



MOST COST-EFFECTIVE SYSTEM TO PROVIDE QUALIFIED AIRCRAFT MAINTENANCE PERSONNEL

“REGULATORY REASON FOR CRITICAL SHORTAGE”

- A. 2007.** Government **adopted EU regulations** for nine (9) aircraft maintenance engineer licences.
- B.** Government **did not/has not adopted EU regulations** for maintenance personnel trade/licencing training courses to support the European nine (9) maintenance personnel trade-based licences **adopted in 2007.**
- C.** Government **did not/has not adopted EU regulations** that enables a State’s [e.g. **Australia**] Education Training System [e.g. **NVET**] to provide these trade/licencing courses without approval by the State’s Aviation Regulator [**CASA**].

‘TO INCREASE AMEs/LAMes – ADOPT THESE EU REGULATIONS’

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AIRCRAFT MAINTENANCE PERSONNEL

This shortage is a result of a failed “adoption of another nation’s regulatory system” by only partially adopting that nation’s regulatory system. Partial adoption does not work.

Adopting the EU maintenance licencing without the EU training requirements has caused the shortage. AMROBA identified regulatory deficiencies & the history and provided the solution. What is now required is commitment to overcome the shortage by adopting the EU regulatory career training courses pathways that support the maintenance licences and will attract young & older personnel with appropriate hand skills and knowledge.

Fact: These EU regulatory provisions should have been adopted and made when CASR Parts 66/147 were made by government in 2007.

- Australian aviation is a global industry that operates to global personnel and equipment standards to help maintain safety. This is the first challenge.
- Reconnecting the academic pathways with the licencing pathways is the second challenge.
- Upskilling the current trade skills to the global standards is the third challenge.

To make it work, the system must return to holding a VET (trade) qualification to progress to a licencing qualification policy by adopting EASR Parts 66/147 training course standards.

EU aligns with international standards promulgated by ICAO to meet Annexes 1 & 8 Standards.

[ANZSCO - Australian and New Zealand Standard Classification of Occupations](#) designated job descriptors for the aircraft maintenance engineer (AME), *avionics, mechanical and structures not applied*. Need review since partial adoption of EU regulations.

Re-engagement of DEWR’s **Trades Recognition Australia** who “*engage Registered Training Organisations (RTOs) to perform aspects of the skills assessment process on its behalf under certain programs. The skills assessments are for non-Australian passport holders who have gained trade skills overseas or in Australia for the purpose of migration and skills recognition. Basically, rebuilding a globally acceptable apprentice to trade AME education system providing basic trade training qualifications for avionics, mechanical and structure streams with added electives to cover skills and knowledge for specialised tradespersons.*”

Coordination of Government Department/Agencies involved: **DITRDCA/CASA, Dept of Education/ASQA, DEWR/JSC-IBSA**. CASA states they are responsible for licencing but not maintenance personnel spelt out in Annex 8 of the Convention. Who is then?

DITRDCA is the link between all government department/agencies. DITRDCA has not assigned responsibility to the Department of Education and ASQA to provide maintenance personnel trade or licencing training since the creation of CAA in 1988.

Partial adoption of EASR Parts 66/147 has caused the critical shortfall of maintenance personnel and licences. Unadopted EU regulations relating to training should be adopted and assigned to the Department of Education & ASQA for EU defined Basic Courses.

CASA should also review its approach to FAR Part 43 and associated FAR requirements.

Fact: The new Jobs and Skills Council (JSC) can provide training packages for adopted EU regulations specifying course details. These issues are detailed on following pages.

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EASA Parts 66/147 Aircraft Maintenance Personnel Course Standards

These basic courses should be the responsibility of Department of Education/ASQA to provide.

Today, the CASR Part 66/147 licences are disconnected from Australia’s academic pathways for all except the large aeroplane sector. **Adopt** EASR Parts 66/147 training course regulations for at least the 9 trade/licence course training standards.

EU regulations for yr 2007 trade/licence training courses, including course duration **were not adopted when EU regulatory Part 66 licences were adopted.**

Government must adopt the latest version of EASA’s course duration and include the B2L and B3. See far right in the **EASA chart of expanding licences.**

Consideration should be given to adapting the L2 Licences for ELA 1200Kg aeroplane courses.

No EASA AME/LAME training courses have been promulgated in Australia.

Entry Pathways

The more academic entry levels in civil aviation maintenance that can be provided, the more chance of attracting and retaining maintenance personnel.

EASA has made many changes, especially to address General Aviation issues. The latest version includes GA, Sport and Recreational sectors training courses that are missing from the Australian civil aviation maintenance training system.

Government is urged to adopt the EU regulations for GA, Sport and Recreational training standards as they are appropriate for these sectors of the general aviation, sport and recreational sectors.

Australia’s NVET system is very capable of reviewing and transitioning these EU regulatory training standards into NVET CBT training packages that will provide Australian maintenance personnel and licence holders to meet international training standards in the interest of enhancing aviation safety.

Recommendation 1: *Government must assign the National Department of Education/ASQA the responsibility to provide these EU basic maintenance personnel training standards that are based on the Chicago Convention’s Annex 8 Aircraft Maintenance Personnel Training Standards.*

EASR Part 147 NAA Approved Training Courses 2007	EASR Part 147 NAA Approved Training Courses 2023
<ul style="list-style-type: none"> • B1.1 course and <ul style="list-style-type: none"> ○ A1 sub-course; • B1.2 course and <ul style="list-style-type: none"> ○ A2 sub-course; • B1.3 course and <ul style="list-style-type: none"> ○ A3 sub-course; • B1.4 course and <ul style="list-style-type: none"> ○ A4 sub-course; and • B2 course. • B3 course added 2011. <p>Note the advancement in trade skills and licencing skills dedicated for the various sectors in general aviation. Australia are years behind other mature aviation countries.</p>	<ul style="list-style-type: none"> • B1.1 course and A1 sub-course; • B1.2 course and A2 sub-course; • B1.3 course and A3 sub-course; • B1.4 course and A4 sub-course; • B2 course (2000 Kg aeroplanes⁰, or • <i>B2L course plus,</i> (Post 2007) <ul style="list-style-type: none"> ○ <i>Instrument course; electives</i> ○ <i>Autoflight course; electives</i> ○ <i>Surveillance course; electives</i> ○ <i>Airframe Systems. electives</i> • B3 course – 2000 Kg aeroplanes (Post 2007) • L courses (Post 2007) <ul style="list-style-type: none"> ○ Sailplanes ○ Powered sailplanes & ELA1 aeroplanes (ELA1 – 1200kg aeroplanes) ○ Hot air balloons ○ Gas balloons ○ Hot-air airships ○ ELA2 gas airships and ○ Gas airships other than ELA2.
<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

“What are the EASA Part-66 licence categories?”

Current EASRs Not adopted: B3/2000Kg aeroplanes, B2L/Systems and L2/1200Kg aeroplanes. AMROBA supports adoption of the above licences to alleviate the pressures and stress in aviation.

“In a Maintenance Organisation, the different categories of EASR Part-66 licences are:

For certifying the release to service of work performed on aircraft by qualified maintenance personnel:”

Licence	Basic Licence categories	Line or Base		
LINE MAINTENANCE				
A	<p>Minor scheduled line maintenance and simple defect rectification Divided into the following subcategories:</p> <ul style="list-style-type: none"> A1 Aeroplanes Turbine; A2 Aeroplanes Piston; A3 Helicopters Turbine; A4 Helicopters Piston. 	Line Maintenance		
B1	<p>Maintenance on aircraft structure, power plant and mechanical and electrical systems, avionics systems requiring simple tests to prove their serviceability and no troubleshooting. Divided into</p> <ul style="list-style-type: none"> B1.1 for turbine aeroplanes, B1.2 for piston engine aeroplanes, B1.3 for Turbine helicopter and B1.4 for piston engine helicopter 	Line Maintenance		
B3	<p>Maintenance on aeroplane structure, power plant and mechanical and electrical systems; and on avionics systems requiring only simple tests to prove their serviceability and not requiring troubleshooting limited to non-pressurized aeroplanes of 2 000 kg MTOM and below.</p>	Line Maintenance		
B2	<p>Maintenance performed on avionic and electrical systems and electric and avionics tasks within powerplant and mechanical systems requiring only simple test and minor scheduled line maintenance and simple defect rectification. Include ELA 2 aeroplanes.</p>	Line Maintenance		
B2L	<p>The same as B2 but limited to the systems endorsed on the licence: Divided into the following ‘system ratings’:</p> <ul style="list-style-type: none"> communication/navigation (com/nav), instruments, auto flight, surveillance, airframe systems. 	Line Maintenance		
C	<p>Base maintenance ‘C’ with respect to complex motor-powered aircraft and ‘C’ with respect to other than complex motor-powered aircraft.</p>	Line Maintenance		
L2 (Adopt L2 1200Kg)	<p>Maintenance on aircraft structure, power plant and mechanical and electrical systems; radio, Emergency Locator Transmitters (ELT) and transponder systems; and work on other avionics systems requiring simple tests to prove their serviceability Divided into the following subcategories:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>L1C: composite sailplanes, L1: sailplanes, L2C: composite powered sailplanes and composite ELA1 aeroplanes, L2: powered sailplanes and ELA1 aeroplanes,</p> </td> <td style="width: 50%; vertical-align: top;"> <p>L3H: hot-air balloons, L3G: gas balloons, L4H: hot-air airships, L4G: ELA2 gas airships, L5: gas airships other than ELA2.</p> </td> </tr> </table>	<p>L1C: composite sailplanes, L1: sailplanes, L2C: composite powered sailplanes and composite ELA1 aeroplanes, L2: powered sailplanes and ELA1 aeroplanes,</p>	<p>L3H: hot-air balloons, L3G: gas balloons, L4H: hot-air airships, L4G: ELA2 gas airships, L5: gas airships other than ELA2.</p>	Line Maintenance
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Licence	Basic Licence categories	Line or Base
BASE MAINTENANCE		
B1	Support * staff for: (Maintenance Organisation) <i>Maintenance on aircraft structure, power plant and mechanical and electrical systems, avionics systems requiring simple tests to prove their serviceability and no troubleshooting (subdivided into B1.1 for turbine aeroplanes, B1.2 for piston engine aeroplanes, B1.3 for Turbine helicopter and B1.4 for piston engine helicopter)</i>	Base Maintenance <i>(Same as FAR Part 145 Inspectorate)</i>
B2	Support staff * for: <i>Maintenance on avionic and electrical systems and electric and avionics tasks within power plant and mechanical systems requiring only simple test and minor scheduled line maintenance and simple defect rectification</i>	Base Maintenance <i>(Same as FAR Part 145 Inspectorate)</i>
B2L	Support staff * for: The same as B2 but limited to the systems endorsed on the licence: <ul style="list-style-type: none"> communication/navigation (com/nav), instruments, auto flight, surveillance, airframe systems. 	Base Maintenance <i>(Same as FAR Part 145 Inspectorate)</i>
B3	Maintenance on aeroplane structure, power plant and mechanical and electrical systems; and on avionics systems requiring only simple tests to prove their serviceability and not requiring troubleshooting limited to non-pressurized aeroplanes of 2 000 kg MTOM and below.	Base Maintenance
L (Adopt L2 1200Kg)	Maintenance on aircraft structure, power plant and mechanical and electrical systems; radio, Emergency Locator Transmitters (ELT) and transponder systems; and work on other avionics systems requiring simple tests to prove their serviceability Divided into the following subcategories: L1C: composite sailplanes, L3H: hot-air balloons, L1: sailplanes, L3G: gas balloons, L2C: composite powered sailplanes L4H: hot-air airships, and composite ELA1 aeroplanes , L4G: ELA2 gas airships, L2: powered sailplanes and ELA1 L5: gas airships other than ELA2. aeroplanes ,	Base Maintenance
DEFINITIONS		
* Support Staff	Support Staff: means those staff holding an aircraft maintenance licence under Annex III (Part-66) in category B1, B2, B2L, B3 and/or L with the appropriate aircraft ratings, working in a base maintenance environment while not necessarily holding certification privileges.	Same as FAR Part 145 Inspectorate. Certify as Airworthy
ELA 1	<i>"ELA1 aircraft" means the following manned European Light Aircraft: an aeroplane with a Maximum Take-off Mass (MTOM) of 1200 kg or less that is not classified as complex motor-powered aircraft; a sailplane or powered sailplane of 1200 kg MTOM or less;</i>	1200Kg MTOW
ELA 2	<i>"ELA2 aircraft" means the following manned European Light Aircraft: an aeroplane with a Maximum Take-off Mass (MTOM) of 2000 kg or less that is not classified as "complex motor-powered aircraft";</i>	2000Kg MTOW

Recommendation 2: *Adopt EU regulations associated with training and add licences not adopted to fully implement the adopted EASA licencing and latest revised EU Regulations. Make Department of Education and ASQA responsible to provide the EASR Parts 66/147 Basic Trade & Trade/Licencing courses.*

Connect NVET AQF Qualifications with CASR Part 66 AME Licences & Associated Trades.

Basically, a globally accepted education system provides the basic training qualifications for avionics and mechanical trade, added electives for licencing streams with added electives to cover skills and knowledge for specialised tradespersons.

EASA Opinion No. 07/2022, Review of Part 66 & New Training Methods & New Teaching Technologies has been sent to the EU Commission for regulatory approval and will be implemented **Q3 2023**. It introduces CBT into EASR Parts 66/147 iaw ICAO CBTA concepts. **More EU regulations that we don't remain harmonised with.**

CASR Parts 66/147 need these EU regulation amendments to EASR Parts 66/147 so the Australian regulatory system enables the new Jobs Skill Council, IBSA, to provide CBT trade/licence training packages for the 9 trades + licences for all Australians involved in all sectors of aviation.

Licencing pathways are mapped though the trades pathways to attain the knowledge like aircraft certification standards, so the licence holder can certify as airworthy post trade sign-off. In addition, the licence holder needs additional management training to coordinate the maintenance. These are the LAME's international "privilege" of the licences.

The following comparison chart compares how the big mature aviation systems have addressed this issue. Australia is 15+years out of date.

Aircraft Type	CASA Licences	EASA Part 66	FAA Part 65	TCA	Brazil	EU Foreign approved nations	JBC-IBSA
Large aeroplane	A/B1.1/B2	A/B1.1	AMT	M2 Aeroplane	Airframe	Same as EASA Parts 66/145/147 Or Should be	IBSA to create CBT based trade/licencing training packages for current and adopted EU regulations specifying maintenance personnel as specified in CASR Parts 66/145/147.
Small aeroplanes	A/B1.2/B2	A/B1.2		M1 Aeroplane	Powerplant		
Large helicopter	A/B1.3/B2	A/B1.3		M2 Helicopter	Airframe		
Small Helicopters	A/B1.4/B2	A/B1.4		M1 Helicopter	Powerplant		
Aeroplane (-2000kg)		B3					
Avionics	B2	B2	Repairman	E (Avionics)	Avionics		
		B2L		S (Structures)			
Ultralight		L2 ELA 1	"The Canadian AME licence allows the holder to both perform AND to certify their own maintenance work, or to certify the maintenance work performed by an unlicensed person. This type of licence is unlike the system used in the United States of America, whereby the FAA issues licences to persons who perform maintenance work on aircraft as technicians by way of "ratings" (the "airframe" or "powerplant" rating or the combined "airframe and powerplant" rating) and a separate licence to accomplish the "Inspection" certification – the AMT/IA Licences."			Many are adopting the light aircraft licencing	
Amateur Built		L2/L2C					
Gliders		L1 sailplanes					
Hang gliders		L1C Comp Sailplanes					
Paragliders							
Balloons		L3H/L4H					
Gyros		L4G/L4G					
Airships							

EASA: L1C: composite sailplanes, L1: sailplanes, L2C: composite powered sailplanes and composite ELA1 aeroplanes, L2: powered sailplanes and ELA1 aeroplanes, L3H: hot-air balloons, L3G: gas balloons, L4H: hot-air airships, L4G: ELA2 gas airships, L5: gas airships other than ELA2.

ICAO Global Trade and Licencing Course Standards

The international maintenance personnel training standard specified in Annex 8 to the Chicago Convention places the responsibility on Contracting States, Australia is one on paper, to set the education standards for maintenance personnel and places responsibility on the State (CASA), to promulgate the training course Standards, based on Annex 1, for those they licence (give a certificate to) based on referenced advisory documents promulgated by ICAO.

In Australia, we have CASA using part of the EASA Part 66 licences standards without integrating with the education system that does not provide globally recognised maintenance personnel education qualifications. This started in the mid-1990s, Part 66 large aeroplanes aligns.

EASR Part 66 has provided one way to overcome that issue and, if fully adopted, would be able to be included into the NVET system.

Basically, a globally accepted education provides the basic training qualifications for avionics and mechanical streams with added electives to cover skills and knowledge for specialised tradespersons. E.g., the Australian aviation maintenance “structures” trade pathway.

Licencing pathways are mapped through the trades pathways to attain the knowledge of aircraft certification standards, so the licence holder can certify as ‘airworthy’ post trade sign-off. In addition, the licence holder needs additional management training to coordinate the maintenance. These are the LAME’s international “privilege” of the licences.

The aim of the Convention standards is to harmonise global standards to enable global mobility of qualified maintenance personnel and licence holders. This “difference” with NZ, our near neighbour, has existed for more than 30 years.

Our biggest problem is the industry sector silos that have been created in the regulatory system where everyone wants to dictate what they believe will match their silo.

Recommendation 3: *Adoption of the EU regulations for all specified trade/licencing courses will enable the NVET system to provide NVET basic trade and licencing training packages.*

Trans-Tasman Mutual Recognition Agreement.

The intent of the Trans-Tasman Mutual Recognition Agreement only works one way. NZ recognition of the Australian licence is by the issue of a TTMRA lifetime ‘letter of recognition’ and be granted the same ratings and privileges as you hold on your Australian licence.

However, Australia requires a NZ LAME to pass the Australian Airworthiness Administration exam. Note that you need to sit the exam in Australia. You cannot sit it in New Zealand. In addition, because of differences between the New Zealand and Australian AME licence rating privileges, certain NZ AME licence ratings, when translated onto an Australian licence, will be limited and not the same as the rating normally issued.

Recommendation 4: *That government, once EU regulations have been adopted, remove unnecessary red tape by recognising NZ aircraft maintenance personnel trade/licencing training standards to improve the mobility of maintenance personnel between NZ & Australia.*

Competency-Based Assessments (CBA) and Competency-Based Training (CBT)

Purpose and Benefits

“Vocational education and training (VET) providers have long used competency-based assessment (CBA) to support students in achieving desired outcomes. Assessment in Vocational Education and Training, also known as VET, is based on **national benchmarks**, which are referred to as competency standards, for the occupation or industry in which a person is receiving training. **According to the standards of the industry and regulatory body**, an outcome of “Competent” in a VET assessment indicates that the candidate has demonstrated specific skills and knowledge required to perform a task or job to a certain industry-expected standard. The student’s ability to perform.

Issue: The Regulatory Body (CASA) has not promulgated the European trade and licence courses standards needed to develop NVET courses for trade level and licences.

Reason: *CASA’s Engineering Management and the Maintenance Project Management believe CBT courses do not have a duration assigned to each course even though they have been provided with the evidence that the Education system does apply a duration to every course over the last 40 odd years.*

Since 2007, when CASA partially adopted the EU maintenance licences and made no attempt to integrate with Australia complete legislative and regulatory system, it destroyed a highly regarded trade training system that provided the skills required for businesses.

AMROBA and others have raised this issue many times **over the last 15 years** and the senior managers in CASA have not sought advice from the Department of Education or looked at Australia’s NVET training regulations and course standards. **Their view, over the 16 years, is CBT courses does not have course durations specified. How totally wrong.**

Standards for VET Accredited Courses 2021 (Current regulatory requirement)

Section B: Course information

1. Nomenclature													
<p>1.1 Nominal duration of the course</p> <p>Basic fundamental standard since CBT adopted. Adopt EU course regulations, they promulgate course durations, associated with aircraft maintenance personnel trade/licencing in EASR Parts 66/147</p> <p>Australianise to refer to Australia’s VET system and make the Department of Education responsible to apply and maintain harmonised with the Convention’s Annex 8 & 1.</p>	<p>State the nominal (supervised) duration of the course in supervised and unsupervised hours – then total them to identify the volume of learning for the course.</p> <p>Nominal (supervised) hours + Unsupervised hours = Volume of learning</p> <p><u>Example:</u></p> <table style="width: 100%; border: none;"> <tr> <td style="padding-right: 20px;">Supervised:</td> <td>630 hours</td> </tr> <tr> <td>Unsupervised:</td> <td>215 hours</td> </tr> <tr> <td>Volume of learning:</td> <td>845 hours</td> </tr> </table> <p><u>Where a range of hours is appropriate</u></p> <p>If a range in duration is appropriate due to flexibility afforded in selecting elective units, include a range of nominal (supervised) hours. The range of hours is determined by the total hours of the core units added to the lowest and highest combination of hours for the elective units.</p> <p><u>Example:</u></p> <table style="width: 100%; border: none;"> <tr> <td style="padding-right: 20px;">Supervised:</td> <td>630—790 hours</td> </tr> <tr> <td>Unsupervised:</td> <td>215 hours</td> </tr> <tr> <td>Volume of learning:</td> <td>845—1005 hours</td> </tr> </table>	Supervised:	630 hours	Unsupervised:	215 hours	Volume of learning:	845 hours	Supervised:	630—790 hours	Unsupervised:	215 hours	Volume of learning:	845—1005 hours
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Question: Why didn't CASA engineering meet with the Education Department sometime **in the last 16 years** to find out that all VET courses do have durations applied and funding is provided based on the course duration?

Recommendation 5. *The government must assign the requirement to adopt the EU Trade and Trade/Licensing regulations to other than CASA as they do not have the expertise, knowledge or experience to adapt EU Regulations into Australian CBT Regulatory system.*

Government Guide to Better Regulations

“Regulatory failure”

<i>Has a previous attempt to regulate failed?</i>	YES
<i>Have old regulations failed to keep up with new circumstances?</i>	YES
<i>Is there a legitimate public outcry about an issue of public importance?</i>	YES

15 years without response.

Conclusion: *CASA's senior engineering management have caused the shortage of aircraft maintenance engineers and licenced aircraft maintenance engineers because they did not have the NVET knowledge, and did not seek the knowledge from the Education Department. Their lack of NVET knowledge meant no adoption of EASR course regulations. This Government responsibility to provide civil aviation maintenance training to meet the Convention's global standards by harmonisation with EU Regulations must be transferred to the Department of Education.*