Australian Business Aviation Association Inc.
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Jason Dymowski
Assistant Secretary, Aviation White Paper and Reform Branch
Via email: aviationwhitepaper@infrastructure.gov.au

17th March 2022 (nb: submission date extended by request)

Dear Jason

ABAA Submission on the Aviation White Paper Terms of Reference

Thank you for the opportunity to respond to the Aviation White Paper Terms of Reference.

The ABAA is a non-profit organisation formed to provide a collective voice for Australia's business aviation community. It maintains a strong high calibre membership base, for whom it provides respected professional representation both domestically and overseas. It encourages the highest levels of operational safety and efficiency within the sector and aims to foster an environment where business aviation may thrive within Australia and around the world.

The association represents over 75 members who own or operate turbine-powered aircraft or directly provide products or services to the business aviation sector.

Its members' operations support a diverse cross-section of industry from mining & resources to agriculture, manufacturing, and logistics as well as providing medical transfers (live patient & organ retrieval) and charter services to business, leisure tourism, and government sectors. In conducting their operations, members are users of Australia's primary, secondary and regional airports.

The ABAA is a member of the International Business Aviation Council (IBAC) and is represented on The Australian Aviation Associations' Forum (TAAAF), the General Aviation Advisory Network (GAAN) and a number of CASA Technical Working Groups.

To follow, please find brief comments addressing aspects of the proposed **Purpose**, **Scope and Themes** of the Aviation White Paper. The ABAA particularly welcomes the specific inclusion of general aviation within the Terms and looks forward to remaining engaged with AWP process to help ensure that this sector is understood and appropriately supported to address the challenges of Australia's aviation future.

Yours sincerely

Jessica Graham

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Purpose

The ABAA welcomes the examination of future trends and acknowledges that long-term modelling is crucial to the successful integration of new technologies into Australia's aviation landscape. Along with this, we would like to see reference to obtaining a thorough understanding of the current state of the sector. Addressing the challenges and deficiencies of the present is an important step towards fully appreciating what is required to ensure industry is appropriately positioned to successfully embrace the challenges of the future. Failing to accurately set the baseline now risks undermining the effectiveness of long-term strategic planning.

The ABAA fully supports the promotion of an efficient, safe, sustainable and competitive Australian aviation sector. In support of this, it encourages the drafting of policy that considers and addresses the concerns of all aviation segments, not just those of the large commercial/airline segment.

Scope and Themes

- *aviation's role in economic development, trade and the visitor economy – general, domestic, regional and international aviation;*

The ABAA encourages a review of work already undertaken in this space and supports the holistic assessment of the socio-economic value of all aviation segments. In this regard, it welcomes the upcoming economic review of the general aviation sector by BITRE as announced by the Department at the recent GAAN meeting.

- *how to maximise the aviation sector's contribution to achieving net zero carbon emissions including through sustainable aviation fuel and emerging technologies;*

The ABAA supports this as a major focus for the AWP, acknowledging that achieving its required contribution towards the net zero 2050 target is an enormous challenge for the industry; one that can only be met by broad-ranging stakeholder collaboration and long-term government support.

Through the International Business Aviation Council, the business aviation sector made this commitment in 2021, ahead of ICAO's commitment to meet the same target. (Refer to attached IBAC Business Aviation Declaration on Net-Zero Carbon Emissions by 2050.) Globally, the sector has met its initial emissions reduction target through the creation of a SAF Coalition, the availability of an industry-specific carbon off-setting program and increased efficiencies in operational procedures and aircraft design and innovation.

Locally, there is uncertainty for ABAA members about what support will be available to the industry in this regard. As a segment, business aviation has a strong history of innovation and is well-positioned to adapt – ready compatibility with drop-in Jet-A1 SAF being one example - but looks to the AWP to clearly articulate short, medium and long-term policy initiatives towards the 2050 target. Concerns regarding the cost to the industry are also paramount.

Beyond emissions off-setting programs, SAF is the most immediately available mechanism towards meeting the goal. The association welcomes the formation of the Jet Zero Council and hopes this will generate policy initiatives to support the increased and cost-effective production of SAF, together with funding to leverage existing infrastructure and build new infrastructure to improve its supply. It should also encourage pathways for the testing and approval of new propulsion technologies and look to remove, where appropriate, regulatory boundaries to the introduction of newer, less carbon-emitting aircraft.

- *airport development planning processes and consultation mechanisms that consider the impact and changing nature of aircraft noise and related expectations on the role of noise sharing and curfew arrangements;*

The ABAA supports the development of policy to oversight airport development and planning, and in particular, an enhanced focus on the importance of maintaining aviation activity and infrastructure at federally leased Australian airports. While it acknowledges the terms of lease are long-established, it welcomes consideration of what mechanisms may be overlayed to monitor appropriate future development and ensure a range of aviation business activities are fairly considered within airport master plan design and approval.

Australia's current curfew regulations are no longer fit for purpose and fail to consider that a range of newer, more efficient business jets generate less overall noise impact on airport environments than previous generations of freight and passenger aircraft, examples of which remain on the approved list for operations during curfew hours. (Refer to attached extract from the Curfew noise modelling comparison undertaken by AIRBIZ on behalf of the ABAA.)

The exclusion of quieter ICAO Chapter IV noise-compliant business jet aircraft, with an MTOW of less than 55,000kgs, seems to unfairly penalise owners and operators and acts as a disincentive for fleet renewal towards newer, comparatively more environmentally efficient aircraft. The ABAA encourages a fresh approach to managing airport noise and curfew procedures and will recommend on behalf of its members that future curfew legislation include an allowance for the operation of business jet aircraft (19-seat maximum passenger capacity) that comply with ICAO chapter IV noise certification or higher and carry an MTOW of up to 55,000kg.

The association does not support the addition of additional curfews at Australian airports.

- *how to support and regenerate Australia's general aviation sector;*

As stated, the association welcomes the specific inclusion of general aviation within the Terms of Reference and looks forward to involvement in further consultation on this subject. It recommends a review of the General Aviation Advisory Network's publication – A New Strategy for the Australian General Aviation Sector – a copy of which is attached.

The ABAA supports greater awareness of the unique characteristics of the general aviation sector and the creation of future policy that appreciates its sensitivity to market pressures and over-regulation and acknowledges its direct and downstream benefits to the creation of a healthy and sustainable Australian aviation landscape.

- *future industry workforce skills and training requirements*

The ABAA supports the view towards long-term requirements but wishes to note that there are already significant issues in the present in terms of skills shortages and training pathways. Work is needed to address these issues now to avoid the loss of an aviation workforce capable of growing to support future technologies.

A key example is the critical shortage of engineering skills. We draw your attention to the RAAA's recent paper on this topic, Aircraft Maintenance Engineers Shortage – Crisis and Opportunity, a copy of which is attached.

We would also strongly encourage policy initiatives to better attract emerging generations of job seekers to all aspects and segments of the aviation industry and the promotion of improved diversity and equality within the future national aviation workforce.

- *maintaining fit-for-purpose aviation safety, air navigation and aviation security systems and service delivery agencies;*

Post-pandemic, Australia's aviation safety (CASA) and air navigation (Air Services Australia) agencies are failing to meet the demand of the aviation community. Here too, the ABAA encourages a review of the current state of these agencies to determine what is needed for them to step up and adequately manage the demands of a future regulatory and air space management landscape. It proposes consideration of a staged national funding model to both bolster the capabilities of these agencies now and support them to develop and maintain the technologies, skills and resources needed for the future.

With respect to CASA, the ABAA encourages the agency to engage further with the general and business aviation segments in the design and application of future rulesets. It encourages cooperative regulation principles and the application of GA risk profiles in the surveillance of current regulations. While the association acknowledges the goals and objectives of CASA's GA Work Plan, its members are still suffering under the burden of protracted response times, inconsistent guidance material and a lack of knowledgeable support and timely surveillance.

In terms of air navigation, the association supports initiatives to continue to improve the national air traffic management system. Priorities include more ADS-B fitment and ground stations, continued removal of outdated navaids, the funding of additional controllers, and policy improvement to enable the approval of direct tracking for aircraft whose performance enables them to fly at higher levels (eg FL380 and above) thereby improving operational fuel efficiency.

- *the role of airlines and airports in supporting regional economies;*

While the importance of airlines and airports is not disputed, the ABAA would encourage expansion of the scope to include assessment and recognition of the role of other users at regional airports. In addition to, or indeed in the absence of, scheduled aviation services, the general and business aviation segment fulfils the needs of rural communities in supporting business, tourism and essential services.

In complement to the above, other airport users such as pilot training organisations, maintenance repair organisations and ground handling services provide direct benefits via employment and help support the development of a sustainable workforce in the greater aviation ecosystem.

- *other significant issues raised during the consultation process.*

Where appropriate, the ABAA will comment on any further issues arising during the AWP process.

As a member of the Australian Aviation Associations' Forum (TAAAF), the ABAA draws your attention to the forum's Aviation Policy Paper, a copy of which is attached. Where its content relates to the Terms of Reference, the ABAA's views are aligned with those presented therein.

The following documents are attached for further reference:

- RAAA - **Aircraft Maintenance Engineers Shortage – Crisis and Opportunity**, Oct 2022
- GAAN – **A New Strategy for the Australian General Aviation Sector**, Dec 2020
- IBAC – **Business Aviation Declaration on Net-Zero Carbon Emissions by 2050**, Sep 2021
- AIRBIZ – **Sydney Kingsford-Smith International Airport | Curfew Noise Modelling**, Sep 2021
- TAAAF - **Aviation Policy Paper,** April 2022

RAAA
REGIONAL AVIATION ASSOCIATION OF AUSTRALIA

Aircraft maintenance engineer shortage – crisis and opportunities

October 2022

Crisis

> ‘The aircraft maintenance skilled labour shortage is at crisis point, both LAMEs and AMEs across all trades. To overcome this all levels of government and industry need to work together to implement a safe, commonsense approach prioritising easy-to-implement policies to reduce the current barriers within the industry.’
>
> **Matthew Wheatley**
> Sigma Aerospace Tamworth

There is a shortage of licensed aircraft maintenance engineers (LAME) in Australian aviation, a shortage now at crisis point. If we do not address this immediately, the continuing airworthiness of the Australian aircraft fleet will be significantly compromised, more aviation maintenance organisations will be forced to close their hangar doors, threatening the future viability of the Australian aviation industry and the critical transport infrastructure that it provides.

Maintenance organisations, particularly those in regional areas, are struggling to employ and retain LAMEs. If an apprentice commences their apprenticeship today, by way of context, it is at least three years until they gain their aircraft engineer licence, and more likely to be four to five years.

The warning signs have been apparent for many years, as evidenced in the extensive 2015 University of New South Wales report: ‘The Future of Aircraft Maintenance in Australia’[1]. Sadly, the report’s many recommendations largely remain unactioned. It is critical we address the factors contributing to this crisis and implement pragmatic solutions to secure the Australian aircraft maintenance sector into the future.

The following recommendations are founded on extensive consultation with industry and capture their concerns. This paper provides:

- Background – ‘how did we get here?’
- Recommendations for positive, pragmatic, and value-adding reforms to resource the sector in the short- and long-term.

[1] Australian Research Council Linkage Project 11011000335

Image: Bombardier Q400 aircraft | © Victor - Flickr

How did we get here?

Until June 2011, an Australian aircraft engineer licence was gained by completing CASA's 'basic exams' for the theory component, and a workplace schedule of experience (SOE) for the practical component. CASA regulated and managed this under Civil Aviation Regulation (CAR) 31. Under this pathway, depending which state or territory the apprentice was from, they could gain the required experience, complete the exams, and be granted their aircraft engineer licence four years after beginning their apprenticeship.

In June 2011, this CAR 31 pathway transitioned to the European Union Aviation Safety Agency (EASA)-based Part 66 licensing system. The licensing syllabus changed considerably, going from a licence with five categories (airframe, engine, electrical, instrument and radio) to a licence with two categories, B1 (mechanical) and B2 (avionics). At the same time, a Diploma in Aeroskills (Mechanical or Avionics) was introduced.

Under Part 66, apprentices study the theoretical component through a CASR Part 147-approved maintenance training organisation (MTO) that is also approved as a registered training organisation (RTO). They complete the practical component by undertaking in-house training at an approved maintenance organisation (AMO) and recording this in a journal of experience (JOE).

However, at the time of transition in 2011, apprentices were instructed to complete a Certificate IV in Aeroskills as it was eligible for state and territory funding, whereas the new Diploma in Aeroskills was not. These pioneering apprentices and employers were bewildered and disgruntled when, after completing the seemingly traditional 'four-year apprenticeship', they discovered that gaining a Certificate IV in Aeroskills did not provide a licence outcome and that to be licensed, they had to complete the Diploma of Aeroskills. Unsurprisingly, many left the industry.

It is widely accepted that the decline in apprenticeship employment numbers began at this time. The industry did not (and largely still does not) understand this apprentice training and licensing pathway, and as a result, has stopped employing apprentices. Those who have employed apprentices have found the majority of their apprentices have not become licensed in the same timeframe as they would have traditionally under CAR 31, if at all.

Several RAAA member AMOs were consulted during the research for this paper. Until 2011, commensurate with their business, many organisations employed at least one apprentice in each of the four-year apprenticeship years (one first-year apprentice, one second-year and so on).

Since 2014, there has been a rapid decline in the apprentice intake. Supporting evidence can be found in the maintenance licensing figures in CASA annual reports: from FY 2006/2007 to 2015/2016 annual licences issued averaged 297. From FY 2016/2017 to 2020/2021, this figure had dropped to 135 per year.

2006/2007 - 2015/2016

297

av.licences/yr

2016/2017 - 2020/2021

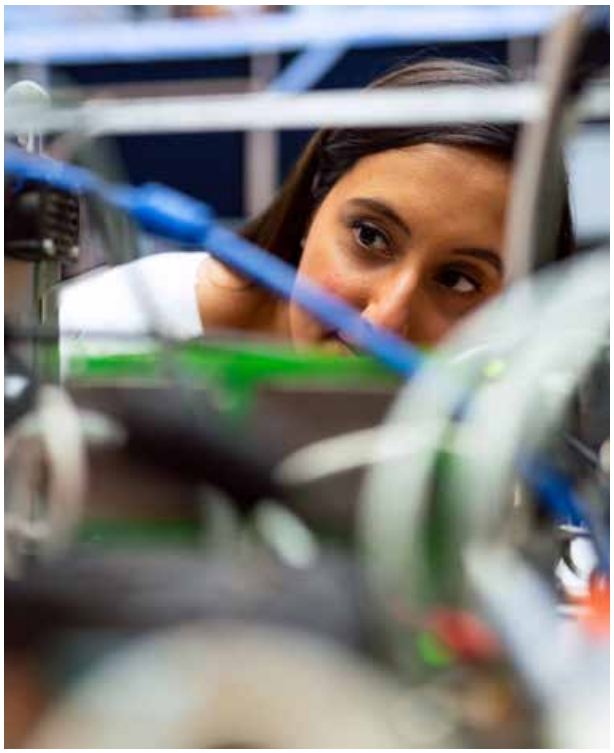
135

av.licences/yr

Source: CASA annual reports

The lack of future proofing is a major factor in the reduction of LAMEs in our industry today due to:

- AMOs and apprentices (still) not understanding the current licensing pathway, despite it being introduced in 2011.
- Unlike the previous CAR 31 pathway, the current diploma pathway is perceived to be extremely difficult, particularly the theory component. It is also extremely difficult and expensive to access outside major cities. Therefore, the industry at large has struggled to accept it.
- Overwhelmingly, industry believes that the MTOs' main concern is generating income, not producing LAMEs. This perception is very real and a significant reason why AMOs are not employing apprentices.
- Next-generation tradespeople are aware of traditional trades such as plumbing, hairdressing and carpentry; however, many do not know that aircraft engineering is even a career pathway.



Opportunities

Aircraft engineering provides an exciting, challenging and rewarding lifelong career. With the predicted exponential growth in future aircraft types, powered by alternate fuels and new methods of propulsion, the growth of uncrewed aircraft operations, and the potential for advanced air mobility, Australia will need even more licensed aircraft engineers to maintain these diverse aircraft safely.

We can recover from this current crisis. CASA, Part 147 MTOs and indeed industry are aligned with a strong desire to collaborate and build a strong Australian LAME workforce, to 'grow our own' licensed aviation engineers.

In the short term however, we will need to recruit LAMEs from overseas, as we cannot 'make' enough to meet this crisis.

To support this, we make the following short- and long-term recommendations for increasing the supply of new domestic LAMEs, and for ensuring we provide a realistic pathway for international LAMEs, ex-Defence LAMEs and for those who have left the industry and wish to return.

> 'The aviation engineering shortage is now beyond critical; if things don't start improving, we will have to start parking planes at the back of hangars and closing their doors.'
>
> **Dean Mooney**
> East Air Cairns

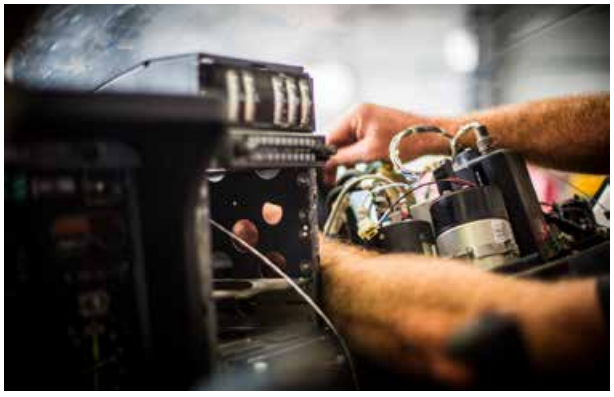
1. Recognition of international LAME licences

Globally, many countries have implemented training standards comparable with the stringent Australian CASR Part 66 standards.

Currently, to attain an Australian aircraft engineer licence, LAMEs from all international countries except New Zealand must complete some, if not all, of the Diploma of Aeroskills to attain a Part 66 licence. This can take several years.

The following short-term realistic solutions can be implemented with government and CASA support:

- CASA recognition of international engineer licences from countries with comparable training standards (such as South Africa, Singapore and EASA-contracting states).
- The LAME would have to pass Module 10 (Aviation Legislation) and the employing AMO deem the LAME competent.
- CASA to permit foreign licences to be issued with exclusions
- Government to add 'aircraft engineering' immediately to the Federal Priority Migration Skilled Occupation list. This would expedite entry into all Australian states and territories for these skilled workers.
- To support those regional AMOs who find it increasingly difficult to recruit and retain LAMEs, the federal and state governments to provide further incentives for the LAMEs and their families to remain in the regional area for a certain time (recommended five years).



2. Education to support current and future LAMEs

Due to its complexity, eleven years after it was first introduced, there is still a significant lack of understanding of the current licensing pathway. This prevents AMOs either from employing apprentices or, if they have, being able to guide them during their apprenticeship to become licensed within the traditional timeframe.

Overwhelmingly, industry feels that the previous CAR 31 licensing pathway was better than our current Part 66 pathway. Industry education has to be urgently improved, so that industry can be champions of emerging LAMEs. Without this critical training and a resulting change in mindset, the uncertainties around the apprenticeship pathway will continue to have a negative impact on our supply of LAMEs.

CASA must partner with industry (and their associations) to promote the aircraft engineering pathway. This includes:

- CASA developing for AMOs and apprentices, with input from MTOs, a plain English 101 course guide, which clearly outlines each step of the apprenticeship pathway.
  - It would outline a training plan; for example, when the apprentice should have the knowledge and skills to change a tyre, replace a leading edge or the main rotor head, or change an engine.
  - This training package could be introduced by a subject matter expert at the CASA Aviation Safety Seminars. Subject matter experts would also need to be available to provide ongoing advice as necessary.
- MTOs engaging with the industry at a 'grassroots' level to drive improved recruitment pipelines and gain industry trust.

- Provide robust education regarding the CASA 'Self Study Pathway' introduced in August, 2021. CASA are to be congratulated for the correspondence circulated in September, 2022; however, the target market is still unsure how the pathway actually works.
- Industry participating in careers expos and programs such as the Women in Aviation initiative and state-sponsored job expos.
- The Australian Skills Quality Authority (ASQA) and RTOs providing access to the Certificate II in Aircraft Line Maintenance or Certificate II in Aeroskills for all school-based students who are eligible for VET (Vocational and Education Training) across Australia (currently this is limited to Queensland and the Northern Territory). These certificates provide an introduction to aircraft maintenance, with the expectation the student will become an apprentice after high school.
- Access to the Certificate II requires industry engagement with MTOs in the VETiS (Vocational and Education Training in Schools) program to generate interest in aviation for our school students.
- We recommend that an industry committee is created so industry is collectively aligned and can drive this in collaboration with the MTOs.

3. Create a pathway for other experienced engineers

To encourage experienced engineers to join the civilian engineering sector, we strongly recommend that CASA:

- Create an avenue for previous CAR 31 licence holders to return to the industry without the need to complete all module gap knowledge
- Provide a pathway for ex-defence force personnel to enter the civilian industry.

4. Remove challenges associated with Diploma in Aeroskills examinations

The current Diploma in Aeroskills requires a higher level of academic aptitude than the previous CAR 31 pathway, meaning some aircraft engineering apprentices who are mechanically talented, but without strong academic aptitude, struggle to pass examinations at the Diploma level.

Mitigating the challenges of the current exam model could assist apprentices to pass these exams without compromising the necessary underpinning academic knowledge.

- CASA to interpret CASR Part 66 to permit individual module subject exams to be held after completing each subject, rather than waiting for the completion of the entire module's content.

  Module 12, for example, comprises eight subjects, which could take approximately two years to complete, meaning apprentices are forced to retain this technical information for that time. If they were able to take the exam after each subject, the failure rate would reduce, without diluting the required theoretical knowledge.
- In line with CASA and ICAO requirements, the current exam pass mark is 75 per cent. If students' marks are under that, they must wait at least 90 days (or 30 days with remediation training) before they can re-sit the exam.

  We recommend that if the student's mark is between 65 and 74 per cent, they be permitted to re-sit the exam as early as the following day without penalty.
- Regulations state that when maintaining aircraft or aeronautical products, aircraft engineers refer to instructions for continuing airworthiness.

  In line with this and while the student still must have a comprehensive knowledge of the subject at hand, we recommend CASA and MTO permit open book examinations.

5. Permit issuing of an aircraft engineer licence with exclusions

CASA's General Aviation Workplan 2022 acknowledges the requirement for '… more progressive, less onerous maintenance licence pathways …'.

The general aviation (GA) sector provides a strong training ground for engineers to learn how to 'engineer' and troubleshoot non-complex aircraft – many a brilliant engineer has been born from GA because of the skills they learned there.

LAMEs will typically progress into airlines for fixed-wing, or offshore operations for helicopters, at some time in their career. The experience gained during their time in GA benefits these organisations significantly.

As the GA sector supports all aircraft maintenance sectors, accordingly we must provide more flexible training solutions for GA.

Currently the Part 66 regulation does not prevent an aircraft engineer licence from being issued with exclusions; however, the Part 66 Manual of Standards does. We understand CASA is currently reviewing their interpretation of the regulation so that they can support this concept.

Permitting a licence to be issued with exclusions would enable a tailor-made, flexible career pathway. For example, if a LAME intends to work only on small helicopters or basic fixed wing aircraft, they do not need to study pressurisation (E16). If they choose to work later in their career on more complex aircraft, say a B737, they would do the necessary study to have that exclusion removed.

The following modules could be exempted from the training:

- Module 4 – Electronic fundamentals
- Module 5 – Digital techniques electronic instrument systems
- As applicable to the desired licence outcome – Modules 15 (gas turbine engine), 16 (piston engine) and 17 (propeller).

6. Government incentives to employ aviation apprentices

There is now funding for a Diploma qualification in all states and territories. While progressive, the amounts are inconsistent across the jurisdictions.

Currently, many AMOs do not have an apprenticeship program. In particular, it is disappointing that some major airlines do not have a commensurate apprenticeship program. By offering GA AMO trained and licensed engineers employment incentives GA companies simply cannot match, the major AMOs benefit. The GA companies are denied a return on their training investment.

While difficult to mandate, to ensure the longevity of the industry, all AMOs have a responsibility to employ as many apprentices as their number of supervising LAMEs permits. We recommend that federal, state and territory governments provide incentives to employ apprentices; for example, during a tender process, organisations which employ apprentices could be favoured.

Of note, to their credit, this year the Northern Territory Government funded fifteen pre-apprenticeship training courses. Not all of them have been filled to date, possibly due to lack of advertising/awareness.

7. Align theory training delivery nationally & create a National Aviation Academy

Currently, the states and territories control apprentice training and its funding, contributing to the disparity in training delivery. For example, the Northern Territory allows certain modules to be studied away from the trade school setting, whereas Western Australia does not.

The Diploma in Aeroskills (mechanical) and (avionics) qualifications sit under the Australian Qualifications Framework (AQF) (i.e., the vocational and educational training system), which in turn sits within the portfolio of the Department of Employment and Workplace Relations (DEWR).

To eliminate disparity in training, we recommend strongly that:

- all MTOs deliver the theory training syllabus that is aligned with the CASR Part 66 Manual of Standards to assure academic consistency for all apprentices
- a National Aviation Academy be created. Training for both civilian and defence apprentices would be conducted under this national model, therefore providing consistency in training and funding.

This was one of the recommendations of 2015's 'The Future of Aircraft Maintenance in Australia' report. The burgeoning uncrewed, electric aircraft, and advanced air mobility sectors make 'an innovation-oriented aircraft maintenance workforce' more critical than ever.

To help develop the training capacity required to build an innovation-oriented aircraft maintenance workforce, and to ensure that maintenance training makes a significant contribution to Australia's education exports, a National Aerospace/Aviation College (NAAC) should be established, with nationally-networked branches in each state and territory. It would draw on the combined resources of the university and TAFE sectors, gain recognition as a Part 147 category maintenance training organisation, a registered training organisation and a nationally registered higher education provider, and have support from aerospace and aviation industry employers for the in-depth provision of practical skills training and experience.

About the author of this document

Sheridan Austin is proud of her over 25 year-aviation experience. Her aircraft engineering career started with National Jet Systems in Darwin, where she was an AME and hands-on aircraft maintenance planner before moving into maintenance control and then a quality and safety role.

A passion for aircraft engineering compliance and the recognition that many aircraft maintenance organisations needed help in understanding and complying with aviation regulations, led her to found Aviation QMS – Quality & Management Services in 2009 to support them.

Sheridan is a passionate industry advocate, and gives back to the industry by participating in CASA technical working groups and working with apprentices, AMEs and licensed and emerging LAMEs to help them to navigate their way through regulatory requirements.

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A New Strategy for the Australian General Aviation Sector

General Aviation Advisory Network
December, 2020 v1-0

About the Authors

This document is a product of the General Aviation Advisory Network, which was established by the Deputy Prime Minister, The Hon Michael McCormack MP, with the aims of:

- Operating as a forum where industry representatives can identify opportunities to work collaboratively to respond to pressures facing the General Aviation sector;
- Providing advice to the Minister for Infrastructure and Transport on matters impacting on General Aviation particularly where existing consultative processes are not addressing the issue; and
- Acting as a reference group for the General Aviation Study, conducted by the Bureau of Infrastructure, Transport and Regional Economics.

Members of the Network have been selected based on their skills and expertise in the aviation industry and work collaboratively to respond to pressures facing the GA sector. They come from a cross section of the diverse GA sector, covering rotorcraft and fixed wing services, including flight training, aerial application, sport, recreational, regional, business, aeromedical, remotely piloted aircraft systems and aircraft maintenance and manufacturing.

Executive Summary and Synopsis

Consistent with its role and through its regular meetings, the GAAN has developed this strategic paper to assist government in its consideration of General Aviation issues and opportunities, on behalf of the sector as a whole, in order to frame and communicate its recommended strategy for the sector's success.

The GAAN's vision for General Aviation in Australia is as follows:

A critical aviation sector contributing to the national economy, job creation and the well-being of communities, strengthened by government policies and cooperative regulation underpinned by deep engagement with industry, that is fair, risk-based, responsive to cost and innovation and which promotes the value of the sector.

In order to attain this vision, the unique characteristics of the General Aviation sector are examined, identifying wide diversity, limited political influence, high sensitivity to market influences, over-regulation and lack of incentives to investment.

The extensive economic, environmental and social benefits to the Australian economy have been listed with a view to further study and analysis. Nevertheless, it is clear from the listing provided that General Aviation is an over-achiever in terms of national contribution, yet too-often ill-considered in national policy formulation and related settings.

The strategic position of the General Aviation sector as an enabler of many national benefits is considered and from these, eight strategic initiatives are derived. These initiatives condense the ten point plan made by the GAAN in its submission to the Australian Government's *Future of Australia's Aviation Sector - Issues Paper*[1], which calls for input to a five-year aviation industry plan.

These strategic initiatives are arranged in issues-solutions-actions themes to support practical consideration. They are as follows:

1. **Economic review of the sector** to identify its value to the economy, looking behind frontline participants to the users of, and demand for, GA services and to provide all levels of government and industry with better information for supportive policy implementation;
2. **Creating a world-class regulatory environment for General Aviation,** to address cultural, systemic and practice-based issues currently hampering GA's relationship with and the effectiveness of CASA through the adoption of a better Classification of Operations policy, cooperative regulation principles, and the application of GA sector risk profiles, along with the reform of GA-specific rulesets imposing unnecessary costs and red tape;
3. **Review of the *Civil Aviation Act 1988*** to ensure that CASA and the regulations it creates do not impose unecessary costs on industry while providing the capability for a modern approach to regulation of General Aviation including harmonisation with best international practice, outcome-based regulations, cooperation with industry to access expertise and to

[1] Prepared by the Department of Infrastructure, Transport, Regional Development and Communications ("the Department of Infrastructure" hereafter) in August, 2020. https://www.infrastructure.gov.au/aviation/future/index.aspx

drive continuous improvement, improve CASA's governance and reduce the potential for impediments to innovation and economic harm;

4. **Training pathways** to ensure the ongoing availability of skills and competencies for the sector by dealing with student support programs, duplication between government agencies, better outcomes for trainees and reduced cost and complexity for industry;
5. **Airports and infrastructure facilities and policy** to support General Aviation flight and ground-based activities for all aspects of the sector;
6. **Airspace for GA operations**, to address equitable airspace access and support new technologies, national security, safety and operational efficiency;
7. **Aviation design, manufacture and export** to capitalise on Australia's proven innovation to create jobs and compete in international markets by identifying and removing unecessary red tape while championing the potenital of the industry to grow significantly while providing national capability enhancements and sustainable jobs; and
8. **Early adoption of technology and a facilitation process** to support, extend and leverage Australia's aircraft engineering, research and development capabilities, fostering innovation and realising economic, environmental and social benefits that reach beyond the sector.

GAAN has addressed each of these issues with practical initiatives that will reposition General Aviation to take advantage of its opportunities and to make an even greater contribution to the Australian community and the national interest.

An Appendix is included, containing the Policy Note previously developed by the GAAN, directed to the linkage between risk-based regulation and understanding of risk in various aspects of the sector.

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1 Introduction

A healthy, innovative and well-regulated General Aviation (GA) sector is fundamental to the Australian national interest.

General Aviation does not exist as an end in itself, but rather serves a variety of downstream purposes including rural and regional freight and transport, community safety, tourism, recreation, training and education; as well as executive and specialist mobility for primary and secondary industries, along with many others.

The national and local economies, job creation and communities - both rural and city - benefit from the facilitating and services roles played by General Aviation.

To maintain the benefits of a safe and viable General Aviation sector, a strategic plan is needed that establishes a long-term vision and identifies initiatives that can be taken to secure the sector's viability. The GAAN recognises that these necessarily extend to economic considerations, across the whole industry. There is also much to do to improve the effectiveness of safety regulations and the efficiency of the regulator and while they are not the only imperatives, they are critical to the sector's long term success.

General Aviation constitutes a significant proportion of non-airline aviation activity in Australia. It consists of operations such as:

- Low capacity charter;
- Private operations;
- Business operations;
- Sport and recreational operations;
- Aerial Work operations including law enforcement, agriculture, firefighting, survey;
- Remotely Piloted Aircraft operations;
- Pilot training;
- Maintenance personnel training;
- Maintenance, repair and overhaul activities; and
- Design and manufacturing of aircraft and aeronautical components.

The General Aviation sector is often recognised by its flight operations; however, these are only one aspect of the sector's economic significance. The sector also drives demand for aircraft design, manufacturing, maintenance and overhaul, training and education, airports and infrastructure. All these components must be kept fit and capable to ensure the health of the sector as a whole.

The GAAN welcomes the opportunity to provide strategic input at this critical time in the Australian aviation industry's history and would welcome questions.

2 The GAAN's Vision for Australian General Aviation

A critical aviation sector contributing to the national economy, job creation and the well-being of communities, strengthened by government policies and cooperative regulation underpinned by deep engagement with industry, that is fair, risk-based, responsive to cost and innovation and which promotes the value of the sector.

3 The Value of General Aviation

Whilst acknowledging past efforts to estimate the value of the General Aviation sector to the Australian economy, the GAAN considers that much of GA's activity occurs to provide critical services to other sectors of the economy. Consequently, attempts to understand the GA sector and its economic potential have fallen short of validating the sector's worth and perhaps more importantly, its future potential.

The Department of Infrastructure's issues paper titled *The Future of Australia's Aviation Sector*[2] seeks to recognise the value of the aviation industry as a whole, which includes the direct employment of 90,000 people and its contribution of $20 billion to the economy, prior to the COVID-19 pandemic[2]. However, the paper does not distinguish the General Aviation sector from other parts of the industry, nor quantify its economic contribution to facilitating and supporting other sectors including tourism, mining, agriculture, emergency services and regional Australia.

The COVID-19 pandemic has brought home both the weaknesses and strengths of the aviation sector. If nothing else, the pandemic has clearly established, in the public's mind, the importance of a reliable aviation industry, and the interconnected nature of the services provided by aviation.

Consequently, a detailed economic study of the General Aviation sector, its potential and its constraints will be a key step in understanding the sector and so unlocking a pathway to more jobs, more exports and even better support of the industries and cities and communities that rely on General Aviation.

The following table explores the value of General Aviation to the wider economy:

[2] Ibid. page 2

General Aviation Activity	Other Economic Sectors and Industries Served and Supported	Economic Benefits	Environmental Benefits	Social Benefits
Low Capacity Services charter and scheduled	• Tourism • Mining[3] • Agriculture • Freight • Mail • Banking • Media • Oil platforms	• Business productivity and capacity • Rapid and timely transfer of personnel and materials	• Reduced demand for roads and land clearing • Reduced environmental impact at tourist attractions	• Connecting families and communities • Safer than surface transport, especially for remote and rural locations
Freight and Delivery Services	• Postal industry • Road trunk and last mile delivery • Medical • Retail and eCommerce • Mining • Ports • Emergency services	• Efficient freight package delivery	• Sustainable infrastructure in remote locations	• Community safety
Marine Pilot Transfers	• Shipping • Ports	• Ship operational efficiency	• Reduced demand for port works such as dredging	• Vessel, personnel and community safety
Target Towing	• Defence	• Reduced workload for Defence personnel	• Reduced demand for ground based ranges and equipment	• Defence preparedness and training
Aerial Photography and Advertising	• Media • Real estate • Art	• Productivity • Real estate sales	• Reduced road vehicle usage	• Unique positioning, views, reach and art

[3] Fly-in, fly-out (FIFO) operations

General Aviation Activity	Other Economic Sectors and Industries Served and Supported	Economic Benefits	Environmental Benefits	Social Benefits
Airborne Law Enforcement, Surveillance, Search and Rescue	• AMSAR • Police • Emergency services • State and Federal law enforcement • Road safety accident investigation • National and industry asset protection	• Lower costs • More timely operations with mortality and trauma reduction • Industry asset protection	• Reduced road vehicle and maritime vessel usage	• International treaty obligations • Community safety • National security
Aeromedical Services	• Health • Emergency services	• Efficient health sector service delivery	• Reduced road vehicle usage • Reduced demand for road and other land infrastructure	• Rural, regional and remote Australians
Airborne Communications including pseudo satellite services	• Land, environment and infrastructure management • Rural and remote access to services • Emergency response	• National resilience to disasters • Service delivery efficiency	• Reduced demand for land infrastructure • Sustainability compared with fixed towers or satellite launches	• Community safety

General Aviation Activity	Other Economic Sectors and Industries Served and Supported	Economic Benefits	Environmental Benefits	Social Benefits
Aerial Application Firefighting Plague/insect control Agricultural Oil Spill Response	• Emergency services including firefighting • Support of ground firefighters • Public health disease vector control • Agriculture including crops and pastures • Forestry • Grain storage sector • Exporters • Food processors • Grocery supply chain • Food and fibre consumers • Oil industry • Offshore industry	• Financial loss aversion – houses, towns, crops, parkland • Public health cost reduction • Productivity, multiple industries • Crop yield increase • Loss avoidance • Emergency response cost and efficiency	• Superior application of crop protection chemicals by highly trained, accountable and licensed personnel • Environmentally sensitive location protection • Environmental protection through land clearing reduction	• Public amenity • Industrial safety • Community safety

General Aviation Activity	Other Economic Sectors and Industries Served and Supported	Economic Benefits	Environmental Benefits	Social Benefits
Helicopter Aerial Work Aerial Mustering Spotting Dropping Animal Control Frost Protection, Powerline Stringing Powerline Cleaning Helicopter Sling Loads Rappelling Winching Hoist Work	• Agriculture – cattle, goats etc • Agriculture - Flood relief • Aquaculture • Food • Exporters • Fishing • National Parks • Crop protection • Emergency response • Community • Lifesaving • Energy supply and consumers • Emergency services and police • Construction • Telecommunications	• Productivity gains for multiple industries • Productivity • Agricultural crop yield • Grazing and fishing yields and operational cost reduction • Stock saved • Energy and communications network expansion	• Environmentally sensitive location protection • Reduced usage of land vehicles and maritime vessels	• Public amenity • Industrial safety • Community safety • Powerline safety and continuity of supply
Aerial Survey	• Mapping • Information services • Mining • Land planning	• Productivity	• Bushfire mitigation • Land management • Mining lease management	• Public amenity • Industrial safety • Community location services and safety
Training Pilots Aircraft maintainers	• Aviation and consequently all other sectors listed here • Agriculture • Communities and rural homes • Food consumers	• Operational quality and productivity • Aircraft reliability	• Aviation industry viability, reducing road and other surface transport environmental demands	• Safety outcomes for industry and wider community

General Aviation Activity	Other Economic Sectors and Industries Served and Supported	Economic Benefits	Environmental Benefits	Social Benefits
Recreational and Sport Aviation	• National and international competitions • Tourism and adventure	• Aviation workforce growth	• Public environmental awareness, especially of remote locations • Reduced impact of ground-based tourism transport	• Social inclusion • Physical and mental health outcomes • Entertainment
Private and Business Travel	• Multiple industries with particular transport needs (e.g., veterinary, engineering, other technical)	• Business support and facilitation • Productivity • Individuals	• Public environmental awareness, especially of remote locations	• Rural and remote community interests • Rural and remote access to services

Table 1: Economic benefits arising from General Aviation activity

4 Economic Characteristics of the Australian GA Sector

The General Aviation (GA) sector in Australia has an unusual combination of characteristics, which arise from being highly specialised, widely diverse and heavily regulated. These are tabulated below:

Characteristic	Effect	Examples
Varying risk profiles among different operational types	Safety exposures differ, even within same sector	Safety record differences between commercial and non-commercial flying
Highly regulated	High fixed costs, barriers to entry, constraints to flexibility	CASA regulations govern entire operational spectrum and supply chain
Dependent on specialist markets	Exposure to economic variation	Agriculture, firefighting, recreational, tourism and scenic flying
Community and local orientation	Typically, small enterprises suited to local market needs	Aeromedical, regional charter, flying clubs, fire fighting
Dependence on limited set of suppliers and providers	High costs due limited competitive sourcing	Airports, maintenance providers, air traffic services
Workforce training requirements and skills shortages	Cost and availability of staff	Pilots, maintenance personnel and operational management
Agility, flexibility and adaptability	Intrinsically capable of adjusting to demand	New services, such as COVID-safe charter flights to new destinations
Undercapitalised small enterprises	Inability to pursue innovation, business diversification and to adapt to changing conditions	Average fleet age, high maintenance costs, susceptible to disruption
Lack of government and community awareness	Not prioritised, inadequately considered and represented	Aviation infrastructure, particularly airports, not oriented to General Aviation needs

Table 2: Characteristics of the GA Sector

In combination, these characteristics correspond to threats and opportunities for the sector and highlight areas in which government can facilitate industry recovery, economic contribution and community value. The GA sector is fragile, yet it serves the community in many ways, including essential services such as fire-fighting, aeromedical and regional freight and the loss of this capability to Australia cannot be contemplated.

No single industry or government body sets strategic goals for the General Aviation sector in Australia. The sector's high level of specialist diversities constrains the adoption of common and unified strategies and goal setting, when compared to other industry sectors, such as airlines.

5 Strategic Goals for the GA Sector

At the highest level, the GAAN's strategic goals for the sector may be summarised as follows:

Strategic Goals	Solutions
Deliver increasing economic, environmental and social benefits to citizens of Australia	• Serve the Australian community by supplying flexible, economically efficient and competitive aviation services for a wide range of purposes, including rural and regional freight and transport, aerial application, survey and remote sensing, community safety, medical transport and evacuation, tourism, recreation, training and education, executive and specialist mobility for many primary and secondary industries.
Achieve and maintain world standard levels of safety commensurate with sector risk	• Be regulated under a just and competitive legal framework that is clear and concise, based on a risk-based Classification of Operations, administered transparently and efficiently, by a regulator committed to just culture, industry engagement, collaboration and administrative efficiency.
Achieve and maintain economic growth within the General Aviation sector	• Deliver benefits to the nation at costs that are competitive with other forms of transport and utilities and comparable to those of other economies, where the costs to government are balanced by the national benefit delivered by the sector to the community and other industries.
Build and develop resilience in the sector to ensure its future sustainability	• Attract domestic and foreign investment. • Increase the capacity of the Australian General Aviation fleet; and reduce fleet age averages. • Partner with governments to support Australian providers of services essential to community safety, such as aerial firefighting. • Increase the number of persons, beyond employment, able to benefit from a viable General Aviation sector as participant and direct and indirect beneficiaries.
Be innovative and support innovation by others in technology, practices and operating models that support complementary strategic goals	• Leverage new technology and deliver operational safety and capability enhancements to be a world leader, creating export opportunities for Australian products, people and expertise.

Strategic Goals	Solutions
Work closely and collegiately with government, community and sector stakeholders to foster shared and collaborative safety regulation to support complementary strategic goals	• Operate collaboratively between government and industry to graduated levels of safety within a risk-based Classification of Operations that places maximum emphasis on protections for persons on the ground and non-participant consumers of aviation services, particularly passengers, who are not well-informed of the attendant risks.

Table 3: Strategic goals and solutions for General Aviation

Giving effect to these strategic goals requires strategic initiatives[4] that can effect meaningful change from the current economic and regulatory situation and arrangements.

[4] In its initial response to the Department of Infrastructure's *Future of Australia's Aviation Sector*[2], dated 11 November 2020, the GAAN identified ten strategic initiatives. Following further work, these have been condensed to the eight strategic initiatives given in this document. The coverage and aggregate content of the initiatives is equivalent.

6 Strategic Initiatives for a Successful General Aviation Sector

In its remaining sections, this document is focused on specific strategic initiatives that would deliver on the GAAN's vision for General Aviation in Australia, derived from the strategic goals of section 5.

1. Conduct a detailed, wide-ranging economic review of the sector, focusing on outputs as well as inputs.
2. Create a world-class regulatory environment for the GA sector.
3. Review the over-arching Civil Aviation Act and adjust to be fit for purpose for the GA sector.
4. Create consistent and effective training pathways to fulfilling, worthwhile jobs in an expanding GA sector for pilots, maintenance and other GA personnel.
5. Provide airport infrastructure and access to airport facilities that are suited to the diverse needs of an emerging and growing GA sector.
6. Provide access to airspace that support the range of current and future GA flight operations and technology.
7. Provide economic and other incentives for the design, manufacturing and export of Australia aircraft and aeronautical components.
8. Facilitate early adoption of technology and support processes that encourage innovation and technology development.

For practicality, each strategic initiative is identified by related current issues, and recommended solutions and actions for their implementation.

6.1 Wide-Ranging Economic Review of the Australian General Aviation Sector

The GAAN believes that it is time to assess the true economic value of General Aviation to the Australian economy, which is often underestimated. Whilst direct demand for GA services does not feature across all industries and most Australian consumers, the indirect impacts of aviation extend well beyond the sector, with benefits being reaching almost every member of the Australian public.

Unless the economic benefits of the sector are understood, it cannot be expected that government policy will reflect the sector's national importance.

Even in a COVID-affected world where business and personal travel has been limited, the role of the aviation industry in transporting goods, delivering emergency services and supporting regional Australia has been pivotal to ensuring that the Australian economy has not suffered more than was necessary.

Professor Geoffrey Blainey[5] has highlighted the historical challenges that Australia faces due to its geographic isolation. Historically, many Australians were unsure of the country's economic viability, due to the long distances between Australia and its European origins. Whilst these challenges are less relevant now, distance continues to pose a significant challenge to Australia's economic prosperity.

As detailed in Table 1, General Aviation offers a solution to many economic, environmental and social problems that arise from geographic distance and isolation, as well as specialist solutions for many industries.

General Aviation also brings social and environmental benefits. Bushfire mitigation, eco-friendly tourism, cultural environment protection, safer agricultural practices and better land and resources management are examples of environmental benefits that flow from the GA sector. Additionally, a person who engages in aviation for sport, recreation or enjoyment gains direct social benefits from the sector's existence. Pilots maintain a certain physical medical standard to gain and retain their qualifications. Whilst various standards and means of verification apply, participants are motivated to remain healthy. Aviation studies teach people to use frameworks to assess information, make informed decisions and act rationally. In common with team sports, aviation teaches decision making skills and fosters valuable skills that participants bring to the workplace. It is important than these non-quantifiable benefits are also recognised.

6.1.1 Issues

General Aviation is not well understood, and its contribution to the wider economy, either in terms of its economic importance to the nation, or its contribution to the community through jobs, services and other industry facilitation effects, is frequently overlooked.

[5] Blainey, GN: *The Tyranny of Distance: How Distance Shaped Australia's History*, Sun Books, Melbourne, 1966

6.1.2 Solutions

Government should fund a detailed independent review that considers all aspects of the economic, social and facilitative value of General Aviation in Australia. The review must engage deeply with industry peak bodies to ensure the comprehensive scope of economic, social and environmental benefits associated with GA are captured.

A proven model[6] for analysing the associated economic impact, structured around four categories, is as follows:

6.1.2.1 Direct Impact

Direct impact is economic activity within the General Aviation sector. In economic terms, direct economic impact arises from all GA flight operations, maintenance, aircraft and component manufacturing and other activities.

6.1.2.2 Indirect Impact

Indirect impact is economic activity occurring throughout the supply chain associated with General Aviation. The initial round of output, income, and employment generated by General Aviation leads to successive rounds of re-spending throughout its supply chain. The "multiplier" impact of General Aviation activity may be measured using input-output models.

6.1.2.3 Induced Impact

Induced impact is economic activity resulting from household spending of wages, salary and proprietors' income earned directly or indirectly from General Aviation-related activities.

People employed in services ranging from the operation and maintenance of aircraft, airports, air traffic control, ground handling and other services generate induced impacts. It is estimated that some 90,000 jobs[2] exist in the sector.

6.1.2.4 Enabled Impact

Many industries choose to use aviation as an input to production because doing so brings valuable commercial advantages. Some industries would not exist in Australia in the absence of a healthy aviation sector.

By way of example, South Australia has a flourishing seafood export sector that relies on the timely delivery of freshly caught produce to markets in Asia and beyond. Traditional surface transport methods would result in delays and as such, aviation is a critical component to their success.

Similarly, other industries could use surface transport to achieve similar outcomes, although the ability to send goods and services in a timeframe sensitive to the needs of the recipient would render some of these industries unviable. At best these local industries would face significant additional hurdles to overcome compared to their international counterparts whose geographic

[6] *Contribution of General Aviation to the US Economy in 2018,* study by PriceWaterhouseCoopers LLC, February 2020:
https://gama.aero/wp-content/uploads/General_Aviation_s_Contribution_to_the_US_Economy_FINAL_20200219.pdf

location offers a natural competitive advantage. More locally, the transport of goods and people to enable industries such as firefighting and medicine clearly delivers benefits in terms of the avoidance or minimisation of catastrophic loss and a reduction in injury and loss of life.

In the 2019-20 bushfire season caused agricultural losses of up to $4.1b[7]. More than 46 million acres of land were destroyed through fire. Aerial assets allowed elements of the firefighting to be tackled in places where ground based assets were not feasible and importantly, more quickly than land based efforts. Without the contribution of those assets, the losses would have been much higher.

When the broader economy and other sectors such as tourism, business travel, transport of goods, and others are considered, it becomes clear that GA enables much more in terms of benefits to the Australian taxpayer. The estimate of $20b[2] arising from the aviation industry may fall short of the true figure[8] when enabled impact is taken into account.

Enabled impact also results from destination expenditures associated with GA flights for business and personal transport.

Economic policy discussions should also include the regulatory funding model. Despite extensive cross-community benefits that flow to almost all Australian citizens from GA operations, as highlighted above and listed in Table 1, less than a quarter[9] of the regulator's funding comes from appropriations by government, whilst the aviation industry directly funds the vast majority of CASA's costs through fuel excise and service fees[9].

6.1.3 Actions

6.1.3.1 Identify and quantify the size of the General Aviation sector in Australia including support services.

Section 3 of this document has outlined the extensive economic, environmental and social benefits that the GA sector brings to the Australian economy. Assessing these benefits would mean understanding:

- The economic size of the sector and its contribution to Gross Domestic Product (GDP);
- The inclusions of jobs related to flying and maintaining, as well as other aspects of the sector, such as aircraft and component manufacturing, airports, freight, security and support services such as catering and fuel supplies; and
- A holistic estimate of jobs and value created by the sector.

6.1.3.2 Identify and quantify those areas of the economy that are heavily dependent on aviation.

This would include, but not necessarily be limited to those areas listed below. The obvious directly co-dependent sectors include tourism, transport and agriculture. A key

[7] *2019-20 Australian Bushfire Crisis: The Economic Impact* Ibis World Special Report, https://www.ibisworld.com/industry-insider/media/4641/bushfire-report-final.pdf

[8] The agricultural sector's gross value of output was $60b (Australian Bureau of Statistics item *75030DO001_201819 Value of Agricultural Commodities Produced, Australia, 2018-19)*. GA's role in the application of fertiliser, pesticides, mustering, asset inspections and many other services is widespread in this sector. If the agriculture sector's use of GA accounted for only a 1% productivity boost to agriculture in Australia, in just this one sector alone, GA would have generated $600m in national economic benefits.

[9] Civil Aviation Safety Authority *Annual Report 2018-19,* p.21

consideration in preparing a brief would be to exclude biases that may limit values. An estimate of jobs and value should be a key output.

6.1.3.3 **Identify and quantify additional benefits arising from General Aviation**, including a regional breakdown to identify and quantify its positive value, particularly to regional communities and its links to enabling education, healthcare, and other business activity**.**

6.1.3.4 **Identify different labour market roles in GA** and produce a breakdown of employment demographics, for example, by city, regional and rural, states and territories; and the type of people and qualification levels in those jobs; for example, university graduates, technical college qualification holders, high school leavers and related analysis**.**

6.1.3.5 **Develop scenarios and sensitivity analysis modelling to understand outcomes tied to the decline or growth of General Aviation** by 5% or 10%[10], to the level of its ultimate demise, to provide an overarching understanding of aviation value**.**

6.1.3.6 **Model the impact of Australian regulatory inefficiency** leading to loss of Australian-developed IP to overseas companies, jobs and skills going offshore, or being sourced from offshore. Anecdotally, it is understood this is occurring with maintenance training being outsourced to New Zealand and pilot training in the United States, where Australia's role reduces to one of recognition. A quantified estimate should be made of this issue and the value of knock-on effects on Australian training organisations, including lost capacity and export opportunity**.**

6.1.3.7 **Develop and deliver modelling and assessment tools** for use by Commonwealth, state and local governments. This information would directly assist planners and policy makers assess the impacts of policy on aviation. It would include data such as export income, taxation, depreciation, land-use, access, opportunity costs, regulatory service charges and fuel excise for a better understanding of the national, regional and local value of a viable General Aviation sector**.**

[10] 5% and 10% are arbitrary values, suggested as starting points for analysis.

6.2 A World-Class Regulatory Environment for General Aviation

6.2.1 Issues

Over a period of decades, multiple reviews of aviation safety and CASA, the aviation safety regulator, have failed to resolve the concerns of many industry stakeholders as to:

- Regulatory standards and administration, including suitability, comprehensibility and contribution to safety;
- Lack of regard to the effect of the cost implications of new and changed regulations and the burden they bring to the sector; and
- Activity of the regulator, particularly its internal culture, management consistency, governance and relationship with industry.

In the same timeframe, the Regulatory Reform Program has introduced significant costs, complexity and duplication without commensurate safety gains, with deleterious impacts on the General Aviation sector.

A key challenge moving forward must be to improve CASA's ability to develop regulatory content and methods that are effective for aviation safety, whilst supporting industry opportunities for growth in the GA sector.

Although sector risk profiles have been developed for specific aviation industry sectors, any process by which they have been applied to regulatory reform is opaque. The GAAN considers sector risk profiles to be essential to objective and risk-based regulation consistent with global contemporary regulatory best practice.

Proactive engagement between industry and CASA is limited, resulting in significant missed opportunities for industry involvement and collaboration towards the advancement of safety outcomes for the sector. This is particularly important during periods of rapid innovation while expert regulatory resources are limited.

To many in the sector, CASA's culture is directed to asserting power and control, at the expense of engagement and cooperation, even during consultative processes, and in contexts unrelated to enforcement or inspection activity.

CASA has established flexible and simpler pathways for operations conducted under the auspices of self-administering bodies[11].

[11] *Civil Aviation Safety Regulations 1998*; *Civil Aviation Legislation Amendment (Part 149) Regulations 2018;* and *Part 149 Manual of Standards*.

6.2.2 Solutions

The key to advancing safety outcomes for the sector is rebuilding trust and developing a collaborative relationship, without favour or "regulatory capture"[12].

The GAAN recognises that aviation safety is not only good for consumers, the public and government, but that it is also fundamentally good for business. In any industry, nothing destroys customer confidence faster than unsafe outcomes.

The achievement of safe outcomes in the General Aviation sector cannot logically involve disregard for the interests of industry, since doing so detracts from industry's ability to invest in safety: it constrains the ability of operators to buy new aircraft, to overhaul and not simply repair existing equipment and to build internal training and standards that surpass the regulatory minima.

A regulatory organisation culture and structure that sets regulatory requirements consistent with sector risk, consistently and objectively enforces clear and comprehensible regulations that are intrinsically linked to addressing known risks is essential to safe General Aviation outcomes. The GAAN recognises that these structures and culture will not mirror those appropriate to large aircraft air transport regulation and policy.

CASA should be required to implement an engagement strategy with General Aviation based on a classification of operations concept that embeds the key principles of this policy including sector risk understanding and risk-based regulation, driven by data and industry expertise and the use of innovative approaches to securing safety outcomes through continuous improvement.

CASA cost recovery from industry must be specific to efficient services, accountable in a commercial sense, and include transparency in billing and timely issue resolution.

6.2.3 Actions

6.2.3.1 Review Enabling Legislation

Establish an independent review of the *Civil Aviation Act 1988*, as noted in section 6.3, to embed a classification of operations model that recognises a more modern co-regulatory approach is required in CASA's dealings with General Aviation.

6.2.3.2 Classification of Operations and Sector Risk Profiles

CASA, in cooperation with industry, should develop a clear policy to operationalise a classification of operations so that simple operations have simple regulations. GAAN has previously developed a Policy Note on Classification of Operations, included at Appendix 1.

Operationalise the concept of classification of operations throughout CASA by the development of Sector Risk Profiles to ensure regulations are developed in consultation with industry and are based on risk management principles, are driven by data and strengthened by industry participation in risk mitigation.

[12] "Regulatory capture" has been cited in several contributions to aviation regulatory discussion as the undesirable product of regulators being so intertwined with industry that these relationships supplant the regulators' responsibilities to the public and broader community.

CASA must be required to further develop the SRP process by the addition of implementation plans that are binding on CASA and industry. Additional work should establish key sector safety performance indicators to enable measurement of success and provide evidence of continuous improvement.

6.2.3.3 Cooperative Approach

Utilise industry expertise to develop cooperative approaches - including but not limited to Sector Risk Profiles – where CASA cooperatively:

- Identifies and works closely with an industry safety partner (e.g., peak body) for different sectors;
- Identifies and gathers sound data for improved safety;
- Identifies key risks and safety issues in each relevant sector;
- Identifies risk controls and safety initiatives;
- Develops a sector risk profile implementation strategy, including funding; and
- Develops safety performance indicators to monitor ongoing safety trends.

Key principles for cooperative regulation should include:

- Positive engagement between regulators and industry peak bodies;
- Risk based and in the context of the operations through the development of Sector Risk Profiles;
- Data driven;
- Transparent;
- Based on the expertise of industry, best practice and continuous improvement;
- Focussed on building the capacity of the industry; and
- The use of education and recognition of industry programs wherever possible to attain safety outcomes, rather than regulation.

6.2.3.4 Continuous Improvement and Quality Management

The CASA Board should urgently establish key management systems within CASA that embed continuous improvement and quality management across all aspects of CASA's interactions with General Aviation and include an enhance complaint handling and appeals mechanism.

6.2.3.5 Organisation and Culture

A root-and-branch organisation-wide review of CASA should be undertaken to examine the organisation's culture, suitability of personnel, engagement with industry, relationships between staff internally and with industry, consistency in decision making, direction and focus on strategic outcomes and the roles of the Board and senior leadership.

6.2.3.6 Efficient Regulatory Management

Establish General Aviation management systems within CASA that are more efficient, minimise duplication and deliver better service to General Aviation. These systems must be based on a strong engagement with industry users to identify areas for improvement, including the establishment of a GA Efficiency Taskforce.

6.2.3.7 Repair and Reform Ineffective Regulation

Work urgently with industry to identify and complete repairs and reforms required to key elements of GA regulations, including:

- CASR[13] Part 61 – Pilot Licencing – including immediate correction to:
    - 'Specialised Training' changes proposed by industry and already underway through the ASAP[14] TWG[15] Part 61 reform;
    - Unworkable Flight Examiner requirements[16];
    - Inefficient and bureaucratic administrative practices with little or no safety benefit;
    - Unjustified divergences from FAA practices for Part 91 (non-commercial) operations.
- CASR Part 66 – Maintenance Licencing disincentives for new personnel;
- CASR Part 135 - Smaller aeroplanes air transport operations – limits on number of seats;
- CASR Parts 137 and 138 – Aerial Work (including Aerial Application) concerns, repeatedly raised by industry, that have not been resolved; and
- CASR Part 141 / 142 – Training organisations – unwieldly and bureaucratic requirements.

6.2.3.8 GA Sector Roadmaps

CASA should recognise the need for GA sector regulatory roadmaps, informed by sector risk profiles and with input from industry to provide the industry the certainty required to invest in fleet renewal, upskilling, capability building and to support growth.

[13] *Civil Aviation Safety Regulations 1998* (CASR) Parts 61, 66, 137, 138, 141 and 142
[14] CASA Aviation Safety Advisory Panel
[15] CASA Technical Working Group(s)
[16] Provisions governing Flight Examiners would be improved by reducing requirements for their services in situations where their engagement is not justified by a quantified, objective, sector-specific risk assessment.

6.3 Review of the Civil Aviation Act

6.3.1 Issues

The *Civil Aviation Act 1988* is now over 30 years old. Piecemeal changes over that time and the changing demands on modern regulatory bodies means that the Act is not as fit for purpose as it should be.

An amendment to the Act made in 2019 requires CASA to take into consideration the economic and cost impact on individuals, businesses and the community and the differing risks associated with different industry sectors when developing and promulgating aviation safety standards. The public hearing of the Senate *Rural and Regional Affairs and Transport Legislation Committee Inquiry into Australia's General Aviation Industry* held on 20 November 2020, heard that several witnesses[17] did not consider that CASA has made any change to the way it operates, despite the amendment. CASA leadership maintained that it had already been doing so[18]. On face value, and in the most positive interpretation, the relevance of the enabling legislation should be reviewed if changes made by Parliament make no difference to the Authority's modus operandi; and in the least favourable case, the ability of the Authority not to respond to the legislation should be addressed.

6.3.2 Solutions

The Act should be subject to independent review and amendment to ensure it is fit for purpose.

6.3.3 Actions

Establish an independent review of the *Civil Aviation Act 1988* to consider:

6.3.3.1 **The current responsibilities, powers and composition of the CASA Board** and if they are appropriate, including how the Act can strengthen the role and structure of the Board to direct the promulgation of minimum performance-based safety standards for GA**.**

6.3.3.2 **How the Act should provide a head of power for a reformed regulatory approach for General Aviation**, including implementation of a classification of operations structure, sector risk profiles and a co-regulatory approach**.**

6.3.3.3 **If Section 9a of the Act is still fit for purpose** given recent amendments to require CASA to also consider cost implications of regulation**.**

6.3.3.4 **How the Act can ensure that General Aviation regulations are internationally harmonised** with key complementary aviation states such as the United States, New Zealand and Canada**.**

6.3.3.5 **Avoiding economic harm and impediments to technological and other innovation** where there is no safety issue**.**

6.3.3.6 **Unjustified punitive measures** introduced through regulation under strict liability offences and their removal for General Aviation**.**

6.3.3.7 **Sections of the Act that are no longer relevant** and can be deleted, or that should be moved to subordinate regulation**.**

[17] Senate Rural and Regional Affairs and Transport Legislation Committee inquiry into Australia's General Aviation Industry, 20 November 2020, *Proof Committee Hansard* pp 5, 9, 16 and 18
[18] Ibid., p 47

6.4 Training Pathways

6.4.1 Issues

6.4.1.1 General

Over the last thirty years of the CASA regulatory reform program and other CASA policy decisions, many adverse outcomes for training pathways have resulted - including significantly increased cost, complexity and duplication for no safety outcomes.

These have not resulted in any change to safety outcomes for industry or improved service delivery for trainees. By comparison, similar countries have equivalent or even superior safety outcomes without the burden imposed on the Australian industry.

Related issues include access to available student loans program, CASA/ASQA duplication/ competition between competencies and licence outcomes, and significant impacts for both pilot licencing and maintenance licencing regulations.

This represents a major reform issue for CASA to secure the future of the Australian aviation industry.

6.4.1.2 Pilot Training

There are a number of separate, but related issues that negatively impact pilot training, both as an economically important aspect of the sector in its own right, and as the upstream supplier of pilots of all descriptions for GA and air transport.

Particular examples of misdirected regulation and administration are as follows:

- Commercial pilot training for specialist roles, such as aerial application, is hampered by a severe shortage of qualified trainers and examiners. As a result, the sector's needs for pilots are not consistently met. The shortage of qualified specialist pilots is further compromised by CASA regulations that do not recognise the demands and requirements of very low throughput training, which requires an appropriate approach for the profile and numbers of trainees and training organisations.

- Regulatory inconsistencies[19] between CASA-regulated and training organisations that operate under self-administration, as well as within the CASA-regulated system, which have the potential to undermine the standards of aviation training and the sector's long term viability.

    - Qualifications from training organisations that operate under self-administration (ASAO[20]) provide credits for some CASA qualifications, but not others. For example, an integrated 150 hour Commercial Pilot Licence course excludes all hours in ASAO

[19] Another inconsistency exists in the rules for operator proficiency checks (OPCs) for aerial application pilots. Fixed wing OPCs can be conducted by chief pilots pursuant to CASR 137.240, whilst an OPC for rotary wing aircraft must be conducted by one of very few flight examiners who hold an aerial application rating.
[20] Aviation Self Administering Organisation

registered aircraft, yet some of those aircraft can be registered with CASA and then used for the same training. No credit is given for experience gained in instructing in ASAO aircraft for CASA flight instructor qualifications.

- Recreational Pilot Licences issued to a student of a CASA-regulated training organisation require a test by a Flight Examiner, but a student can alternatively obtain ASAO training, complete a navigation endorsement, apply on paper for a CASA Recreational Pilot Licence on the basis of the ASAO pilot certificate, and then undergo a flight review with a CASA Grade 2 instructor in a CASA-registered aeroplane and bypass the use of a Flight Examiner at all, for exactly the same outcome. The CASA-regulated flight school is subject to extensive, onerous documentation and ongoing surveillance requirements, but not allowed to issue the entry-level pilot qualification, whilst the regulations facilitate an alternative pathway to the contrary, for exactly the same outcome.

These issues result in confusion and added costs for people seeking to participate in or enter the industry.

A more pragmatic approach would assist attracting new pilot entrants.

6.4.1.3 Maintenance

Qualifications for maintainers, more specifically LAMEs[21], are very restrictive.

The rapid advancement in technology has left traditional training methods behind, particularly the current system's inability to recognise prior learning and leverage the opportunity for specialisation in fields such as avionics.

The tertiary education sector, particularly TAFE, has been unable to sustain LAME courses that cover piston and turbine engines, as well as airframe, electrical, instrument and avionics subjects to the standards required by the regulations. As a consequence, it is not unusual to hear of young LAMEs whose training has extended years longer than necessary.

Creating pathways that make LAME qualifications more transferable to the outside world and vice versa would attract candidates with the ability to develop both general trades and specialised skills. It is increasingly difficult to get people to take on a qualification without future options.

6.4.2 Solutions

CASA should engage with GAAN to establish a holistic training review that would remedy the significant negative impacts currently being experienced in GA through the relevant CASA Parts.

6.4.2.1 Goal

The goal should be to attract and maintain a qualified and professional workforce to support GA and broader aviation industry needs. Recognition that this is the entry point for commercial aviation personnel.

[21] License Aircraft Maintenance Engineer

6.4.2.2 Objectives

- Create and promote careers, not just licence issue;
- Develop a resilient workforce by ensuring transferability of skills and recognition of qualifications;
- Support, with corresponding regulatory measures, cost effective entry, ab initio training and ongoing skills and knowledge requirements;
- Ensure requirements are consistent between skill sets and licensing; and
- Provide for internationally recognised and transferrable qualifications.

6.4.3 Actions

- **Provide funding and recognition** for CASA-authorised technical training schools;
- **Resolve the competition in the ASQA[22]-CASA relationship;**
- **Holistically review Parts 61, 141 and 142 competencies**, along with the requirements for general GA training and 'specialised' GA training; and
- **Holistically review CASR Parts 42, 66 and the future 43 for opportunities** to streamline LAME training and licensing and support timely and efficient course completion.

[22] Australian Skills Quality Authority

6.5 Airports

6.5.1 Issues

6.5.1.1 Capital City Secondary Airports

No industry can survive, let alone prosper, without adequate land security being given to the fixed building assets needed to house, support and grow their operations. The small to medium enterprises (SME) business that characterise the GA sector are critical to the sector's viability, growth and job creation have been negatively affected at the capital city secondary airports, particularly Moorabbin, Bankstown, Jandakot, Archerfield and Parafield since the airports were privatised.

The General Aviation sector has been negatively impacted as a result of the activities of some airport owners that seek to discourage aviation usage at the airports they lease or own to favour non-aviation development and other markets, which may be more lucrative.

SMEs do not have the commercial corporate resources to negotiate the long-term leases that large non-aviation companies, have been able to achieve.

It is generally not possible to finance business assets on land that has short lease terms of ten years or less, which is currently all that is on offer for GA SMEs, because improvements on the land become the property of the lessor at the end of the lease period.

This is a major disincentive for GA businesses, which have no alternative other than to operate at an airport, since they need a runway. The economic ramifications of this situation mean fewer jobs, and lack of investment in fleet renewal, upskilling and capability-building, which are essential for the sector's viability.

Whilst airport owners are operating within the law, it does not mean that government should not act to address these critical issues confronting many GA sector SME operators.

6.5.1.2 Regional Airports Under Local Government Control

Many regional airports face an uncertain future and precarious financial position.

The GAAN considers that the Commonwealth's divestment of regional airports was a major policy mistake. In many cases, local government lacks the financial capacity to cover the recurrent costs of maintaining the airports, and the ability to grow and promote aviation industries at the airports. As a result, the Commonwealth has provided grants through the Regional Airports Program, Regional Aviation Access Program and the Building Better Regions Fund, which while helpful and well-intentioned, are ad-hoc and not tied to a central plan or industry strategy. A new approach is needed to support and expand regional airports and the GA and businesses that operate there.

Before any meaningful reform can be achieved, it should be accepted that smaller regional airports are critical national infrastructure, just like rail, roads and shipping ports. They are needed for air transport and GA activities, particularly aeromedical, emergency and agricultural services. Local government can, and should, be used to provide support services, but over time it has become clear that most lack the capital and expertise to operate airports, evidenced by the state of some facilities.

6.5.2 Solutions

6.5.2.1 Capital City Secondary Airports

The ACCC[23] should be asked to investigate the conduct of owners of large secondary airports and consider whether these leased airports require the protection of additional regulation. Government should revise its policy towards the approval of leased secondary airport master plans to ensure that the interests of the GA sector are adequately protected.

6.5.2.2 Regional Airports Under Local Government Control

Australia needs a network of regional airports that are safe and economically sustainable. This requires both a national regional airport provision and access plan; and a standardised understanding of the costs required to provide airport infrastructure. With these matters identified and documented, funding can then be directed in a strategic manner and over a period of asset sustainment that is not possible with an ad-hoc or laissez-faire approach.

It is noteworthy that almost all regional airports were developed through Commonwealth funding, many years ago. A national approach to improve regional airport outcomes would better utilise funding already being provided, whilst arresting the decline in regional airport infrastructure.

6.5.3 Actions

6.5.3.1 Capital City Secondary Airports

The ACCC should consider whether the following aspects of airport planning and development are being adequately provided by major secondary airport lessees:

- Security of tenure and access to suitable property leases for aviation businesses;
- Parity or otherwise of behaviour with normal commercial lease arrangements; and
- Impact on General Aviation businesses.

Government should review the independent review criteria for assessing airport development proposals with a view to ensure GA needs are fairly considered and adequate for the industry's current needs and future growth.

Through its powers and required approvals of airport master plans, government can set conditions on the head lease owners for commercially acceptable terms to GA SMEs, sufficient to support business lending applications. GA aviation business must not be denied conditions that are available to non-aviation businesses simply because GA must necessarily be located at an airport.

6.5.3.2 Regional Airports Under Local Government Control

A bold and innovative approach to revitalize regional airports, based on a sustainable mode, is needed to protect, maintain and grow business and employment opportunities.

The need for Commonwealth recurrent funding to sustain these assets and consistent, controlled standards for facilities appears to be inescapable.

Extensive existing, and underutilised, services including power, water, drainage and roads, coupled with the very flat and easily developed land that generally surrounds airports may provide the ingredients for regional business development opportunities at regional airports.

[23] Australian Consumer and Competition Commission

Recurrent Commonwealth funding could be matched with businesses prepared to commit capital by way of subsidised long-term leases.

It would be important to ensure that commercial investments were made by aviation-related businesses, or for surplus airport land in a way that is fully compatible with the ongoing use of the site as an airport, since allocation of airport land to non-aviation businesses could diminish the viability of the airport.

Annual lease payments could be linked to performance indicators that require businesses to sustainably grow, employ and train staff and support regional communities. Particular emphasis on youth employment for apprentice and traineeships should be targeted.

Annual auditing of performance indicators would provide the basis to reset or adjust lease payments. Financial guarantees should be taken from business principals to ensure compliance.

6.6 Airspace for GA Operations

6.6.1 Issues

General Aviation access to airspace is critical to its operations.

GA operations continue to be limited by airspace restrictions, including through airspace exclusively claimed by Defence that is not shared, as well as the impact of new developments.

The expected increase in the number of new airspace users (including drones, RPAS[24], and advanced air mobility), with diverse operational needs, can be expected to compound this situation.

There is currently no single user group to provide advice on airspace changes. The present arrangement only engages airspace users locally. For example, there is no effective national user consultation in relation to instrument approaches, which are a critical resource that has been affected by significant regulatory change in recent years.

Current airspace change discussions have been limited to the specific changes and not assessed against a national strategic plan for the evolution of airspace and air traffic management accounting for the changing needs of all airspace users.

The GA sector is also particularly apprehensive about the future impact of Western Sydney Airport on Bankstown Airport. This apprehension has resulted in a disincentive for investment in training and other GA facilities at Bankstown Airport.

6.6.2 Solutions

Principles and objectives for the national management of Australian airspace should be established that align with the Minister's airspace policy statement.

A national body should be established to advise government, in the national interest, in relation to airspace management.

A strategic operational concept for Australian airspace, accounting for existing and new airspace users, should be developed, which draws on best global practice, particularly the US National Airspace System (NAS) model, which has demonstrated efficiency and safety, whilst assuring GA aircraft equitable access and flexibility under visual flight rules.

Airspace reform would provide a stimulus to the GA sector, bringing job creation, fleet renewal, improved maintenance facilities and a more supportive environment for flight training.

Western Sydney Airport, Airservices Australia and the CASA Office of Airspace Regulation should engage with stakeholders to identify key concerns for ongoing visual and instrument operations at Bankstown and the Sydney Basin.

[24] Remotely Piloted Aircraft System

6.6.3 Actions

6.6.3.1 Airspace Model

The government should initiate a review of the Australian strategic airspace model, with particular consideration for existing and emerging airspace user needs, drawing on proven international structures, particularly the US NAS, and compliance with ICAO.

6.6.3.2 National Airspace Plan

A national airspace plan consistent with the model above, and the ICAO Global Air Traffic Management Operational Concept and Australia's State Safety Program should be prepared by the new advisory body, described in section 6.6.3.4, with appropriate industry engagement.

6.6.3.3 Leverage Technology

The Government should establish a policy framework to ensure the continued exploitation of ongoing technical innovation that has the potential to enhance the safety and efficiency of airspace operations and air traffic management. Pertinent examples include the widespread national deployment of ADS-B technology and advancements in automated airspace and air traffic management concepts for drones[25].

6.6.3.4 Strategic Airspace Advisory Body

The Government should establish an enduring Airspace Industry Advisory Board (AIAB) to complement the existing Airspace Policy Group. The AIAB should provide advice towards:

- Maintaining the vision and flight plan in line with updates to the Minister's Policy Statements, changing stakeholder needs, and emergence of new opportunities for innovation; and
- Ensuring strategic airspace user input in relation to airspace change proposals.

6.6.3.5 Western Sydney Airport

Airspace architecture design should accommodate the needs of Sydney (Kingsford-Smith) Airport, Western Sydney Airport and the Sydney Basin General Aviation airports, including Bankstown and Camden. The design activity must address the airspace needs of existing and emerging flight operations, and be coordinated with, and accepted by, Airservices Australia and the CASA Office of Airspace Regulation.

[25] Commonly referred to as Unmanned Aircraft System Traffic Management (UTM).

6.7 Aviation Design, Manufacturing and Export

6.7.1 Issues

Australia has an opportunity to become a significant manufacturer of specialised aviation products and associated emerging technologies, but a national aviation manufacturing policy to encourage the development of this area of the industry has not emerged. In particular, Australia has a poor track record in maintaining its aircraft certification and manufacture capabilities.

In many cases, General Aviation aircraft and component manufacturing has faced excessive cost and time delays caused by CASA. In common with the issues presented at section 6.8.1, existing regulatory inflexibility and impediments hamper opportunities for innovators, which could otherwise be creating Australian jobs.

At the same time, new aviation manufacturing industry opportunities are emerging in areas of RPAS and Advanced Air Mobility (AAM) platform manufacturing, as well as communications, navigation and surveillance equipment and software.

Current research and development programs and criteria do not address the needs of aircraft design, certification and manufacturing. As a result, companies that invest in bringing new technologies to certification are usually resource and investment depleted, which can result in commercialisation opportunities disappearing overseas.

Aviation is a global industry. International markets require Australian manufacturing standards to be harmonised with their requirements to facilitate access, compliance and successful exports.

Those that choose to remain in Australia, find it challenging to reach commercialisation under regulatory burden, skills shortages and cost of developing global market opportunities.

The current approach has been a contributing factor in the shortage of significant investment.

6.7.2 Solutions

Leveraging structures with the Department of Infrastructure for economic oversight, and CASA for manufacturing approvals areas, pathways should be identified to improve the process for approvals, for the dual purposes of introducing innovation from overseas and exporting Australian innovations.

Doing so will also involve attention across several government portfolios in relation to skills shortages in manufacturing, production, aeronautical design and certification personnel.

6.7.3 Actions

6.7.3.1 Harmonisation

Regulations and practices for the design, certification, manufacture and export of Australian aeronautical products[26] must be fully harmonised with those of intended markets. As the dominant markets for GA products, acceptance by the United States FAA and European EASA of Australian regulatory approvals with nil, or minimal differences, is an essential concept. Doing so will require extensive consultation with industry and a renewed focus on regulatory support for these activities.

6.7.3.2 Cost Recovery

Charges for regulatory services for the certification of Australian aeronautical products should be abolished, which would assist in a more level playing field for Australian aeronautical design and manufacturing companies that compete with those of the United States.

6.7.3.3 International Agreements

Government should reduce the regulatory burden faced by industry in the export, and overseas recognition, of Australian designed, manufactured and certified aeronautical products. This could be achieved in multiple ways, including through ICAO compliance, expanding the scope of existing bilateral agreements and ensuring they are effective, in recognising Australian aeronautical products and platforms.

Where new bilateral and Free Trade Agreements are negotiated, Australian aeronautical products and related products and services should always be included.

6.7.3.4 Delegations

CASA should delegate additional responsibilities for design, manufacturing approval and oversight to industry, where personnel can demonstrate suitable competence and qualifications.

6.7.3.5 Programs

Government should initiate cross-portfolio activity with the following objectives:

- Research and development grants criteria should be revised, to include further development of established products and transition and further development towards “green” technological solutions;
- Low cost loans availability to fund newly developed products manufacture, including capital equipment;
- Job creation Initiatives and programs to encourage young people to enter manufacturing industries; and
- Renewed focus on Government supported trade missions to identify international market opportunities for Australian aeronautical products and services.

[26] In this context, an “*aeronautical product*” is intended to refer to any type of aircraft (including RPAS); anything intended for installation on or as part of an aircraft; any system or platform used to operate, control or provide services to one or more aircraft; and any related services.

6.8 Early Adoption of Technology and Facilitating Processes

6.8.1 Issues

Australia has a proud heritage of being a leading aviation state, however, regulatory overreach, red tape and bureaucracy have hamstrung the Australian industry and particularly GA businesses from being as innovative as they might otherwise be, in the adoption of new technology.

The Department of Infrastructure has recently released an economic study[27] of drones and air mobility. In its medium uptake scenario, the study found opportunities equating to $14.5b impact over the next 20 years, with the employment of an additional 5,500 people in Australia.

It is clearly in the national interest that these opportunities are not lost, however in the absence of specific planning, the existing industry support and regulatory framework appear incapable of supporting them.

6.8.2 Solutions

New technology and innovation require outcome-based regulations that make use of industry led consensus standards, rather than being historically-based.

Greater industry, research and regulatory authority engagement, such as sandboxes and technology incubators are needed to identify and explore innovation in a safe and efficient operational environment.

Appropriate access to airspace to facilitate technology development without compromising the safety of other users should be facilitated.

6.8.3 Actions

Government should initiate cross-portfolio activity with the following objectives:

6.8.3.1 Ensure a prioritisation of national research and development programs to innovations that have the potential to:

- Deliver safety, efficiency, economic or sustainability benefits across multiple aviation sectors;
- Create new, or enhance existing, commercial, civil or defence applications for GA; and/or
- Create new manufacturing and export opportunities for Australian based industry.

Examples of how this could be achieved include Australian Research Council priorities, targeted government grant programs aligned to priority areas (e.g. enhancing services to regional communities); and issuing “grand challenges” to foster innovation and investment.

[27] *Economic Benefit Analysis of Drones in Australia*, Deloitte Access Economics, October 2020 https://www.infrastructure.gov.au/aviation/drones/files/economic-benefit-analysis-of-drones-to-australia-final-report.pdf

6.8.3.2 Programs and funding to enable relevant government agencies, including CASA, to appropriately support industry-led innovation, research and development programs through expert advice, regulatory improvement and reform:

- Regulatory innovation program – allow industry to access Government advice, streamlined and subsidised application processes to obtain necessary regulatory approvals;
- Regulatory sandboxes – that enable Government to partner with industry to jointly explore solutions to Government-identified technical, operational or regulatory challenges; and
- Ongoing funding to ensure regulatory reform that can keep pace with changing industry needs.

6.8.3.3 Further economic measures to encourage industry co-investment in the development of new aviation products and processes;

6.8.3.4 Programs to aid small businesses in connecting with Australian-based researchers and complementary businesses;

6.8.3.5 Low cost loans to fund newly developed products manufacture, including capital equipment; and

6.8.3.6 Job creation initiatives and programs to encourage young people to enter manufacturing industries.

7 Appendices

7.1 Appendix 1 - GAAN Policy Note – Classification of Operations

This appendix comprises a policy note, originally developed by the GAAN as a free standing document in October 2020. The version attached here as an appendix has been updated, in accordance with the position agreed at the GAAN meeting of 18 November 2020, to clarify the classifications of Airline Operations and Low Capacity Passenger Operations.

Other than the above, and beyond reformatting as an Appendix to this document, no other changes have been made from the original.

APPENDIX 1

Policy Note: Application of Risk-Based Classification of Operations to General Aviation Regulation

General Aviation Advisory Network
December 2020

Executive Summary

This paper sets out the recommendations of the General Aviation Advisory Network (GAAN) for:

a) A collaborative approach to the assessment of risk among different types of operations within the General Aviation sector of the Australian aviation industry ("Sector Risk Profiles")

b) The importance of an implementation strategy, which would involve both industry operators and the regulator (CASA), so that Sector Risk Profiles deliver meaningful and measurable safety improvements

c) Application of Sector Risk Profiles to both the content of regulations and their administration and enforcement by CASA, leading to a rational approach to the Classification of Operations within the aviation industry, so that regulatory requirements are incrementally increased from a minimum standard.

It is the view of the GAAN that whilst CASA has produced some Sector Risk Profile documents, the potential benefits of this work have not been fully realised, because the stand-alone documents are not integrated to inform the regulatory development process and CASA's approach to administering the law. This leads to unnecessarily onerous requirements on the General Aviation sector, and fails to secure, in a rigorous way, mitigations against the highest priority risks in the various types of operations found in the sector.

The GAAN recommends:

1. That all remaining sector-specific risk reviews be scheduled, undertaken and completed in collaboration with industry representatives in an open, genuinely transparent manner, with published agreed reports; and
2. That the Sector Risk Profiles be used in conjunction with, and as a basis for further regulatory development, consistent with a new, clearly-defined Classification of Operations, fit for purpose in Australia's operational context, and not bound to historical imperatives, which whilst appropriate for the large end of the industry, constrain General Aviation and waste regulatory resources without demonstrated safety benefits.

1. Introduction

Attempting the adoption and application of a risk-based philosophy to regulatory development has frustrated CASA and its predecessors since at least 1986. A fresh perspective would give traction to various CASA directives and messaging, which espouse a risk-based philosophy but have not delivered any real reform. Historical practice and ICAO recommendations do not justify the imposition of burdensome inefficiency on Australia's domestic GA sector. Civil Aviation Safety Regulations (CASR) Parts 61, 141 and 142 have increased these burdens and costs to the extent that small operators are choosing exit strategies over compliance.

General Aviation does not exist as an end in itself, but rather serves a variety of downstream purposes including rural and regional freight and transport, community safety, tourism, recreation, training and education; as well as executive and specialist mobility for many primary and secondary industries. A safe and viable General Aviation sector that continues to deliver benefits to the nation requires a regulatory framework that objectively balances risks with costs and benefits.

If this risk-reward equation is not adequately considered, the value created by General Aviation from these business drivers is lost, along with related opportunities for individual citizens and the nation as a whole.

Put simply, the problem is that General Aviation is over-regulated, subject to unnecessary and costly regulatory burden, which constrains its opportunities for growth and in some cases, survival. The problem is complicated by generalised, non-specific safety concerns, which are said to apply across the whole industry, and between which the general public cannot readily distinguish, in the absence of contextualised mitigations.

The solution lies in accepting that aviation safety is, and always has been, a joint responsibility of the regulator, aircraft manufacturers, maintainers, owners and operators; as well as pilots, aerodromes and service providers. To give this effect, the various sectors of the aviation industry must operate inside a relevant regulatory framework that takes account of their particular safety risks.

To achieve this alignment, a program for the collaborative identification of specific risks for each sector of the aviation industry ("Sector Risk Profiles"), in conjunction with a plan to implement initiatives that specifically correspond with this alignment ("Classification of Operations"), is necessary.

Fundamental to this concept is that regulatory measures that do not effectively address relevant risks are discontinued, so that resources may be reallocated and costs to government and industry reduced. This will enhance safety, since regulatory content and activity can target known, specific risks, rather than relying on a bureaucratic blanket of restrictions, frequently unrelated to the context in which the General Aviation sector operates in Australia. Further, it supports desirable industry employment and investment outcomes, and increases the standing, value and effectiveness of the regulator.

This paper therefore highlights the safety and economic benefits to industry and government that would flow from linking objective assessments of risk to the Classification of Operations in regulatory administration, enforcement and future rule-making.

2. Aviation Sector Risk Profiles and Classification of Operations

The adoption of Sector Risk Profiles in conjunction with an appropriately structured Classification of Operations would:

a) Engage industry, in a co-regulatory setting, jointly addressing specific risks attached to the particular sector's operations, and allocating shared responsibilities more effectively

b) Provide a framework for government to objectively classify aviation operations with respect to risk and allocate resources accordingly

c) Clearly and openly communicate risk, alongside the benefits each sector brings to the community and the national interest

d) Support the objective measurement of safety outcomes, which can be applied to data-driven, best practice, continuous improvement activities, rather than one-off, reactive initiatives

e) Focus regulatory measures and services on areas of greatest risk, whilst transparently clarifying the role of industry sectors in assuring and enhancing their own safety outcomes

f) Facilitate opportunities for CASA to mature as a regulator, leveraging learnings from rigorous risk assessment processes and performance feedback; to more effectively serve its public and industry purposes

g) Drive change and organisational improvement at CASA for greater transparency in decision making and consistency between its divisions and staff

h) Support the development of more effective, co-branded and co-delivered safety promotion and education materials with industry involvement, able to leverage industry training and educational resources

i) Support the development of industry capacity for national benefit, particularly in sectors which serve community safety.

To date, CASA has published Sector Risk Profiles for aerial mustering; aerial application; aerodromes; and small aeroplane transport operations. Whilst well-intentioned, these documents are descriptive and analytical, and are not linked to, or support, specific regulatory measures that take corresponding risk assessment conclusions into account.

Whilst there are a number of common threads in the regulation of different sectors within the aviation industry, there are also many important differences. It is widely agreed that high-capacity air transport passenger flights should be regulated to attain the lowest levels of risk, but beyond that, opinions differ markedly between and among industry sectors as to appropriate specific regulatory principles and how they should apply. It is therefore appropriate for the GAAN to offer leadership in interpreting and applying the principles of risk management and Classification of Operations to regulatory activities.

For measures to be appropriate, the operations to which they apply need to be properly classified. The GAAN considers that the following structure balances simplicity, whilst providing sufficient granularity, to be effective:

Sector Classification	Defining Characteristics	Regulatory Features and Principles
Airline Operations	All high and medium capacity charter services and large aircraft freight. Airlines and fare paying passengers.	• A passenger travelling on scheduled airline services who has no control of the risks (other than choosing not to fly) should expect the safest operations • Full SMS, FRMS, DAMP etc • AOC and sector-specific regulation • Regular systems reporting • Surveillance, and audit of outcomes/ systems – three year maximum between major audits – can be ongoing and systems based depending on company size and complexity.
Low Capacity Passenger[1] Operations	Low number of passengers (up to 19 passengers) in smaller aircraft, including some business aviation, charter, tourism, aerial taxi, aeromedical and scenic operations.	• Safer operations – within the context of the lower number of passengers aboard • Consistent with the graduated risk model of FAA Part 135 requirements • If the aircraft is not large or complex it should not be subjected to airworthiness controls for scheduled services (CASR Parts 42 and 145) • AOC and sector-specific regulation • SMS, FRMS, DAMP scaled to the scope and complexity of the operations • Regular but simplified reporting on systems • Surveillance / audit of outcomes / systems.
Aerial Work Operations	Mission-specific flights involving only informed and mission-relevant crew and participants. Includes aerial survey, flight training, agricultural, aerial application, firefighting, search and rescue.	• A participant should expect safe operations - within the context of known, controlled and accepted risks for the mission type • Trained crews, participants and risk-informed other persons • Operating Certificate (not same as AOC) and Operations Manual, key personnel, simplified fatigue management, micro DAMP • Sector oversight informed by industry agreed risk identification and controls • Outcome-based regulations placing responsibility to the operator, supported by AMOCs, CAAPs and advisory material • Cross recognition of risk controls already attained through pilot training and licensing • Surveillance / audit of outcomes/systems – five year period for audits, unless company participating in a CASA-approved industry Safety Management Program, or audited by an independent auditor without major findings for action and results shared with CASA in lieu of audit • Support of existing specialist associations (e.g. AAAA, AHIA, etc) and recognition of sector-

[1] This document has been updated, in accordance with the position agreed at the GAAN meeting of 18 November 2020, to clarify the classifications of Airline Operations and Low Capacity Passenger Operations. Beyond that and reformatting as an Appendix, no other changes have been made.

Sector Classification	Defining Characteristics	Regulatory Features and Principles
		specific programs to deliver safety outcome superior to CASA minimum safety outcomes.
Unmanned Aircraft Systems (UAS)	Flights by aircraft systems on which there is no pilot or passengers on board.[2] These include remotely piloted and autonomous aircraft.	• Safe operations to relevant standards • Adaptable to technological innovation • Protections for third parties and people on the ground • Education and safety promotion • Support of existing specialist associations relevant to the operation type (e.g. AAUS).
Private Operations	Flights undertaken purely for the transport or incidental purpose of an aircraft owner, analogous to the use of a private vehicle on the road. Personal transport of the aircraft owner, recreational and sport activities.	• Safe operations • Minimum standards and rules of the air • Protections for third parties and people on the ground • Education and safety promotion • Support of existing specialist associations relevant to the operation (e.g. RAAus, SAAA, GFA, APF etc) and Part 149 for self-administering bodies.

Table 1: Classification of Operations

[2] The carriage of passengers by UAS should be classified within the same framework that applies to conventionally piloted equivalent aircraft operations.

3. Leveraging Sector Risk Profiles for Better Safety and Efficiency

It can be seen from Table 1 that aircraft operations can be readily classified. The Sector Risk Profiles already prepared serve to inform the industry's understanding of risk, and as templates for further work. What is missing, however, is any framework for specific actions that may be taken in response to the Sector Risk Profile assessments. The following structure has therefore been proposed to develop strategies and actions that improve the effectiveness of the aviation regulator.

Consideration	Related Activities	Application of Classification of Operations and Sector Risk Profiles to these Activities	Practical Examples and Opportunities

Regulatory Content	• New rule making in response to technology, demand, economic or political imperatives
	• Maintenance of existing regulations for currency and relevance
	• Retirement of deprecated legislation.
		• Determination of regulatory requirements from risk assessment
		• Genuine consultation and engagement with stakeholder representatives
		• Joint risk prioritisation and treatment plans reflected in regulatory drafts
		• Structuring regulations to core basic standards with corresponding tiered sector overlays
		• Projections of future changes in sector risk
		• Standards commensurate with sector risks for:
		  ○ Flight operations
		  ○ Airworthiness
		  ○ Medical
		  ○ Aerodromes
		  ○ Required operator facilities and capabilities.
			• Clarify CASA and Airservices Australia's responsibilities in the Act, and eliminate unreasonable and impractical CASA obligations (for example, for sanitation at aerodromes, section 98(3)(f) of the Act)
			• Publish clear statements for the primacy of safety, to support operational efficiency and to take costs into account consistent with section 9A(3)(a) of the Act
			• Align CASA's practices with the requirements of section 9A(3)(b) of the Act
			• No new regulations without formal and public risk assessment
			• Discontinue justification for new regulatory provisions based on historical requirements
			• Industry involvement and engagement in all new regulations
			• Likely risk changes (mostly due to technology) to be anticipated in new rule making
			• Simple, basic rules for private operations, extended upwards through higher tiers, rather

Consideration	Related Activities	Application of Classification of Operations and Sector Risk Profiles to these Activities	Practical Examples and Opportunities
			than forcing default rules suited to higher tiers on private and aerial work operations • Regulatory consistency between authorisations issued by CASA and those of self-administering organisations • Less red tape • Foster increases in pilot numbers, new aircraft, fleet age reduction and business and economic growth.
Surveillance and Enforcement	• Operator audits • System report reviews • Ramp checks • Incident and accident investigations • Enforceable undertakings • Penalty schemes and licensing sanctions • Prosecutions.	• Reporting and audit requirements; and review and audit frequencies tailored to match sector risk operational classification • Surveillance and enforcement resources directed to highest tier risks, whilst assuring basic standards for public and systemic safety • Penalty schemes, sanctions and prosecutions commensurate with target types, sector and risk.	• Align CASA's practices with the requirements of section 9A(3)(b) of the Act • Discontinue unproductive routine low-risk audit work (e.g. CAR 30 maintenance facility audits) and adopt management by exception • Educate private and aerial work sectors as to the specific responsibilities of private owners and operators • Reallocate resources to improve skills and experience of inspectors assigned to air transport operations.
Administration	• Aircraft registration and airworthiness processes • Flight crew licensing processes • Training processes • Aviation medicine processes and standards.	• Processes commensurate with sector risks for: ○ Record keeping ○ Information collection and handling ○ Licence and certificate issue and renewal ○ Authorisation renewal in low risk sectors based on industry experience	• Align CASA's practices with the requirements of section 9A(3)(b) of the Act • Discontinue unproductive practices, such as advance notice requirements for private pilot instrument proficiency checks, CASA-involvement in routine private pilot medical examinations, forms and documents that lack heads of power, repetitive forms providing information already known to CASA • Renew instructors' ratings based on ongoing verifiable activity

Consideration	Related Activities	Application of Classification of Operations and Sector Risk Profiles to these Activities	Practical Examples and Opportunities
		○ Permissions and dispensations ○ Special approvals ○ Accreditation of industry training ○ Medical tests and examinations ○ Self-administering organisations ○ Advance notice requirements ○ Documentation and forms ○ Communications and information distribution. • Resource prioritisation and funding biased to higher tier classifications, above a minimum standard.	• Remove flight examiner requirements for recurrent checking of private and aerial work pilots • Eliminate maintenance facility authorisations for aerial work and private operations • Align processes and procedures with FAA for private operations • Eliminate paper licences unless required for international operations • Reduce forms and information collection and handling expense • Communicate electronically • Redirect cost savings to public safety and airline programs; or reduce fuel levy cost to industry.
Outcomes	• Aviation safety outcomes reported by sector risk and operational classification • Organisational and financial structures that support operational classifications and corresponding accountability for effectiveness; and public and industry value for safety expenditure.	• Adopt relevant Safety Performance Indicators for each General Aviation sector based on Sector Risk Profiles • Clear distinctions between higher and lower tier risks in reported outcomes • Public awareness and accountability to Parliament for Sector Risk Profiles and Classification of Operations policy and outcomes.	• Align CASA's practices with the requirements of section 9A(3)(b) of the Act • Report outcomes to the Minister, Parliament and the public by clear sector divisions • Educate the public about the differences between sectors and operational classifications • Support accountability and responsibility of individuals and companies involved in private operations for their own actions.

Table 2: Specific Regulatory Measures, based on Sector Risk Profiles in conjunction with Classification of Operations

4. Implementation

As Sector Risk Profiles are prepared, it will be necessary to plan for the implementation of related initiatives, consistent with the Classification of Operations, that give effect to what will be learned.

In mission-specific sectors, such as flight training, aerial application or scenic flights, an industry association should be identified to champion the process and liaise closely with CASA. In addition, where the plan involves rule changes or significant departures from existing practices, public consultation would also be required.

The corresponding Implementation Plan for each Sector Risk Profile would include, at minimum:

- Identified risks and treatments
- Task steps to give effect to the treatments
- Who will perform the listed tasks, and when they will be completed.

The implementation should then be monitored, and reviewed post-implementation, against this baseline.

It is not sufficient or acceptable to produce Sector Risk Profiles without a corresponding Implementation Plan that includes existing regulatory requirements and their application within a risk-based Classification of Operations.

5. Reporting and Verification of Outcomes

A key step in implementing Sector Risk Profiles, within an effective Classification of Operations, is the establishment of relevant Safety Performance Indicators, which provide a snapshot of sector-specific safety performance.

Safety Performance Indicators may lead or lag, but to be beneficial, must be relevant to the particular Sector Risk Profile. Beyond ongoing monitoring of safety performance, Safety Performance Indicators, when defined in sufficient detail, may be used to obtain insight about sector safety strengths and deficiencies

Objective, transparent and published Safety Performance Indicators should be actively employed to drive continuous improvement at CASA.

Safety Performance Indicators should, at minimum, identify:

- Key responsibility holders, which may be more than one party
- Targets, or benchmarks to identify attainment of desired safety outcomes.

Safety Performance Indicators should be published and readily accessible to industry and regulatory personnel, Government and the Parliament.

6. Conclusion

This paper has canvassed significant opportunities for improving the regulatory philosophy applied in Australian aviation.

For too long, prescriptive regulations based on historic, military or airline practices have been applied by default to General Aviation industry sectors, where the risk to the public is low and participants are, or should have been, informed of the relative risks attached to activities in these industry sectors. Regrettably, the phenomenon has arisen in new legislation as regulations and standards, where the content has originated from within CASA without appropriate contextual risk-based justification.

The problem is not just the regulatory content itself, but the manner in which the regulations are enforced and administered. Both aspects must be tackled if current and ongoing expensive, cumbersome and ineffective regulatory practices are to be avoided.

Other industries have faced similar decision points in recent years and reached similar conclusions. The Australian Prudential Regulation Authority has moved to risk-based regulation of supervised institutions; large and small maritime vessels are regulated totally separately; and road transport clearly distinguishes between heavy vehicles operated for commercial purposes and light vehicles used for private and incidental trade.

The cost of not acting will bring increased regulatory burdens and cost to the General Aviation sector, along with administrative complexity and expense for government that is not necessary. Inappropriate regulation and its administration diverts scarce financial resources from areas of higher risk, imposing operational costs on users of aviation services that weakens the national economy; it constrains the ability of citizens to participate in the industry, limiting growth and discouraging investment, which increases the average age of the Australian General Aviation fleet, itself a deterrent to safety improvement. The GAAN members therefore regard this matter as one of the highest priorities for action by CASA and Government more generally.

The only valid method for determining the necessity of aviation regulation and practices is formal, objective risk assessment. Only once risk is understood in a particular aviation sector can improvements be formulated, which may require regulation, better administration, or safety promotion and education.

The GAAN therefore recommends:

1. That all remaining sector-specific risk reviews be scheduled, undertaken and completed in collaboration with industry representatives in an open, genuinely transparent manner, with published agreed reports; and
2. That the Sector Risk Profiles be used in conjunction with, and as a basis for further regulatory development, consistent with a new, clearly-defined Classification of Operations, fit for purpose in Australia's operational context, and not bound to historical imperatives, which although appropriate for the large end of the industry, constrain General Aviation and waste regulatory resources.

This paper has been endorsed by the General Aviation Advisory Network. Questions may be directed to or through the Chair.

Business Aviation Declaration
on Net-Zero Carbon Emissions by 2050

Business aviation, historically an early adopter of new technologies, has a solid track record of ever-improving efficiency. The business aviation community wants to build on this performance as the world emerges from the pandemic and as decarbonization and climate action become increasingly important.

The Paris Agreement in 2015 and the more recent reports of the Intergovernmental Panel on Climate Change (IPCC) strongly suggest the need for more ambitious action to ensure that the average temperature rise above pre-industrial levels is now kept below 1.5°C. The IPCC's most recent report in August 2021 underscored the urgency to make 1.5°C a global goal.

Desiring to contribute further to climate action efforts, the global business aviation community commits to meeting net-zero carbon emissions by 2050 through a combination of measures and in close partnership with stakeholders, particularly governments and key sectors of the air transport industry.

Business Aviation Has a Solid Track Record of Environmental Improvement

The global business aviation community has long been mindful of the need to mitigate its impacts on the environment. The sector is known for its innovative, cutting-edge technologies that allow aircraft to fly more efficiently and cleanly. Business aircraft manufacturers first incorporated winglets, glass cockpits, lighter materials, enhanced propulsion systems, and more aerodynamic structures into their products, all contributing to greater fuel efficiency and reduced carbon emissions.

As scientific understanding of climate change evolved, the global business aviation community developed a multigoal plan to mitigate and reduce its carbon emissions. In 2009, we issued the *Business Aviation Commitment on Climate Change* (BACCC), which outlined three goals:

- Short term – Two percent annual fuel efficiency improvement 2010 to 2020;
- Medium term – Carbon-neutral growth from 2020; and
- Long term – Halving emissions by 2050 relative to 2005 levels.

Business aviation rose to meet the challenges, acting on these already ambitious goals:

- Achieving the short-term, fuel-efficiency improvement goal;
- Establishing the Business Aviation Sustainable Aviation Fuel (SAF) Coalition to advance the production, supply, awareness, and use of SAF across the sector's value chain; and
- Making available to the business aviation sector a voluntary carbon-offsetting platform to support decarbonization efforts in the near term while benefits from other measures arrive later.

Greater Ambition: How Will We Get to Net-Zero Carbon Emissions by 2050?

This aspirational goal will be even more ambitious and challenging to meet than the long-term goal first adopted by the industry in 2009. It will require the use of multiple keys effectively to unlock the pathway:

22 September 2021

- **Modern Technology** – New, innovative aircraft models will have to be even more efficient, and use of sustainable propulsion systems, such as electric, hydrogen and hybrid, could play an important role in the component of business aviation that uses smaller aircraft over shorter distances.
- **Sustainable Aviation Fuels (SAF)** – SAF will be a critical key to unlock our way to net-zero carbon emissions by 2050. It is a demonstrated technology in use today. The central challenges are scaling up production and making it available at reasonable prices. A transparent, accountable book-and-claim system, recognized globally, could significantly help the industry encourage greater use and production.
- **Operational Improvements & Modernized Infrastructure** – Operators are always looking to reduce weight and fly more directly, thereby using less fuel and emitting less carbon. More modern air traffic control and airport infrastructures will contribute to more efficient operations and use of sustainable sources of power on the ground.
- **Market-based Measures (MBMs)** – While we expect the benefits of the above measures to have large impacts on reducing emissions directly from the sector over the longer term, MBMs, such as voluntary offsets, can provide options for supporting action to mitigate the industry's emissions in the nearer term, albeit outside the sector.

These are the same four keys the industry identified in 2009. Committing to net-zero carbon emissions by 2050 means that the use of each of these becomes more important. Analyses indicate, however, that meeting this new goal will require a more aggressive shift in aircraft innovation, an even larger-scale increase in SAF production, and acknowledgement that MBMs, e.g., offsets, will likely be necessary to meet our goal in 2050.

Stakeholders Play Significant Roles in Unlocking the Path to Net-Zero Emissions by 2050

Striving for and meeting this goal will require the full participation and committed support of stakeholders, each critical to turning the keys to unlock the pathway:

- **Governments** to implement policies to (a) incentivize production, sustainable distribution, and consumption of SAF, (b) encourage R&D in sustainable feedstocks for and production of SAF; and (c) foster modernization and improvement of industry's ability to leverage the latest in technology;
- **Fuel producers and suppliers** to increase the network for production and wide availability of SAF;
- **Manufacturers** to design and manufacture even more efficient aircraft and engines and aircraft powered by sustainable energy sources such as electricity or hydrogen;
- **Air navigation service providers** to rapidly modernize the global ATC system and eliminate inefficiencies; and
- **Airports and ground-handling service providers** to provide lower carbon-emitting GSE and greater uptake and offerings of SAF.

Civil aviation is a critical activity for the global economy. It represents about two percent of carbon emissions, and the business aviation sector represents about two percent of that total. Nonetheless, the business aviation community is committed to achieving net-zero carbon emissions, as outlined above, while continuing their important economic, social, and humanitarian missions. The business aviation community calls on governments and other stakeholders to join us in embarking in partnership on this more challenging journey to achieve net-zero carbon emissions by 2050.

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CURFEW NOISE MODELLING

NOISE CONTOURS

SCENARIOS

The following noise model and metrics were used:

- SEL (Sound Exposure Level)
- 75, 85 and 95 dBA
- The software used is AEDT v3c (approved by Airservices Australia)

The representative aircraft types modelled are shown on the next page.

REPRESENTATIVE AIRCRAFT TYPES

BAE146

- Most common aircraft type permitted during curfew: ~20x more movements than all business jets in 2019
- ~42,000kg MTOW
- Chapter 3 or 4 certified
- Modelled in AEDT as a BAE146
- Assumed a typical mission of MEL/BNE – Stage Length 1

Falcon 2000

- Representative Chapter 3 Jet under 34,000kg
- ~17,000kg MTOW
- Chapter 3 or 4 certified
- Modelled in AEDT as a CNA750 (Citation X)
- Assumed a typical mission of MEL/BNE – Stage Length 1 (software limitation)

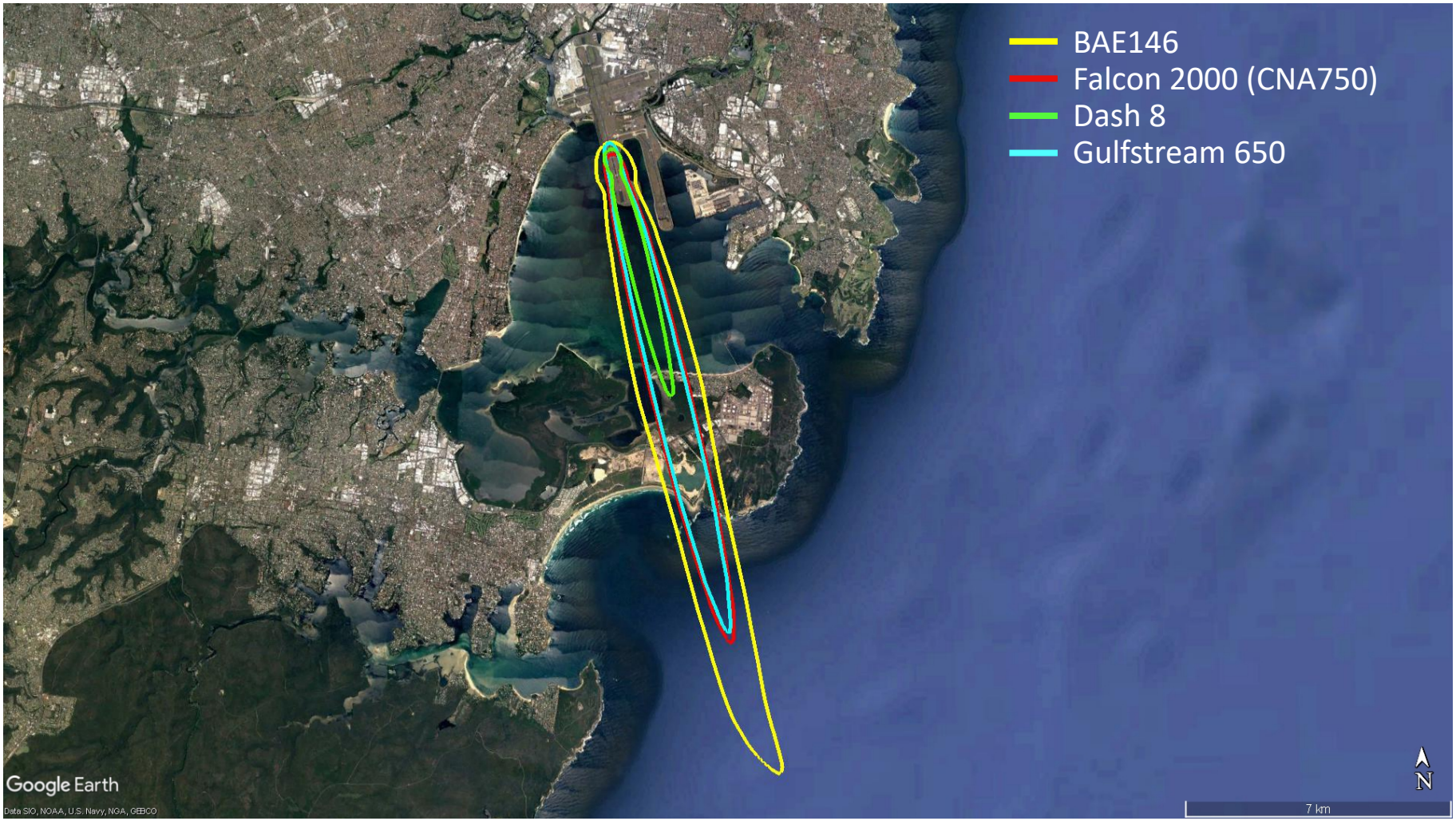
Dash 8-Q300

- Representative Turboprop aircraft
- ~20,000kg MTOW
- Chapter 3 or 4 certified
- Modelled in AEDT as a DHC830
- Assumed a typical mission of CBR – Stage Length 1

Gulfstream 650

- Representative Chapter 4 Jet over 34,000kg
- ~47,000kg MTOW
- Chapter 4 certified
- Modelled in AEDT as a G650ER
- Assumed a typical mission of HNL/HKG – Stage Length 6

SEL CONTOURS – ARRIVALS 75 DB(A)



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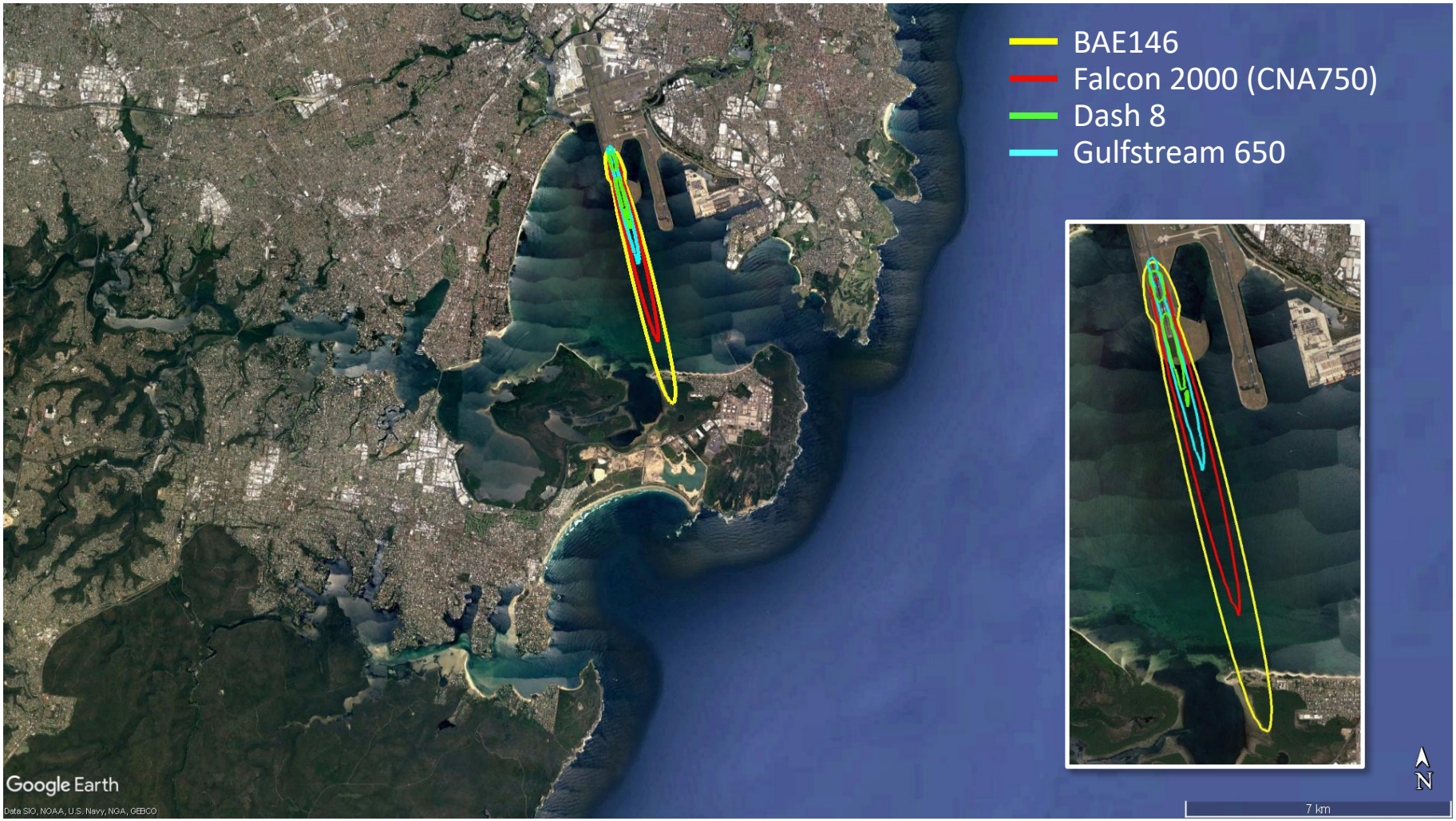

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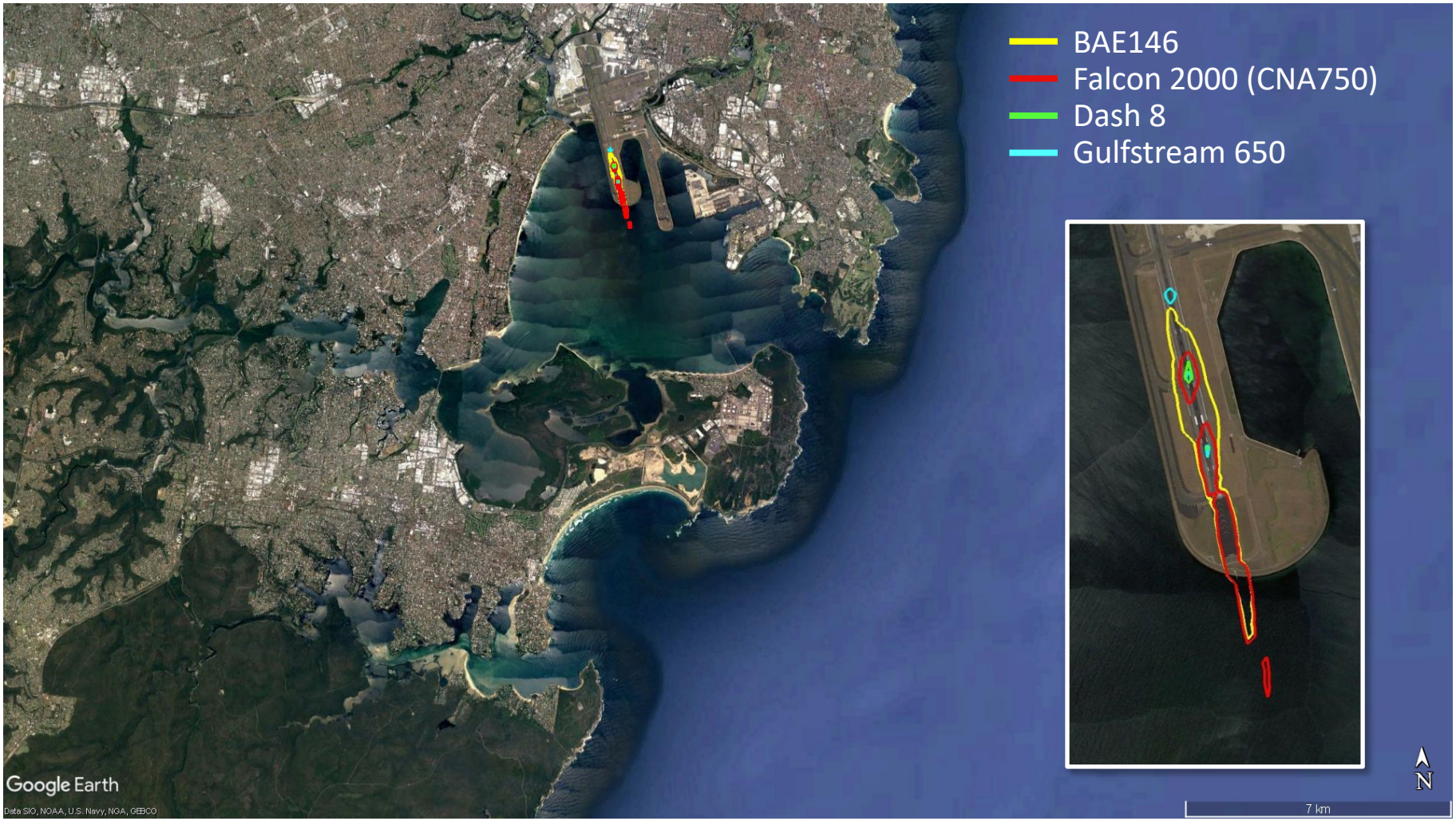

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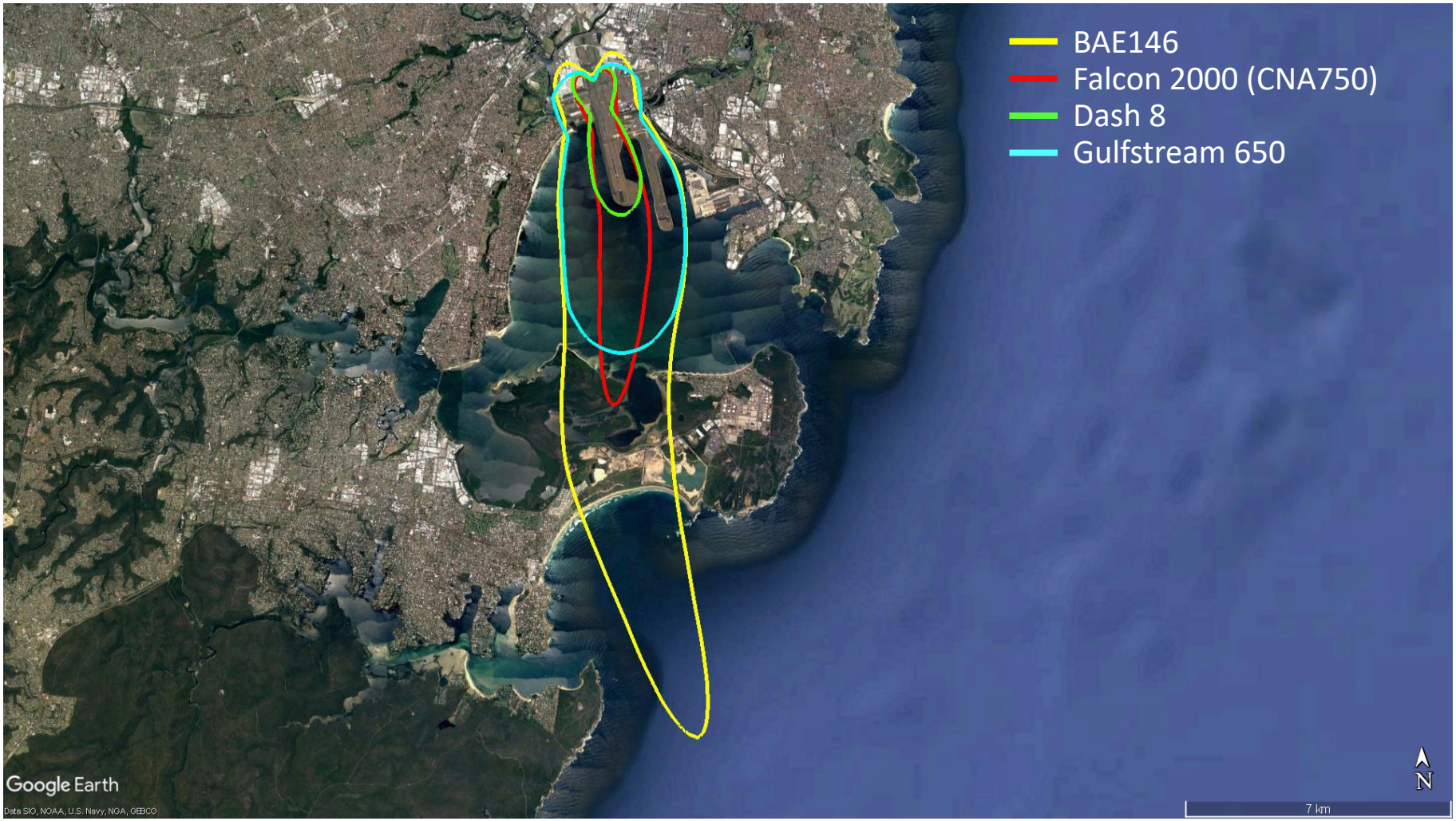

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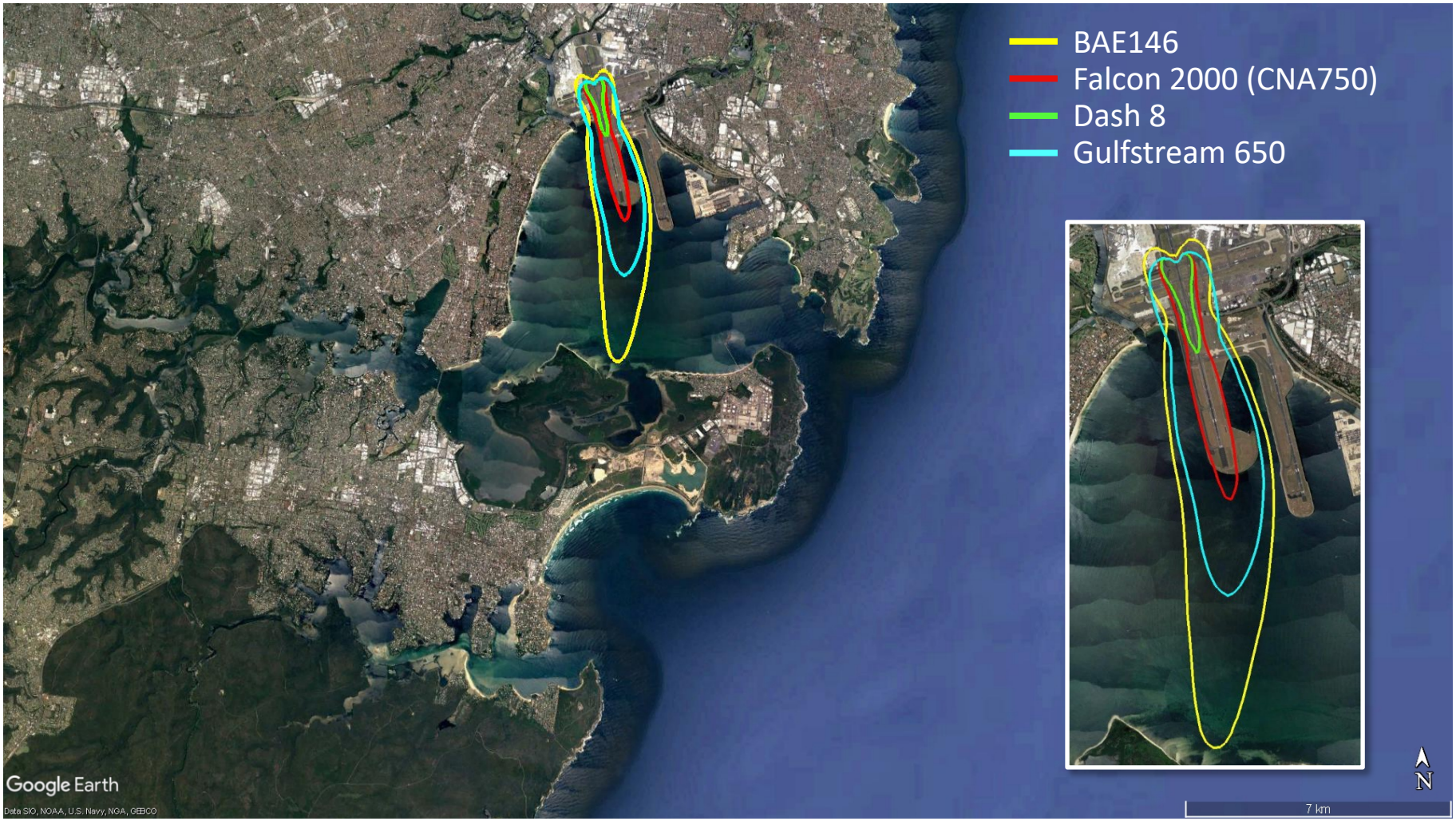

SEL CONTOURS – DEPARTURES 95 DB(A)

CONCLUSIONS

- Existing curfew restrictions are based on aircraft weight, noise certification level and noise certification chapter.

- Newer jet engine technology includes significant reductions in noise levels and more stringent noise certification levels.

- The Gulfstream 650ER (or equivalent aircraft types) produce single event noise contours either smaller than, or similar to, other aircraft types already permitted to fly during the curfew.

- Proposed changes would maintain 90-95 rule, increase MTOW above 34 tonnes and enhance noise certification requirements to the equivalent of chapter 4.

TAAAF

The Australian Aviation Associations' Forum




Aviation Policy Paper

APRIL 2022



The Australian Aviation Associations' Forum is an alliance of the majority of Australia's largest aviation associations giving industry a united voice to government on key aviation issues and policy.

The Australian Aviation Associations' Forum (TAAAF) members represent the majority of Australia's largest aviation industry associations: from commercial passenger-carrying operations, to business charter, aerial work using fixed-wing, rotary and uncrewed aircraft (drones), and sport and recreational aviation. Aviation at all levels has been hit especially hard by the pandemic, with both international and domestic traffic down in 2020, by up to 80 per cent and 70 per cent respectively. Australian aviation was one of the hardest hit. Continuing complications in 2021—unpredictable state border closures; inconsistent state and federal rulings on aviation, health and security issues; COVID-19's wider impact on the health and availability of the workforce, and on infrastructure and logistics, contributed to Australian aviation's operational challenges.

Australia was one of the global pioneers of commercial aviation, and its aviation industry is a vital contributor to Australia's economic and social wellbeing: as a direct employer; a driver for tourism and nationwide supply-chain logistics; and as a key player in agriculture, mining, construction and emergency services. The Australian aviation industry is an economic engine, contributing billions of dollars to gross domestic product, and employing 65,000 people.

In the leadup to the Federal election, TAAAF would like to highlight policy areas requiring urgent government attention. Many of these issues have been the subject of considerable ongoing discussion, but TAAAF is calling for the incoming government to take timely action to address these concerns. This policy paper identifies some quick wins, as well as areas requiring more significant, long-term action.

The aviation policy environment and the regulator

The Civil Aviation Safety Authority (CASA) is in the throes of completing an overhaul of aviation regulations, moving from civil aviation regulations (CARs) to civil aviation safety regulations (CASRs). The new CASRs, unlike the more prescriptive CARs, are designed to be outcomes- or performance-based regulations. The philosophy underpinning the CASRs is that there is no one prescribed way to meet the requirements, and that organisations know the inherent risks in their operating environment better than the regulator. Aviation organisations can therefore adopt the most appropriate way to meet the requirements, as long as they can demonstrate their approach meets the desired safety outcomes—it is an acceptable means of compliance.

However, the effectiveness of performance-based regulation relies on the culture within industry, and perhaps more importantly, within the safety regulator; a culture requiring a greater level of maturity, accountability, transparency and flexibility. Therein lies the problem. TAAAF members' experiences of interactions with CASA do not show it to have these characteristics.

TAAAF members have found that CASA appears to be divesting itself of many activities, but not keeping up with funding of resources to handle the resulting administrative tasks. TAAAF association members, for example, report frequent and frustrating delays with administrative approvals. The loss of paperwork by CASA resulted in one organisation being unable to approve certificates of airworthiness for six weeks, because their instrument had lapsed, and another is still waiting after three months for approval for safety documents.

Communication is another major issue. Despite the setting up of a number of technical working groups and other consultative bodies, TAAAF members feel that lip service is being paid to industry consultation. The communication is one-way, with opinions/advice offered by industry often being duly ignored. There are also silos of information within CASA, as wider internal communication of the outcomes of these meetings does not seem to occur. This reinforces the divide between standards personnel and operations, with standards personnel often many years removed from current industry experience and operational realities. A significant number of operational personnel/inspectors seem to struggle with the new outcomes-based regulatory culture, still oversighting organisations through the lens of the old prescriptive mindset.

A comprehensive training program is urgently required, as well as employment of new staff with contemporary expertise. What is needed above all, is a proportionate approach to regulation and policy, where the policy solution and operational outcome is proportionate to the risk involved.

The CASA funding model also needs urgent reform, with a deteriorating situation made worse by the devastating impact of the pandemic on aviation activity/fuel use.

An independent review

TAAAF members are therefore calling for an independent review of the way CASA does business—its organisational culture. This review should be carried out by an independent firm and not, as has happened in the past, by political appointments too close to the regulator or to industry.

⚠ **The review should include, but not be limited to:**

- **Examination of whether regulations are fit-for-purpose**
- **Service delivery – licensing, certification etc.**
- **Communication, consultation, stakeholder engagement**
- **Staffing – organisational structure and training**
- **Accountability - KPIs**
- **Funding model**
- **CASA's relationships with other agencies, such as the Department and Airservices Australia**

Access to airspace and airports

Airspace

The rapid maturing of technologies such as uncrewed aircraft (drones) and electric aircraft, (now, conventional fixed-wing, and in the next five to 10 years, urban air mobility vehicles) combined with aviation traffic growth generally (seen until the pandemic struck in 2020) bring challenges in managing this increasingly congested airspace safely and fairly.

Australia has an enormous opportunity to foster an innovative and integrated aviation ecosystem though a flexible, safe and efficient integrated air traffic management framework. However, all sectors of the industry must be involved.

TAAAF is concerned that the proposed commoditisation of a national asset, airspace, is proceeding without adequate industry consultation.

Currently, there is no avenue for industry to have input into agency discussions about future use of airspace and air traffic management. When the landscape changes rapidly, TAAAF represents a range of industry membership: regional passenger-carrying aircraft, bizjets, helicopters, sport aviation, drones, which can provide informed, relevant and current advice to the agencies concerned as they formulate an integrated airspace management framework.

⚠ **TAAAF members would like to see a representative and inclusive framework for industry participation in future airspace traffic management design and integration.**

Aerodromes

There are anomalies for many TAAAF members in their access to aerodromes. TAAAF understands that government must balance the needs of the public, the benefits of aviation and the impacts of safety.

However, TAAAF members are concerned that many airports exhibit monopolistic behaviour, charging excessive fees and restricting access to certain aviation activities.

The helicopter industry is banned from Western Sydney, even lifesaving operations such as EMS (emergency medical services) helicopters.

Despite the likelihood of an expanding vertiport infrastructure to meet UAM requirements, Melbourne is decommissioning its last heliport.

Aviation businesses are finding it difficult to maintain tenure at airports such as Moorabbin in Melbourne and Bankstown in Sydney. For TAAAF members, such as flying training schools, this is a critical issue for their ongoing viability.

Glaring anomalies in airport charges affect TAAAF members. RA-Aus, the association representing the fastest growing sector in Australian aviation, sport aviation, reports that their members face a $545 charge for day parking at Moorabbin Airport, compared to $11 a day for CASA-registered VH-aircraft.

⚠ **TAAAF members would like to see the Airports Act reflect better security for aviation businesses.**

Skills shortages

Of the many challenges facing aviation today, the shortage of aviation professionals, especially maintenance engineers, is the one issue which has been discussed at length, with no resulting action to address the problem. Some regionally-based TAAAF members, for example, have been advertising unsuccessfully for maintenance engineers for over a year.

As the aviation industry ramps up operations following the COVID downturn, there will be an even greater shortage of aviation professionals, many of whom took redundancies during the pandemic shutdowns, and are unlikely to return.

The National Aviation Safety Plan, released in October 2021 by nine contributing agencies, (but with little or no industry input), continued this theme, saying the following: 'Training and education is key to maintaining a skilled workforce and enhancing aviation safety performance.' However, it offered no practical strategies for developing, or even 'maintaining a skilled workforce'.

The current shortage of aviation engineers, especially in regional Australia, is only going to become worse as the ageing population of engineers retires. The present training regime is too inflexible, not fit-for-purpose, and the Part 66 requirements complex and unwieldy. According to one TAAAF member, 'The system for qualifying to be an aircraft engineer needs to be improved and take a tiered approach, where engineers can more simply qualify for a licence to certify routine tasks. They can then choose whether to gain further qualifications to certify more complex tasks.

The current system is an 'all or nothing' approach, lacking the required flexibility to qualify sufficient engineers for the industry.

- **TAAAF members would like to see a proportionate and tailored approach to engineering training, creating more flexible career pathways. This would allow for a tiered approach to qualification, giving apprentices a simpler pathway into the industry.**
- **In the US, for example, there are two levels, making it more achievable to fill positions for engineers to certify for more routine tasks.**
- **Engineering qualifications in Australia should be more aligned with the Federal Aviation Authority system.**
- **In the short term, a possible solution is to attract skilled overseas workers. However, the system for processing visas would need to be streamlined, as processing currently takes about a year.**
- **Aircraft engineers must be added to the 44 occupations on the Priority Skills Migration List to help streamline this process.**

Australian design and manufacturing

Australia has a proud history of aviation innovation and manufacturing.

David Warren's black box flight recorder, which transformed aviation safety globally, is perhaps the best-known of these Australian inventions. Aircraft designed, certified and manufactured in Australia have included the GAF Nomad N22/N24, GippsAero (Mahindra Aerospace) GA200 Agricultural aircraft and GA8 Airvan (utility aircraft); Jabiru LSA aircraft and engine variants; and Insitu/Textron's AAI Aerosonde.

According to a report released in mid-2019*, the Australian aircraft manufacturing and repair services industry contributed $2.9 billion to the Australian economy in 2016-17, contributing valuable export dollars and maintaining the nation's manufacturing capability in design, certification and manufacturing. The experience during the pandemic, with supply chain logistics threats and rising prices because of reliance on overseas products, highlights the imperative that Australia must retain and build its own aviation design, certification and manufacturing capabilities into the future.

Over the past forty years we have witnessed an attrition of Australian aviation manufacturing companies, enterprises that have been forced to move off-shore, or have been taken over by overseas companies, due, in the main, to the lack of a level playing field with overseas competitors.

Australia ranks in the top 10 among OECD countries for its quality of research. There are immense opportunities in the current technology landscape for Australia to leverage its well-deserved reputation: whether in design/certification and manufacturing of smaller aircraft, development of electric/hydrogen powerplants and variants, autonomous flight, or in other niche aviation segments including AI and augmented reality.

However, such Australian aviation manufacturing enterprises face numerous challenges, three of which were highlighted in the 2019 report*:

Access to a skilled labour force. A decline in the number of new trainees and an ageing workforce is limiting the number of skilled workers available to the industry.

The regulatory environment and lack of mutual recognition of certifications, which have a negative impact on the industry's global outreach.

Limited government support. Greater government support is needed to attract higher volumes of work off-shore and enhance visibility for businesses in the global export market, similar to the support observed in the US, New Zealand and Europe.

⚠ **TAAAF members would therefore like to see:**

- **Greater government support for Australian aviation design and manufacturing, both financial, and in the promotion of Australian aviation design and manufacturing, domestically and overseas.**
- **An easing of the regulatory burden, by streamlining approvals for a level playing field, and negotiating mutual recognition of certification.**

*KPMG report, commissioned by the Department of Industry:

Australia's Aerospace Industry Capability Research and Economic Modelling of the Aircraft Manufacturing and Repair Services Industry in Australia. 12 June 2019

TAAAF members

AAAA

Represents aerial application operators and pilots across agricultural and firefighting domains. Over 100 operator members, who control 90 per cent of Australia's aerial application aircraft.

CEO: Nat Nagy
aaaa.org.au

ASAC

15,000 active members, and over 200,000 participants in sport aviation activities such as ballooning, gliding, parachuting, hang gliding and paragliding.

President: Grahame Hill
asac.asn.au

Antique Aeroplanes

600 members. For the restoration, maintenance, operation and promotion of aircraft from the 1930s to the 1960s.

President: Matt Henderson
antique-aeroplane.com.au

AAUS

3000 members, largest advocacy group in Australia for uncrewed systems: air, land and sea.

CEO: Greg Tyrell
aaus.org.au

ABAA

Represents Australian- or NZ-based companies operating turbine-powered aircraft.

CEO: Jessica Graham
www.abaa.com.au

ACUO

Representing the commercial sector of uncrewed aviation in Australia

President: Tom Pils
acuo.org.au

AHIA

Broad membership base representing Australian helicopter operators. Australia has almost 4,500 licensed helicopter pilots and a fleet of over 2200 rotary aircraft.

CEO: Paul Tyrrell
austhia.com

Australian Warbirds Association

The administering body for all limited category (ex-military and historic) aircraft operations in Australia.

CEO: Brian Candler
australianwarbirds.com.au

RAAus

10,000 members. RAAus trains and certifies pilots, flying instructors and maintainers, registers a fleet of over 3,200 aircraft, oversees the operations of 174 flight training schools nationwide and supports almost 50 aero clubs.

CEO: Matthew Boutell
raa.asn.au

RAAA

Over 100 members representing all aspects of regional aviation: directly employing over 11,000 Australians, turning over more than $2 billion annually, carrying over 2 million passengers and 23 million kgs of freight.

CEO: Steve Campbell
raaa.com.au

Royal Federation of Aero Clubs

Representing aero clubs, flying schools and flying training in Australia since 1914

President: Alan Bligh OAM
rfaca.com.au

Women in Aviation – Australian Chapter

A national platform representing all facets of the aviation industry, and to engaging the next generation of aerospace leaders.

President: Jessica Hayler
waiaustralia.org












TAAAF

The Australian Aviation Associations' Forum

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