AVIATION 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 Aviation Industry Reference Committee (IRC). The key findings will be used by the IRC in the development of the Aviation IRC Skills Forecast and Proposed Schedule of Work for the AVI Aviation Training Package.

Several targeted strategies were employed to collect industry intelligence about the opportunities and challenges for the Aviation workforce and any AVI Aviation 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 Aviation 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 Aviation 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 AVI Aviation Training Package to be submitted to the AISC on 30 April 2018.

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

For further information please contact:

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**AVIATION INDUSTRY OVERVIEW**

The Aviation industry underpins Australian business and tourism and has an estimated annual revenue of $43.54 billion, adding $15.91 billion to the Australian economy in 2017. The industry employs more than 88,000 people across its five main subsectors: Domestic commercial aviation, international commercial aviation, general aviation, air-freight transport and aviation support infrastructure.

**KEY AVIATION METRICS**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue ($b)</td>
<td>43.54</td>
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<tr>
<td>Profit ($b)</td>
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<tr>
<td>Average Wage ($)</td>
<td>81,708.53</td>
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<td>No of Businesses</td>
<td>1,865</td>
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<tr>
<td>Employment Growth to 2023 (%)</td>
<td>11.5</td>
</tr>
</tbody>
</table>

Scope: Airport Operations, Domestic Airlines, International Airlines, Non-Scheduled Air Transport

**KEY AVIATION FACTS**

**Domestic Aviation in Australia – 2017:**

- **61.65 million passengers carried**, up 1.2 per cent from 2016
- **681,000. The number of aircraft trips**, a decrease of 0.5 per cent from 2016
- **8.97 million passengers travelled Melbourne–Sydney**, up 2 per cent from 2016
- **27 million passenger movements through Sydney**, Australia’s busiest domestic airport
- **24.17 million domestic aviation passengers** travelled through regional airports, up 1.3 per cent from 2016

**International Aviation Activity in Australia – 2017:**

- **62 international scheduled airlines** operated services to/from Australia
- **38,661 million international scheduled passengers**, up 6.7 per cent from 2016
- **1,044,806 tonnes of international scheduled air freight traffic**, up 4.8 per cent from 2016

**New Zealand, Singapore, United Arab Emirates, USA, and Indonesia.** Top five countries for passenger movement

- **Singapore accounted for 14.1 per cent** of passenger movement to/from Australia
- **Auckland accounted for 12.6 per cent** of passenger movement to/from Australia

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AVIATION WORKFORCE

AVIATION WORKFORCE BY STATE/TERRITORY

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Number</th>
</tr>
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<tbody>
<tr>
<td>New South Wales</td>
<td>19,807</td>
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<td>Tasmania</td>
<td>739</td>
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</tbody>
</table>

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

AVIATION SKILL SHORTAGES

70.6 per cent of employers reported experiencing a skills shortage in the last 12 months. The occupations reported as being in shortage were:

1. Trainers/Instructors all types
2. Pilots
3. Maintenance engineers/technicians
4. Avionic/Software Engineers
5. Aerodrome Reporting Officers

Reasons for Shortage

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

1. Cost/time to achieve the required qualification
2. Wages / salaries considered too low
3. Ageing workforce / current staff retiring
4. Competition from other organisations
5. Geographic location of the vacancy
KEY AVIATION SKILLS ISSUES

INDUSTRY CHALLENGES AND OPPORTUNITIES

International Aviation Growth
The international aviation industry will continue to grow strongly for the foreseeable future, benefiting both Australia and other markets world-wide. This is largely driven by international economic growth in provincial areas, higher disposable incomes in emerging markets, and increased air travel in developing economies. Asian countries are anticipated to account for 66 per cent of the global middle class by 2030 which may impact the Australian aviation market.

International aviation activity is forecast to grow strongly to 2030, with domestic and international activity through Australia's capitals expected to double. The growing number of people living in Australia that were born overseas will also fuel future growth, further increasing demand for travel through Australian airports.

As air travel demand increases, Australian airlines and airports are facing greater competition for skilled labour, both locally and from other countries. This is already evident for qualified pilots and engineers. Many developing countries are raising pilot wages to attract foreign-trained talent to support their growth. Incentives and methods to retain skilled aviation Industry employees, as well as ensuring the Vocational Education and Training meets demands of industry, will be highly important in the future.

Emerging Technology and Automation
Aviation businesses are investing in, and developing, new information-based technologies to streamline and automate manual processes in airports. These changes are anticipated to reduce workplace health and safety concerns, while changing the skill needs of the workforce; increasing efficiency through automated system monitoring, maintenance, and toward more value-added activities including personalised customer service. Technology-based solutions will also provide new career paths for existing employees, with opportunities to train and further enhance skills. For example, demand for analytical skills, digital literacy, information management and mobile applications (development and implementation), among others, will continue to rise.

Aviation employers are already expressing concern about the digital skills capability of key segments of the workforce in the aviation industry. The rising impact of technological change on the skills training of the workforce will need to be closely monitored in the coming years.

4 Commonwealth of Australia (2016) Trends: Transport and Australia's Development to 2040 and Beyond. Canberra, ACT.
Security in Aviation Travel
The Aviation industry is under ever-increasing risk from both cyber, and real-word threats. The increasing rate of technological change is putting pressure on airport operators to maintain a robust level of cybersecurity. Ensuring the safe handling of personal data of all passengers in airports, and on planes, as well as their personal safety, will continue to be a challenge for aerodrome operators.

Similarly, there is increased risk of real-world attacks, either in the air or in high-density airport facilities. Maintaining high standards of security and training people to identify suspicious behaviour will be necessary to ensure continued reliable safe travel operations.

Remotely Piloted Aircraft Systems (RPAS)
Remotely Piloted Aircraft Systems (RPAS), also known as Unmanned Aircraft Systems (UAS), or drones, are rapidly emerging in civil aviation. These technologies are expected to play a significant role in the Aviation industry over the next 20 years. RPAS and other unmanned remote pilot systems are offering enormous opportunities across a wide range of other industries, including scientific research, emergency services and commercial aviation.

The wide-spread rapid adoption of these emerging technologies is presenting challenges to existing policy and regulatory frameworks. Response to these emerging technologies include the redevelopment of the existing Remote Pilot Licensing Certificate, developed to protect the safety of the public by enacting RPAS flight rules and regulations7.

International Opportunities
Strong international opportunities exist for Australian aviation training providers, both in terms of overseas operations and involvement in expanding the aviation capacity of other nations. In the field of aircraft manufacturing and engineering, Australia is considered a leader in the provision of through-life services, particularly applied to military aircraft. In addition, there are several aviation engineering and engineering training areas in which Australia possesses significant international expertise. These hold a sizeable potential for international growth.

Air Traffic Control
Aviation in Australia is undergoing a significant overhaul of operational handling. Air Traffic Control operations are predominantly handled by automated processes, with human input in the terminal and approach operations. As aircraft activity continues to increase in the future, the demand for operators who are capable of accurately interpreting large volumes of flight data, communicating with manned and unmanned flights while maintaining situational awareness of the broader airspace environment and adjusting to changes will increase.

The Air Traffic Management systems used to track civil and military aviation in Australia are currently being upgraded. The new air traffic management system, known as oneSKY, is being implemented, and will enable all air traffic over Australia to be viewed in real-time. The new system will harmonise civil and military air operation, improving safety and communications between the two systems.

Whilst the new system will be supported through new or revised VET skills and knowledge, the role of the air traffic controller will increasingly demand “on-the-fly” analysis of large volumes of data, interpretation of diagnostic information, as well as critical thinking and problem-solving.

**Ground Operations**

The advent of autonomous systems and vehicles will improve the efficiencies of loading/unloading cargo, safety, reduce human factors incidents, and turnaround times between flights. However, not all tasks in ground operations will be automated. Most aircraft refueling tasks and the opening of internal and external aircraft cargo holds for loading and unloading cargo have not yet been designed for automatic or robotic-assisted opening. Within ramp operations roles, tasks are likely to predominantly focus on equipment maintenance skills to support autonomous ground operations equipment.

Examples of new skills and changes to job roles could include the ground operators’ role changing to a body-language interpreter, which seeks to identify signals beyond the scope of computer checks. Customer service (including check-in, baggage handling) will also become more about interacting with people and promoting their individual identity.

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8 Airservices Australia (2017) *About the OneSKY program*. Available at: http://www.airservicesaustralia.com/projects/onesky/about/
WORKFORCE SUPPLY SIDE CHALLENGES AND OPPORTUNITIES

**Trainer/Instructor Shortages**
While commercial Aeroplane and Helicopter Pilots are in high demand, the occupation cannot be qualified as being in shortage due to the large number of candidates with basic licences and skill sets acquired as recreational or General Aviation (GA) Pilots. With the number of pilots currently predicted to increase substantially in the medium to long-term, the need for qualified and appropriately skilled Flight Instructors, Flight Examiners and Flight Operations Inspectors is also likely to increase.

There is a demonstrated chronic shortage of Flight Instructors and Flight Examiners for both aeroplanes and helicopters. Similar shortages are experienced in other countries, with fierce competition for some specialist training skills. Multi-crew training and advanced simulator training skills are in particularly high demand.

The offshoring and/or outsourcing of aircraft maintenance functions by Australian airlines in recent years has had a significant effect on the maintenance engineering training landscape. Several generalist engineering training providers have stopped their aviation courses. There is significant concern within the industry that closing engineering training facilities will impede the ability of training providers and maintenance businesses to rebound or take advantage of international growth opportunities.

**Aerodrome Operations**
Strong demand for ground operations occupations at airports, including Aircraft Baggage Handlers, Airline Ground Crew, Load Controllers and Airports Works Safety Officers, continues to increase. The demand for these occupations is primarily driven by airport growth, with most major capital city airports being expanded or planned for expansion.

High staff turnover rates are a challenge and risk for the viability of regional and capital city aerodrome operations. The annual employee replacement rate is estimated to be 25 per cent, indicating a lack of depth and experience in many operational and support roles.

**Regional Airport Operating Costs**
Competitive market conditions remain a challenge for regional and remote aerodromes, from both financial and workforce perspectives. The regional airports of Australia play a significant role in the sustainability of rural communities. They enable tourism, logistics, access to health care and education, and connect communities together.

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The Australian Airports Association’s commissioned report revealed that over 60 per cent of regional airports ran budget deficits in 2014-2015, with nearly 40 per cent expected to have persistent budget deficits over the next ten years. The costs of airport upgrades, maintenance and operation are higher in regional centres, further increasing the financial pressures. Across all regional airports, the expected budget deficit will be greater than $17 million per annum for the next decade.\(^{10}\)

The increasing costs of compliance and security will have major disruption in the management of these regional airports. The aviation workforce in these centres will be at risk of a reduction in employment opportunities. Federal, state and government policy, including privatisation opportunities, will play an important role in the future of regional airports.

**Training Costs**

Training providers have indicated that Aviation flight training in Australia is widely recognised as being high-quality compared with other countries. This quality, however, comes at a high financial cost. The “poaching” of qualified pilots is an issue affecting industry’s willingness to invest in training. Flight training schools have raised significant concerns regarding the dual costs of maintaining separate RTO and Flying School accreditation, with many questioning the cost/benefit ratio of continued operations. High compliance costs drive up training costs, which flow onto the Aviation industry and trainees.

The current cost barriers faced by individuals and businesses are well understood. However, there is a need for the industry to invest more in upskilling its current and future workforce, through public and private funding mechanisms.

\(^{10}\) ACIL Allen Consulting (2016) *Regional Airport Infrastructure Study: Economic Contribution and Challenges of Regional Airports in Australia*. Melbourne, VIC.
PRIORITY SKILLS
The priority skills results are drawn from Aviation 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 Aviation workforce within the next three to five years.
1. Piloting
2. Health/Safety
3. Compliance
4. Organisational
5. Maintenance/Servicing

GENERIC SKILLS
Ranking of the 12 generic workforce skills in order of importance to the Aviation industry.
1. Science, Technology, Engineering, Mathematics (STEM)
2. Managerial / Leadership
3. Design mindset / Thinking critically / System thinking / Solving problems
4. Technology
5. Learning agility / Information literacy / Intellectual autonomy and self-management
6. Communication / Virtual collaboration / Social intelligence
7. Language, Literacy and Numeracy (LLN)
8. Data analysis
9. Customer service / Marketing
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
AVIATION INDUSTRY REFERENCE COMMITTEE (IRC)

The Aviation Industry Reference Committee (IRC) has been assigned responsibility for the AVI Aviation Training Package.

**Chair:** Adam Burford

**Deputy Chair:** Stephen Leahy

www.australianindustrystandards.org.au/committee/aviation-industry-reference-committee/

The AVI Aviation Training Package provides the only nationally recognised Vocational Education and Training (VET) qualifications for occupations involved in aerodrome operations, airport safety, ground operations, cargo services, customer service, aviation transport protection, aviation search and rescue, management and supervision, air traffic control, flight operations (pilots – aeroplane, helicopter, commercial, military, remote and pilot in command) and flight instruction. The AVI Aviation Training Package comprises 21 qualifications, 44 Skill Sets, and 216 Units of Competency and associated assessment requirements and covers aviation safety, ground operations and flight operations. The AVI Aviation Training Package is in the Scope of Registration of 90 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.
AUSTRALIAN INDUSTRY STANDARDS

Australian Industry Standards (AIS) provides high-quality, professional secretariat services to the Aviation 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.