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Department of Infrastructure, Transport, Regional Development and Local Government
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Development of a National Aviation Policy Statement – Submission

Dear Sir/Madam,

As a brief introduction, GPSat Systems is a Melbourne based company solely focused on Satellite Navigation as technology assisting the broader introduction to Australian and regional markets. Our business mix is a combination of industry premium GNSS product sales, professional engineering consultancy and unique product development for all levels of government and local corporations.

For the past decade, GPSat Systems has had a close ongoing association with the Airservices's Groundbased Regional Augmentation System (GRAS) project, as we continue to be keen supporters of this innovative Australian initiative reforming global air navigation away from the outdated VHF radio navigation aids. GRAS is the largest Australian satellite navigation project yet to be undertaken and our involvement spans both the original Engineering Test Bed and the present Certification Phases. For over a decade, GPSat has invested, provided technical support, lobbied and serviced the project at various levels to develop and demonstrate Australian technical expertise and capabilities.

Contained below in RED are extracts from the Issues Paper - Section 2.2 Air Traffic Management and our comments generally in relation to satellite navigation technologies are inserted in BLACK.

Section 2.2 Air Traffic Management

Key challenges

Australia has responsibility for eleven per cent of the world's airspace. We need continued investment in modern air navigation infrastructure, including satellite technology, to enable further improvements in aviation safety while meeting the air traffic capacity demands of the 21st century aviation industry.

Over past decade Australian Aviation investment in future satellite navigation has been both patchy and un-coordinated. Today, it is understood that both these important initiatives are under pressure from within the local Aviation industry due to fear of change and in-trenched vested interests. Furthermore, collectively ASA, CASA, and ATSB lack either the funds and/or desire to establish a comprehensive national test facility to cover all aviation industry aspects governing the future introduction of satellite navigation to Australian airspace. This is a major concern.

Future communication, navigation and surveillance systems will be driven both by better air traffic control management on the ground and by better equipment on board aircraft. This will allow more

flexible and efficient routes to be flown and provide greater awareness of other air traffic and other potential airspace conflicts in-flight.

Australia through its unique global character (big continent, small population, very significant industries of mining and agriculture) has the opportunity to be a world leader in these areas. The economic benefits for implementing improved ATC infrastructure are very clear, and the future potential to export these technologies to regional markets is enormous. This has been generally understood for quite some time, but the rate of investment to bring these changes through has been slow.

Systems under consideration include technology and options such as Automatic Dependence Surveillance – Broadcast (ADS-B), Global Navigation Satellite Systems (GNSS), Airborne Collision Avoidance Systems (ACAS), and Approach with Vertical Guidance (APV).

In setting the direction and priorities for future air traffic management policy, Australia needs to take account of developments in Australia and internationally, and actively engage in International Civil Aviation Organization's (ICAO) consideration of key issues. We must also consider how we will adopt the ICAO Global Air Traffic Management Operational concept.

In general, Australia is well recognised both by the international aviation community and ICAO for its leading role in the generation of international standards and specifications. However, we as a nation seem to “drop the ball” during the implementation and rollout phases and yet again this seems to have happened for both the ADS-B and GRAS projects.

Investment in a skilled workforce is essential to ensure Australia has an air traffic management system capable of meeting current and future demands. This will involve targeted strategies to attract, retain and train air traffic controllers and other critical staff performing key roles in our air traffic management system.

The only possible way that this can happen is by pro-active development and investment into Australian industry, which hasn't happened to date. All too often, Australian industry is totally overlooked in favour of big off shore multi-national aerospace companies. Australian taxpayer funds invested in jobs, training and ongoing commercial opportunities for offshore companies. On both the GRAS and ADS-B projects the investment in Australian industry could at best be described as minimal, at less than 5% of the many tens of millions spent to date on the foreign national companies. This is not satisfactory.

Changes in the way in which future air traffic management is delivered and the associated infrastructure requirements will impact on the aviation industry. Effective consultation with industry is essential to ensure that changes are practical, that the investment required is reasonable and that funding mechanisms are put in place where appropriate to assist the transition.

The benefits to the nation through productivity improvements is clear, unfortunately, it seems that the sole funding streams for implementing these initiatives has only come from within AirServices budget. In the future a broader funding approach is clearly needed to assist these capital intensive infrastructure projects.

Australia has taken tentative steps towards greater coordination between civil and military operations at airports and air traffic control towers around Australia. However more work needs to be done as these arrangements have thrown up a number of challenges. Responsibility for and the availability of air traffic control systems and other services at these locations, and better, more flexible use of airspace, are just some of the issues that need to be addressed. Increasingly, regulatory decisions in airspace and air traffic management should be based on transparent, accountable, risk management-based processes, always having regard to the principle that safety is paramount.

Australia lacks a clear Government endorsed national plan for the development of our future air traffic management system. A plan which focuses not just on the immediate challenges, but also our medium to long term objectives and strategies for how they can be met, would provide a basis for informed decisions on investments in the system and in aircraft equipment. Safety, security, productivity, cost-effectiveness and environmental issues could all be considered in developing the plan.

Agreed. Any satellite navigation augmentation infrastructure implemented by the Australian aviation industry would also have very significant flow-on implications for other industry sectors including, commerce, defence, transport, marine, mining and agriculture, all of whom could substantially benefit from real time high integrity GNSS monitoring over the Australian continent. Furthermore, it could also potentially represent very significant local employment and export opportunities to other countries looking for similar practical / cost efficient solutions.

■ How can Australia's air traffic management system best take advantage of new and emerging satellite navigation technologies? What is the role of government in the take up of the new technologies? Are there any regulatory impediments to maximising the use of new and emerging surveillance and navigation technology?

Over the past several years, AirServices has commendably invested in three significant satellite based navigation initiatives to modernise Australian airspace, these being, GRAS, GBAS (GNSS) and ADS-B. However, today it is understood that both the all important GRAS & ADS-B initiatives are under pressure from within the local Aviation industry due to fear of change and in-trenched vested interests.

The role for government and in particularly the Dept of Infrastructure should be that of national coordinator. For example, once in service the ground reference portion of GRAS will provide a high integrity 24/7, rapid response (few seconds to fault detection) national monitoring network ascertaining that GNSS signal in Australia is both safe and reliable to use. Although aviation is the primary stakeholder and motivator for GRAS, the project should also ultimately service the national banking industry/ commerce, high speed internet, precision machine automation in agriculture and mining, atmosphere research and many others. No other planned GNSS network provides this high integrity, instantaneous GPS/GNSS monitoring spanning the entire Australian continent. Thus, this national asset should under pin our nation's risk mitigation strategy associated with Australia's ongoing dependence and economic reliance on the American GPS and other future GNSS networks.

As a critical national infrastructure project, GRAS's future is too important to be decided singularly by a small group within ASA (board members) without due consideration to the above broader national asset issues.

Recommendation: Aviation GNSS should be set as a national priority with coordination directed through the Department of Infrastructure and possible funding linked from the National Future Fund. The flow-on benefits are clear for general aviation, broader Australian commerce (communications, agriculture, mining etc.) and ongoing nurturing of local aviation industry for realising the huge future export potential.

■ How do we enhance both air traffic management safety and capacity and efficiency?

If/ when deployed, GRAS will provide GPS integrity and corrections for en-route and non precision approaches down to 76m (250-ft AGL) throughout Australia thus allowing more flexible and efficient routes to be flown into Australia's outback and remote regions. With ADS-B greater awareness of other air traffic and other potential airspace conflicts in-flight will greatly enhance safety. The benefits of adopting these technologies is very clear

Recommendation: Dept Infrastructure to implement a national Aviation GNSS Plan. Through the provision of coordinated infrastructure planning, consistent funding (not necessarily only from ASA's budget), and broader strategies to grow local aviation technology industries will drive these modernisation enhancements.

- How effective have Australian regulatory agencies been in pro-actively assessing the Australian air traffic management system and setting clear risk-based safety and efficiency outcomes requirements, having regard to international developments?

In general, both through the aviation industry and international forums both ASA and CASA are very well recognised as innovative forward thinkers in regards to ATC modernisation. Over the years many studies/submissions have been undertaken and experimental engineering systems have been developed, tested and proven to work. Where ASA/CASA consistently fails is in the implementation/ deployment follow and realisation of meaningful commercialisation outcomes. They like to plan and play, but then the bickering/ moaning within the local aviation industry begins, this routinely kills off these projects. We simply then sit back and wait for other nations to commercialise the technology and we are then happy to buy it back at inflated prices. As a result with respect to international aviation industry, we have no viable industry and Australia is insignificant as a long term participant.

- Are we effectively aligning airspace classifications and the level of services and facilities provided to reduce risk to passenger transport operations? Can we better identify risk factors?

No comment

- How do we ensure the development of Australia's air traffic control systems is compatible with global and regional systems?

To date Australia (ASA & CASA) have been very effective in engaging with the International Civil Aviation Organization (ICAO) on key future ATC initiatives and have actively participated in the RTCA working forums in the development of standards and requirements. It's the implementation and commercialisation of these processes that are the problem.

- How can Australia's air traffic management development be aligned with broader policy considerations such as national security and the environment?

On the 28th August 2002, Hon John Anderson Minister for Transport and Regional Services gave a speech (ref AS25/2002) to the house Representatives stressing the importance of satellite based navigation technology for underpinning Australia's future economic development and commending Professor Don Sinnott, the chairman of the Australian GNSS Co-ordinating Committee's for the DOTAR's policy "Positioning for the Future". The speech was accurate in stating the significance of this new technology's present and future roles in Australia's economic development, BUT, in-accurate in stating Australian's collective contribution. At a government level, the "Positioning for the Future" policy was essentially ignored and the GNSS Co-ordinating Committee was quickly disbanded. Subsequently, there has been no significant outcome stemming from this policy to date.

Recommendations:

- a.) It is hoped that the new Department of Infrastructure will resurrect the DOTAR's policy in some form and then put in place new genuine initiatives to nurture future Australian GNSS industry growth for both aviation and other commercial sectors.
- b.) To develop these technologies requires coordinated infrastructure planning, proper and consistent funding (not necessarily only from ASA's budget), a broader strategy to grow local aviation

technology companies and finally a comprehensive export strategy. This is function / responsibility that should be channelled through the Department of Infrastructure.

■ **What steps need to be taken to ensure the retention, training and future supply of skilled air traffic controllers and associated professionals?**

As a general statement, the progressive up take of satellite navigation technology by the aviation industry could at best be described as “patchy” without any clear direction, strategy or significant investment. The industry philosophy has been to use imported navigation technologies for “operational problem solving”. Without focused funding streams, in the relatively small Australian market commercial returns on new technology adoption are often difficult to realise and ongoing R&D is always under financial pressure.

Fortunately, several of Australia’s leading tertiary institutions are now offering courses in aviation and space sciences incorporating satellite navigation. However, these courses are generally focused on navigation application topics utilising imported navigation receiver and sensor products, rather than, the actual science/technology behind these products. This is primarily due to the lack of commitment and adequate investment into the high technology research tools required to perform this work

Recommendation: Linking ASA, CASA, and ATSB-Aviation establish two comprehensive Satellite Navigation (GNSS) national test and training facilities to cover all aviation industry aspects governing the future introduction of this technology to Australian airspace. These centres would then be locations where; i) general aviation pilots could train using simulation systems, ii) where technicians could test and evaluate avionics, and iii) where new technologies and science applications could be researched. These centres would then help to better educate the aviation industry about the benefits of adopting these new technologies.

■ **What should a national air traffic management plan cover and who should be responsible for its development and implementation?**

Once in service, the ground reference portion of GRAS would have provided a high integrity 24/7, rapid response (few seconds fault detection) national monitoring network ascertaining that GPS signal in Australia is both safe and reliable to use. Although aviation is the primary stakeholder and motivator for GRAS, the project would have also ultimately serviced the national banking industry/ commerce, high speed internet, precision machine automation in agriculture and mining, atmosphere research and many others. No other planned GNSS network provides this high integrity, instantaneous GPS monitoring spanning the entire Australian continent.

As mentioned earlier, this project’s future is currently uncertain and the potential loss of this national asset opens a significant issue associated with Australia’s ongoing dependence and economic reliance on the American GPS network. The potential loss of this critical national infrastructure project has major national ramifications. It seems that GRAS’s future is currently being decided by a small group within ASA (board members) without due consideration to the above broader national issues.

Recommendation: In general GNSS and more specifically the aviation GRAS project are important future national infrastructure assets and thus should gain broader visibility and be considered/debated more vigorously by the Australian tax payers. The new Departments of Infrastructure and Innovation should take more proactive roles in coordinating, funding and developing export opportunities for these infrastructure technologies.

In summary, it is hoped that through this aviation review process that future Australian satellite navigation projects will be better coordinated, funded and eventually evolve into successful deployments. National productivity improvements and vast export opportunities should be the motivator, thus ensuring that both the tax payers and local industry become the direct beneficiaries at many levels. Improved air safety and optimised navigation in the airspace, to the generation jobs and commercial returns for Australian business as the technology is exported to global markets is the dream. We encourage the Dept of Infrastructure to continue to both endorse, financially support and then lead these important satellite navigation initiatives for aviation and the broader Australian community into the future.

Yours faithfully,

GPSat Systems Australia Pty Ltd.

A handwritten signature in blue ink, appearing to read "G. Hooper", is positioned above the typed name.

Graeme Hooper
Managing Director