Aerospace Industry Reference Committee

Skills Forecast and Proposed Schedule of Work 2019–2023

MEA Aeroskills Training Package

April 2019

IBSA MANUFACTURING

Administrative Information

Name of Industry Reference Committee (IRC):
Aerospace

Name of Skills Service Organisation (SSO):
Innovation and Business Skills Australia (IBSA Manufacturing)

About the Industry Reference Committee

The **Aerospace Industry Reference Committee** comprises fourteen members and was constituted in August 2017.

The 2019 Industry Skills Forecast and Proposed Schedule of Work was reviewed and approved by the membership below:

Mr Russell Burgess (Chair)
Mr Ken Cannane
Ms Lynda Douglas
Mr Stephen Re
Mr Matt Murphy
Mr Michael McGill
Ms Mary Brown
Mr Michael Evans
Mr Mike Higgins
Mr Douglas Hendry
Mr Paul Baxter
Mr Mark Fagan
Mr Warren Bossie
Mr Steven Wright

About the Skills Forecast

The Industry Reference Committee (IRC) Skills Forecast and Proposed Schedule of Work identifies priorities for training package development work to meet the needs of industry. This document is based on research, analysis and consultations with Aerospace IRC members and industry stakeholders and provides evidence of current and emerging industry skills needs.

Industry Reference Committee Signoff

The 2019 return of the Aerospace IRC Skills Forecast and Proposed Schedule of Work was agreed as the result of a properly constituted IRC decision.

IRC Chair: Russell Burgess

Date: April 2019

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This IRC Skills Forecast and Proposed Schedule of Work has been prepared on behalf of the Aerospace Industry Reference Committee for submission to the Australian Industry and Skills Committee (AISC).

This document has been produced with the assistance of funding provided by the Commonwealth Government through the Department of Education and Training.

Contents

Executive Summary

The aerospace industry has a key role in the Australian economy and supports growing industry sectors including tourism, security, rescue and exports. The industry also plays a critical role in supporting regional and remote communities.

Advice from industry stakeholders has identified a critical shortage of Licensed Aircraft Maintenance Engineers (LAMEs). The nature of their work impacts on aircraft safety and has downstream implications on a number of dependent industry sectors, such as tourism and local business operations.

Alignment of the regulatory frameworks of the Civil Aviation Safety Authority (CASA) and the Australian Qualifications Framework (AQF) provides an opportunity to create an efficient means to train aircraft maintenance engineers and alleviate skill shortages.

The Aerospace IRC has also identified the need to review and update training components to reflect changing skill and knowledge requirements impacted by new technologies and materials; traditional repair and service; and maintenance skills. These skills will continue to be important to the ongoing maintenance of a wide range of aircraft in operation.

In 2018, the Aerospace IRC submitted a Case for Change that requested a complete review of the MEA Aeroskills Training Package which would also consider alignment of VET qualification standards to CASA licensing regulations. Due to the comprehensiveness of this Case for Change the IRC have not identified further items for inclusion in the 2019–2020 to 2020–2023 Proposed Schedule of Work.

Sector Overview

The safe movement of people to and from Australia and through Australian skies and airports is a shared responsibility of the aviation industry. It requires extreme vigilance, care and capability.[1]

What is the Aerospace Industry?

The aerospace industry can be broken down into three sub-sectors:

- aircraft and aircraft parts manufacturing
- civilian aircraft and component repair and maintenance
- military aircraft repair and maintenance.

This industry has a key role in the Australian economy and has strong links to other important sectors including tourism, protection, rescue and exports. The industry also plays a critical role in engaging with and supporting regional and remote communities.

Industry Snapshot

The aircraft manufacturing and repair services industry plays a critical role in maintaining and repairing general aviation, commercial and military aircraft and in the manufacture of aircraft and aircraft components.

Aerospace Industry's Contribution to the Australian Economy

10,900

People employed in 2018

Source: ABS 6291.0.55.003 Labour Force, Australia, May 2018.

920

Number of businesses

Source: ABS 8165.0 Counts of Australian Businesses, including Entries and Exits.

Business locations

NSW	280	SA	53
VIC	180	TAS	9
QLD	272	ACT	5
WA	98	NT	23

Source: ABS 8165.0 Counts of Australian Businesses, including Entries and Exits.

1 Airservices Annual Report, 2016–17.

An overall increase in exports of Australian aircrafts and components and continued demand for maintenance services have driven modest growth in the industry. Exports are primarily sent to the United States (for Boeing planes) and France (for Airbus planes) as Australian parts are key components of the Boeing 787 Dreamliner and the Airbus A380.[2]

In the five years leading up to 2016–2017, total passenger movements grew by 14%, comprising 9% growth of domestic passenger movements, while international passenger movements grew by 34%. In 2016–2017, the Australian aviation sector:

- facilitated almost 118 million domestic passenger movements and almost 39 million international passenger movements.
- facilitated 8 million international tourist trips to Australia, which contributed $27 billion of international tourism spending to the Australian economy. This is estimated to have contributed $21.6 billion in total added value to the national economy (equivalent to 1.3%), and supported 218,500 jobs, equivalent to 1.8% of the total employment in Australia.
- transported 450,000 cargo tonnes domestically and over a million tonnes internationally of low-density, high-value and time-critical goods, such as eCommerce parcels, perishable food, and medical items.
- played a defining role in providing aviation skills training and supporting community groups, connecting families, friends and communities, promoting tourism and trade and supporting essential and emergency services, such as the Royal Flying Doctor Service.[3]

The aircraft manufacturing and repair services industry is highly regulated and very reliant on highly skilled labour to provide maintenance services. Demand for Maintenance Registered Organisations (MROs) services is on the rise, with annualised revenue forecast to increase by 2.7% over the five years to 2022–2023 as airlines and Defence upgrade fleets.[4]

The OneSKY program is expected to be rolled out by 2023 and will provide a harmonised civil and military aviation traffic system to replace the current separate civil and military aviation traffic systems which are reaching the ends of their lives.[5] OneSKY is intended to manage all civilian and military air movements across 11% of the earth's airspace, including Australia and extending west into the Indian Ocean and east to New Zealand. It will also support 450 highly skilled, high-tech jobs and enable Australia to safely manage and benefit from the rapid increase in air travel over the next 20 years at a time when airspace management is changing significantly.[6]

The Aerospace sector of Defence is a key user of aircraft maintenance services, both internal and contracted.

2 IBISWorld C2394, Aircraft Manufacturing and Repair Services in Australia Industry Report, December 2017.

3 Source: Deloitte Access Economics, Connecting Australia: the economic and social contribution of Australian airports, 2018.

4 IBISWorld C2394, Aircraft Manufacturing and Repair Services in Australia Industry Report, December 2017.

5 Source: Deloitte Access Economics, Connecting Australia: the economic and social contribution of Australian airports, 2018.

6 https://www.thalesgroup.com/en/australia/press-release/onesky-benefit-air-travellers, accessed 20/11/2018.

Business Landscape

The Aerospace IRC has selected the following Australian and New Zealand Standard Industrial Classification (ANZSIC) class **2394, Aircraft Manufacturing and Repair Services**, as representative of the aerospace industry in Australia.

However, it is important to note that there are inherent difficulties in identifying industry and occupational data relevant to each training package. This report provides selected data from the Australian Bureau of Statistics (ABS), including counts of Australian businesses and labour force information. This data is based on two hierarchical classification systems – ANZSIC[7] and the Australian and New Zealand Standard Classification of Occupations[8] (ANZSCO). A list of ANZSIC and ANZSCO codes that have been identified by key industry stakeholders as relevant to this training package are provided at Appendix A and Appendix B.

Some of the industries or occupations that are included in the census date provided may not be specifically relevant to this training package. To support the analysis of annual data included in the report, Appendix A provides a more detailed breakdown of occupational data based on the 2016 Census.

Despite the following limitations, the data can be useful in highlighting recent trends when supplemented with qualitative advice from industry, this data helps to develop a useful picture of current and prospective industry conditions:

- the ANZSIC and ANZSCO classification systems were introduced in 2006, with minor revisions incorporated into the ANZSCO structure in 2009 and 2013. Industry has noted that some ANZSIC and ANZSCO codes are now outdated and do not represent some emerging industries or occupations, and
- the classification systems may not be sensitive to localised specialisations.

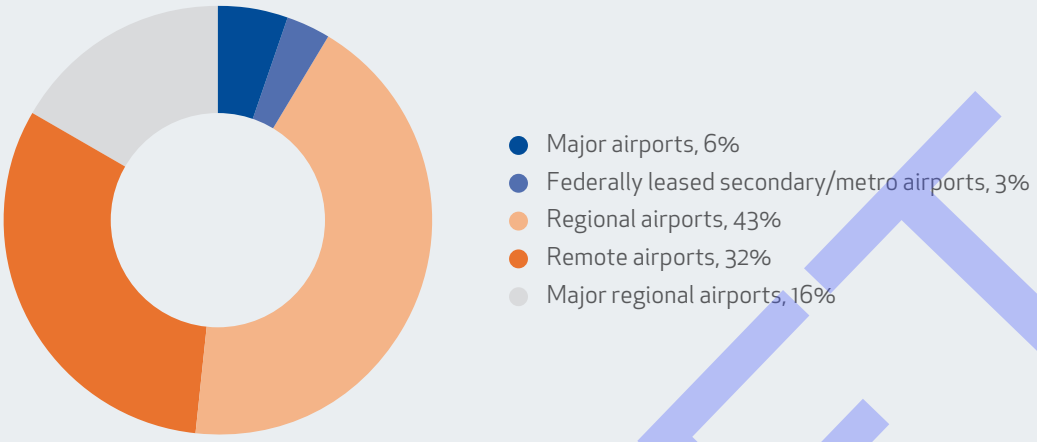
The airport sector in Australia is characterised by around 155 airports and more than 2,000 smaller airfields and landing strips around the country. Among the 155 airports with Regular Passenger Transport (RPT) services, 75% of them are located in regional and remote areas. Overall activity is dominated by larger facilities with the 10 largest servicing about 140 million domestic and international passengers and comprising about 90% of the overall passenger traffic in 2016–2017.[9] Aircraft maintenance engineering services are most often co-located to airports and play a major role in aviation safety. Figure 1 depicts the ownership and location of Australian airports.

7 ABS Cat.no.1292.0.55.002 Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006 – Codes and Titles.

8 ABS Cat.no.1220.0 ANZSCO – Australian and New Zealand Standard Classification of Occupations, 2013, Version 1.2.

9 Deloitte Access Economics, Connecting Australia: the economic and social contribution of Australian airports, 2018.

Figure 1 – Classification of Australian airports, 2017



Source: Deloitte Access Economics, Connecting Australia: the economic and social contribution of Australian airports, 2018.[10]

There were 920 businesses identifying as offering aircraft maintenance and repair services in 2017, with 80% located in New South Wales, Queensland and Victoria. Half of the businesses were non-employers and only eight employed 200 employees or more.[11]

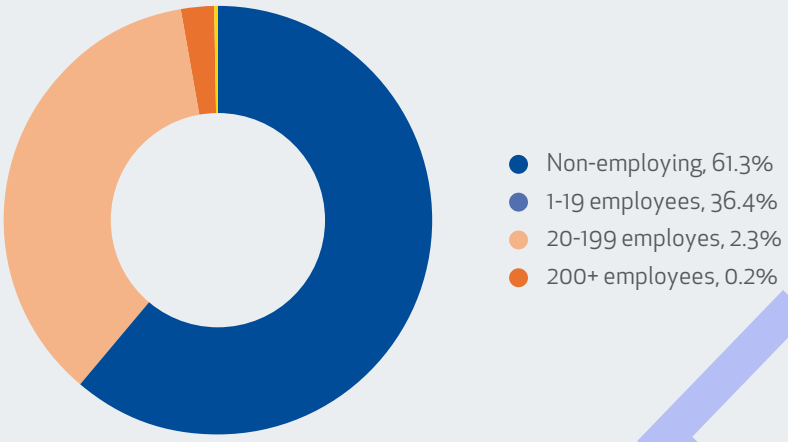
Multinational aerospace companies, such as BAE Systems, Boeing and Airbus, employ highly skilled staff and provide MRO services to large international and domestic airline carriers, such as Qantas, Virgin, Tiger and Jetstar.

The large number of sole operators in the sector introduces particular challenges for on-the-job training, including supervision, workplace assessment, and accessing a range of work experience. For apprentices and trainees, challenges include isolation and lack of peers and mentors, particularly in regional and remote locations.

10 Note: A total of 183 airports are included but only 155 have Regular Passenger Transport.

11 ABS 8165.0 Counts of Australian Businesses, including Entries and Exits, Jun 2013 to Jun 2017.

Figure 2 – Business counts by industry, number of employees, 2017



Source: ABS 8165.0 Counts of Australian Businesses, including Entries and Exits, Jun 2013 to Jun 2017.

Within the aeroskills industry there were an estimated 10,900 aircraft maintenance engineers employed in May 2018 and projected growth to 2023 is 1% or 100 employees.[12] Industry consultations indicate higher employment growth is anticipated to meet current shortages and future growth projections.

Australia's tourism industry is heavily reliant on the aviation sector. In 2016–2017, 8 million international tourists travelled to Australia by plane, representing 97% of total international tourists travelling to Australia, and they spent $27 billion in Australia with over half this expenditure spent on education and training, accommodation, and retail.[13]

12 "Source: Department of Jobs and Small Business, Labour Market Information Portal (LMIP).

Occupation time series data (May 2014 to May 2017) has been sourced from the ABS 6291.0.55.003 Labour Force, Australia, Detailed, Quarterly, May 2018. Figures are average of preceding 4 quarters, whereas May 2018 and projection to May 2023 figures are seasonally adjusted and trended as sourced from LMIP."

13 Source: Deloitte Access Economics, Connecting Australia: the economic and social contribution of Australian airports, 2018.

Key Industry Stakeholders

Key industry stakeholders in the aerospace sector include:

Airservices Australia is a government-owned corporation providing air traffic control management and related airside services to the aviation industry. Airservices Australia also provides aeronautical data, telecommunications, navigation services and aviation rescue and firefighting services.

Australian Industry and Defence Network (AIDN) is the industry association for small-to-medium enterprises (SMEs) wishing to do business in the Defence and security sectors.

Australian Transport Safety Bureau (ATSB) deals with the non-regulatory aspects of air, sea, rail and road safety in Australia and investigates, analyses and reports on transport safety.

Civil Aviation Safety Authority (CASA) is responsible for regulating the aviation industry and maintaining safety standards.

Defence aims to promote the security of Australia, and to protect its people and its national interests.

Defence Aviation Safety Authority (DASA) is responsible for enhancing and promoting the safety of military aviation.

Department of Infrastructure, Regional Development and Cities is responsible for overseeing the aviation sector in Australia. Through the Department, the Australian Government contributes to the prosperity of the economy and the wellbeing of all Australians by fostering a viable, competitive and safe aviation industry.

European Aviation Safety Agency (EASA) is responsible for the regulatory and certification process among European Union member states.

Large employers within the aerospace sector include:

- Airbus Group Australia
- BAE Systems Australia
- Boeing Australia
- Honeywell Holdings
- Jetstar
- Qantas
- Raytheon Australia
- Rex (Regional Express)
- Tigerair
- Virgin Australia

Associations relevant to this sector are:

Australian Helicopter Industry Association (AHIA) aims to promote the Australian helicopter industry by working with governments, regulatory authorities and the community to ensure it is a safe, efficient and viable industry, readily able to adapt to the continuing needs of its customers through the pursuit of global industry best practice.

Australian Licensed Aircraft Engineers Association (ALAEA) represents the industrial, technical and professional interests of LAMEs.

Australian Warbirds Association Limited (AWAL) brings together those interested in promoting and preserving Australia's military aviation heritage.

Aviation/Aerospace Australia (A/AA) is the national association representing the aviation and aerospace industries.

Aviation Maintenance Repair Overhaul Business Association (AMROBA) is a non-profit organisation dedicated to representing the maintenance, repair and overhaul segment of Australia's aviation industry.

Regional Aviation Association of Australia (RAAA) supports its members by working with government, the regulatory authority, and the community to promote a safe and viable regional aviation industry for everyone.

Training Snapshot

In 2017, a learner enrolled in a qualification from the MEA Aeroskills Training Package was most likely to be:

ENROLLED IN CERTIFICATE IV IN AEROSKILLS (MECHANICAL)

STUDYING IN QUEENSLAND

IN THE 19-YEARS-AND-YOUNGER AGE BRACKET

NOT IN AN APPRENTICESHIP OR TRAINEESHIP

ENROLLED WITH TAFE

MALE

Training Delivery

There were 16 Registered Training Organisations (RTOs) with MEA Aerospace qualifications on scope at 28 August 2018. Table 1 indicates the number of RTOs with each qualification on scope.

Table 1 – Number of RTOs by nationally recognised qualifications on scope

Qualification name	No. of RTOs on scope
Certificate II in Aeroskills	11
Certificate II in Aircraft Line Maintenance	9
Certificate III in Aircraft Surface Finishing	3
Certificate III in Aircraft Life Support and Furnishing	4
Certificate IV in Aeroskills (Avionics)	13
Certificate IV in Aeroskills (Mechanical)	13
Certificate IV in Aircraft Surface Finishing	3
Certificate IV in Aeroskills (Mechatronics)	4
Certificate IV in Aircraft Life Support and Furnishing	1
Certificate IV in Aeroskills (Armament)	2
Certificate IV in Aeroskills (Structures)	12
Diploma of Aeroskills (Avionics)	9
Diploma of Aeroskills (Mechanical)	9
Diploma of Aviation Maintenance Management (Avionics)	4
Diploma of Aviation Maintenance Management (Mechanical)	4
Advanced Diploma of Aviation Maintenance Management (Avionics)	1
Advanced Diploma of Aviation Maintenance Management (Mechanical)	1

Source: Training.gov.au. RTOs approved to deliver this qualification. Accessed 28/08/2018.

The low overall number of RTOs reflects not only the highly specialised nature of aircraft maintenance engineering work, which has also been subject to offshoring, but also the high investment in resources, materials and equipment required by RTOs. Areas such as surface finishing, aircraft life support and finishing and armament play a key role in Defence but are thin markets for RTOs.

In 2017, TAFE delivered 46% of the training, a 6% decline in 12 months, while enterprise providers increased their share by 10% between 2016 and 2017 to 48%.[14]

Aviation maintenance personnel are highly regulated by both Defence and the CASA. In the case of the CASA, regulations are often based on International Civil Aviation Organisation (ICAO) requirements and are aligned with those of the EASA. Many units of competency and the structure of some qualifications in the MEA Aeroskills Training Package are specifically aimed at satisfying regulatory requirements. Where applicable, the complexity and detail of these regulatory requirements are referred to in units of competency and qualifications, and learners are required to read and understand them to be deemed competent.

Aircraft maintenance engineer licences are issued in accordance with Civil Aviation Safety Regulation (CASR) Part 66 Manual of Standards.

The licences and related Aeroskills qualifications are:

- B1 with sub-categories B1.1, B1.2, B1.3 and B1.4 for certification of mechanical and electrical maintenance performed, respectively, on gas turbine fixed wing aircraft, piston engine fixed wing aircraft, gas turbine engine helicopters and piston engine helicopters. The qualification that provides a pathway to these licences is the Diploma of Aeroskills (Mechanical)
- B2 for certification of avionic maintenance on aircraft. The qualification that provides a pathway to this licence is the Diploma of Aeroskills (Avionics).

Individuals seeking a licence must complete their off-job training and competency assessment at an RTO that is registered to deliver the MEA Aeroskills Training Package and is also a CASR Part 147 Maintenance Training Organisation (MTO), operating in accordance with a CASA-approved requirement. These requirements are additional to the VET Quality Framework regarding conditions of training delivery, theory content, examinations and assessment of competency.

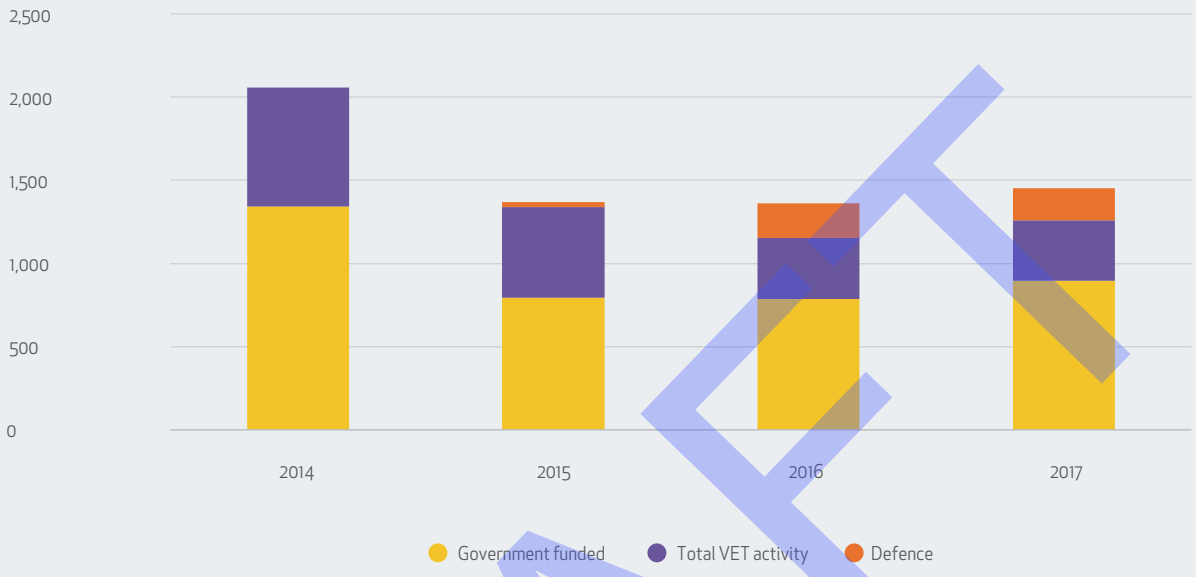
Feedback from RTOs delivering MEA qualifications indicates that extensive additional work is undertaken by RTOs to minimise the effects on industry of the dual regulatory requirements of CASA and the VET Quality Framework in what are considered very thin markets. Opportunities presented by aligning the two regulatory frameworks include reduced costs of delivery to meet dual regulatory requirements, and opportunities to market training to international customers, which will assist in addressing the costs of the highly specialised skill requirements mandated by the aviation industry.

These separate but overlapping requirements necessitate that the aerospace industry and education providers ensure that graduates are work ready and employable.

Total VET enrolments in the MEA Aeroskills Training Package declined by 39% between 2014 and 2017 alongside a 33% decline in government-funded positions for the same period. Consultation feedback indicated that the aerospace industry is disengaging from the formal VET system as it does not result in licensed skilled workers.

14 Source: NCVER VOCSTATS, extracted on 15/08/2018.

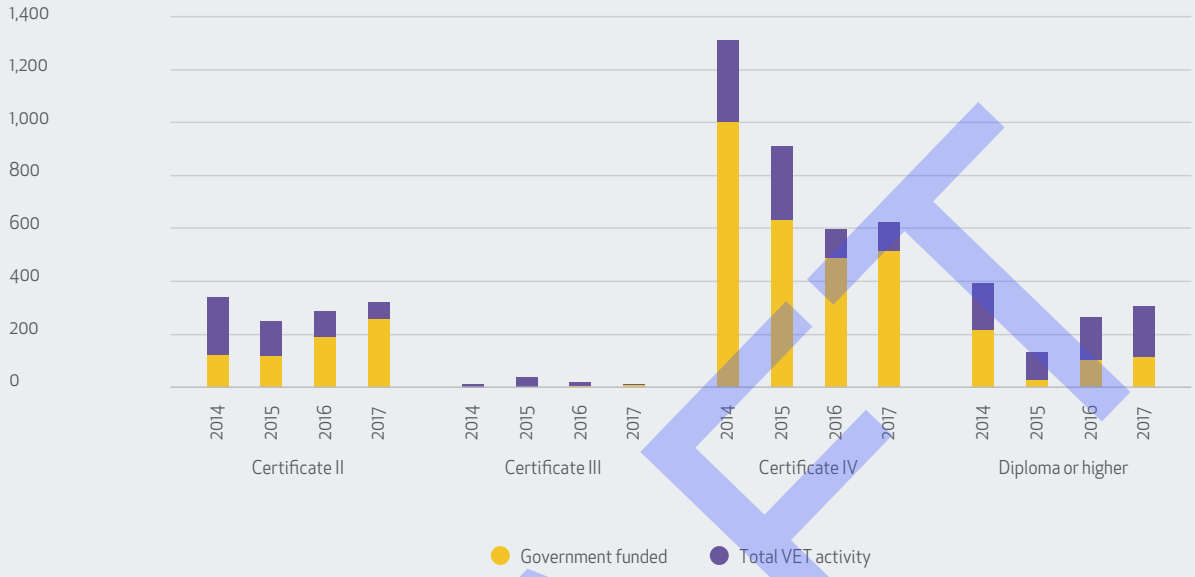
Figure 3 – Total program enrolments in MEA Aeroskills qualifications, 2014–2017, including Defence Data, 2015–2017



Source: NCVER VOCSTATS, extracted on 15/08/2018 and data provided by Defence.

The qualification with the highest enrolments was the Certificate IV, which leads to employment as an Aircraft Maintenance Engineer (AME); however, enrolments for this qualification declined between 2014 and 2017 by 52%. Diploma level and higher qualifications also declined by 22% from 2014 to 2017. In this industry, the Certificate III offers few employment outcomes.

Figure 4 – MEA Aeroskills program enrolments by qualification level, 2014–2017



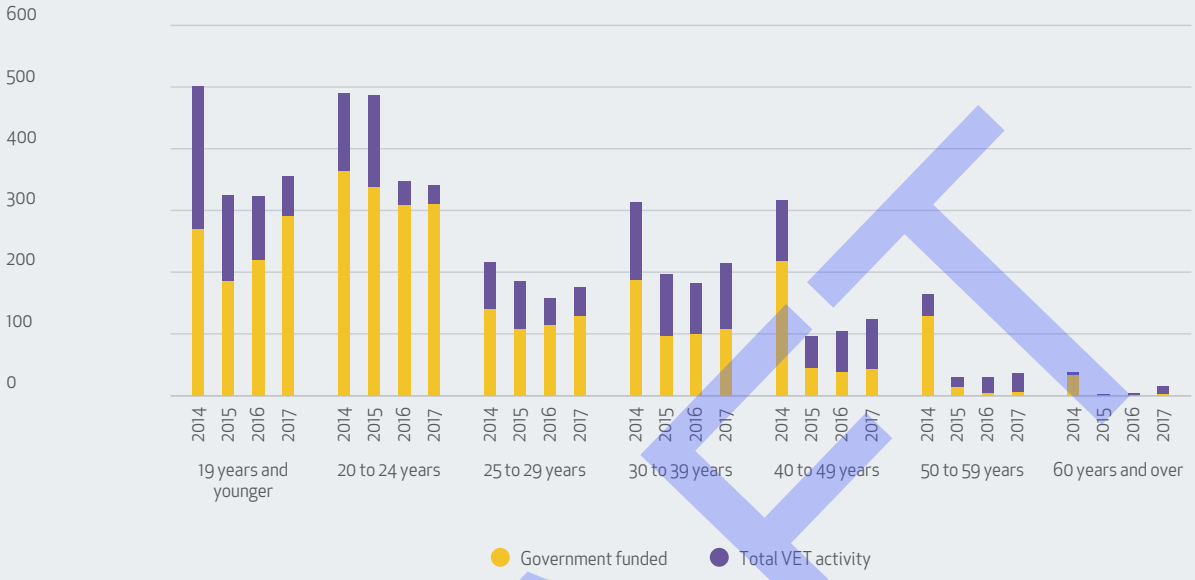
Source: NCVER VOCSTATS, extracted on 15/08/2018.

Enrolments are largely consistent with the population distribution across Australia with the exception of Queensland with 36% of the 2017 MEA Aeroskills Training Package enrolments against 20% of the Australian population. This can be attributed to some degree to the large industry base providing services to the aerospace industry in Queensland.

Learners aged between 20 and 24 years made up the largest enrolment group during the 2014–2017 period, followed by those aged 19 years and younger.[15] This pattern reflects industry's preference for more mature starters, with established employability skills, who can be immediately effective in the workplace.

15 Source: NCVER VOCSTATS, extracted on 15/08/2018.

Figure 5 – MEA Aeroskills Training Package enrolments by student age, 2014–2017



Source: NCVER VOCSTATS, extracted on 15/08/2018.

Qualifications Available

The following table shows the relationship between the qualifications and the specialisations that exist within each of the three occupations identified by industry.

Table 2 – MEA qualifications mapped to ANZSCO occupational codes

Qualification Clusters/Qualifications	ANZSCO	Occupations
Qualifications	**3231**	**Aircraft Maintenance Engineers**
Certificate II in Aeroskills	323111	Aircraft Maintenance Engineer (Avionics)
Certificate II in Aircraft Line Maintenance	323111	
Certificate III in Aeroskills (Mechatronics)	323111	
Certificate IV in Aeroskills (Avionics)	323111	
Certificate IV in Aeroskills (Mechatronics)	323111	
Certificate IV in Aeroskills (Armament)	323111	
Diploma of Aeroskills (Avionics)	323111	
Diploma of Aviation Maintenance Management (Avionics)	323111	
Diploma of Aeroskills (Non-Destructive Testing)	323111	
Diploma of Avionic Engineering	323111	
Advanced Diploma of Aviation Maintenance Management (Avionics)	323111	
Advanced Diploma of Aviation Non-Destructive Testing	323111	
Advanced Diploma of Avionic Engineering	323111	

Qualification Clusters/Qualifications	ANZSCO	Occupations
Qualifications	**3231**	**Aircraft Maintenance Engineers**
Certificate III in Aircraft Life Support and Furnishing	323112	Aircraft Maintenance Engineer (Mechanical)
Certificate IV in Aeroskills (Mechanical)	323112	
Certificate IV in Aircraft Life Support and Furnishing	323112	
Diploma of Aeroskills (Mechanical)	323112	
Diploma of Aviation Maintenance Management (Mechanical)	323112	
Diploma of Aeronautical Engineering	323112	
Advanced Diploma of Aviation Maintenance Management (Mechanical)	323112	
Advanced Diploma of Aeronautical Engineering	323112	
Certificate II in Aircraft Surface Finishing	323113	Aircraft Maintenance Engineer (Structures)
Certificate III in Aircraft Surface Finishing	323113	
Certificate IV in Aircraft Surface Finishing	323113	
Certificate IV in Aeroskills (Structures)	323113	

Qualification Uptake

The following five MEA qualifications with the highest number of enrolments in 2017 made up 89% of enrolments:

Certificate IV in Aeroskills (Mechanical)	424 enrolments
Diploma of Aeroskills (Mechanical)	226 enrolments
Certificate II in Aeroskills	192 enrolments
Certificate IV in Aeroskills (Avionics)	146 enrolments
Certificate II in Aircraft Line Maintenance	132 enrolments

Though enrolment numbers are low in comparison to qualifications in other sectors, these are highly specialised qualifications that lead to critical occupations.

Completions paralleled the decrease in enrolments, declining by 37% between 2014 and 2017. The Certificate II in Aeroskills, the Certificate II in Aircraft Line Maintenance and the Diploma of Aviation Maintenance Management (Avionics) were the only MEA qualifications to experience an increase in completions between 2014 and 2017.

A number of qualifications have had low or no enrolments over recent years. The Aerospace IRC aims to look for opportunities to reduce the number of qualifications wherever possible as part of the *Alignment of VET qualification standards to CASA licensing regulations* project, once approved.

The following table shows the commencements of Aeroskills apprenticeships in 2017. New South Wales had the most commencements followed by Queensland then Victoria; Queensland and New South Wales fund almost all qualifications linked to apprenticeships. Jurisdictional funding variations were raised as posing some issues for employers operating nationally.

Table 3 – Apprenticeship commencements in 2017 by state/territory

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT
Number of apprenticeship commencements	227	15	73	19	8	<5	-	19

Source: NCVER VOCSTATS extracted on 13/08/2018.

New apprentices undertaking off-the-job training declined between 2014 and 2017 by 15%. This raises significant concerns for the long-term future workforce of the industry, which also has an ageing workforce and, in regional Australia, large numbers of ageing aircraft needing support by experienced LAMEs and AMEs.

Industry consultations raised concerns about the large number of face-to-face training days required for AMEs to upskill to LAMEs. Employers are either using rosters to accommodate or are not supporting the upskilling due to the long workplace absences required. Stakeholder feedback also indicated that more flexibility in the way a trainee can conduct their training would allow employers to enrol more staff into traineeships.

Challenges and Opportunities

For Industry and Employers

Harmonisation of regulations[16]

The lack of harmonisation of Australia's regulations with other leading aviation countries is one of the issues impacting on the supply of skilled employees for the domestic market, as well as the ability of Australian training organisations to compete in the global market for training delivery.

Harmonisation with EASA Part 66 has also been a challenge for the VET sector to align training for aircraft maintenance engineers and licensed aircraft maintenance engineers.

The complete adoption of the EASA equivalent Part 66 basic training processes would streamline training programs and again harmonise Australia's regulations with the vast majority of advanced aviation countries. The EASA approach, with regulatory-based aviation maintenance training, is of a standard where a vocational outcome would become a secondary benefit, not an influencing component as it is today, given its links to the funding and licences. Alignment with EASA would mean that Australian licensed engineering qualifications could again be globally recognised, which in turn would make Australian aircraft maintenance providers more attractive to international companies, particularly those in the Asia–Pacific region.

During 2018, industry associations from Australia's general aviation community, proposed reforms to tackle the administrative and financial burden of regulatory compliance that they say has led to the decline of their sector and is out of step with contemporary regulatory practice.[17]

Change in government policy and legislation more broadly was also ranked as a significant challenge for Defence.[18]

16 Final Report Expert Panel on Aviation Skills and Training, 2018.

17 http://australianaviation.com.au/2018/07/australias-general-aviation-unites-in-push-for-reform, accessed 07/03/2019.

18 DoD 2017–2018 Report on 'Learning Capability VET Industry and Workforce Survey'.

Growth in aviation industry

International aviation activity is forecast to grow strongly to 2030, with domestic and international activity through Australia's capitals expected to double.[19] This will stretch the capacity of Australia's busy airport infrastructure which is already being tested.

Increases in global air travel will intensify demand for skilled labour, both locally and from other countries. A rise in the number of aircraft kilometres flown tends to increase demand for aircraft MRO services. This is because the likelihood of minor technical problems increases with kilometres accumulated, which leads to aircraft reaching their scheduled services or requiring replacement parts sooner.[20]

Capital expenditure on defence is expected to grow to 2% of GDP by 2020–2021. Rising capital expenditure on defence, which includes spending on military aircraft, increases demand for aircraft maintenance. New projects, which include upgrading existing fleets and acquiring new aircraft, are amongst the top ten acquisition projects by budget spend from 2018–2019.

The Government has foreshadowed opportunities for cross sectoral 'joint maintenance' in blended workforces comprised of personnel from military and civilian workforces working on the same planes.[21]

Technology, automation and data

CASA has recently stated that the advance in technologies, including on-board digital automation and production methods, are likely to continue to challenge the aviation industry over the next five years. Technology-based solutions and more automated maintenance are expected to increase demand for analytical skills, digital literacy, information management and the development and implementation of mobile applications.

Data is being used to improve flight performance, cut turbulence, improve safety and identify engine defects 2,000 times faster than before.[22] Working with data and making data-based decisions are expected to be important skills for workers in the future, with suggestions that creativity, complex problem solving and critical thinking will be the top three broad skills for Industry 4.0 as computers are not yet able to perform these as well as humans.[23]

Defence[24]

The demand for further air and ground network integration and the use of low observable air frames are impacting the workforce, with additional skill requirements in relation to networks, increased cyber awareness and defence, and low observable air frame support.

19 Commonwealth of Australia (2016) Trends: Transport and Australia's Development to 2040 and Beyond. Canberra, ACT.

20 IBISWorld C2394, Aircraft Manufacturing and Repair Services in Australia Industry Report, December 2017.

21 Hampson, I., 'Aircraft Maintenance Training and Licensing Reforms: Options and Imperatives, 2017.

22 CSO, 2015, BSA's "What's the big deal with data?" report illustrates worldwide impact of data revolution.

23 IBSA, 2017, Preparing for Industry 4.0, will digital skills be enough?

24 DoD 2017–2018 Report on 'Learning Capability VET Industry and Workforce Survey'.

Supply-side Challenges and Opportunities

Access to trainers/instructors

The offshoring and/or outsourcing of aircraft maintenance functions by Australian airlines in recent years have had a significant effect on the maintenance engineering training landscape, with generalist engineering training providers having 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.

Financial assistance[25]

Incentives from both state and federal governments vary, such as payroll tax arrangements for apprentices, whereby employers receive financial assistance when engaging staff undertaking a Certificate IV course; however, there is no such benefit for staff undertaking a traineeship (Diploma).

Employer incentives also vary from state to state, which further complicates the process for employers and RTOs working across multiple jurisdictions. Importantly, the Diploma qualification ultimately provides licensed engineers, which are the target group in critically short supply, particularly in the state-to-state sector. This has contributed to a serious shortage of LAMEs especially in the general aviation sector.

25 Final Report Expert Panel on Aviation Skills and Training, 2018.

For Learners and Training Package Development

Industrial relations

One of the major challenges for the MEA Aeroskills Training Package is the industrial relations implications of any changes; particularly those which lead to both trade and licence outcomes. Sufficient stakeholder consultation needs to be undertaken as part of all training package development.

Structure and alignment of training[26]

Australia currently has two primary engineering maintenance training streams, each with their own suite of requirements. Some industry stakeholders consider that this structure produces outcomes that are not efficient and may in fact be contributing to the shortage of qualified licensed aircraft maintenance personnel.

The two training streams are (a) a Certificate IV qualification, which results in an aircraft maintenance engineer (AME) qualification, and (b) a Diploma course which leads to a LAME qualification. CASR Part 66 module 10 is the difference between trade and licence outcomes. The LAME qualifications, which the Diploma pathway offers, are urgently needed in the industry, as these qualifications provide the ability to check and certify aircraft engineering work prior to the aircraft entering or re-entering service. Both courses are separately audited by ASQA under one piece of legislation and by CASA under different legislation. (CASA only audit MTOs delivering qualifications with licence outcomes.) This means that a training provider can pass the ASQA audit but still not meet the requirements of the CASA audit.

The Certificate IV course, which is provided by RTOs (including state-based TAFEs), is not aligned to CASA's Part 66 maintenance regulations. Unless training is delivered by a CASA-approved Part 147 training organisation, students who graduate from courses through non-approved organisations obtain qualifications that do not match CASA's licensing requirements and the needs of the industry (as described in CASA Part 66). As a result, they require retraining and re-examination to gain their licence. Stakeholder feedback indicates that a shortage of RTOs with Part 147 authorisation has also contributed to the serious shortage of LAMEs. Students are only able to source training from the approved Part 147 organisations and if these organisations are not in the same state as to where the employee is employed, they are unable to apply for a traineeship. RTOs are also not required to explain to prospective students that they are not approved by CASA, leading to considerable cost to the student and duplication of effort within the training system. This has the potential to flow onto the Diploma where the Certificate IV is largely nested.

Alignment is also required between both CASA and Defence Aviation Safety Regulations (DASR) requirements, especially considering the impact to Defence of the introduction of (DASR) licensing.[27]

26 Final Report Expert Panel on Aviation Skills and Training, 2018.

27 Aviation Technical Training Advisory Group.

Employment and Skills Outlook

The ANZSCO classifies the associated occupations as follows:

Unit Group 3231 Aircraft Maintenance Engineers

- Occupations 323111 Aircraft Maintenance Engineers (Avionics)
- Occupations 323112 Aircraft Maintenance Engineers (Mechanical)
- Occupations 323113 Aircraft Maintenance Engineers (Structures).

Employment Outlook

There has been a recent notable decline in the number of employees within the industry class Aircraft Manufacturing and Repair Services. The number of employees dropped by nearly 1,900 employees (19%) between 2006 and 2016, with a decline of more than 900 employees in each five-year period between Census dates. Some of this decline is attributed to offshoring and newer aircraft with less maintenance requirements.

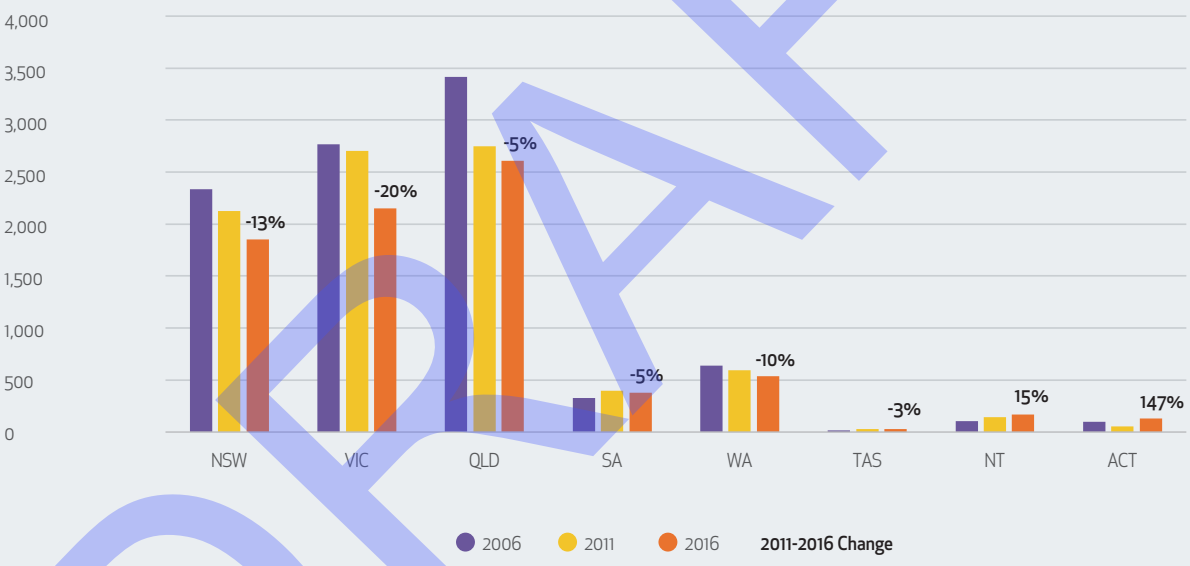
Figure 6 – Number of employees in selected industry classes, Census 2006–2016 and five-year change from 2011 to 2016

Source: Department of Jobs and Small Business, Labour Market Information Portal Occupation time series data (May 2014 to May 2017) has been sourced from the ABS 6291.0.55.003 Labour Force, Australia, Detailed, Quarterly, May 2018.

Most of the Aircraft Manufacturing and Repair Services are in Victoria, New South Wales and Queensland. The largest decline in the number of Aircraft Manufacturing and Repair Services employees has been in New South Wales and Victoria. In Victoria the decline can be largely attributed to closures of John Holland and Avalon MRO services and the movement of Qantas MRO services to Brisbane. The decline in Queensland is smaller in contrast to other states which can probably be attributed to the relocation of Qantas MRO services to Queensland. Between 2006 and 2016 there have been small increases in the number of employees in the other states and territories: the Australian Capital Territory, the Northern Territory, South Australia, Tasmania and Western Australia, although, these states and territories all have relatively few people working in this industry class.

Stakeholder consultations advised that staff turnover is currently low and that contractors are used as a standard practice to meet workforce skill needs for special projects and as a recruitment pathway for industry.

Figure 7 – Total number of employees in selected industry classes by usual place of residence, Census 2006–2016



Source: Department of Jobs and Small Business, Labour Market Information Portal Occupation time series data (May 2014 to May 2017) has been sourced from the ABS 6291.0.55.003 Labour Force, Australia, Detailed, Quarterly, May 2018.

Figure 8 illustrates how the number of younger people working in Aircraft Manufacturing and Repair Services has dropped most notably. Between 2006 and 2016, the number of employees aged under 20 dropped 66%, from 217 to 73. Over the same period, the number of employees aged in their 20s, 30s and 40s dropped by 25% (425), 29% (747) and 24% (653) respectively. The number of employees aged in their 50s dropped by 7% (140), whereas those aged 60 and over increased 44%, from 565 to 815.

Figure 8 – Total number of employees in selected industry classes by age, Census 2006–2016

Source: Department of Jobs and Small Business, Labour Market Information Portal Occupation time series data (May 2014 to May 2017) has been sourced from the ABS 6291.0.55.003 Labour Force, Australia, Detailed, Quarterly, May 2018.

The impact and consequences of an ageing workforce has been reported by the industry during consultations and in a number of surveys, including IBSA Manufacturing's Aerospace Industry Survey conducted in 2017.[28] Industry consultations indicate that businesses are reluctant to take on new young people as they are disillusioned with the training system, which they feel is letting them down, with graduates completing qualifications but unable to obtain licences without significant additional inputs. There is industry confidence that alignment between the CASA requirements and the VET requirements will significantly improve conditions for recruitment of younger people to the industry.

28 https://ibsa.org.au/wp-content/uploads/2018/04/Aerospace-Survey-Analysis-published.pdf, accessed 01/12/2018.

Skills shortages are identified for all Aircraft Maintenance Engineer occupational specialisations, namely avionics, mechanical and structures. Recent labour market surveys indicate, 'Shortages of aircraft maintenance engineers are apparent. While a large proportion of applicants are qualified and licensed (where applicable), few employers are able to find applicants with the correct licence type or aircraft rating required for their vacancies. Employment and advertised vacancy data suggest that the demand for these workers has increased over the past year, while new supply through apprenticeship training is at historically low levels'.[29]

The Expert Panel on Aviation Skills and Training found there is a serious shortage of licensed engineers available to oversee the maintenance of aircraft to the required regulatory standards. The licensed engineer shortage is further exacerbated by the age profile of this group who are generally in their mid to late 50s. This situation is even more pronounced in the general aviation sector than in larger airline operations.[30]

Australia's commercial aviation industry has traditionally drawn engineers from the general aviation industry into the regional sector. The declining use of small twin engine aircraft has contributed to less pilots, AMEs and LAMEs and related instructors with sufficient multi-engine experience to transition from general aviation to commercial airline operations in Australia. This is closing a skilled pathway and influencing the establishment of direct training programs by some of the larger airlines.[31]

Figure 9 shows that shortages of aircraft maintenance engineers have re-emerged for the first time since 2010. In 2017, employers had considerable difficulty filling their vacancies, with most applicants regarded as unsuitable:

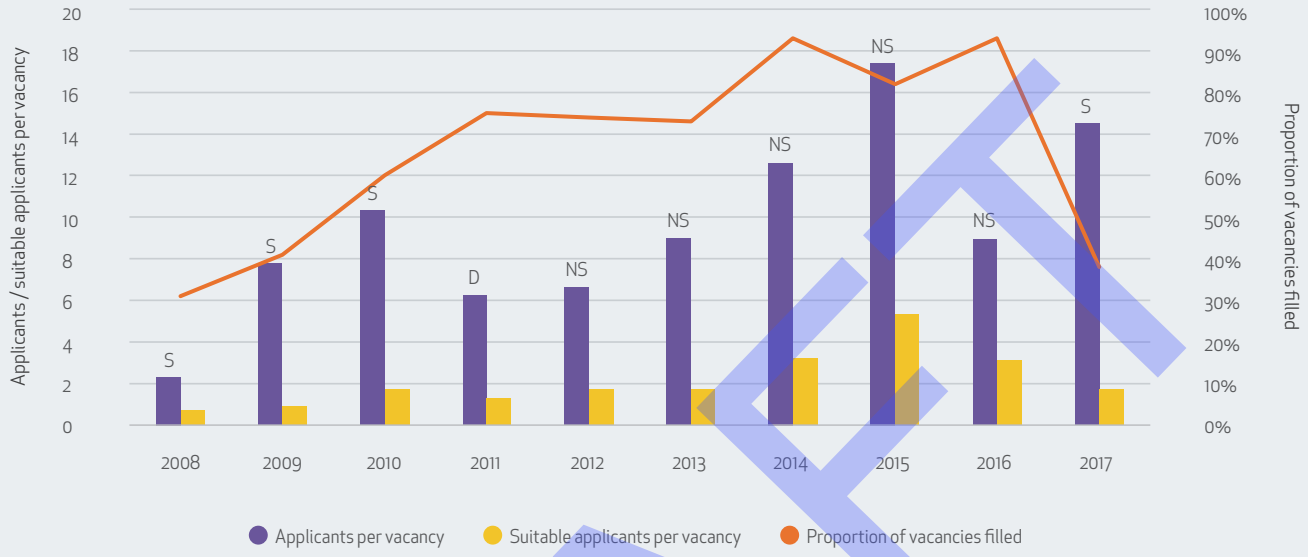
- Around 38% of surveyed vacancies were filled, the lowest proportion since 2008.
- Employers attracted an average of 14.5 applicants per vacancy, of whom 12.8 were qualified but just 1.7 were considered to be suitable.
- Half the employers did not attract any applicants they considered to be suitable; for example, Queensland (the second largest employing state of aircraft maintenance engineers), filled only 10% of their vacancies and attracted an average of just 0.7 suitable applicants per vacancy. This may be partially explained by the number of remote and regional airports.
- LAME roles were more difficult to fill than Aircraft Maintenance Engineer (AME) roles, with just 29% of LAME vacancies filled, compared with 50% of AME vacancies. Employers noted that LAME vacancies are generally harder to fill because it can be difficult to find applicants with the correct licences.
- Employers sought aircraft maintenance engineers with qualifications recognised by CASA, typically a Certificate IV in the specialisation (either avionics or mechanical) relevant to the position, and those recruiting for LAMEs required applicants to hold the relevant base licences and, in some instances (commonly for avionics vacancies), aircraft ratings.

29 Department of Jobs and Small Business, Occupational reports – Engineering trades, ANZSCO 2131–11,12 Aircraft Maintenance Engineers, March 2018.

30 Final Report Expert Panel on Aviation Skills and Training, 2018.

31 Ibid

Figure 9 – Proportion of vacancies filled (%), average number of applicants and suitable applicants per vacancy (no.), Aircraft Maintenance Engineer, Australia, 2008–2017

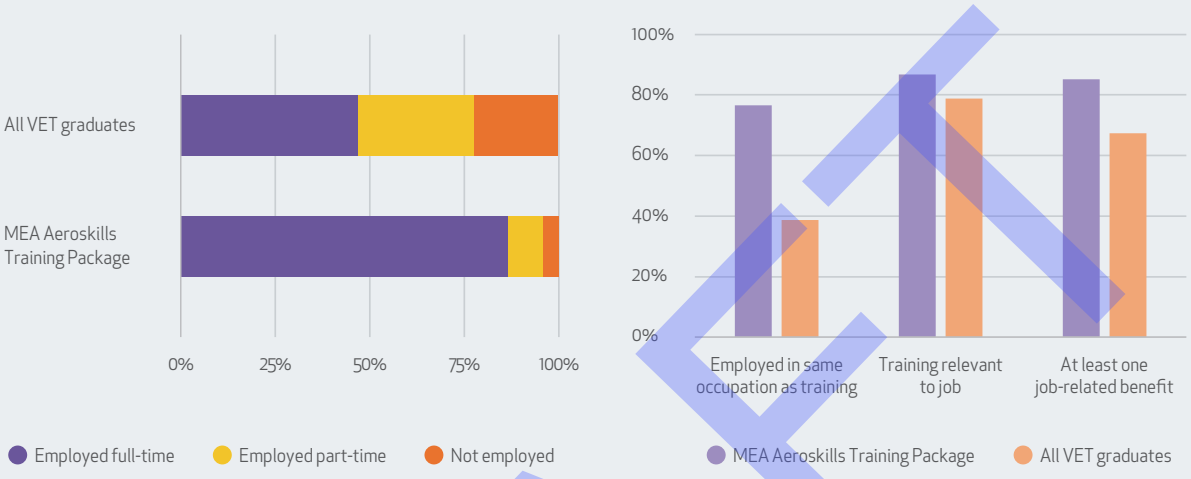


Source: Department of Jobs and Small Business, Survey of Employers who have Recently Advertised.

Key to ratings: S = Shortage D = Recruitment difficulty NS = No shortage.

Graduates from MEA qualifications are much more likely to gain full-time employment after training and in an occupation linked to their training than their VET student counterparts enrolled in other manufacturing qualifications.

Figure 10 – MEA and VET graduate outcomes after training



Source: NCVER VET student outcomes 2017, Data visualisation – VET graduate outcomes, all VET graduates.

Workforce Supply Challenges

In 2018, the Manufacturing[32] IRCs met and discussed the AISC commissioned Future Skills and Training Resource which summarises data on current and future Australian and international megatrends, to support IRCs in developing their Industry Skills Forecasts and Proposed Schedules of Work.

While there is broad agreement across other manufacturing sectors about future skills, the aerospace industry identified a number of different trends and had different priorities for common future skills. See Table 4.

Table 4 – Aerospace and manufacturing future skills outcomes (ranked from most important to least important for the Aerospace IRC)

Aerospace Industry[33]	Manufacturing Industry[34]
Society and Culture	**Society and Culture**
Ageing population	Changing work and career values
Global mobility	Ageing population
Changing work and career values	Global mobility
Political and Institutional	**Political and Institutional**
Innovation ahead of regulation	Innovation ahead of regulation
	Political appetite for reform
	Agility of VET System
Technology	**Technology**
Digitisation	Artificial intelligence, Augmented and virtual reality, Machine learning
Mobility and connectivity	Cross disciplinary science
Augmented and virtual reality	Mobility and connectivity
Cross disciplinary science	
Resources and Environment	**Resources and Environment**
Financial viability	International sustainability action
International sustainability action	Access to quality internet
	Financial viability
Business and Economics	**Business and Economics**
Empowered customers	Empowered customers
Skills mismatch	Skills mismatch
Workforce vulnerability	Changing workplace dynamics

32 IBSA Manufacturing supports six manufacturing IRCs.

33 https://ibsa.org.au/wp-content/uploads/2018/06/Aerospace-Future-Skills-Outcomes.pdf, accessed 25/10/2018.

34 https://ibsa.org.au/overview-future-skills-outcome-summary, accessed 25/10/2018.

IBSA Manufacturing conducted a survey of the aerospace industry in 2017 and the IRC considers the findings still relevant. They include the following:

- When asked to rate the level of impact of specific workforce challenges, respondents rated the ageing workforce and a shortage of skilled workers as key challenges for the industry.
- Automation of tasks was rated as the challenge that had the least impact on the industry.
- New job roles the industry is currently developing skills for include:
  - roles related to licensing and regulation such as LAMEs, B1 Licence holders, Airworthiness and Safety Inspectors
  - managerial and leadership roles including aviation, people and project management as well as supervisory roles
  - roles related to new technologies such as avionics, digital systems integration, new aircraft types and composite structures
  - engineering roles covering cross-trade mechanical skills, fibre optics and technical research.

A full copy of the survey results is available at
https://ibsa.org.au/wp-content/uploads/2018/04/Aerospace-Survey-Analysis-published.pdf

New and emerging job roles requiring new skills development for Defence include those involved in networks air and ground integration, the use of drone technology for professional imagery capture and exploitation and low observable air frames.[35] Conversely, technology and workforce changes have contributed to the decline of other skills within the industry including:

- those associated with heavy engineering support, on which there is decreased reliance
- decline in equipment that requires deep level maintenance, as well as this skill being contracted in
- servicing skills, due to a higher degree of throwaway items.

35 DoD 2017–2018 Report on 'Learning Capability VET Industry and Workforce Survey'.

Skills Outlook

Key Generic Skills

In developing their Industry Skills Forecasts and Proposed Schedules of Work, Manufacturing IRC members have ranked the importance of key generic workforce skills. The key generic skills provided in the table below are based on:

- the combined ranking across Manufacturing IRCs in their 2018 Industry Skills Forecasts
- the ranking from the 2018 Aerospace IRC Survey
- the ranking from the Defence 2017 Learning Capability VET Industry and Workforce Survey – Aerospace Sector.

Technology use and application skills, communication/collaboration including virtual collaboration/social intelligence skills and Science, Technology, Engineering and Maths (STEM) skills rank in the top six generic workforce skills for the entire manufacturing industry, the aerospace industry and the Defence Aerospace sector. Technology use and application skills are of particular importance to Defence because of their research and development work which leads to state-of-the-art equipment and materials.

Table 5 – Key generic workforce skills

In this table '1' has the greatest importance and '12' the lowest importance.

	Manufacturing IRCs	Aerospace IRC	Defence Aerospace Sector
1	Design mindset/Thinking critically/ System thinking/Solving problems skills	Design mindset/Thinking critically/ System thinking/Solving problems skills	Technology use and application skills
2	Technology use and application skills	Learning agility/Information literacy/ Intellectual autonomy and self-management skills	Design mindset/Thinking critically/ System thinking/Solving problems skills
3	Learning agility/Information literacy/ Intellectual autonomy and self-management skills	Communication/Collaboration including virtual collaboration/Social intelligence skills	Science, Technology, Engineering and Maths (STEM) skills
4	Communication/Collaboration including virtual collaboration/Social intelligence skills	Science, Technology, Engineering and Maths (STEM) skills	Learning agility/Information literacy/ Intellectual autonomy and self-management skills
5	Science, Technology, Engineering and Maths (STEM) skills	Technology use and application skills	Language, Literacy and Numeracy (LLN) skills
6	Language, Literacy and Numeracy (LLN) skills	Language, Literacy and Numeracy (LLN) skills	Communication/Collaboration including virtual collaboration/Social intelligence skills
7	Data analysis skills	Data analysis skills	Data analysis skills
8	Managerial/Leadership skills	Managerial/Leadership skills	Customer Service/Marketing skills
9	Customer service/Marketing skills	Customer service/Marketing skills	Environment and Sustainability skills
10	Environment and Sustainability skills	Environment and Sustainability skills	Financial skills
11	Entrepreneurial skills	Financial skills	Entrepreneurial skills
12	Financial skills	Entrepreneurial skills	

Please note the Defence VET Industry Workforce Survey does not include 'Managerial/Leadership skills'.

The IRC acknowledged the variations and concluded that the rankings represented well the differences and commonalities between Aerospace and Defence Aerospace given the structured environment of Defence and the more independent work demanded of aircraft maintenance engineers in the civilian environment.

Demand for Generic Skills may vary considerably between industry sectors, regions and individual businesses. Employers may prioritise some Generic Skills over others depending on their particular context, workforce and business imperatives. All of the identified Generic Skills are important throughout the workforce. This ranking represents the importance of Generic Skills across an industry but should not be expected to reflect the specific experience of every business and employer within that industry.

Consultations and industry surveys identified specific areas requiring further skill development, these include composite materials and maintenance of ageing aircraft.

Table 6 – Priority areas for training package development

Rank	Skill	How identified
1	Maintenance of ageing aircraft	Industry Consultation
2	Understanding of composite materials	Industry Consultation

Key Drivers for Change and Proposed Responses

Key Messages

'Shortages of aircraft maintenance engineers are apparent. While a large proportion of applicants are qualified and licensed (where applicable), few LAME employers are able to find applicants with the correct licence type or aircraft rating required for their vacancies. Employment and advertised vacancy data suggest that the demand for LAMEs has increased over the past year, while new supply through apprenticeship training is at historically low levels.'[36]

With less than 10,000 aircraft engineers in Australia, the nature of the work means that any shortages can have significant impacts on safety and also on other industries such as tourism and local business operations. The time it takes for new entrants to complete and gain their licences and aircraft ratings means there are virtually no quick-fix solutions.

Alignment of the CASA regulatory frameworks and the national VET Quality Framework provides the opportunity to create an efficient means to train aircraft maintenance engineers and offers a long-term solution to a long-standing issue that is becoming critical. Alignment of the VET Quality Framework with the CASA regulatory framework will also create an acceptable means to train (licenced) aircraft maintenance engineers from the Indo-Asia-Pacific region.

The Australian aerospace industry operates in a highly competitive international arena. It also possesses a well-recognised international reputation for safety and a highly skilled workforce. To ensure this view is maintained and to ensure the industry has access to a skilled workforce, with appropriate licences and aircraft ranking, a radical new approach is required to training of aircraft maintenance engineers.

This view is shared by industry stakeholders and remains the key driver for change to the MEA Aeroskills Training Package as proposed in the Case for Change submitted with the 2018 Industry Skills Forecast.

In the intervening 12 months, the disengagement of the industry and the low enrolment trends continue, making recovery more and more challenging. If the Case for Change is approved, the training package development process is not expected to deliver any significant outcomes until after 2020.

The impact of not moving in this direction will be significant, not only for the commercial Australian aerospace industry, but also for those industries and communities dependent on it including tourism, exports and regional and remote communities.

36 Department of Jobs and Small Business, Occupational reports – Engineering trades, ANZSCO 2131–11, 12 Aircraft Maintenance Engineers, March 2018.

Table 7 – Priority skills and key drivers for change

Priority Skills	Key Driver for Change	Proposed Response
Regulatory/Legislative		
LAMEs	Current shortages of LAMEs	Review of training package products that lead to licensed occupations and aircraft ratings
Licensed occupations	To remove the requirements to meet two different standards to achieve a licensed outcome	Alignment of CASA and VET requirements
Aircraft maintenance	Alignment of CASA and DASR	Active, targeted involvement of Defence in reviewing of qualifications and units of competency
Industry-specific		
Ozone unit	Regulatory requirement	Included in Case for Change and supplementary information
Aircraft surface finishing and maintenance	Required to be maintained due to the number of ageing aircraft still in operation	Included in Case for Change and supplementary information
Higher level skills	Low enrolments in higher education qualifications and opportunities to enhance articulation pathways	Included in Case for Change and supplementary information

Training Product Review

Current Activities

Aircraft Maintenance Subcategory B1 Licences Project

In February 2018, IBSA Manufacturing was commissioned to undertake further training package development work, on behalf of the Aerospace IRC, on the MEA Aeroskills Training Package. The project, *Aircraft Maintenance Subcategory B1 Licences*, focused on the alignment of Diploma of Aeroskills (Mechanical) to CASA licence subcategories B1.2 and B1.4.

The training package development work is due to be completed and submitted for AISC consideration in 2019.

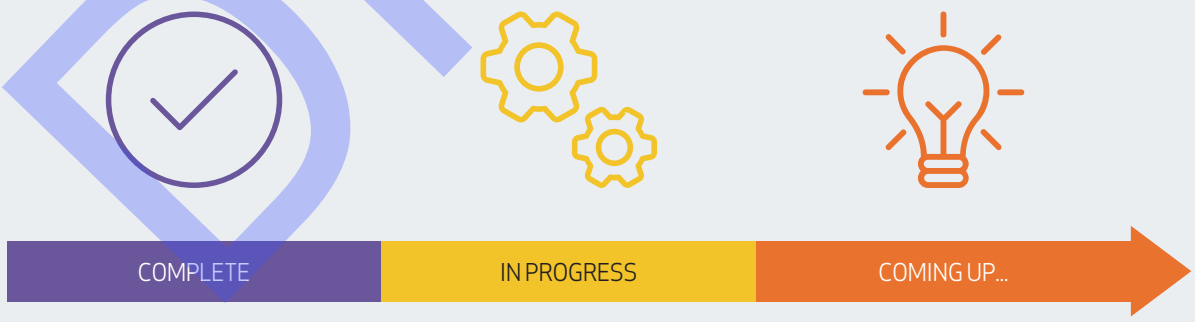
Alignment of VET qualification standards to CASA licensing regulations

The 2018 Industry Skills Forecast included a Case for Change for Alignment of VET qualification standards to CASA licensing regulations. The AISC requested supplementary information to further inform the Case for Change.

The 2018 Case for Change supplementary information was resubmitted to the AISC in 2019 and represents a complete review and redevelopment of MEA Aeroskills qualifications. It is anticipated that the revised qualifications will support industry to recruit aircraft maintenance engineers with the correct licence type or aircraft rating.

Once approved, the training package development work is due to be completed and submitted for AISC consideration in 2020.

Training product review – activities timeline



AISC Cross Sector Projects

In 2017, the AISC established nine cross sector projects in the common skill areas of: automation, big data, digital skills, consumer engagement through social media, cybersecurity, environmental sustainability, inclusion of people with disability in VET, supply chain, and team work and participation. This new approach to training package development aims to simplify VET and improve mobility through recognition of qualifications between occupations.

To ensure cross sector units are relevant to multiple occupations and industry sectors, each project includes representation across multiple industries. Cross sector units of competency will be housed in the most relevant training package and marked with a cross sector identifier. Once available on training.gov.au, the units can be adopted across all industry training packages as qualifications and skills are reviewed or developed.

The following cross sector project has been identified as potentially impacting the MEA Aeroskills Training Package:

- The **Consumer Engagement Through Online and Social Media** cross sector project is looking at key skills for businesses to remain competitive in a global market including cultural awareness, customer service, marketing, communication and social media skills. The project proposes the development of eight new cross sector units and four skill sets in the areas of ethical practices, privacy regulations and protocols and awareness of online/social media users.

There are a further two cross sector projects that may also impact the MEA Aeroskills Training Package: Automation Skills and Digital Skills. The next phase of work on these projects is being determined and the Aerospace IRC will continue monitoring their progress for consideration in future training package development work.

The Aerospace IRC will consider recommendations to integrate the new units developed under the above cross sector projects into qualifications in the MEA Aeroskills Training Package once components are available.

Upcoming Activities

Priorities 2019–2023

As outlined in the previous section, Training Product Review – Current and Upcoming Activities, the Aerospace IRC has submitted a Case for Change and supplementary information for Alignment of VET qualification standards to CASA licensing regulations. This work aims to undertake a complete review and redevelopment of all MEA Aeroskills qualifications and native units of competency.

The Aerospace IRC also determined the Case for Change should be broadened to include all future activities listed on the 2018 Proposed Schedule of Work to ensure that this Case for Change:

- streamlines qualifications and units of competency to enable future changes to be simpler
- supports the Australian Aerospace sector to build capacity and capitalise on growth opportunities in the Asia–Pacific Region.

These activities include the:

- addition of one new unit, CPPFES2043A – Prevent ozone depleting substance and synthetic greenhouse gas emissions, as an elective unit for Aeroskills qualifications for LAMEs and AMEs as regulatory requirements call for all LAMEs to have competency in this unit
- review the three aircraft surface finishing qualifications (see below) to ensure they are required to meet industry need, and the development of a new unit on ageing aircraft fundamentals to be included in the Certificate III and IV qualifications:
  - Certificate II in Aircraft Surface Finishing
  - Certificate III in Aircraft Surface Finishing
  - Certificate IV in Aircraft Surface Finishing
- incorporation of Defence priorities relating to new aircraft and any licensing requirements into the MEA Training Package
- review of B1.1 licence exclusion removal skill sets:
  - Skill Set LME001 Electrical – B1.1 Licence Exclusions E1 and E4 Removal (Release 1)
  - Skill Set LME019 Instrument – B1 Licence Exclusions E5 and E7 Removal (Release 1)
- redevelopment and rationalisation of higher level qualifications to ensure they deliver the skills and knowledge required for the identified occupational outcomes and improve pathways into higher education.

Consultation Undertaken

The 2019 Skills Forecast and Proposed Schedule of Work 2019–2023 builds on the consulations undertaken as part of the 2018 return. Feedback on industry imperatives were also captured as part of training package development projects undertaken throughout 2018.

More specifically, key individual industry and group stakeholders, identified by the Aerospace IRC, were consulted during the development of the Industry Skills Forecast. See Appendix E for the consultation list.

Feedback was gathered via the following methods:

- forums, meetings and focus groups – attended in person and via webinar
- interviews and one-on-one consultation – via phone/teleconference and/or face-to-face
- nationwide and organisation-specific surveys or questionnaires.

Issues and Sensitivities Raised

Industry consultation identified a number of issues and sensitivities, relating to particular areas within the industry, which have been outlined in the table below. The Upcoming Activities section provides further information on the action to be taken to address these issues/sensitivities.

Table 8 – Issues and sensitivities raised by stakeholders during consultation

Area	Issue and/or sensitivity	Action to be taken
Regulatory/ legislative requirements	The aerospace industry is disengaging from the formal VET system as it does not result in licensed skilled workers. Businesses, in the general aviation sector in particular, are reluctant to take on new young people and apprentices as they are disillusioned with the training system, which they feel is letting them down. Graduates are completing qualifications but unable to obtain licences without significant additional inputs. There are concerns about the ageing workforce. Confidence that alignment between the CASA requirements and the VET requirements will significantly improve conditions for recruitment of younger people to the industry. There is currently a shortage of LAMEs. There are concerns about the large number of face-to-face training days required for AMEs to upskill to LAMEs. Employers are either using rosters to accommodate or are not supporting the upskilling due to the long workplace absences required. A shortage of LAMEs means there is a shortage of properly skilled AMEs. Areas requiring further skill development include composite materials and maintenance of ageing aircraft.	Integrated into the 2018 Case for Change supplementary information
Skills development	More skills surrounding structural sheet metal and corrosion	Identified for further consultation and potential future training product development

Proposed Schedule of Work 2019–2020 to 2022–2023

As there is a Case for Change pending approval to review and redevelop the MEA Aeroskills Training Package to meet the current and future needs of the industry, the Aerospace IRC have agreed that a Proposed Schedule of Work not be submitted for this return of the Industry Skills Forecast.

The IRC will consider any additional priorities for training package development for the Aerospace sectors in the 2020 return of the Forecast.

Appendix A: Occupation Classifications

For the purposes of analysing employment trends, the following ANZSCO codes have been used.

Four-digit Classification	Six-digit Classification	Occupation
3231	323111	Aircraft Maintenance Engineers (Avionics)
3231	323112	Aircraft Maintenance Engineers (Mechanical)
3231	323113	Aircraft Maintenance Engineers (Structures)

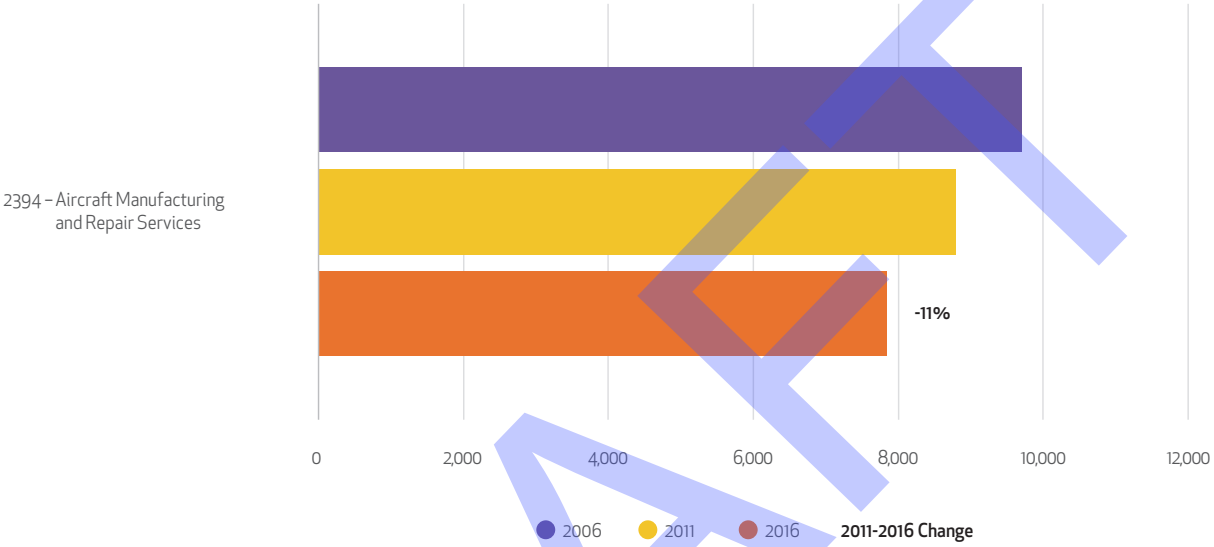
Appendix B: Industry Classifications

For the purposes of analysing the business landscape, the following ANZSIC codes have been used.

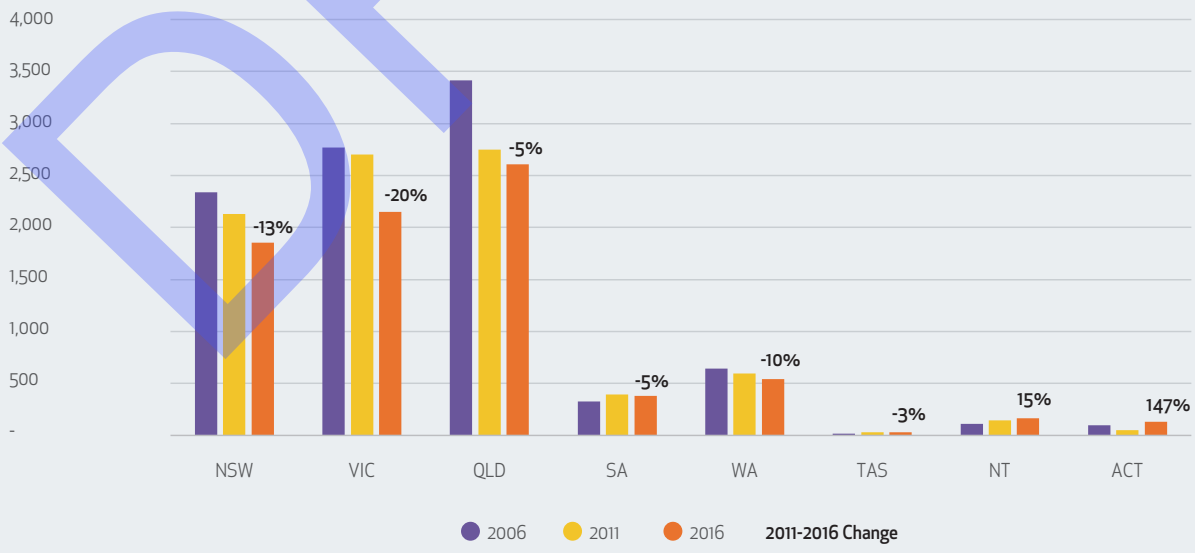
Four-digit Classification	Industrial Classification
2394	Aircraft Manufacturing and Repair Services

Appendix C: Census Snapshot

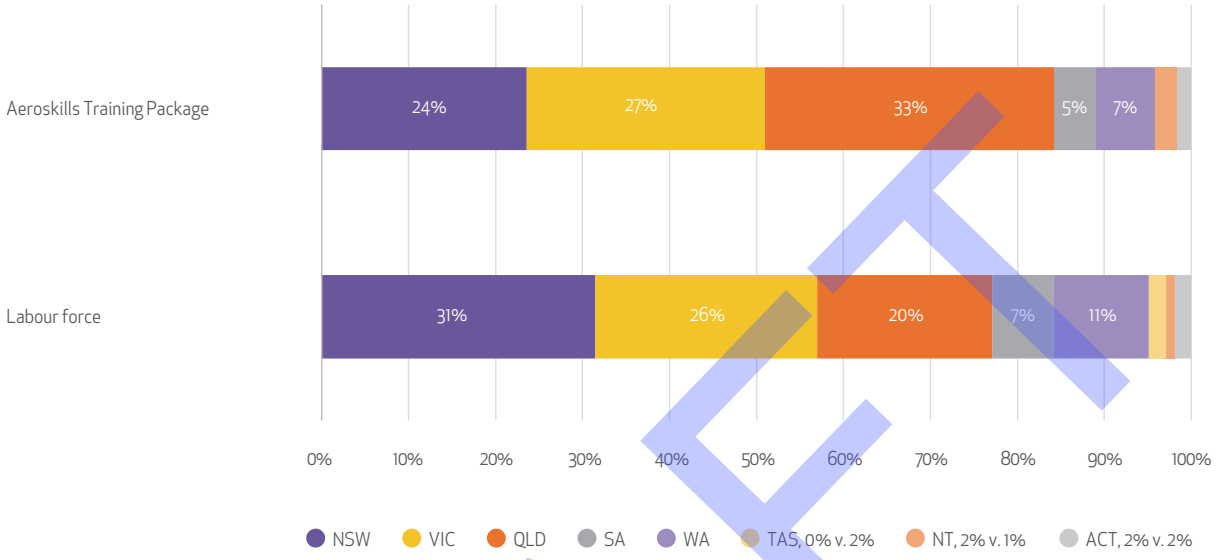
Number of employees in selected industry classes, Census 2006–2016, and five-year change from 2011 to 2016



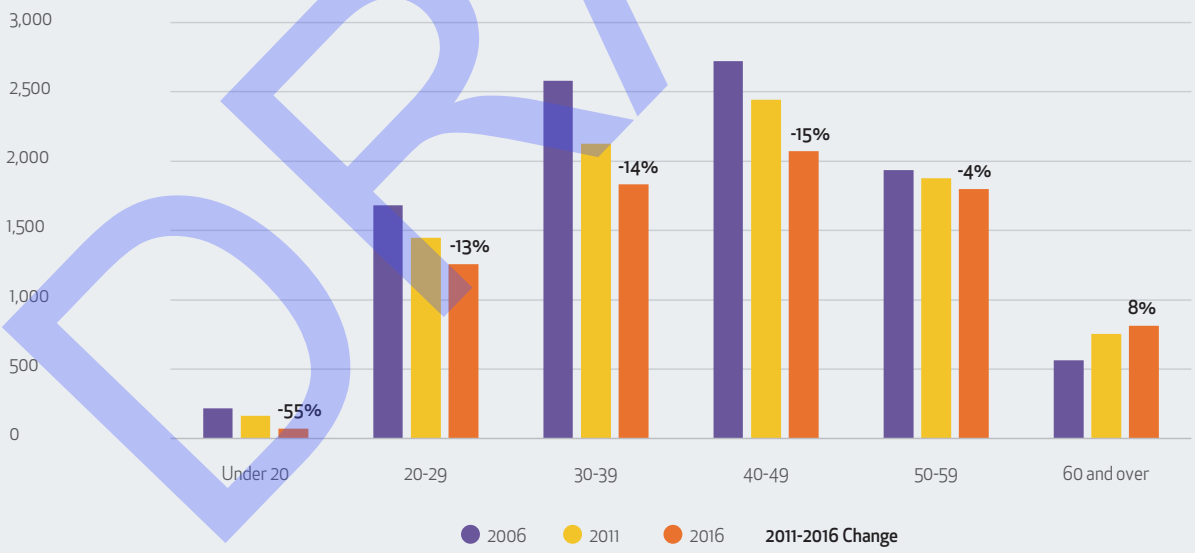
Total number of employees in selected industry classes by state of usual residence, Census 2006–2016



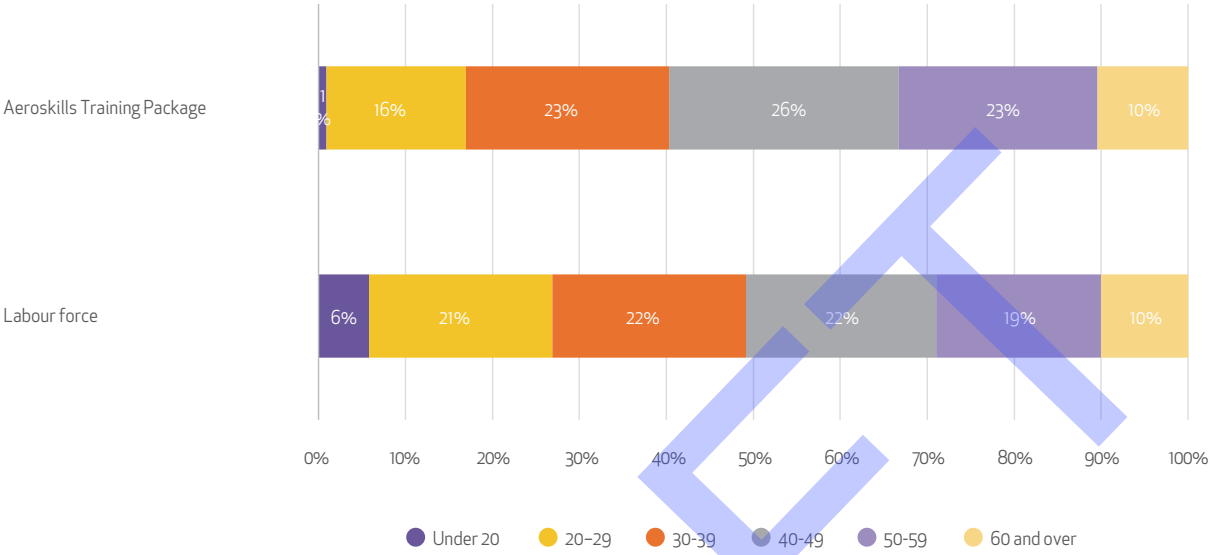
State of usual residence of employees in selected industry classes versus the general labour force, Census 2016



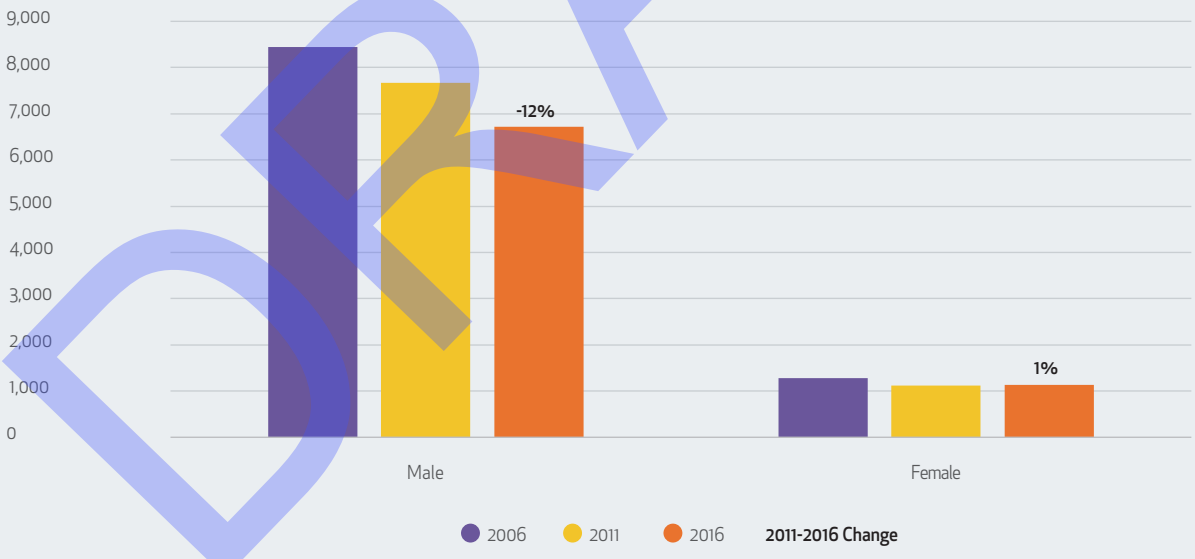
Total number of employees in selected industry classes by age, Census 2006–2016



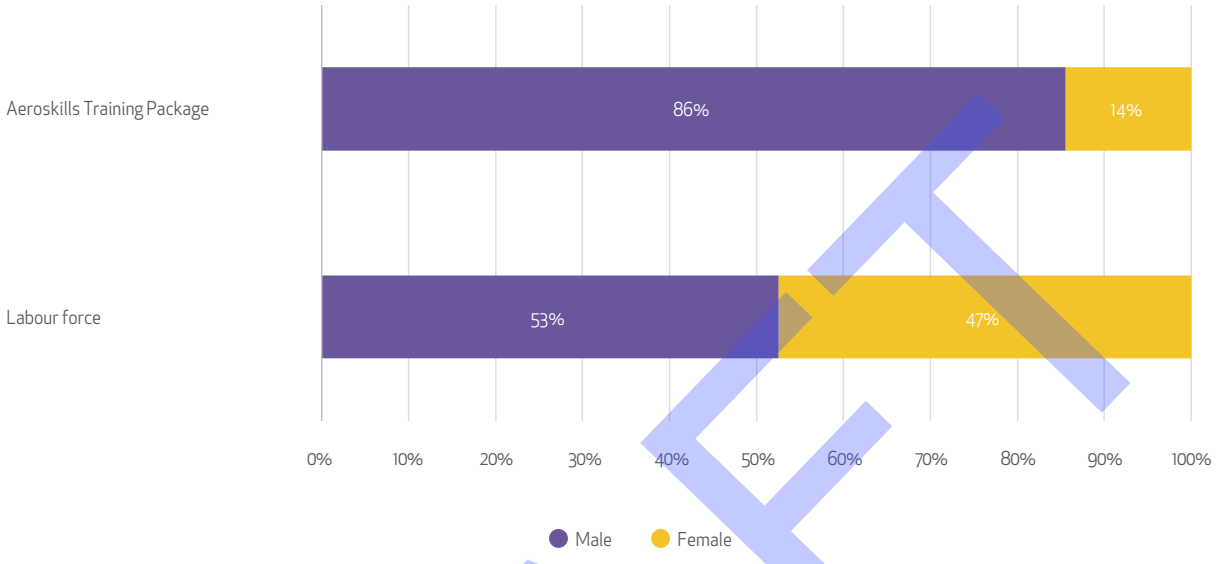
Age of employees in selected industry classes versus the general labour force, Census 2016



Total number of employees in selected industry classes by gender, Census 2006–2016

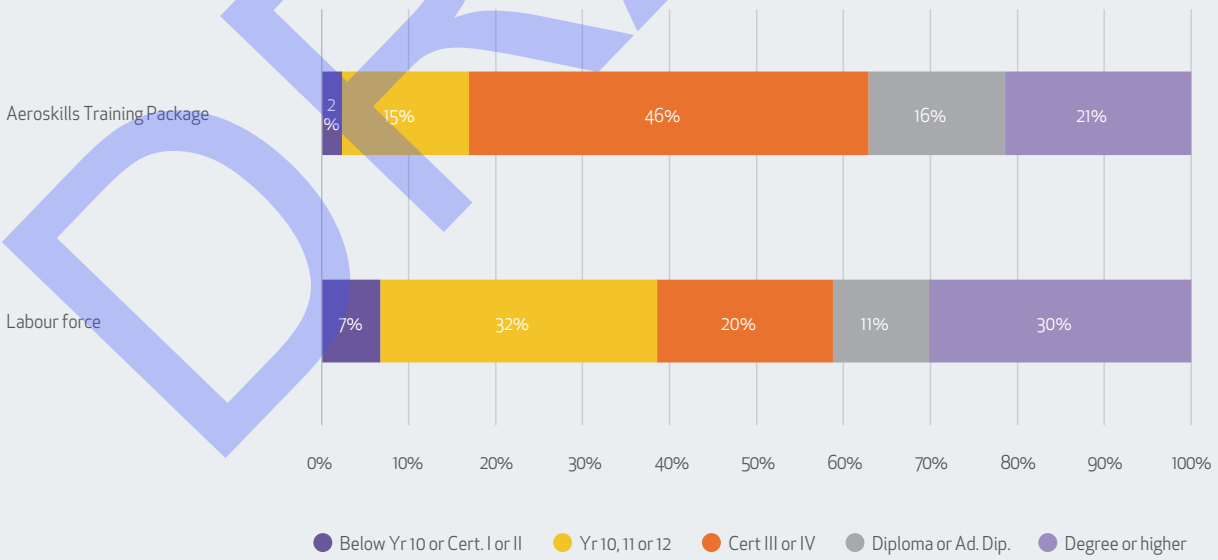


Gender of employees in selected industry classes versus the general labour force, Census 2016



Highest educational attainment of employees in selected industry classes versus the general labour force, Census 2016

Excludes those whose educational attainment was not stated or not applicable

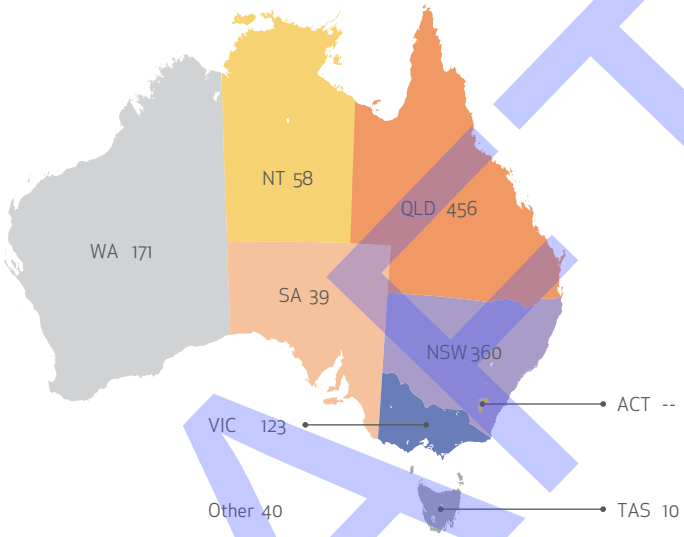


Source: Australian Bureau of Statistics (ABS) Census of Population and Housing: 2016 Census – Employment, Income and Education; 2011 Census - Employment, Income and Unpaid Work; 2006 Census – Labour Force. Data extracted using TableBuilder.

Appendix D: Enrolment Snapshot

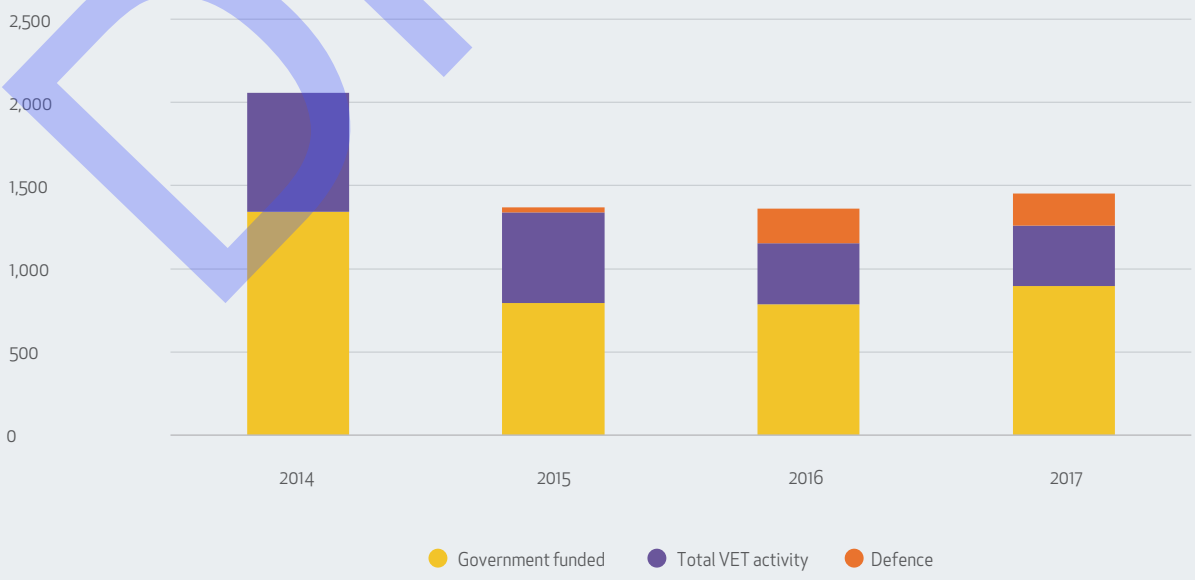
Program enrolments in MEA Aeroskills qualifications by state/territory of student residence

2017 Total VET Activity



Total program enrolments in MEA Aeroskills qualifications, 2014–2017, including Defence Data, 2015–2017

2014–2017 Total VET Activity, 2015–2017 Defence



Proportion of program enrolments in MEA Aeroskills qualifications by training provider type

2014–2017 Total VET Activity

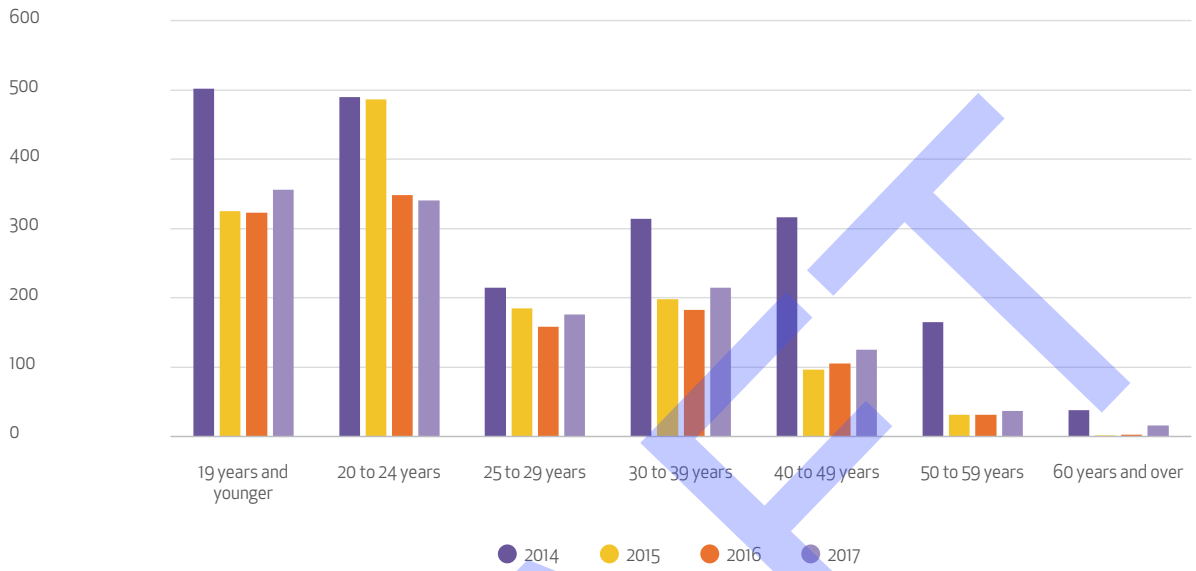
	2014	2015	2016	2017
TAFE	64%	44%	52%	46%
Private training provider	12%	10%	7%	3%
University	6%	20%	3%	1%
Enterprise provider	16%	27%	38%	48%
School	2%	0%	0%	0%
Community education provider	0%	0%	0%	3%

Program enrolments in MEA Aeroskills qualifications by gender

2017 Total VET Activity

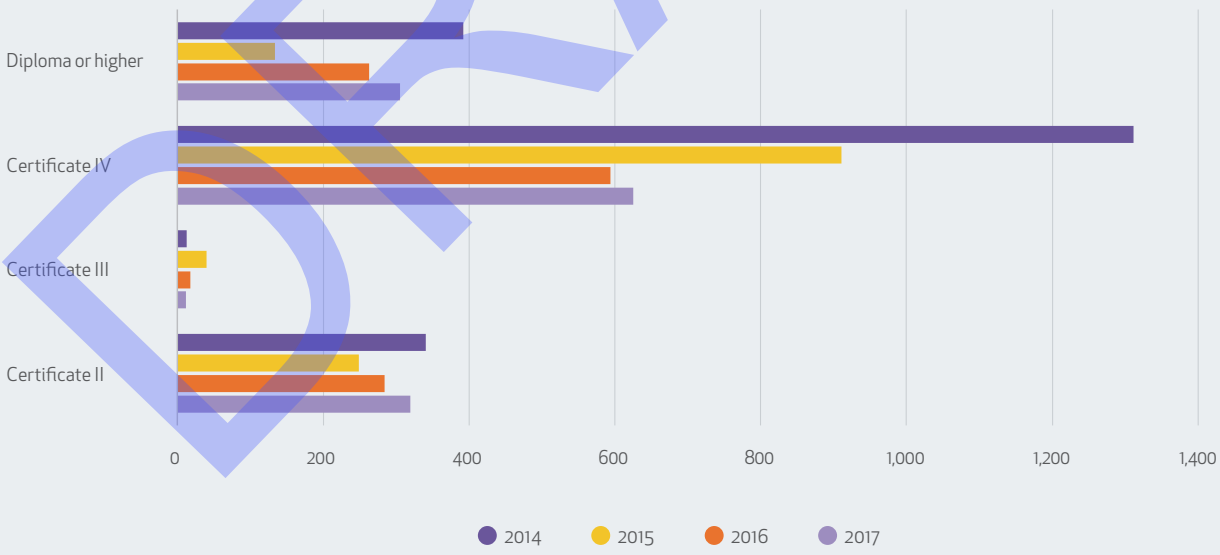
Program enrolments in MEA Aeroskills qualifications by age group

2014–2017 Total VET Activity



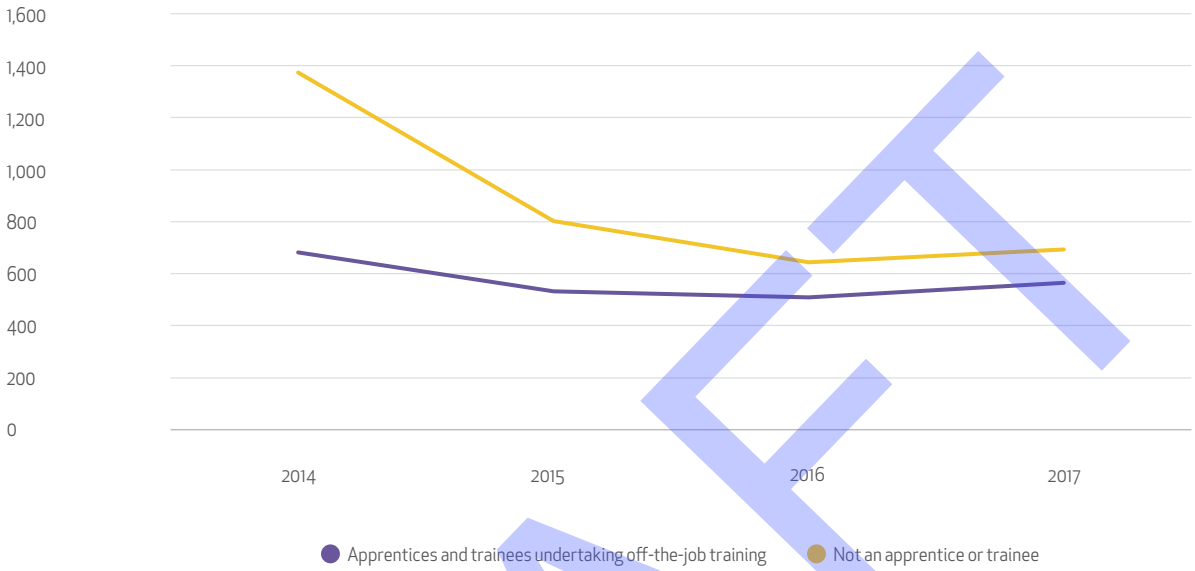
Program enrolments by qualification level in MEA Aeroskills qualifications

2014–2017 Total VET Activity



Program enrolments in MEA Aeroskills qualifications by apprentice/trainee undertaking off-the-job training

2014–2017 Total VET Activity



Source: All data in this appendix was extracted from VOCSTATS on 15/08/2018 by IBSA Manufacturing who take responsibility that the information extracted is appropriate for its intended use.

VOCSTATS data are 'randomly' adjusted by small amounts by a data perturbation tool to avoid the release of confidential data. Hence numbers are only approximate. The perturbation impact is negligible for most practical purposes. The effect can be significant and must be considered when interpreting small numbers.

Appendix E: Consultation List

The 2019 Skills Forecast and Proposed Schedule of Work 2019–2023 builds on the consulations undertaken as part of the 2018 return. Feedback on industry imperatives were also captured as part of training package development projects undertaken throughout 2018.

More specifically, key individual industry and group stakeholders, identified by the Aerospace IRC, were consulted during the development of the Industry Skills Forecast. See the consultation list below.

Feedback was gathered via the following methods:

- forums, meetings and focus groups – attended in person and via webinar
- interviews and one-on-one consultation – via phone/teleconference and/or face-to-face
- nationwide and organisation-specific surveys or questionnaires.

Consultation List

Organisation

Air North	Macquarie University, Centre for Workplace Futures
Australian Licensed Aircraft Engineers Association	Paspaley Aviation
Aviation Australia	QMI Solutions
Aviation Training Services Victoria	RMIT University
Aviation Technical Advisory Group	Skills Point NSW
BAE Systems Australia – DATA	Skills Tasmania
Box Hill Institute	Skyline Aviation Group
Cairns Aviation Skills Centre	South Metropolitan TAFE – WA
Chartair	State Training Authority – NT
Chisholm Institute	State Training Authority – QLD
Defence	State Training Authority – SA
Department of Education and Training – VIC	State Training Authority – VIC
Department of Industry – NSW	TAFE NSW – Padstow
Department of Training and Workforce Development – WA	TAFE SA – Parafield
Hawker Pacific – Aviation	UEEA Training Council – WA
Industry Skills Advisory Council Northern Territory	Unitedearo
Manufacturing Skills Australia	Virgin Australia