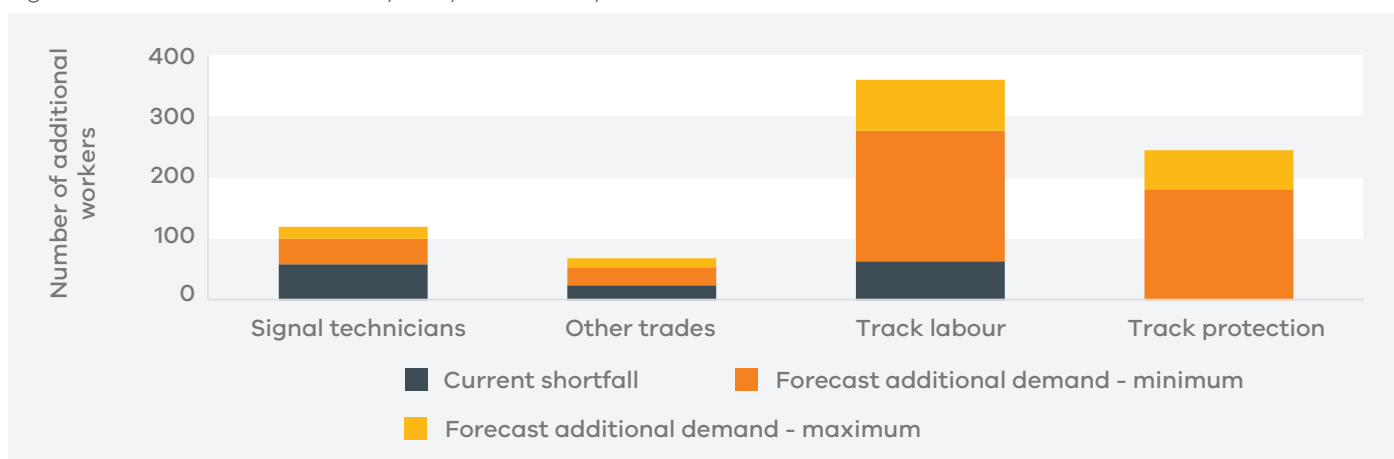
Finally, employers reported difficulty attracting and retaining suitable entry level workers to the sector due to the career perception, long and irregular hours, travel and inconsistent work. Working in rail infrastructure can be demanding and involve shifts of 12 to 14 hours. The pipeline of work can fluctuate, and to minimise disruption to the public work is often done in off-peak times, such as nights, weekends and holidays. In addition, there can be a need to travel long distances to the location of required work.

The sector will require 600 to 800 workers to meet current shortages and forecasted additional demand to 2022

Infrastructure investment, competition for the national pool of workers and a backlog of maintenance work is expected to drive demand for skilled workers over the next three years. The rail infrastructure workforce is projected to grow at three per cent per year to 2022, resulting in 600 to 800 additional workers needed to address the shortfall and meet forecast additional demand. From 2022, demand for labour is likely to further increase based on the current pipeline of work, including the scheduled construction of the airport rail link. The current level of training investment by the sector is insufficient to meet expected demand, with action required by industry and government to address shortages.

Approximately 160 to 190 of the total increase in workers will be in occupations that require an apprenticeship, like signal technicians, HV substation electricians, overhead lines workers or mechanical fitters (Figure 6). Employers anticipate that signal technicians will continue to be the hardest role to fill over the next one to three years as the sector is not prepared for the loss of experience from an aging workforce. The sector is already looking to other industries to help meet this demand. Employers also face current shortages for highly skilled track labour, such as rail plant operators and track examination and certification workers. A high proportion of entry level rail infrastructure workers are in labour and track protection, so the forecast additional demand is high given anticipated growth in the sector.

Figure 6: Estimated demand for key entry level roles by 2022



Note: forecasts don't include replacement of the current workforce due to turnover. Minimum forecasts are based on a workforce size of 5,000. Maximum forecasts are based on a workforce size of 7,000. 'Other trades' includes HV substation electricians, overhead lines workers and mechanical fitters.







Skills developed on the job are valued by rail infrastructure employers

The Rail Industry Worker (RIW) matrices the skills required for common activities. As per the matrices, all entry level rail infrastructure workers require a white card, railway medical and the safely access the rail corridor unit of competency. There are often additional requirements depending on the role, employer and nature of the work. For example, to move from a Rail Labourer to a Ballast Unloader, a worker must acquire the Carry out track ballasting and the Implement ballast unloading competencies. The full set of requirements for all key roles and employers can be found online in the RIW matrices⁹.

Rail infrastructure businesses rely on track labour to do the labour-intensive and machine operation work. These workers often enter the sector without prior training or experience, with skills and experience gained on the job complemented by requirements for individual competencies, tickets or licenses. Tasks undertaken by track labourers can include track examination and certification, plant operation, unloading ballast, lubricating and maintaining rail, and installing guard rail. Skilled tradespeople and track protection workers complement them.

Table 2 details the key skills and requirements for four of the key entry level roles in rail infrastructure. All roles require workers to perform their duties safely and have the stamina and flexibility to adapt to work requirements. Many of today's rail infrastructure workers do not gain the breadth of experience that was possible before rail services were privatised, as the Public Transport Corporation would rotate elements of their workforce across the state. This can exacerbate skills shortages as the core experienced workforce are retiring without a ready supply of workers to replace them. Track labourers do not require an accredited pathway, although employers look for at least 6-12 months track experience, which can take several years to gain. For labour-intensive track work, employers seek workers with physical strength and stamina, while experience and capability are highly valued for plant operators. Signal technicians require specialised skills and more developed math and problem-solving skills. The highest volume occupations in other trades are electrical tradespeople, such as substation electricians and overhead lines workers. These workers need to understand design plans and the behaviour of electrical equipment. Track protection requires safety-conscious workers who may also require knowledge of hand signals and an ability to remain focused for extended periods.

Table 2: Key skills identified by employers

	 Track labour	 Signal technician	 Other trades - electrical	 Track protection
Key skills	<ul style="list-style-type: none"> Plant / machine operation Track examination and certification Drill, bolt and cut rails to length Physical strength 	<ul style="list-style-type: none"> Signal design Math Diagnostics and root cause analysis Understand Victorian standards Logical approach to problem-solving 	<ul style="list-style-type: none"> Install, test and maintain electrical equipment Run, bend and connect cable Understand plans and specifications Basic math 	<ul style="list-style-type: none"> Safety-conscious Maintain focus as lookout Understand and perform hand signals
Tickets and requirements*	<ul style="list-style-type: none"> White card Safely access the rail corridor Railway Medical 	<ul style="list-style-type: none"> Electrical license Certificate IV in Rail Signalling White card Safely access the rail corridor Railway Medical 	<ul style="list-style-type: none"> Electrical license White card Safely access the rail corridor Railway Medical 	<ul style="list-style-type: none"> White card Safely access the rail corridor Railway Medical

* requirements vary by task, role and employer. Refer to the Rail Industry Worker matrices for the full set of requirements

⁹ RIW National Matrices, Australasian Railway Association, 2019

Sector trends have implications on the future rail infrastructure workforce

Government procurement practices are a key driver of industry behaviour, and changes in these practices were identified as an important trend by consulted employers.

Recent years have seen an increased focus on procurement to drive government priorities and to shape project delivery. For rail infrastructure the most significant trend is the increased focus on contracts structured to minimise impact on communities and a variable pipeline of projects. This has created unintended impacts on the workforce demand by concentrating activity in short periods of time and reducing certainty for future projects. Rather than recruit for a consistent pipeline of work, employers need to plan for peaks and troughs based on a relatively small core workforce augmented by contingent labour.

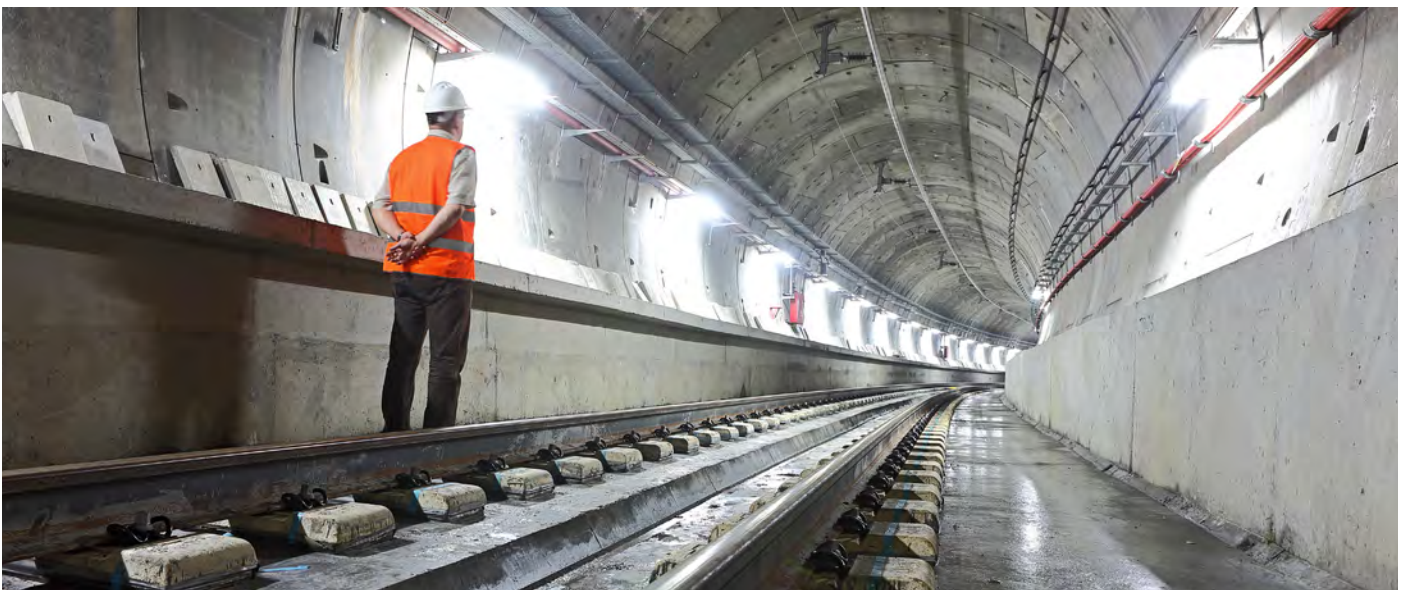
The increased demand for contingent labour is contributing to greater reliance on labour hire as a business model in the sector. This trend may present challenges for workforce development in the sector, as the labour hire model is not conducive to skills development and the completion of full qualifications. While use of labour hire is most common in entry-level roles, the contingent nature of work and a lack of training and upskilling can mean these workers are less likely to develop into the skilled positions that are facing labour shortages. While MPSG is designed to address this, employers noted that the most needed skills are not always prioritised in meeting their MPSG obligations.

Further, the increased reliance on contingent labour to scale workforce in response to major projects has wider implications for workforce profile. Employers noted a growing dependence on less experienced workers to meet the increased workforce demand. This in turn leads to difficulties ensuring the workforce have the skills and knowledge required for their position. Less experienced workers in senior roles has the potential to increase risk of management issues.

The increasing need for computer literacy in management roles is compounding the issue, as some experienced managers and superintendents lack the computer skills needed for modern management.

As the sector grapples with the record demand, employers are looking to tap into new pools of workers. Employers acknowledge that there is further action required by industry to make rail infrastructure a more attractive career choice. As a sector predominantly drawing on male workers, employers are looking to attract more women to rail infrastructure. Actions to shape rail as a more attractive choice for new entrants also include school-based programs, diversity and inclusion programs and better managing the demands of the work. Appropriate training pathways will be critical for the sector to attract and retain new workers. Increased use of apprenticeships could be a key component to provide greater employment certainty and support for new workers as they learn the industry.

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3. The role of training

Recommendations for the VET system:

3. Consider mechanisms that enable rail infrastructure experts from industry to better support training delivery.
4. Investigate the merits of Certificate III in Rail Infrastructure as an apprenticeship.
5. Ensure the review of the Certificate IV in Rail Infrastructure aligns it to industry needs before promoting among industry to encourage greater use.
6. Add the Certificate IV in Electrical – Rail Signalling and Certificate IV in Rail Infrastructure to the funded course list.
7. Undertake further research on the utilisation of the Certificate II in Track Protection to determine whether this needs to be considered for inclusion on the Funded Course List.
8. Remove qualifications with no sector demand from the funded course list.
9. Investigate the merits of supporting skill sets aligned to the Australian Rail Industry Worker matrices.

Apprenticeships and skillsets are the preferred model of training for the sector

Rail infrastructure businesses have a strong preference for on the job learning supported by apprenticeships and skillsets. Employers recommend workers be employed before committing to in training to ensure training activity is appropriately directed and that they can gain the necessary experience on the job.

The Rail Industry Worker (RIW) national matrices set out the competencies and qualifications required to hold specific roles in rail industries (see Figure 7). The requirements outlined in the matrices have been agreed by several businesses including V/Line, Metro Trains Melbourne (MTM), Australian Rail Track Corporation (ARTC), John Holland Group and interstate providers. The national matrices are designed to increase transportability of labour by more closely aligning the training requirements of major rail businesses in Australia.

Figure 7: Rail Industry Worker matrices outline the unit of competency requirements



Apprenticeship pathways are required for signal technicians and other trade workers to meet the licencing requirements for their roles. Signal technicians initially enrol in a Certificate III Electrotechnology Electrician before studying their Certificate IV Electrical – Rail Signalling. This is usually completed over a four-year apprenticeship. Enrolments in the Certificate IV in Electrical – Rail Signalling declined between 2015–2018, suggesting further action is needed by industry to address signal technician shortages. Other common apprentice pathways include the Certificate III Electrotechnology Electrician for overhead lines workers and Certificate III in Engineering – Mechanical Trade for fixed plant related roles. Whilst demand for trade qualified workers exceeds supply, there remains an acute shortage of apprenticeships on offer by employers in rail.

Skilled trades people developed through apprenticeships are valued by the sector. Employers feel they get the best results with signalling, electrical and mechanical trade workers that have learned their craft in rail infrastructure. Some rail infrastructure employers, particularly Tier 1 contractors, face challenges sustaining a continuous pipeline of work for their apprentices. In these cases, they often work with group training organisations as a source of labour.

In contrast the preference for labour and track protection is for workers to build competency in line with the RIW matrices. As workers move from role to role, they broaden their capability, with qualifications being attained once they have met the requirements. Of the 23 roles identified in the Track and Civil Matrix, eight roles require a full qualification with the remainder requiring skills sets.

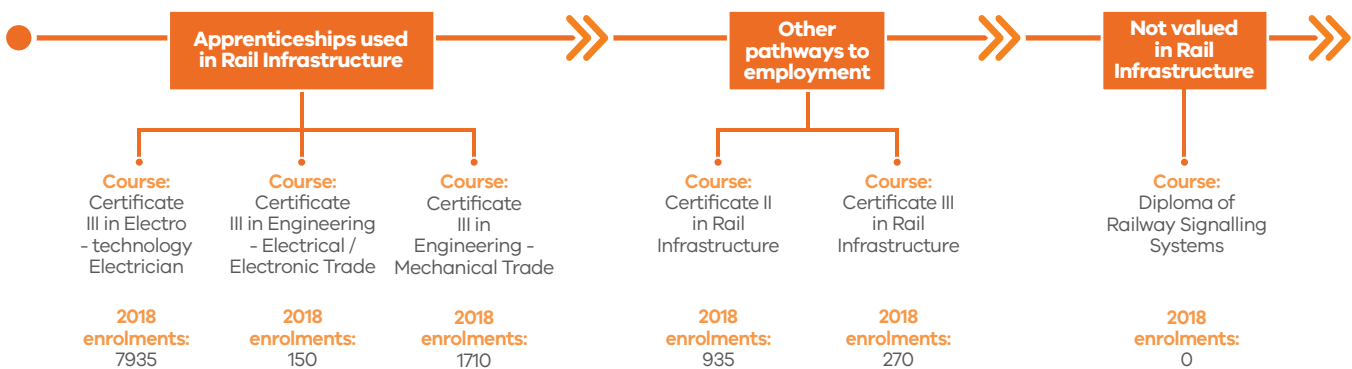
Once experienced, labourers, signal technicians and trades people can progress into leadership roles. The transition from apprentice or worker to leading hand can take over four years as workers complete training and gain the experience, leadership and safety skills they need to progress. Most of the workforce do not progress beyond the leading hand level, as many workers are satisfied with the balance of pay and responsibility at this level. Transition into a supervisor role could happen after four years as a leading hand, with breadth of experience an important consideration. When workers reach the supervisor level, they will often transition from contract to ongoing employment. Relatively few workers will make the transition from supervisor to superintendent, with significant experience and planning and execution skills required for the role. Most supervisors and superintendents are from trade backgrounds and have grown into their positions through experience. There are management roles above the superintendent level, including general superintendent, construction manager and project manager. However, these roles tend to have a low volume of workers that have often come through a different pathway, such as engineering. Signal technicians have some additional career path options, with a smaller number of workers seeking white-collar or design and technology roles.

Post-trade qualifications are not currently a focus for employers. However, it was noted that the Certificate IV in Rail Infrastructure is underutilised and has the potential to be useful for those looking to progress in the sector, particularly with greater focus on people and leadership in the course content.

Five qualifications on the funded course list are valued in rail infrastructure

Employers indicated that five qualifications on the funded course list are valued in rail infrastructure (see Figure 8). This includes three apprenticeship courses, which are core electrical and mechanical courses not specific to the sector. The Certificate IV in Electrical – Rail Signalling, Certificate IV in Rail Infrastructure and the Certificate II in Track Protection were valued by consulted employers, however, they are not on the 2020 funded course list. The Diploma of Railway Signalling Systems is on the funded course list and was not valued by consulted employers. A further six courses not valued by rail infrastructure employers were removed from the funded course list for 2020. Employers noted that there are parallel activities happening to consolidate training and better align to the national matrices.

Figure 8: Rail infrastructure VET courses on the funded course list (Total VET Activity)



In addition to qualifications, consulted employers emphasised the importance of skill sets for work in the sector. Three qualifications, the Certificate II and Certificate III in Rail Infrastructure and the Certificate II in Track Protection, incorporate the majority of units needed to support obtainment of the foundation skill sets required to perform most work in the sector. In particular, the ‘safely access the rail corridor’ unit is required for all occupations working on or near track.

Opportunities exist to strengthen training quality and alignment of products to industry needs

Quality of delivery is a key concern of the sector with the standard of training delivery leading to a lack of confidence in the training system. To address this, registered training organisations need to use technical experts from the rail infrastructure sector. The number of providers is small (No TAFEs deliver), and training can only be delivered by specialists from rail.

Consulted employers identified a critical shortage of quality educators. This was reinforced by rail industry stakeholders who identified educators, trainers and assessors as the second highest area of shortage in an Australian Industry Standards survey¹⁰. However, attracting skilled workers remains a challenge. Lost wages in the transition from rail infrastructure work to an educator role can easily exceed \$100,000 per annum. As a result, the type of workers that make the move are often older, close to retirement and looking to give back to the sector. Employers emphasised that the skills needed live in industry. Consequently, collaboration across government, industry and training providers is required to adequately address the issue.

Employers were generally satisfied with qualifications identified as valuable to the sector. Some employers expressed interest in exploring the potential for an apprenticeship pathway based on the Certificate III in Rail Infrastructure.

Finally, the focus on skill sets for many of the key roles creates ambiguity on the role of publicly subsidised and fee for service activity to support the sector. Greater clarity could be provided through recognition of specified skill sets for eligible workers. As compliance is recognised with single unit competencies, it is less likely for employers to seek full qualifications outside of trades areas. It may therefore be more desirable for government to focus on funding these skill sets discretely from qualifications, which may also reduce the non-completion rate.

Three qualifications, the Certificate II and Certificate III in Rail Infrastructure and the Certificate II in Track Protection, incorporate the majority of units needed to support obtainment of the foundation skill sets required to perform most work in the sector.



¹⁰ Australian Industry Standards Skills Forecast, 2019





**Office of the
Victorian Skills Commissioner**

Level 1, 21 Degraeves Street
Melbourne VIC, 3000

PO Box 354, Flinders Lane
VIC, 8009

T: (03) 8892 1602

E: enquiries@vsc.vic.gov.au

www.vsc.vic.gov.au

Level 1, 21 Degraeves Street
Melbourne VIC, 3000

