TRANSPORT AND LOGISTICS IRC SKILLS FORECAST KEY FINDINGS DISCUSSION PAPER 2018

The purpose of the paper is to provide industry stakeholders with a summary of the key findings from the recent industry intelligence gathering activities overseen by the Transport and Logistics Industry Reference Committee (IRC). The key findings will be used by the IRC in the development of the Transport and Logistics IRC Skills Forecast and Proposed Schedule of Work for the TLI Transport and Logistics Training Package.

Several targeted strategies were employed to collect industry intelligence about the opportunities and challenges for the Transport and Logistics workforce and any TLI Transport and Logistics Training Package review work necessary to meet these industry needs. These included:

- A Call for Submissions process inviting stakeholder responses about key issues affecting skills and workforce development;
- An IRC Skills Forecast Survey seeking information on priority skill needs, skill shortages and issues relating to workforce training and;
- A comprehensive review of Data and Research Sources nominated by the Transport and Logistics IRC.

Australian Industry Standards has been tasked by the IRC to collect feedback from interested stakeholders about these issues on its behalf.
HOW TO PROVIDE FEEDBACK

Stakeholders are invited to submit their comments on the findings outlined in this paper by close of business on 20 February 2018.

It is acknowledged that the information provided about issues in this paper is deliberately brief. The purpose of this paper is to validate and confirm the findings, which will inform the advice the Transport and Logistics Industry Reference Committee (IRC) will provide to the Australian Industry and Research Committee (AISC).

In considering the key issues and themes identified in this paper, we are keen to have any feedback that either confirms your issue has been covered, or else raises an issue you feel should be addressed in the Proposed Schedule of Work (FY18/19–FY21/22) for the TLI Transport and Logistics Training Package to be submitted to the AISC on 30 April 2018.

Responses can be emailed to enquiries@australianindustrystandards.org.au.

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TRANSPORT AND LOGISTICS INDUSTRY OVERVIEW
The Transport and Logistics industry in Australia has an estimated annual revenue of $96.65 billion, adding $39.95 billion to the Australian economy in 2017. The industry employs nearly half a million people across its major subsectors: road transport, logistics, warehousing and stevedoring.

KEY TRANSPORT AND LOGISTICS METRICS

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue ($b)</td>
<td>96.65</td>
</tr>
<tr>
<td>Profit ($b)</td>
<td>10.41</td>
</tr>
<tr>
<td>Average Wage ($)</td>
<td>66,712.44</td>
</tr>
<tr>
<td>No of Businesses</td>
<td>84,635</td>
</tr>
<tr>
<td>Employment Growth to 2023 (%)</td>
<td>3.3</td>
</tr>
</tbody>
</table>

Scope: Courier Pick-up and Delivery Services, Customs Agency Services, General Warehousing and Cold Storage, Grain Storage, Long Distance Bus Transport, Port Operators, Postal Services, Rail, Air and Sea Freight Forwarding, Removalists, Road Freight Forwarding, Road Freight Transport, Scenic and Sightseeing Transport, Stevedoring Services, Taxi and Limousine Transport, Urban Bus and Tramway Transport

KEY TRANSPORT AND LOGISTICS FACTS

48,747 registered businesses in the road freight transport ranging from single truck operators to large multi-national corporations

30 per cent of domestic freight task carried by road equating to 726 billion tonne-km¹

$53 billion per year by 2031 – estimated cost of congestion on transport infrastructure²

8.8 per cent increase in volume and 8.2 per cent increase in spending on parcels by 2018³

³ Pitney Bowes (2017) Parcel Shipping Index Forecasts.
TRANSPORT AND LOGISTICS WORKFORCE

TRANSPORT AND LOGISTICS WORKFORCE BY STATE/TERRITORY

Source: Australian Bureau of Statistics (2017), 2016 Census - Employment, Income and Education

TRANSPORT AND LOGISTICS SKILL SHORTAGES

80.7 per cent of employers reported experiencing a skills shortage in the last 12 months [2017 Survey results]. The occupations reported as being in shortage were:

1. Truck Drivers
2. Educators
3. Supervisors/Managers
4. Schedulers
5. Forklift Drivers

Reasons for Shortage

Employers identified the following reasons for the shortage with the most frequent response listed first:

1. Wages / salaries considered too low
2. Unattractive job / poor industry image
3. Ageing workforce / current staff retiring
4. Cost/time to achieve the required qualification
5. Competition from other organisations
KEY TRANSPORT AND LOGISTICS SKILL ISSUES

INDUSTRY CHALLENGES AND OPPORTUNITIES

Technological Innovations

The Transport and Logistics industry is rapidly being affected by a surge of new technologies and innovations. The advent of Industry 4.0 (the next industrial revolution incorporating complex computerised systems, data and software to create ‘smart’ processes and products) will rapidly change the skill needs of the Transport and Logistics workforce. Jobs that were highly manual less than a generation ago are being reshaped with new technologies and equipment, creating both new opportunities and a dissonance of the required skills in the workforce.

Automation

Automation is not a new phenomenon to hit the Transport and Logistics industry, but its use is growing at a rapid pace. Mining operations have used autonomous vehicles to reduce the risk of its workers in hazardous areas and to increase efficiencies of moving cargo within mining sites since 2008. Automation of container terminal operations are also underway in Australia i.e. the fully automated Victoria International Container Terminal (VICT) at the Port of Melbourne, in Sydney at Port Botany, and at the Port of Brisbane.

It is expected that semi-autonomous vehicle technology (requiring the driver’s attention or input at some point in the journey) will be introduced in Australia within the next ten years. The implementation of fully autonomous vehicles (requiring no driver interaction) may still be decades away from consumer-level products. It is noted, however, that pilot-programs in limited environments, including fully driverless buses in Darwin, are underway.

Currently, the regulatory framework and legislation for autonomous vehicles is not keeping pace with the fast-tracked development of private investment, research, and development. The advent of these innovations will require new skills and impact the Transport and Logistics workforce and other supporting industries. It will also create opportunities to attract younger people to the industry, with the adoption of new innovations and systems requiring greater digital literacy skills.

The National Transport Commission (NTC) has recently released guidance material on the new regulatory requirements for autonomous vehicles within Australia. With varying levels of automation expected to enter the market, there is a clear need to develop accountability and legal responsibility while the vehicle is in operation.

7 ICTSI (2017) ICTSI: Melbourne terminal: world’s first fully automated international container terminal.
9 National Roads and Motorists’ Association (2017) The future of car ownership. Sydney, NSW.
The use of telematics has been incorporated into the regulatory framework through the Intelligent Access Program (IAP). IAP is also breaking ground internationally, acting as a benchmark for the development of international standards for telematics\(^\text{13}\). Working with new computer systems and automation protocols requires a workforce with digital literacy (including data analysis), higher-order skills, and strong communication skills to liaise with colleagues and customers effectively. These skills include the ability to think critically, creatively, to problem-solve, and to respond to unforeseen tasks dynamically/adaptively.

The industry will also require new skills, such as those required for maintenance of automated equipment, diagnostics, and remote servicing of broken-down vehicles mid-transit. To maintain relevance and employability, the workforce will need to be able to adapt and prepare for the new wave of change.

Automating the processes of goods-to-person logistics will continue to expand, to make the fulfilment of e-commerce more effective and efficient. With the volume of road freight expected to nearly double between 2015-2030, the role of the Transport and Logistics workforce is anticipated to change dramatically, with more emphasis on data management and new software solutions (i.e. telematics and electronic record keeping)\(^\text{14}\).

### Disruptive Technology and Innovation

New technological innovations are continually being developed that can revolutionise a market, create new markets, add new value to products/processes, and disrupt current market occupants\(^\text{15}\). Furthermore, the ‘Uberisation’ of markets (the transition to use under-utilised capacity within a market for low transaction costs) is increasingly changing transport management systems\(^\text{16}\).

Integrated transport facilities (ITF) are being developed for goods receival, logistical storage and dispatch into one unified centre. The ITFs are a significant focus of research and development activity within the Transport and Logistics industry. Automating the internal handling of goods in these facilities is already in use; from unloading cargo containers in ports, dispatching the contents to their appropriate storage facility, and sending the delivery to its destination.

How the industry reacts or grows with technological disruption is yet to be seen. However, lessons learnt from Uber (and other service platforms), as well as innovative technologies, show that businesses need to be proactive when developing strategies to better service customers. The Transport and Logistics industry needs to ensure the workforce can meet the skill-needs of these new disruptions and innovations.


\(^{16}\) Ken Lyon (2015) Crowd sourcing and Uberisation: Does the Logistics Industry have a future? Transport Intelligence.
**Internet of Things**

The Internet of Things (IoT) describes the ever-increasing trend of connecting devices, sensors and data collecting tools to networks, relaying information without a human intermediary. IoT has the capacity to enhance asset tracking, warehousing operations, and freight transportation. Its applications extend to every aspect of the logistics supply chain and has already been incorporated into the supply chains of logistics providers\(^7\).

By 2020, there will be over 50 billion IoT devices world-wide and estimates state that by 2025, up to $2.5 trillion (USD) of additional value will be generated by IoT for the global logistics industry\(^8\). Spending on connected logistics solutions is expected to more than double between now and 2020 because of IoT's impact on the retail market\(^9\).

The growth of these analytical capabilities is leading to new innovations across communications, systems engineering and security environments that improve the reliability and transparency of the transport systems. It will be necessary to develop skills to capitalise on the operational efficiencies, heightened security, improved customer experience and new business models that follow from IoT innovations\(^9\).

Within the Transport and Logistics industry, IoT will have an impact on the workforce, driving the demand for new skills to effectively work, operate and manage new systems in ever-changing environments.

**Omni-Channel Logistics**

Consumers are progressively expecting to be able to buy products 24 hours a day, seven days a week; either online or instore; on multiple devices simultaneously; with the same level of customer service as shopping instore. This is demanding a change from traditional single and multi-channel logistic process chains of goods and service delivery towards omni-channel logistics (being available 24 hours a day online, with multiple methods of delivery, at the convenience of the customer). These changes will affect marketing, merchandising, ordering, fulfilment and returns across multiple platforms\(^20\).

The recent emergence of Amazon in the Australian market is likely to create significant disruption in e-commerce. Amazon's entry will create strong competition in the local market and put pressure on the current market to compete with operating at convenient and competitive pricing.

Temperature and time-sensitive products will benefit from multi-modal transport methods and real-time, omni-channel logistical solutions. The existing workforce will need to be equipped with the necessary digital skills and higher-level skills if the benefits of this technology are to be fully realised.

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\(^7\) Logistics & Materials Handling (2017). Deutsche Post DHL and Huawei to work together on IoT supply chain tech.


\(^9\) Sarvi, S., Liddle, G., and Thompson, R. (2017) City streets become a living lab that could transform your daily travel. The Conversation.

Supply Chain

Sustainability
The required sustainable operating practices and changes to regulations in the Chain of Responsibility are beginning to influence industry decisions. There is increasing pressure to reduce greenhouse gas emissions and manage environmental compliance parameters more effectively. These are increasing the demands to employ sustainable business practices, including the use of new technology\textsuperscript{21}.

New technologies and innovative approaches are being developed and implemented to address environmental issues such as vehicle emissions, energy consumption, fuel efficiency and stream-lining operations through automation in facilities. Alternative fuels (including biogas, bioethanol, biodiesel) and hybrid electric vehicles are beginning to appear in everyday operations.

Tesla Motors has recently announced development of an electric truck called the Tesla-Semi, which they state will deliver a substantial reduction in the cost of cargo transport by reducing fuel consumption and CO$_2$ emissions and operational/maintenance costs compared to conventional transport vehicles\textsuperscript{22}.

Companies are now required to focus more strongly on environmental, social and governance (ESG) performance. These new performance criteria will require new approaches to workforce development and standards of performance. This will have a flow-on effect to workforce relations, safety and productivity, requiring more effort in human capital performance (upskilling and enhancing the workforce through training and development).

Supply chain sustainability extends beyond environmental compliance, it also encompasses workforce sustainability. Companies are looking to streamline operations through savings on resourcing and increasing productivity performance to ensure sustainability.

The sustainability of operations has a trickle-down effect onto the workforce, increasing job competition and requiring workers to have knowledge and awareness of the regulatory obligations. These changes bring consequential impacts for the workforce, who will need to retrain and adapt to meet the changing skill needs.

Traceability
Tracking the identity of physical property in transit is going to be a significant business opportunity over the next decade. Logistics and supply chain companies are the key enablers that ensure retailers achieve inventory visibility and optimisation to meet customer demand.

The use of blockchain-based systems (technology which distributes transactions made across an open or closed network of computers, and tracks these by consensus, enabling transparency and transaction history) will significantly increase the traceability of goods along the supply chain. This will add value by identifying the origin of goods, reducing fraudulent supply of fake goods, and enable higher levels of customer satisfaction\textsuperscript{23}. The impact of this technology (including further unforeseen technological changes) on the Transport and Logistics industry of the future cannot be underestimated.

Safety & Regulatory Environment

Industry is focussed on achieving high levels of safety and effectiveness. Over the past 35 years, there has been an 80 per cent reduction in the number of heavy vehicle fatalities, despite rapid growth of the workforce, and heavy vehicles on the road, over the same time. Ongoing driver skill training and education in regulatory and safety requirements will be necessary to ensure those high levels of safety and efficiency are achieved.

The use of virtual, and augmented, reality and simulation-based training systems are being investigated by businesses to deliver training where it may not be financially viable or safe to conduct in the real-world. Nearly a third of businesses within the Transport and Logistics industry are investigating how to integrate VR to improve occupational health and safety training24.

An increasing societal focus on road safety will remain a focus into the future. This is reflected in the evolution of Chain of Responsibility and other safety measures.

Any changes made to the regulatory environments within the Transport and Logistics industry directly affects the workforce. Companies will be required to upskill and retrain workers to meet these requirements, for example, new regulations in fatigue management and heavy vehicle operated competency. Consequently, the skills required by the workforce will need to keep pace with any future developments.

WORKFORCE SUPPLY SIDE CHALLENGES AND OPPORTUNITIES

Ageing Workforce, Industry Attraction and Workforce Flexibility

With a large proportion of workers set to retire in the next two decades, the industry currently faces an on-going recruitment challenge25. The average age of all workers in the Transport and Logistics industry is 45, which has increased by two years since 200626. Planning viable recruitment strategies for succession and preparing a new cohort of workers is required to ensure industry can keep up with demand.

Attracting, training and retaining young workers to undertake a career in the Transport and Logistics industry is proving to be a challenge.

Compounding the issue is the increased use of sub-contracting and other new forms of employment within the industry. Stakeholders report that part of the difficulty attracting young drivers is that the occupation isn't seen as a professional position. When coupled with the industry's poor perception in the broader community, this amounts to a significant barrier. Career progression is often limited in driving roles and career pathways are often not understood. Promoting the industry and the technological advances being made to young people is encouraged to reduce the age-gap within the industry.

24 Procurement and Supply Australasia (2017) Aussie business owners turn immersive tech into a (virtual) reality.
Gender Diversity

The Transport and Logistics industry consists of widely diverse businesses and a diverse range of employment opportunities. This does not directly translate to diverse workforce demographics, with most employees in the Transport and Logistics workforce being male. Despite the industry experiencing strong employment growth of 28 per cent in the last decade, the Australian Bureau of Statistics reveals 20 per cent of employees in the wider transport industry are female in 2017. This gender composition of the workforce has largely remained the same over the last 30 years. Stakeholders report a perception that most work undertaken is stereotypically 'masculine', while women are predominately employed in support roles such as administration, human resources, procurement, and finance.

While advances in technology have arguably increased employment opportunities for women, barriers still exist for certain job roles considered too dangerous or impractical for females. Despite the lower representation of women in the workforce, females in Transport and Logistics have higher education levels than their male counterparts on average; around 31 per cent have a diploma or higher, compared with 24 per cent of males.

As technology embeds itself into the industry further, opportunities for both genders to have stable careers in the industry at any level will increase. Initiatives to make roles more flexible and attractive to sections of the broader community not traditionally engaged in the Transport and Logistics workforce would be highly beneficial for the longevity and sustainability of the industry workforce.

PRIORITY SKILLS

The priority skills results are drawn from Transport and Logistics stakeholder responses to the IRC Skills Forecast survey conducted between 4 December 2017 and 16 January 2018.

SKILL CATEGORY

In order of priority to the industry, the following skills were identified as the most important for the Transport and Logistics workforce within the next three to five years.

1. Compliance
2. Health/Safety
3. Driving
4. Operational
5. Digital

GENERIC SKILLS

Ranking of the 12 generic workforce skills in order of importance to the Transport and Logistics industry.

1. Managerial / Leadership
2. Language, Literacy and Numeracy (LLN)
3. Learning agility / Information literacy / Intellectual autonomy and self-management
4. Technology
5. Design mindset / Thinking critically / System thinking / Solving problems
6. Customer service / Marketing
7. Communication / Virtual collaboration / Social intelligence
8. Data analysis
9. Science, Technology, Engineering, Mathematics (STEM)
10. Environmental and Sustainability
11. Financial
12. Entrepreneurial
BACKGROUND INFORMATION

INDUSTRY REFERENCE COMMITTEES
New arrangements for training product development commenced in January 2016. These arrangements consider the needs of employers of all sizes, across all industry sectors, and ensure the delivery of high quality Training Packages that are nationally endorsed and internationally regarded.

Industry References Committees (IRCs):
• Provide a forum for industry engagement
• Direct the review, development and implementation of Training Package content relevant to the industry sectors they cover
• Act as a conduit for industry feedback to the Australian Industry and Skills Committee (AISC) and governments on industry trends

IRCs are composed of individuals and industry members with the experience, skills and knowledge of their specific industry sector. IRCs are supported by independent and professional Skills Service Organisations (SSO) to develop and review Training Packages, and to inform Training Package development priorities.

IRCs have a direct relationship with the AISC, and are charged with identifying industry’s skills needs, developing Business Cases setting out the Case for Change, and providing the sign off on training products before they go to the AISC for consideration.

Each IRC will perform the following functions:
• Gather intelligence for their industry sectors to inform advice on Training Package development and review
• Direct the work of its SSO in the development of industry proposals, Cases for Change and Cases for Endorsement
• Oversight the development and review of Training Packages in line with the requirements of the AISC
• Provide sign off for industry proposals, Cases for Change, Cases for Endorsement and other submissions for consideration by the AISC
• Direct the work of the SSO in preparing the support materials where funding for additional activities is provided
• Report to the AISC on progress of its work
• Promote the use of Vocational Education and Training (VET) in the sectors they represent
TRANSPORT AND LOGISTICS INDUSTRY REFERENCE COMMITTEE (IRC)

The Transport and Logistics Industry Reference Committee (IRC) has been assigned responsibility for the TLI Transport and Logistics Training Package.

**Chair:** Mark McKenzie

**Deputy Chair:** Cathi Payne


The TLI Transport and Logistics Training Package provides the only nationally recognised Vocational Education and Training (VET) qualifications for occupations involved in warehousing and logistics operations, driving operations, stevedoring, yard operations freight handler, furniture removals, international freight forwarding, mobile crane operations, waste driving operations, driving instruction for car, heavy vehicle and motorcycles, materiel and deployment logistics, traffic operations, bus and coach operations and customs broking. The TLI Transport and Logistics Training Package comprises 36 qualifications, 38 Skill Sets, 464 Units of Competency and associated assessment requirements covering these sectors. The TLI Transport and Logistics Training Package is in the Scope of Registration of 683 Registered Training Organisations.

IRC SKILLS FORECAST AND PROPOSED SCHEDULE OF WORK

The IRC Skills Forecasts focus on the prioritisation of the skill needs of the industry sectors each IRC has responsibility for. They are developed and reviewed annually in consultation with industry stakeholders and submitted on behalf of the IRC to the Australian Industry and Skills Committee (AISC) for approval.

IRCs are required to consult broadly with stakeholders to ensure a whole-of-industry view about the opportunities and challenges for the workforce and the Training Package review work necessary to meet industry needs.

The IRC Skills Forecast is submitted to the AISC and informs the development of a four-year rolling National Schedule for Training Package development and review work. More information on the National Schedule can be found at [www.aisc.net.au/content/national-schedule](http://www.aisc.net.au/content/national-schedule).
AUSTRALIAN INDUSTRY STANDARDS

Australian Industry Standards (AIS) provides high-quality, professional secretariat services to the Transport and Logistics IRC in our role as a Skills Service Organisation. AIS provide services to eleven allocated IRCs which cover Aviation, Corrections, Gas, Electricity Supply (Generation and Transmission, Distribution and Rail), Electrotechnology, Maritime, Public Safety (including Police, Fire and Emergency Services, Defence), Rail, Transport and Logistics, and Water industries. AIS supports these important industry sectors using our world class in-house capability and capacity in technical writing, quality assurance, project management and industry engagement in the production of Training Packages.

AIS was established in early 2016, 20 years after its predecessor the Transport and Logistics Industry Skills Council (TLISC) was established in 1996. More information about AIS can be found at http://www.australianindustrystandards.org.au.

- We support industry growth and productivity through our modern innovative approach to establishing skills standards.
- We provide high-quality, professional secretariat services to help our allocated industry reference committees develop the skills that industry needs.
- We partner with industry to shape the workforce of the future.