



**AUSTRALIAN DIVISION INC.**

26<sup>th</sup> June 2008

Department of Infrastructure, Transport,  
Regional Development & Local Government  
GPO Box 594  
CANBERRA ACT 2601

**Submission on National Aviation Policy Statement Issues Paper**

Dear Sir,

Attached is a submission in response to the National Aviation Policy Statement Issues Paper issued by the Minister in April 2008. This submission has been prepared by the Royal Aeronautical Society Australian Division.

The Royal Aeronautical Society was founded in 1866. It has a worldwide membership of 18,000 mainly current or past engineers, pilots, academics, managers, and executives from major aviation bodies. The Society is a non political, not for profit organisation, and works to further the future of aviation and aeronautics around the world.

The Australian Division has a similar demographic to the wider Society membership. The Division is fortunate to have amongst its members, a number of former CEOs and executives of Australian aviation organizations, and also a number of former senior Defence executive officers.

The National Aviation Policy Statement Issues Paper is a comprehensive and timely consideration of the challenges facing Australian civil aviation. The Society's Australian Division welcomes the opportunity to comment on those issues of importance to its members.

Thank you for the opportunity to submit comments.

Yours sincerely,

David Forsyth  
President, RAeS Australian Division  
**0417 267 891**

# **ROYAL AERONAUTICAL SOCIETY Australian Division**

## **National Aviation Policy Issues Paper Response June 2008**

This paper is submitted by the Royal Aeronautical Society Australian Division (RAeS). The Royal Aeronautical Society (RAeS) was founded in 1866. It has a worldwide membership of around 18,000 mainly current or past engineers, pilots, academics, managers, and executives from major aviation bodies. RAeS is a non political, not for profit organisation, and works to further the future of aviation and aeronautics around the world.

The National Aviation Policy Issues Paper is a comprehensive and timely consideration of the challenges facing Australian civil aviation. The Society welcomes the opportunity to comment on those issues of particular importance to its members.

This paper does not attempt to address all the topics contained in the Issues Paper, but restricts its content to those issues important to its membership, the organisation's objectives and which are encompassed within the expertise of its Australian members who made submissions.

The Section headings below correspond to the section numbers in the Government Issues Paper.

### **Section 1.1 - International Air Services Agreements**

International Aviation as we know it today has developed post WW11 on a system of mutually accepted and respected Global standards. Many have their origin in the 1944 "Convention on International Civil Aviation" (the Chicago convention) and the subsequent work of ICAO. The system of Bilateral "Air Service Agreements" (ASA's) is not part of that convention. These agreements have their origin in the desire by states to protect their National (often Government owned) carriers for strategic and perceived economic reasons. They are in every sense barriers to free trade and are anachronistic in today's global economy. Many governments, including Australia, recognise that the time is long gone when these barriers to global economic trade should be changed. Whilst to move to do so is gathering momentum it is still slow and fraught with complex detail.

The EU single aviation market, the Australia/NZ "Single Aviation Market" agreement, the ASEAN "Roadmap for the Integration of the Air Travel Sector" (RIATS), the Multilateral Agreement for the liberalisation of Air Services" (MALPAS) between Singapore Thailand and Brunei, the recently entered into force new agreement between the US and EU, and many others attest to the fact that the archaic Bilateral system is on the way out. Given the current fuel cost pressures facing the airlines there is reason to argue that the rate at which this is happening remains far too slow.

The Review the former Government undertook through 2005 and into the start of 2006 concluded that its policy of liberalising International Air Services is right for Australia. Government has indeed adopted a liberal policy in recent times – the open domestic market being unusual even in the most liberal of countries. There has recently been a degree of cynicism relating to the perceived protection of Qantas in respect to the Australia/USA route, however the Australian Government's position is understandable and the decision has created opportunity for a second Australian airline to commence on the route later this year.

Typically debate on this subject, particularly by the Tourism element, focuses on the capacity and frequency clauses in the agreements. However in the very difficult times now facing the industry it is the "ownership and control" clauses that may well play an even more important role in determining the continued existence of many airlines. Whilst Australia has adopted a liberal approach to route approvals, it is unique in legislating an obligation for a minimum of

51% of Qantas shares to be held by Australian interests. These constraints normally reside only in the Bilateral agreements between states. Qantas has consistently argued for this requirement to be relaxed or removed. In this it is echoing the move away from the traditional "ownership and control" clauses to the more modern ICAO concept of "Principal place of business" that is gaining momentum globally. Indeed the Australia/NZ agreement already accepts "principal place of business/incorporation" in Australia or New Zealand. The EU equally applies this formula within the States of the Union and this has been accepted by numerous non EU states by way of the so called "horizontal mandate" (the notion of "Common Air Carrier").

The current concept of ASA's was initially set, and has been driven over the past 60 years largely by the American and European states. Given Asia/Pacific will be the largest Aviation market in the world within two years, there is a need for the Region to take a stronger position on this subject. Australia as a respected leader in Aviation has a unique opportunity to take a leadership role in this process and in so doing reaffirm its political and international role as a driver of policy in the region.

At the recent IATA Annual General Meeting the airlines agreed to meet later this year in Istanbul to define the future needs of the industry "beyond the current bilateral system". Along with a number of other Governments, Australia has agreed to attend this meeting. It is important that it does so with a strong message of liberalisation both in terms of a more appropriate "ownership" policy and removal of the current constraints on routes and capacity

Given the importance of Qantas to Australia's economy and international image it is important to consider their views on this matter. On 10 April 2008 John Borghetti, Qantas Executive General Manager, in an address to the National Aviation Summit, in regard to liberalisation, said:

*"Australian Governments have been among the more liberal in the aviation world. Almost uniquely, anyone who meets the criteria can set up an airline in Australia's domestic market. As for international routes, unused entitlements available to foreign carriers for our top 20 markets are equivalent to almost 150 B747 flights per week. And this doesn't include the unlimited capacity available under arrangements with the key markets of New Zealand, the UK, the US and Singapore or to regional Australian gateways. There is another myth that Qantas does not support liberalisation. With two flying businesses and a growing freight enterprise, market access is critical to the Qantas future. Qantas recently supported the Government's efforts to conclude an open skies agreement with the United States. We'll be equally supportive of a comprehensive open skies agreement with Europe. Indeed, we have already highlighted to the Government a range of priority passenger and freight markets in Europe, Canada and South Africa, as well as markets in South America and Asia. But the fact is there is no concerted global push for liberalisation - each step has to come about through painstaking bilateral negotiations. Australia is at the-end-of-the-line and we cannot afford to squander our limited negotiating leverage. That's why Qantas supports a carefully paced and sequenced approach to liberalisation - an approach that takes account of distortions in the global environment and maximises Australia's position".*

Whilst some would dispute Mr. Borghetti's comments in respect to Qantas support for a more liberal policy, the thrust of his comments are important in the overall context of Australia's international aviation policy.

## **Section 1.3 - Regional and General Aviation**

### General

Regional and general aviation are two of the more fragile sectors of aviation in Australia. Regional air services rarely provide the profit or returns on assets which mainline trunk domestic routes afford. Generally speaking, regional routes can only be profitable with the use of turbo prop aircraft, and even then the air fares required to make the route economic are greater on a per kilometer basis than comparable domestic trunk routes. These busier trunk routes usually have far cheaper fares on a seat mile basis than most regional routes, even those to the larger regional cities like Tamworth or Dubbo.

As a solution, major regional centres like Dubbo, Longreach, or Mildura could be used as hub centres. Passengers could drive to the hubs up to 2 hours away or use shorter regional services in under 30 seat aircraft in order to then utilize the hub services into the major capital cities. Given the airport congestion at those capitals, limiting regional services to aircraft having more than 18 seats makes sense. Redeployment of those aircraft to provide services between smaller outlying towns and the regional hub centres would allow more efficient use of the capital city airports.

This is particularly the case in Sydney where, due to special congestion issues, it may be necessary to question the continued use of aircraft with capacity under 35 seats.

### Route Licensing

In the past, State Governments used a Route Licensing system to ensure continued services to remote regional communities. Queensland still does. Services to Longreach, Thursday Island and other remote Queensland towns operate well and ensure continuity of service.

The airline industry has a history of cut throat competition, which at its best, provides service frequency and cheaper fares for consumers, but at its worst can result in cessation of services or bankruptcy of airlines. A Route Licence scheme, while having its drawbacks, can ensure continuity of service and a sustainable economic result for a regional operator.

Government has a role to play in ensuring such a scheme operates and continues to provide air services for the smaller regional communities.

### Regional Security

The imposition of security measures adopted for capital cities at regional airports has added a significant financial burden to already marginal regional routes. There are numerous reports of regional airports having fences and security gates installed 100 metres either side of the terminal building, but beyond that anybody can walk around and access airside of the airfield. This has added cost to regional communities.

If a hub system was introduced as described above for major regional centres to act as hubs for flights to the capital cities, then the security need only be applied at the regional hubs. The remaining regional airports, which would feed into the regional hubs could operate as they would normally without the imposition of the additional security.

### General Aviation

General aviation covers three types of activity.

- The first is the small charter and service category which includes tour operators, charter services, RFDS, air ambulance etc.
- The second activity includes private business, recreational, and pilot instruction flying using VH registered aircraft under the auspices of CASA.
- The third activity is the Recreational Aircraft sector (RAA), covering small aircraft previously known as ultra lights. This sector is booming, some say because it operates under a self regulated environment, instead of under CASA.

The first category requires Government to improve and maintain the levels of safety and oversight in a similar manner to regional airline operators. This is because the paying public are involved in these flights and thus proper regulation and Government oversight is required. These aircraft also operate in airspace used regional RPT aircraft and so need to be included in that system.

The second category is declining rapidly, burdened by excessive cost impositions from regulation of safety and security, and aircraft replacement, maintenance and operational costs. Older aircraft in this category are much less fuel efficient than the newer RAA aircraft which also adds to the burden. They currently operate from the larger airports, but also from some of the remote areas. Wealthier individuals could continue to operate in this sector, but it is probably unsustainable for other recreational pilots.

The third category is booming, raising the question as to whether it is easier to abandon the second and merge it into the third category. This could be done by Government providing incentives to owners and operators to introduce new aircraft into the third category and allow the older aircraft to remain in the unsustainable second category and eventually disappear. Some wealthier individuals who wish to continue accessing larger airports might remain. This RAA category usually operates outside the airspace used by RPT operators.

The third sector needs to be encouraged but it is probably not sustainable for it to survive at larger airports owned by large investors like banks who will continue to increase fees to ensure their financial returns. Many of the RAA clubs operate at private airfields in order to avoid the cost impositions of security regulations, airport ownership charges etc. Survival of this sector requires Government to ensure that the airfields this sector uses remain either in private or Club hands, or if in Government (say local Council) hands, that the charges remain reasonable. These airfields need to remain free of the security and regulatory burdens which are damaging the second sector.

### Ageing Aircraft

It should be emphasised that with proper maintenance by experienced mechanics there should not be a safety issue with the use of older aircraft.

There are several factors that could lead to the phasing out of ageing aircraft without Government intervention, namely the increase in fuel price, the cost of maintenance and the lack of experienced mechanics. The relentless increase in fuel prices, now likely to continue, will possibly cause this sector of the industry to follow the trend of motor vehicles resulting in a change from larger, high fuel consumption types to smaller more efficient aircraft, or possibly re-engining of older aircraft.

## **Section 1.4 - Addressing skills needs in the aviation industry**

### Skills need

The Aviation industry is highly cyclical, and the industry is often dramatically subject to the effects of external shocks. These cycles tend to be deep, painful to the airlines, their shareholders and employees, and have significant impact on the economies of the countries where they are domiciled. It would be foolish to presume this will change. The difficulty this presents in terms of skills needs, is that when times are tough, one of the first cost elements that an airline will cut is training, understandable perhaps when there is a real possibility of the company incurring substantial losses or even failing. It does however set the scene for substantial shortages of skills when the cycle again turns to growth. Australia has seen this cycle many times. The Annual General Meeting of the Regional Airlines Association in 2000 lamented at length on the shortage of pilots and engineers and the difficulties faced as a result of poaching of staff. This has been mirrored over the past 12 months – 8 years later!

The majority of these skilled employees will tend to “trade up” to larger and perceived more secure companies except where prevented by local loyalty or personal circumstances. Thus

some companies will feel the pain more than others. Even as recently as November last year Tony Tyler CEO of Cathay stated that they had no difficulty in securing the skills they need as they were an “Employer of choice” for many pilots and engineers. Conversely REX in Australia has been forced at times to cancel flights due to a shortage of pilots. This in no way reflects on that company but rather on the realities of this industry. Clearly there is an urgent need to flatten out the cycles and to ensure, given the long lead time in training Aviation skills, that opportunity is taken in the downtimes to prepare for the growth that will inevitably follow.

Whilst companies must bear part of this responsibility, the reality is that it will fall to Government, both State and Federal to encourage and support the development of these skills over the long term. Training locally may however provide a source of skilled personnel for the industry in other countries which are prepared to pay higher remuneration for the skill. In times of severe mechanic and pilot shortages some airlines and organisations are prepared to pay in order to poach the skills from Australia, the UK and other countries. The Government needs to have a strategy to prevent/minimise the export of the skills base if it is paying to provide it.

A great deal of good work has already been done and there is value in considering the Queensland Government’s initiatives.

A number of possibilities may be considered:

- The Skills Formation Strategy established by the Queensland Government is designed to encourage business, organisations, regulatory bodies, government education providers and registered training providers to partner on long term solutions to workforce planning issues; for example utilisation of staff, job redesign, new training approaches, better career planning and integrated training pathways. This is a policy that would provide value throughout Australia.
- Encourage States to establish industry specialist secondary schools along similar lines to Aviation High, and establish “gateway” schools across the States that are linked to industry players for specialist assistance, work experience and access for school-based traineeships/apprenticeships.
- Strategies to attract, retain and plan for industry’s skills needs need to include all industry stakeholders to:
  - Develop industry recognised career paths for all industry sectors
  - Provide suitable training for schools career advisors, regional industry careers advisors (RICAs)
  - Develop easily interpreted and navigated aviation career websites
- GA operators would benefit in extended business and management training as most are past technicians/operators who, in the main, have had no grooming in management skills. Indeed throughout the industry there is a tendency to promote those in the “ranks” to higher positions with no management training or no succession planning conducted.
- Establish funding assistance for trainees, particularly pilots and maintenance apprentices (under the “institutional” training model), because of:
  - The high cost of training for pilots
  - The need to be self sufficient for apprentices who attend the training school full time for nominally 12 months before becoming apprentices.This assistance could be in the form of a loan (with interest)/HECS fee arrangement. In doing so, continue the “Fee–Help” for student pilots who are attending the Bachelor of Aviation program. This program should be extended to those training schools that are not associated with university programs and meet specific criteria, such as those which:
  - Are Regional Training Organisations
  - Conduct airline training (for pilots)

- Participate in a national flying training standardization scheme
- Encourage suitable flying training schools/organisations to:
  - Focus on providing airline training, deleting the traditional approach to pilot training via the PPL,CPL route (Note: there is a need to ensure regional - eg Macair, Skytrans, Hinterland, Regional Pacific, Rex, etc – are catered for in this model as some flying schools appear to be moving toward mainline pilot training only, including 737 simulator time)
  - Establish a national “Central Flying School” for instructor training
  - Increase their standards and become standardized by
    - Becoming RTOs
    - Partnering with airlines
    - Networking to work collectively on standards
    - Co-operating with CASA
- A national “Central Flying School” should be investigated, using similar lines as is in the ADF – maybe even combining the two – and operated on commercial lines by either:
  - Industry consortium (between airlines and simulator companies)
  - A Government department (with responsibility for aviation transport)
  - Consortium of flying training schools
  - One flying training school as a response to a tender process
- Standardise TAFE and private RTO courseware for aircraft maintenance engineering training, including the preparation and training of instructors – possibly at a central instructor training facility. In this respect the decision to sell off Aviation Australia should be reconsidered.
- Government and industry could work closer together if one industry body represented all aspects/factions of industry, rather than currently disparate voices from a number of different lobby groups – suggest Government encourages the formation of one group as the voice of industry.
- Long term training needs of the industry should cover the range of disciplines required by the industry – not just flying and maintenance training. Airline and airport operations, airport construction and maintenance, and logistics (et al) qualifications are required to help overcome both skills and labour shortages in those industry sectors. Air traffic control training should also be opened to commercial operators for increased cost effectiveness.
- Develop the role of CASA to:
  - Foster industry development; and to enhance the standards of skilled personnel in the industry
  - Be the regulator and in doing so, remove anomalies from the regulations, standardize interpretation of the regulations and assist to raise both safety, operational and training standards.

### In Addition

The Industry should continue to differentiate itself from other industries that compete for people. Many Aviation employees tend to stay with the industry through good and bad times because of their love for aircraft.

The industry should target females and multi-cultural people as a source of skills and expertise. A number of the people working in the industry are females or from non-English speaking backgrounds. They have fine skills and fit very well into the image of the aviation industry as being global and all-encompassing.

Also, the industry should try to attract young people. New carbon fibre aircraft, UAVs, high tech Scramjets etc are leading edge technologies and therefore of great interest to younger people.

To further enthuse these younger people, the industry should encourage aviation industries to emphasise the environmental improvements modern technology is providing for the industry and the work being done by the Industry to reduce emissions.

## **Section 2.2 - Air Traffic Management**

### **Background**

Australia, through its Air Traffic Control (ATC) provider, Airservices Australia, and its largest airline Qantas, has been in the forefront of ATC navigation technology development, especially the use of satellite systems for navigation. The use of RNP approaches and GNSS systems have been trialled successfully for RPT aircraft, and the ADSB system is being deployed in upper level airspace.

### **ADSB**

It is apparent that overseas jurisdictions are committing to GNSS and ADSB in particular as the basis for future airspace management. Australia needs to commit to similar systems if it is to remain in the forefront of ATC technology. Several of the existing infrastructure components used for aviation navigation and control are approaching the end of their life, including some radars, NDBs and VORs. If the decision to move to ADSB in lower level airspace is not taken soon, it is possible that these older pieces of infrastructure could be replaced with updated versions of the same type of systems (eg radar) rather than the newer ADSB based system. This would be a mistake.

The difficulty surrounds the cost associated with equipment of the smaller GA fleet with ADSB transmitters. The cost to do this is not insignificant, and discussion papers have floated the idea of Government subsidies. Given that the average age of the GA fleet is high, if incentives were to be given for owners to obtain newer aircraft, then ADSB could be introduced with new aircraft. Alternatively a subsidy could be provided to fit the new equipment to GA aircraft. An alternative would be to legislate that ADSB will be mandatory from a set date (eg 2014) and that from that date every aircraft which enters certain categories of airspace requires ADSB (eg all airspace which currently requires a transponder). Government could offer an incentive rather than a subsidy, eg a tax deduction for the value of the ADSB equipment and fitment. It is also important that aircraft are only required to have ADSB capability if the aircraft is to be operated in airspace which requires it. This should only be where a proper risk assessment shows it is required, much the same as applies to transponders today.

There is definitely a need for Government to make a decision on ADSB, and then to legislate for its implementation within a sensible timeframe. However it should be understood that the introduction of ADSB will mean that a private owner who has paid approximately \$50,000 for his aircraft will need to pay about 50% more to have ADSB. The cost of the Jabiru type aircraft for example will increase and possibly put it out of reach for some future buyers. A solution, which doesn't destroy GA for the "ordinary" private pilot, is essential.

There are two types of ADSB equipment being promoted. The system for upper airspace and the larger RPT aircraft is a global standard already agreed. Lower level airspace ADSB equipment for GA aircraft appears to be aligning behind two options, one to use the same technology as the RPT and the second to use a proposed USA equipment standard which might be cheaper and possibly provide additional information for GA aircraft, such as weather, maps etc. That second US based system requires some additional elements of infrastructure to deal with both systems. Any additional services which can improve the situational

awareness for GA aircraft should be seriously considered, especially if it provides a cheaper implementation solution for GA. Europe may not adopt the US second system and instead use the same standard as applies to upper airspace. Australia should ensure that its lower level airspace system aligns with either the European or the US system, whichever is the most cost effective.

### Airspace Classification

Over the last 20 years, any airspace management initiative has caused extensive debate between different industry sectors, with progress slowed by disagreements within the industry.

The nub of the debate exists between the smaller RPT and charter operators wanting to have VFR GA aircraft separated from them at all times. This is motivated by a desire for complete safety assurance, which is a good thing, but it has often meant that limitations would be imposed on VFR pilots, which might not be supportable by a proper risk analysis.

The debate over respective merits of the system used in the USA vs Australia has biased possible solutions, classification changes and proposals and caused many in the industry to reject outright almost any change proposed.

An important step in moving forward was commenced last year by Airservices, CASA, RAAF and the then DoTRS formulating a Common Risk Framework for evaluation of airspace changes. The movement of the airspace regulatory function out of Airservices into CASA OAR was also a fundamental requirement before proper consideration of changes to airspace classifications could be considered.

Government needs to ensure that the Common Risk Framework is agreed as the basis on which assessment of airspace risk and classification is determined.

With those steps in place, a methodical assessment of airspace risk in the light of traffic growth, passenger movements, VFR activity, and other parameters can be objectively made. Such assessments need to be regularly revisited to ensure the risk is re-evaluated when change occurs. The important core of this exercise is the methodical assessment of risk. Smaller groups such as recreational aircraft, GA, gliders etc will want as much freedom to fly as they can get. RPT and charter operators will want to be confident that those amateur aircraft pilots will remain out of their way, or remain separated, to protect the passengers they carry. Proper risk assessment is required to balance the opposing views of freedom for GA vs protection of the paying passenger flights.

The bulk of aircraft activity is in the so called J curve, roughly between the Great Dividing Range and the east coast of Australia. There are also a few centres scattered across the rest of the country, usually associated with a city such as Alice Springs, Broome, Kalgoorlie etc, which require consideration on an individual basis. These areas including the J curve should be the areas where airspace assessments should be concentrated, and if risk assessment and cost benefit studies dictate, then appropriate surveillance should be applied, and where required use of a technology such as ADSB or radar.

There are also a large number of areas designated as 'Restricted Airspace' often associated with Defence airfields and activity. Government has a role to play in ensuring that these restricted areas are not overly exclusive, and that as much as possible is available for both RPT and GA aircraft to use when Defence is not active. There are some successful models in Europe for flexible use of Military Airspace which could be examined for their suitability in Australia.

## **Section 3.1 Safety Regulation and Regulatory Reform**

It is a requirement for every organization operating with a CASA approval to have in place a working Safety Management System (SMS). For some years, CASA has espoused the idea that as the regulator, it should be auditing organizations to ensure their SMS is working correctly. Unfortunately some people within CASA have had difficulty adopting this new approach and continue to carry out audits which are based on the old system of 'quality checking'. Often CASA findings are minor in nature and cause frustration in the organization. Sometimes this is because the CASA people are less experienced than those they are auditing. CASA should follow its stated objectives and leave the detail to the organization carrying the approval and keep audit activities at a high level.

CASA governance needs to be improved. One suggestion which has merit is splitting CASA into two distinct functions, one a Policy function, the other the Compliance function. The Policy function should cover policy and regulatory reform. The Compliance function should cover regulatory compliance and enforcement. The Regulatory function requires a Board to provide strategic policy guidance.

Compliance is clearly a function which requires surveillance and audit activity, with appropriate penalties for breaches of Regulations. Increased application of a graduated points system would be an improvement with graded levels of financial fines similar to those enforced in the USA, or for that matter, used in State driving offences. For many years CASA had an all or nothing system of penalties which was sometimes unfairly applied.

Policy and Regulation requires considerable consultation with industry. However for too long Australia has continued to create too many of its own special rules and to be too prescriptive in its regulations. More recently CASA has tried to adopt regulations from other jurisdictions, which is a good step. It is starting to appear as though the European EASA regulations are becoming accepted as the new global standard, a status previously held by the US FAA Regulations. As a matter of Government Policy, the EASA regulations should as much as possible be adopted by Australia, enabling easier harmonization for aircraft operating across jurisdictions and easier purchase and sale of aircraft. That is not to say that there is no need for any special Australian rules. Australia's vast uninhabited distances with low levels of infrastructure do require some special considerations, but these are the exception.

A policy to adopt EASA rules would enable faster change of the Regulations and greater certainty for operators.

Safety standards in Australia used to be the envy of the world. Australia's vast distances and a reliance on the airplane from its inception meant it had to become self sufficient in aircraft operation and maintenance. However, progress has been hampered by rigid adherence to regulations and procedures more appropriate to these pioneering years than today's globalised industry with its higher standard of technical performance and aircraft reliability. Unfortunately the safety culture of the main regulatory agencies still reflects earlier practice.

Safety standards which helped develop Australia's reputation for operational excellence, reliability and safety can sometimes now be an anachronistic imposition on the modern aircraft operation, equipped as they are with exceptionally reliable components and a multitude of avionic equipment which relieve the pilot of much of the burden evident in early aircraft, even early jet aircraft. Safety equipment on modern aircraft protect from Controlled Flight into Terrain (CFIT), navigational errors, and other aircraft on conflicting paths.

CASA and Airservices must change their culture to embrace the efficiency improvements that would follow from embracing newer ways of doing business. This must be based on an objective appraisal of safety outcomes rather than relying on old established practices and attitudes.

CASA as the Regulator still has an important role in ensuring safety in Australia's skies, but it requires a change in mindset within CASA and ending the application of obscure Australian regulations to aircraft already certified by EASA or FAA.

The Recreational Aircraft Association (RAA) and the Gliding Association have demonstrated that under self regulation, a progressive and modern approach to regulation and compliance can result in a better safety outcome than the traditional model employed by CASA.

### Aviation manufacturing and design

Historically, aviation has been a leader of technology change and Australia has sometimes been at the forefront in design and development in a number of areas. In the field of light aircraft some recent examples of industry capability are Jabiru, GA8 and Kavanagh. Whilst this capability is well respected, the capacity is relatively small and is currently falling behind in the field of aviation design.

Compared to Canada and Brazil, Australia is boxing substantially below weight in aircraft manufacturing. Significant components for Boeing and Airbus commercial aircraft are however being designed and manufactured locally in Australia. The potential is substantial and Government support by way of Research and Development by both Government agencies and private sector, under tax or other concessions could lead to significant returns for the country.

There is a need for approval of Australian designs and products to be in accordance with an agreed schedule. This requires CASA to have a strong technical base, and sufficient resources available to service industry requirements in a timely manner. In turn this requires a substantial body of industry advisory material from CASA to ensure work is done in a manner that will be approved by CASA. Alternatively, approval of manufactured aircraft in Australia could be arranged with another jurisdiction.

### Acceptance of Australian approvals by overseas countries.

Australia accepts without further examination, approvals from a wide range of overseas countries. However those countries do not always accept Australian products without detailed review.

Currently Australia has only a limited range of agreements with overseas countries to expedite the necessary reviews of Australian designs and products. There is a need for these agreements to be expanded and implemented as soon as possible.

To achieve this there is a need to:

- Ensure CASA has a suitable industry reference group that speaks for the Australian aviation design and manufacturing industry.
- Quicken the pace of improving delegations to industry
- Allocate priority to finalisation of agreements with overseas regulators regarding acceptance of Australian approvals and products.
- Ensure acceptance of overseas products is not concluded prior to consideration of reciprocal acceptance of Australian aviation products.

### International Aviation Safety.

That Australia has a high standard of safety is recognised internationally. There is a difficulty however in ensuring foreign aircraft operating in Australian airspace meet these or equivalent standards. The EU has adopted a system of "Black listing" aircraft from certain nations. This is extremely controversial, particularly where the bans are applied to airlines that do not operate in

European airspace. The US has recently downgraded the Philippines safety category on the basis that, in their view, it does not meet the required ICAO Standards.

There has been a great deal of work by the airlines through the auspices of the International Air Transport Association (IATA) to achieve common harmonized safety and operational standards. This is primarily through a program of audits known as the "IATA Operational Safety Audit" (IOSA). Commencing approximately 5 years ago, IATA drew together some 100 technical experts from the airlines, ICAO, Regulatory authorities and their own technical division to compile a common set of safety and operational standards incorporating the best practices worldwide. This now forms the basis of a document comprising more than 400 pages, available freely through IATA's website. It is continuously updated by a team of experts drawn from the Regulatory authorities, IATA and the Airlines. Audits of the airlines to this IOSA standard are conducted by independent Aviation audit companies who are themselves trained and audited by IATA. Once audited, and any deficiencies rectified, the airline is placed on the IOSA register. This is maintained by IATA and is available on the IATA website.

By December this year all member airlines of IATA (196 airlines representing 94% of the world's scheduled international traffic) must be on the register or will no longer be a member of IATA. No airline may now be admitted as a member until they are on the register.

IOSA does not replace individual Government Regulatory oversight or structures. It is however a global set of harmonized airline safety and operational standards adopted by the airlines and available to the Regulators. Importantly of the 176 airlines currently on the register, approximately 20% are non IATA members, many of these being Low Cost Carriers. Virgin Blue was one of the first airlines on the IOSA register – even before Qantas. IOSA covers turbo prop fleets as well and can be a valuable tool to assist in Australia's own domestic safety oversight.

The Report on an airline contains assessments against over 900 standards and recommended practices in the following areas that are key indicators of an airline's ability to deliver operational safety - Corporate Organisation and Management, Flight Operations, Flight Dispatch, Aircraft Maintenance, Cargo Operations, Ground Operations, Cabin Operations and Operational Security.

IOSA Audit Report transactions are now *de rigueur* amongst airlines, who confidently use IOSA Audit Reports in lieu of conducting their own operational safety audit for the purposes of interline agreements. Over 900 such audit report transactions have taken place since programme commencement in late 2003, and the number is growing exponentially.

Access to IOSA Audit Reports is by a simple yet closely controlled and confidential process, with the final agreement for release of the report coming from the owner of the report - the audited airlines. The IOSA data provides an opportunity for States to enhance and extend their oversight capability, as well as to better focus their limited resources. Regulators are able to access the IOSA Audit Reports at no cost, and thereby to use this information as vital intelligence in the discharge of their oversight responsibilities.

CASA was, and remains, heavily involved in the work of IOSA. There would be considerable value in the Australian Government moving towards mandating that foreign airlines operating in Australian airspace be on the IOSA register.

## **Section 4.1 Aviation Emissions and Climate Change**

There is sufficient evidence and agreement by reputable bodies that the climate is changing, that global temperatures are increasing and that Greenhouse gas emissions are contributing to the change. Science is indicating with more and more confidence that any global temperature changes above 2° C are likely to have a catastrophic effect on the world. To stay within that limit greenhouse gas emissions must be capped at 500 parts per million, and to achieve that objective greenhouse gas emissions must be reduced by about 60% by 2050.

Civil Aviation is a global industry which is growing at 5-6% per year. It supports US\$2.9 Trillion in economic activity, provides some 29 million jobs and provides direct employment to a skilled workforce, is fundamental to the tourist industry and is essential for business and trade. Over 2.2 billion passengers flew last year.

It is recognised that Aviation has an adverse effect on the environment in terms of noise, local air quality at airfields and climate change. Every kilogram of kerosene burnt produces three kilograms of CO<sub>2</sub>. Other by-products of burning increase that level to a CO<sub>2</sub> equivalent of five to six kilograms. Anthropogenic global warming caused by aviation is directly proportional to the amount of kerosene burnt. Overall the aviation industry is responsible for 2 to 3% of CO<sub>2</sub> produced by burning fossil fuels. However with the forecast growth in aviation, and as other heavily polluting industries become more efficient, this percentage of the overall impact on Global warming will increase. Nevertheless, it should be remembered that the auto industry is responsible for 18%, electricity and heating 35% and cattle production 9% and all are growing at a significant rate

Whilst International Aviation is exempt from Kyoto protocols per se, ICAO has been charged with the responsibility for the creation, oversight and control of Aviation emissions targets. At their tri-ennial meeting last year ICAO agreed to a comprehensive program of controls. By contrast the EU reserved their position on a proposal to agree these standards globally and in so doing highlighted the controversial nature of discussions and decision making in respect to environmental issues. This signalled the possible beginning of an extensive legal battle that may well atrophy progress.

Aviation is part of the overall transport industry but its impact on the environment is unique in that energy has to be expended to provide lift (compared to surface transport which is supported by the ground/sea), its emissions are placed directly into the atmosphere up to 12 kilometres above the surface of the earth, and there is as yet no practical way to use renewable energy sources as a propellant. There is however a great deal of research and testing currently underway to find suitable alternatives. As an example, on 1<sup>st</sup> Feb 2008, Airbus flew the A380 with one engine on a 40% "Natural Gas to Synthetic Kerosene" (GTL). It is sulphur free and gives a 30% reduction in particulate emissions. Airbus predicts that by 2030 up to 30% of aviation fuel could be synthetic. The potential economic value in such production, away from today's petroleum based products, provides a significant economic and leadership opportunity for Australia. To do so however will need the active support of the Government and significant investment of public and institutional funds.

The Aviation industry has achieved a 70% improvement in the level of emissions in the last four decades. The latest generation of civil aircraft represented by the Boeing 787 Dreamliner and Airbus A350 will provide fuel efficiencies of below 3 litres per 100 passenger kilometres, better than any hybrid car on the market today. Nevertheless the forecast gain in efficiency of 1 to 2% per year is not sufficient to offset the increase in emissions created by the overall growth of aviation which is predicted to double by 2020 and quadruple by 2035. This timeframe lies within the life of today's new aircraft. The cost of fuel is over 30% of airlines' operating costs. It is therefore in the interests of both the Aviation industry the interests of the community to reduce fuel burn and hence emissions.

Internationally the aerospace industry is reacting to this challenge. In Europe the Advisory Council for Aeronautical Research has set out a strategic research agenda which gives high

priority to and sets ambitious goals for reducing the environmental impact. NASA has set similar goals. In UK the Royal Aeronautical Society with representatives from industry, Government and academia has set up an organisation "Greener by Design" to study ways of mitigating the environmental impact of aviation and to identify current research projects which have the potential to inform the debate. The "Silent Aircraft" Initiative sponsored by Cambridge University in UK and MIT in USA with partners from industry, airlines, airport operators, Government and academia, has the objective of developing a concept design for the 2030's, and identifying challenges to make the necessary technical breakthroughs. Areas already identified by the groups include Blended Wing Body/Flying Wing configuration, light weight airframe materials, laminar flow, better combustion, open rotor and advanced turboprop engine designs, new airframe/engine integration configurations, free flight navigation, optimum range operations, etc.

In the work done so far there is a recurring theme of conflict between commercial and environmental objectives and between different environmental objectives such as noise levels and carbon dioxide emissions, or fuel efficiency and nitrogen oxide emissions. Trade off studies to reach the best environmental outcome and the establishment of transparent and clear targets are needed. There is also a level of conflict between public perception of the problem (which often puts noise ahead of air quality and climate change) and an objective evaluation of the problem which puts climate change as by far the most serious environmental issue.

A dramatic reduction in emissions can be achieved through improvements in Airspace management. Australia has a great deal of experience in developing operational best practices and took a very worthwhile leadership role in recent APEC meetings on this subject. There is significant value in Australia continuing this work

Australia is a geographically large country, far from its overseas markets and is more dependent on aviation than most. Australia is a small, but important, aviation player. Within Australia, urban residents in particular are aware of the noise and the local air quality issues around airports. However the Australian public is not yet fully aware of the scale and extent of the most significant problem, which is the amount of Carbon Dioxide and Nitrogen Oxides being emitted in the upper atmosphere and their contribution to climate change.

Whilst there is considerable room for debate on the absolute quanta of the aviation emissions, there is no doubt that if aviation emissions continue to increase at the current rates, and if Australia fails to reduce national greenhouse gas emissions by say 60% by 2050 relative to 2000, then aviation emissions have the potential to become a major source of greenhouse gases. Reductions of this order will be necessary to keep CO<sub>2</sub> equivalent emissions below 500 parts per million and global warming down to 2° C. Given these parameters, it is the Australian Government's responsibility to act decisively to lessen the effect of aviation on the environment. There are real opportunities for Australia to be proactive and to contribute to resolving a global problem.

There are conflicts between environmental, commercial and political goals, and between technical solutions to reduce the environment effect. Compromises will have to be reached. There is no silver bullet to fix all the issues. Rather silver buckshot is needed to attack the problem from many sometimes conflicting angles. This will require Governments and the industry working together to achieve the emission reductions necessary to sustain the economic potential.

There is as yet no single body to lead Australia through the current maze of conflicting imperatives relating to Aviation and the environment. Were such a body to be established, the RAeS Australian Division with support from its UK principal has the technical know-how to debate the issues relating to aviation and its effect on the environment. The RAeS also has the ability to assist Government and Industry to determine and prioritise targets and action necessary for the industry to address these environmental issues.

Australia should be proactive in its endeavours, take an even stronger leadership position in relation to aviation and the environment, and be ready to respond in a measured timely way to political pressures from environmentalists, the aviation industry or any of the disparate voices demanding to be heard on this complex subject.

Within two years the Asia/Pacific region will be the largest Aviation market in the world, eclipsing the US for the first time in the history of the industry. Australia is well placed geographically and politically to take a leading role, perhaps through APEC, to contribute to the debate on aviation and the environment. Australia's decision to cooperate with APEC countries on practical measures to reduce aviation greenhouse emissions is a move in the right direction.

There are ample opportunities for Australia to take a leadership role, both globally and in the region. Doing so will provide long-term and real benefit both directly to improving the environment and in providing commercial opportunities arising from new technologies.

Australia has world class facilities for research at DSTO and CSIRO, developmental organisations such as Airservices Australia and a small but capable aerospace industry. Australia should create opportunities for these organisations to collaborate with and contribute to overseas organisations to develop technologies and operational procedures to reduce climate change.

Australia should collaborate with the Royal Aeronautical Society, European Union (EU) and European aerospace companies in their Clean Sky Joint Technology Initiative. Collaboration can include funding and use of Australian resources such as CSIRO, DSTO, Australian aviation industry, Australian aviation agencies such as Airservices, CASA and the like. There are aspects of the problem in which Australia has a special capability or interest such as ATM services, long range travel, and combustion technology which are relevant on a global scale.

The Australian Government should also use its influence to take the lead in the Asia/Pacific region and globally to develop aviation policies and operational practices appropriate to our region. Thus far the debate is largely confined to Europe and USA as the biggest users of aviation. But Asia/Pacific now has 25% of the Aviation market and its share is growing. Asian/Pacific carriers are hampered by not having a single strong voice to effectively contribute to the debate which is generally dominated by Europe. Australia is well placed to take a leading role.

In addition Australia could undertake research aimed to lessen the impact of aviation on the environment by collaborating with:

- Cambridge University and MIT on the "Silent Aircraft initiative".
- Engine manufacturers on combustion chamber design to reduce Nitrogen Oxides.
- Boeing and Airbus on the next generation concept designs.
- "Greener by Design" to promote the issue of aviation and the environment.
- Research into the impact of long range flying on fuel efficiencies with respect the optimum payload range.
- Research into contrail reduction.

Another example of where Australia could contribute is the encouragement of greater use of ADSB for Air Traffic Control, including management of aircraft movements on the ground, on approach and on landing.

The Australian Government could provide tax and other incentives to encourage the domestic airline industry to rapidly introduce new equipment and new technologies which lead to step change reductions in emissions.