



**A PROPOSAL  
TO  
CHANGE AVIATION  
APPRENTICE  
TRAINING STANDARDS  
TO**

*AMROBA*

- 1. MEET INTERNATIONAL (ICAO/EASA)  
TRAINING STANDARDS**
- 2. PRE-EMPLOYMENT  
PRACTICAL SKILL TRAINING**
- 3. REDUCE ELAPSED TIME**
- 4. REDUCE OVERALL COST  
(EMPLOYER, APPRENTICE, GOVERNMENT)**
- 5. ACCESS TO TRADE WAGES QUICKER**



## THE ISSUES

- 1. The number of aviation apprentices are declining as employers find current training is de-skilling the aircraft maintenance engineering workforce.*
- 2. Practical skills are no longer taught pre-employment. Most industry wide practical skills for the 'avionics' and 'mechanical' AME trades should be taught prior to employment.*
- 3. ICAO states that AME students should attain practical skills before working on operating aircraft or aircraft components. This is an aviation safety issue. An unskilled AME may unintentionally induce a safety related fault.*
- 4. There is no international recognition of Australian AME trade qualification due current qualifications do not meet the international training standards promulgated by the International Civil Aviation Organisation (ICAO).*
- 5. Australia has 'avionics' and 'mechanical' AMEs trade streams. The current avionics and mechanical AME training does not provide the practical and knowledge skills to perform industry wide maintenance, especially minor and major modifications and repairs.*
- 6. Australian Qualification Framework (AQF) AME Training Courses are not approved by the Australian Standards Qualification Authority (ASQA) compliant with ICAO international training standards structured to meet the European Aviation Safety Authority (EASA) AME licences and ratings that have been adopted into Civil Aviation Safety Regulation (CASR) Part 66.*
- 7. Aviation apprentice numbers are declining and may need knowledge training, post-employment, to be centralised in a similar manner to the marine training centre of excellence in Tasmania.*

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## **AUSTRALIAN AVIATION MRO PERSONNEL SKILLS AND KNOWLEDGE REQUIREMENTS**

To attract young people into the aviation maintenance, repair & overhaul (MRO) industry requires two elements: Jobs and Skills. Jobs are dependent on the amount of aircraft hours flown by Australian registered aircraft, and the capability of providing aircraft maintenance services at a reasonable cost. Skills however, are dependent on a national training system that can commence in secondary schools or tertiary training establishments, prior to commencing employment, by applying a more structured practical skills focused training system.

### ***Advantages***

- Industry wide practical skill training obtained pre-employment (secondary/tertiary) (AQF Level 2).
- This will enable a reduction of trade training to 2 years post-employment. This benefits employers and employees to access trade level salaries in a shorter time.
- Year one employment training to AQF 3 will enable basic licences to be issued by CASA.
- Year two employment training to AQF 4 meets the avionic and mechanical trade training levels meeting international training standards (ICAO/EASA).
- One additional year experience plus specific licencing training (AQF 5) to obtain full avionic and/or mechanical AME licences to be issued by CASA.
- Higher practical and knowledge skills providing industry wide transportable skills meeting global aviation training standards.
- Reduced overall training costs.

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## RESTRUCTURING COMPETENCY TRAINING

Aviation is a global industry. The current approach is not providing internationally acceptable education qualifications to enable qualified maintenance personnel obtain employment outside Australia to gain valuable international experience (Pilot & Air Traffic Controller qualifications are acceptable globally). The current system is more business sector orientated that does not provide industry wide transportable trade qualifications. This has resulted in a lack of attraction to the aviation trade by school leavers.

The numbers of aviation apprentices & trainees has decreased from **779** in 2009 to **398** in 2013. **This is more than a 50% reduction in aviation apprentices/trainees over 4 years** and the trend downwards has continued in 2014/2015. This clearly means that a new approach is needed to provide the practical skills and theoretical knowledge for future aircraft maintenance engineers (AME) and technicians (AMT).

To make the aviation MRO industry attractive to school leavers, the Australian Qualification Framework (AQF) AME trade qualifications must:

- a. *enable practical skills to be learnt with similar trade practical skills at local secondary schools and/or tertiary training establishments; and*
- b. *meet international training standards promulgated by ICAO & EASA (transportable qualifications accepted in foreign countries, especially in this region) which enables tradesperson to gain valuable experience in the global aviation system, and*
- c. *enable aviation trade knowledge training to be provided by correspondence and on-line pathways from dedicated aviation training establishments. This may mean that only **one centre of excellence** training provider approved by the federal government may exist with full correspondence and on-line tuition capability.*

In addition, the problem with the current aviation AQF training pathways is that it is a three (3) stream pathways (**avionic/mechanical/structures**) used in large airlines. This is not associated with the non-airline sectors and the (ICAO/EASA) international training standards for aircraft maintenance engineers/technicians (AME/AMT). The international training system is a two (2) stream system (**avionic and mechanical**) that is recommended to be adopted and properly integrated into the Australian Qualification Framework (AQF) system. The avionic and mechanical pathways multi-skills employees to meet global aviation training standards better than the 3 stream system.

1. The proposed pathways will also provide basic qualified AQF Level 3 AME/AMT at the completion of one year of employment. Honing practical skills post employer in the workplace and additional knowledge skills meets the Basic AME licencing standards.
2. Additional knowledge in year two of employment will enable a person to become a fully qualified AQF Level 4 AME/AMT meeting international training standards.
3. Adding experience and LAME role and responsibilities in the third year of employment will enable tradespersons to attain the AQF Level 5 level to become qualified for a full CASR Part 66 AME licence. It must be a progressive education system approved by ASQA to benefit the MRO industry. Though the AQF Level 3 qualification will meet the CASR Part 66 “basic licence”, the ASQA approved AQF 4 & 5 qualifications must attain international recognition. (ICAO/EASA). These are the international training standard used mainly in the South Pacific Region.

## Pre-employment

- AQF Level 1 & 2 skills should focus on providing the practical skills needed to perform aircraft maintenance tasks. (10-20% knowledge & 80-90% practical). ICAO provides guidance material of the practical skills required.

## Post-employment

- AQF Level 3 skills should add knowledge to the depth necessary to meet CASR Part 66 AME Cat 'A' licence and also a pathway for workshop AMT responsibilities. (This level is 80-90% knowledge & 10-20% aviation specific level practical skills)
- AQF Level 4 skills should add additional knowledge meeting full international trade training standards for AMEs. (100% knowledge)
- AQF Level 5 should add additional knowledge applicable to the international standards to meet CASR Part 66 licencing requirements. (100% knowledge).

Pre-employment	Post-employment		
AQF Levels 1/2 Practical Skills 90%	AQF Level 3 Theoretical 80/90%	AQF Level 4 Theoretical 100% (Correspondence & On-line)	AQF Level 5 Theoretical 100% Correspondence & On-line
----- 10 % Theoretical	Basic AME "A" licence ----- Practical 10/20%	AME/AMT Tradesperson	Full AME "B" Licences

The above structured training is discussed later in this paper.

## ***Better Skills – Shorter Apprenticeships***

**Required:** A secondary/tertiary education program that provides students with employable practical skills before seeking employment. The focus is on obtaining structured practical skills prior to seeking employment that will enable a shorter apprenticeship training system.

**Pre-employment:** A person entering the workforce needs basic skills that cannot be learnt on an operating aircraft or aircraft component. The basic practical skills must be attained in a controlled training environment to ensure the student has the attitude and ability to perform these hand skills. All tradespersons understands the need to practice on non-operating aircraft and components to develop and hone these practical skills.

**Post-employment:** AMROBA contends that a two year trade training program, whilst employed, can be achieved with an additional third year to attain CASR Part 66 licencing knowledge and experience. The two year program must provide aviation specific skills and knowledge, based on international aviation maintenance training standards for the avionic and mechanical streams.

- These skills and knowledge can be achieved within two years as long as pre-employment training (ab initio training), teaches the practical skills, industry practices and workplace, health and safety requirements to perform aircraft and component maintenance tasks in a safe environment.
- Learning aviation practical skills in a structured training environment is safety related, it enables the development and honing of practical skills, practicing on non-operating aircraft/components within a controlled training environment.
- The practical aviation skills obtained pre-employment would provide transportable practical skills similar to other trades and career paths if aviation does not have enough job vacancies in a particular year.

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## ***Current Situation***

AMROBA contends that the current competency based training system is not structured to provide ab-initio technical practical skills pre-employment thus preventing advanced practical and knowledge skills to be attained in an efficient manner for the benefit of the employee and the employer. Secondary school and/or tertiary training providers have tended to shift practical training to the employer over the last couple of decades thus, according to employers, deskilling the workforce. An individual employer cannot provide industry wide practical skills that can be provided by a combination of secondary technical schools and tertiary training providers.

In hindsight, it is now recognised that aircraft maintenance personnel competency based training is not structured to meet industry wide requirements. The AME trade training was one of the first industry sectors to adopt competency based training about 3 decades back. It is timely that the government is reviewing the vocational education (VET) system and this paper provides a more efficient approach to greatly improve skills in the aviation trade training/licencing sector.

## ***Government Initiative***

Next year, the Federal Education Department will implement a new approach to developing industry sector (skills & knowledge) VET based training system to meet the needs of the future. They will create various “Industry Reference Groups” instead of the current “Skill Councils” so that the industry will have more input.

AMROBA members, like many small businesses in other industry sectors, have continually criticised the skills being provided under the current VET system for AMEs/AMTs.

## ***Ab-initio Training***

AMROBA recommends that an efficient education system should concentrate on providing ab-initio practical (hand skills) training at, either or both, secondary schools and/or tertiary training establishments **pre-employment**. This ab-initio training would provide a student with industry wide practical skills and basic aviation knowledge to gain employment. Instead of concentrating on knowledge initially, concentration on appropriate industry wide practical skills to obtain employment should be part of the ab initio training.

## ***Two stage training***

If the secondary/tertiary full time training was properly focused, the graduate will be provided with the necessary practical skills, workshop practices skills and basic AME knowledge pre-employment. This level of training would equate to the AQF Levels 1 & 2 that can be provided within the secondary/tertiary training sectors pre-employment. A student meeting these AQF levels would then have industry wide employable skills upon entering the workforce.

## ***Outcome***

By concentrating on providing quality aviation specific practical skills pre-employment, the apprenticeship training framework can be reduced to 2 years thus enabling a tradesperson access to tradesperson pay rates post 2 years employment. An additional knowledge based year, post trade, would also enable these qualified tradespersons attain the knowledge and experience to meet CASA’s AME licencing standards that are based on international AME training standards. Employers benefits by a better skilled employees.

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## PROPOSED (L)AME TRAINING PROCESS

*A two year trade training apprenticeships system provided by correspondence and on-line from a centre of excellence training establishment. Cost savings to government, employers and apprentices*

### ***Pre-employment, practical skill training***

**ICAO States:** Practical training consists of general maintenance practices, practical skills and attitude training in order to master essential skills before proceeding to work on airworthy aircraft or components. Therefore the practical skills required to do aircraft maintenance tasks should be attained pre-employment. These practical skills, workshop practices and other training requirements can, and should be attained at either a tertiary training establishment or a combination of secondary schools and tertiary training establishments pre-employment.

Gaining these practical skills prior to employment is safety related. Secondary schools could make arrangements with a tertiary training establishment specialising in providing the basic aviation maintenance practical skills, workshop practices and attitude training up to the AQF Level 2 proposed in this paper. ICAO provides guidelines of the practical skills required. Meeting these training standards pre-employment will reduce the time away attending training establishments post-employment.

Following pre-employment training (AQF 1 & 2), the graduate will be more employable. Once obtaining employment the apprentice/trainee can access the next level (AQF 3) of training to obtain basic trade qualifications. Qualifications that will enable them to attain the CASR Part 66 Cat 'A' & Elementary Group rating AME licence.

The following year of employment will attain (AQF 4) full trade qualifications in the avionic and/or maintenance AME/AMT streams. ICAO also provides training standards to this level. Implementing the international training standards will mean Australian tradespersons will once again have internationally recognised trade qualifications.

The third year of LAME specific training/experience will enable CASA to issue CASR Part 66 B1-1, 1.2, 1.3, 1.4 & B2 licences. That is, based on a two year trade training plus one year experience and licence specific knowledge to obtain a full CASR Part 66 AME licence. A much more efficient VET system as knowledge training can be provided by correspondence and on-line by possibly one centre of excellence. This a cost saving for government.

Industry must consolidate training based on a total three year training pathways for both avionics and mechanical tradespersons comprising of two year trade training plus an additional year to underpin CASA's AME licences and non-specific aircraft ratings. The first two years must comply with an ASQA approved apprenticeship training system, meeting international (ICAO/EASA) trade training standards, that will also underpin a third year diploma course required for the issue of a CASR Part 66 AME licence.

## ***Australian Qualification Framework Alignment***

<b>AQF</b>	<i>Competency level</i>	<b>Outcome</b>	<b>Learning Standard</b>	<b>Type</b>
<b>AQF Level 1 and 2</b>	<i>Can demonstrate autonomy and limited judgement</i>	Preparation for employment	Basic practical skills and workplace practices can be provided by a technical secondary school or tertiary college prior to employment	Post year 10 minimum requirement.
<b>AQF Level 3</b>	<i>Can take limited responsibility</i>	CASR Part 66 CAT A & Elementary Maintenance licence levels	This level concentrates on providing the practical skill levels to perform and certify for limited maintenance work	Theoretical training can be provided on-line
<b>AQF Level 4</b>	<i>Can demonstrate autonomy, judgement and limited responsibility in known or changing contexts and within established parameters</i>	Tradesperson signing for own maintenance Possible B1.2	This level adds more knowledge and troubleshooting capabilities to the practical level in AQF 3	Additional theoretical training provided on-line.
<b>AQF Level 5</b>	<i>Can apply knowledge and skills to demonstrate autonomy, judgement and defined responsibility</i>	Full AME Licence level. B1.1, 2, 3 & 4 & B2	This level introduces aviation legislation, aviation standards and licence responsibilities	Additional knowledge provided on-line.

### ***First year employment, skill/knowledge/trade training***

During the first year of employment, additional skills and knowledge that equate to the AQF Level 3 would be attained by an approved tertiary provider thus providing additional practical skills and knowledge. All knowledge training can be provided on-line by the tertiary training provider. Final assessment of competency is carried out face to face at end of year. This AQF level 3 would be structured to meet the following CASR Part 66 AME licensing ratings: AME Cat A licence and the proposed CASR Part 66 Elementary AME licence.

This training must be approved by the Australian Standards Qualification Authority as part of a two year trade training system for avionic and mechanical apprentices meeting international training standards.

### ***Second year employment/trade level training year***

During the second year of employment, the final knowledge requirements and any enhanced skills to meet trade levels can be provided mainly on-line by the training provider with face to face competency assessment carried out at the end of the year by the provider. (*Assessment could also be done by tele or video conference*). This additional knowledge equates to the AQF level 4 (trade level) to provide trade qualifications to enable the qualified person with the knowledge and skills to perform and sign for maintenance tasks within the particular trade.

The concentration of practical skills pre-employment enables businesses to employ persons with appropriate practical skills and also enables the person to continually improve their knowledge. This pre-employment training must be accepted and approved by the Australian Standards Qualification Authority to underpin a two year trade training system for aviation avionic and mechanical maintenance apprentices and trainees.

### ***Third year employment/AME licensing training year***

There are specific knowledge and skills required above the trade training levels that supports the CASR Part 66 AME licencing standards. The additional knowledge that relates to the international LAME role and responsibilities, such as the basis of aircraft design standards, design standards conformity inspections, making airworthiness safety determinations,

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coordination of maintenance and documentation management, basic business management, and safety management implementation. Understanding the difference between regulatory responsibilities and master/employee responsibilities and their role for maintaining quality in all maintenance capabilities.

The importance of the LAME to provide ICAO Annex 1 “quality oversight responsibilities” is the fundamental privilege of the licence holder as well as coordinating maintenance so the LAME can sign a release to service for the aircraft after maintenance is completed.

The Government, the public and aircraft operating crew all rely on the safe decision making skills of the LAME. It is essential that the NVET system provides both practical skills and theoretical knowledge equivalent to the international training standards promulgated by ICAO and in a similar manner as has been structured in Europe to meet CASA’s AME licencing.

### ***Summary***

By providing industry wide practical skills prior to employment, it enable post-employment training to be mainly provided by correspondence and on-line tutoring. Obtaining the knowledge required at the end on the first year on employment, successful basic tradesperson can also attain the first level of licencing from CASA.

This is a much more efficient and cost effective system than what is provided under the current 4 year apprentice/trainee system that needs the apprentice to have extended stays in a training environment during each year.

Year one pre-employment training has a 10-20% practical skill element that could be provided by a tertiary training establishment. The knowledge element could be provided from possibly one or more training centres of excellence utilising distant learning – either correspondence or on-line. The training centres of excellence may also provide full time training.

The cost savings to government, employers and employees, though not costed, should be considerable. Pre-employment practical skill training can be attained at any approved RTO that adopts the national competency standards developed from the ICAO training standards.

Post-employment is mostly be correspondence and on-line. Honing practical skills will be the responsibility of the employer. The provision of knowledge skills can be done by one or two approved centre of excellence training establishment.

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***Safety All Around.***

## APPENDIX

### ***AQF Background***

The following is a government review of the efficiency of Australia's vocational education and training (VET) system to provide a skilled workforce for industry. The Australian Apprenticeships Incentives Program will enable adoption of the proposed training system listed above.

### **NVET INTRODUCTION (ALL INDUSTRIES)**

1. *Australia's vocational education and training (VET) system is designed to help individuals develop or enhance workplace skills and knowledge. Supporting people to develop workplace skills is a key factor in improving productivity and workforce participation, and plays a central role in strengthening economic and social wellbeing.*

2. *Apprenticeships and traineeships—hereafter referred to as Australian Apprenticeships—are an important component of Australia's VET system. An Australian Apprenticeship is an employment arrangement that combines paid work with a structured program of 'on-the-job' and 'off-the-job' training. Australian Apprenticeships enable employees to gain experience, develop practical skills and acquire nationally-recognised qualifications. As at 30 June 2014, there were approximately 351 000 apprentices and trainees 'in-training'. Of these, approximately 55 per cent were classified as technicians and trades workers.*

3. *The Australian Government has a number of programs in place to support Australia's VET system, and Australian Apprenticeships in particular. The largest component of the Australian Government's financial support for Australian Apprenticeships is the Australian Apprenticeships Incentives Program (AAIP).*

### **Australian Apprenticeships Incentives Program**

4. *The objective of the AAIP, which commenced in 1998, is to contribute to the development of a highly skilled and relevant Australian workforce that supports economic sustainability and competitiveness. The Australian Government aims to achieve this objective by:*

- *providing genuine opportunities for skills-based training and development of employees by providing incentives to employers of eligible apprentices; and*
- *encouraging people to enter into skills-based training through an Australian Apprenticeship by providing personal benefits.*

5. *A key part of the AAIP is the delivery, under contract to the Australian Government, of Australian Apprenticeships Support Services (Support Services) by Australian Apprenticeships Centres (AACs). Since the AAIP commenced, there have been five separate contract rounds for the delivery of Support Services—the current round commenced on 1 July 2012 and is scheduled to end on 30 June 2015. A broad range of Support Services are required to be provided in the current contract round, including: assessing the eligibility of applications and claims for financial assistance under the AAIP; providing information and advice to potential applicants; and marketing and promoting Australian Apprenticeships. The AACs are paid a fee for each Australian Apprenticeship that they administer as part of delivering the Support Services.*

6. *In September 2014, the then Minister for Industry—now the Minister for Industry and Science—announced the establishment of the Australian Apprenticeships Support Network (Support Network) to replace the current round of Support Services from 1 July 2015. At the time, the then Department of Industry's website noted that: the Support Network [is designed to] make it easier for employers to recruit, train and retain apprentices and better support individuals in a proven earning and learning pathway, helping improve completion rates.*

7. *To the end of December 2014, total AAIP expenditure in the current Support Services contract round has been approximately \$2.8 billion—\$2.3 billion in financial assistance and \$0.5 billion in fees paid to AACs.*