



## **Submission from Wing Aviation Pty Ltd Response to the Government's Aviation Green Paper**

Wing welcomes the opportunity to comment on the Australian Government's Aviation Green Paper. As the Government notes in this paper, Uncrewed Aircraft Systems (UAS) produces numerous benefits to society; using drones for scaled delivery has the potential to give access to goods and supplement medical services in remote and rural communities, replace tens of millions of car trips, eliminate hundreds of thousands of tons of vehicular CO2 emissions, and result in significant economic benefits across the economy. Beyond delivery, drones already offer a safer alternative to critical business and government activities like infrastructure inspection, agriculture activities and emergency services.

To support the growth of this budding industry, Wing recommends that the Government continue to promote public awareness of how drones can yield societal benefits, partner with industry to earn community acceptance, attract global investment and continue to advance a rapidly growing Australian homegrown UAS industry and ecosystem. Wing strongly supports the Government's stated intent "to regulate these new technologies in a way that maintains social licence and delivers benefits to communities." We would urge the Government to continue crafting its policies using an outcomes-based approach, setting a high bar for policy goals and safety standards, while challenging industry to innovate to meet that bar. Global regulatory harmonisation will also be vitally important for the Government to achieve the outcome it envisions in the paper.

As the first company in Australia to offer a commercial drone delivery service, Wing has developed a valued and longstanding partnership with Australia. Since our 2019 launch of commercial drone delivery services in Canberra, Wing has delivered hundreds of thousands of packages to Australian homes and businesses. During the height of the COVID-19 pandemic, Wing afforded contactless delivery to tens of thousands of Australians, while allowing businesses to have an unparalleled last mile delivery solution during a time of restrictive movement and general uncertainty. Over the course of its operations in Australia, Wing's delivery services have provided increased access to underserved communities and individuals with mobility limitations, as well as benefiting the environment by lowering emissions. Drone delivery companies in Australia are starting to open competition in the last-mile mobility sector, which has helped stimulate job creation and increased economic growth.

Delivering thousands of packages every week across multiple Local Government Areas in Southeast Queensland, Australia remains Wing's largest global operational footprint; we have spent years building robust policy partnerships with the Civil Aviation Safety Authority (CASA), the Department of Infrastructure, Transport, Regional Development Communications and the



Arts (The Department), the states and cities in which we operate, and as well as in the communities in which we serve. We look forward to continuing to build on these engagements in an effort to promote a safe, reliable and open drone ecosystem.

## **Safety**

To maximise safety and optimise performance, Wing employs an outcomes-based approach to the design and implementation of our operations and services - this approach mirrors what CASA requires in its assessment of complex drone operations like ours. A Specific Operations Risk Assessment (SORA) provides a global framework which allows operators to use innovation, and explore different options in delivering safe outcomes, versus using a prescribed approach which is more typical with legacy aviation. Australia is a member of the Joint Authorities for Rulemaking of Unmanned Systems (JARUS), a consortium of over sixty countries that uses this framework. JARUS provides a high bar for safety, a framework that can be applied across the world, and terms fit for the rapid advancement of drone technology. This outcomes-based approach should be applied beyond just safety regulation.

### UAS Noise Policy

Concerns regarding excessive noise emissions from drones have not been frequent or persistent in Wing's experience of successfully completing over 350,000+ deliveries in Australia, in predominantly densely populated areas. Wing operates a drone which is difficult to hear indoors, in combination with smart routing, and a program of regular and meaningful community outreach, we regularly complete many thousands of flights without receiving any noise feedback from the community.

Wing has found success in Australia from its outcomes based approach of tailoring operations to the interests and needs of individual communities. As demonstrated by the reduction of noise in the evolution of Wing's aircraft models, Wing is committed to minimising noise exposure through both route planning and aircraft design. Wing has also accounted for noise effects by placing its delivery sites in locations that are in commercial areas, where noise effects are typically dominated by ambient noise from nearby roads and other centre and commercial activities.

In addition to noise emissions from drones often being indistinguishable from ambient noise, which frequently includes other airborne noise sources, it is important to note that the use cases of drones are not replacing those of traditional aircraft carrying large cargo and passengers over long distances, but rather shorter trips with lighter loads completed currently by ground transportation. As a result, it is more appropriate to compare noise emissions from



cars and trucks versus drones. Typical vehicle pass-bys, particularly for large vehicles such as trucks and buses, produce noise levels significantly higher than Wing UA emissions.

We believe the Department's existing work in the drone noise policy area has been successful. The development of noise permissions based on the expectations of the Local Government Areas (LGAs) and greater community serves as a guide for drone operators to fly in a community-minded way versus something more limited and prescribed, e.g. a limit on decibels, which could limit the advancement of the ever growing drone ecosystem.

#### Community Outreach, Social License to Operate

Before drone delivery is occurring in a community, there are often reasonable concerns from the community about noise and, surveys show secondarily, about safety. Virginia Tech completed a study analysing and estimating the effects of integrating drones into communities of varying population density in the United States. Their work surveying an entire community, both before and after introducing drone delivery, found that 87 percent of respondents expressed positive sentiments about drone delivery after having a practical understanding and experience of what it was. Of note, these community positive sentiments about drone delivery exceeded those that were conveyed in previous surveys.<sup>1</sup>

In our experience, investing in community outreach, education, answering questions and demonstrating the technology before it is widespread is important in achieving community acceptance.

#### Environment

Wing also has taken care to ensure its operations benefit and do not disrupt or harm other parts of the environment. For instance, to assess any possible impact of Wing's drones on birds in Australia, Wing commissioned research<sup>2</sup> on bird populations in Canberra, where Wing provided home delivery operations. This study compared the number and species of birds in suburbs where Wing makes deliveries to neighbouring suburbs where Wing does not provide deliveries. The same observations were repeated in suburbs before delivery started, as well as after. The study's findings did not demonstrate any statistically significant difference between the numbers of birds or bird species present in suburbs in which Wing conducts drone deliveries compared to those in which Wing does not operate.

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<sup>1</sup> Virginia Tech, "Perspectives on Drone Delivery" (November 2020),

[https://maap.ictas.vt.edu/content/dam/maap\\_ictas\\_vt\\_edu/Perspectives-on-drone-delivery.pdf](https://maap.ictas.vt.edu/content/dam/maap_ictas_vt_edu/Perspectives-on-drone-delivery.pdf)

<sup>2</sup> A Study to Identify Possible Effects of Drone Wing Operations on the Presence of Urban Birds in Canberra (November 2023)



Regarding safety, noise, environment, and other non-safety policy areas involving drones, we think these examples demonstrate that an outcomes-based approach can be successful in encouraging operators to innovate and operate in a responsible way, to achieve important policy outcomes in line with community expectations.

### Cost Recovery

There are many facets of the Government's regulations and policies which have provided a path for Wing and others to readily grow operations in different parts of Australia. Wing is likely the largest civil drone fleet in Australia and likely has more aircraft registered than any other aviation organisation in the country. However, Australia currently is one of the most expensive countries in the world to operate commercial drones. Wing's hourly assessment fees to CASA have amounted to hundreds of thousands of dollars, and the current drone registration regime is both costly on a per drone registration basis, as well as in the time it takes to comply. The cost to register a drone in the US is \$5, in the UK is £10.33, in Canada is \$5, and in Australia is \$45. As a first mover, Wing understands its responsibility to shoulder some of these fees to help grow the industry and fund the start of regulatory programs in the UAS space, but it would be beneficial to the long-term growth of all industry participants to decrease some of these costs to align with global standards

To remain a leader in the UAS industry and to continue to attract investment, the Government should evaluate its existing regulatory frameworks to determine which are essential services for those in the drone ecosystem. For instance, while registration and safety case review are expensive, these services are crucial and requisite for drone operations, though Wing hopes that the costs of these services will eventually decrease. Unlike crewed aircraft, Wing and others in the UAS industry do not transport passengers or utilise Government resources supporting air traffic management systems. Wing operations do reference various sources of authoritative airspace information to facilitate safe and efficient navigation as it provides its services.

Given that the UAS industry's use of Government resources is significantly less than traditional users in the airspace, Wing believes the compensation to Government should reflect the resources it uses from the Government. This mainly is limited to the approvals needed to be certified UAS operators and the necessary authoritative airspace data needed to perform operations. As such, Wing proposes that the Government continue with its current approach of applying an appropriate hourly rate to compensate for the Government-borne operational and rulemaking costs associated with using the class of airspace that users intend to operate in.



From a cost recovery vantage point, Wing does not believe the discussed Flight Information Management System (FIMS) is not necessary to enable safe airspace sharing in the drone ecosystem. The drone landscape will be highly diversified with different aircraft, use cases, and ecosystem needs. The FIMS hypothesis proposes a one-size-fits-all solution that will not meet drone-user expectations and will likely fail to achieve the fidelity needed to power a scaled drone ecosystem. Instead, the Australian Government should look to focus on the publication of standardised data sets that will allow end-users greater access and applicability. In addition to the lack of comparability with other global counterparts, mandated use of a service that imposes an unnecessary cost and regulatory burden is likely to discourage entry in Australia's drone sector, which would in turn result in fewer operators present to cover the cost of FIMS. To that end, an important principle established by the International Civil Aviation Organization (ICAO) notes that, "...an equitable cost-recovery system could comprise charges based on the allocation of total air navigation services costs incurred on behalf of users." [\[ICAO Doc. 9082, Sec. 3\]](#) It would therefore be beneficial for the Government to avoid narrow, centralised solutions such as FIMS in favour of outcomes-based solutions that will lead to favourable outcomes with respect to policy, community, and safety.

## Automation

### UAS Traffic Management (UTM)

As the UAS industry continues to develop and scale on a global level, it will be important to prioritise the adoption of an industry-led UTM system to serve as a framework for safe and effective data sharing. The UAS industry, including service providers, has demonstrated it is interested, equipped, and ready to implement and maintain a UTM ecosystem. Consensus globalised standards developed by the UAS industry, such as F3411 Standard Specification for Remote ID and Tracking and ASTM F3548 Standard Specification for UTM UAS Service Supplier (USS) Interoperability, have provided valuable contributions to UAS operating and offering services in a way that promotes safety and interoperability in the airspace.

Wing believes industry is best positioned to build and manage UTM services, with the Government operating in an oversight capacity to ensure the industry-led UTM ecosystem supports safe airspace integration and cooperation with low altitude airspace operations. The UAS industry has shown a desire and capability to promote safety through strategic deconfliction, during which operators can discover nearby operations and share flight intents to ensure there are no conflicts before they fly. Service providers and regulators also have participated in UTM data exchanges to enhance awareness and safety in the airspace. Standards development organisation ASTM has quantified the safety benefits of strategic coordination to produce an approximate 98.6% reduction in collision rate. A decentralised, federated ecosystem has been the overwhelming regulatory direction adopted by jurisdictions



including Europe and the United States (US). In the US, seven commercial drone companies have partnered to implement strategic deconfliction into their daily operations. The UTM service will be consistent with the ASTM F3548 USS Interoperability standard and is being socialised with the FAA. It is anticipated that this will promote greater airspace access for BVLOS drone operators.

Industry would also benefit from hearing insights from the Government on FIMS given industry, as well as Government agencies, have already developed and/or implemented solutions with identical or similar functionality. From the perspective of regulatory harmony and industry efficiency, Wing believes that any centralised services should be limited. There has not been a demand for FIMS from Australian drone operators as FIMS services are not tailored to the current and future issues of importance in the drone sector, and will not be a viable solution for some of the non-safety policy outcomes the program has claimed it will solve. Given the drone industry is continually evolving, those who are participating in the UAS industry are ideally equipped to quickly and effectively address issues that arise in an agile and flexible manner using an outcomes-based approach.

To offer platforms for authorities to enable an ecosystem of USSs, Wing has participated in many initiatives in various jurisdictions, including CASA's RPAS platform. The ecosystem currently is made up of twelve different companies with regulatory oversight from CASA. The Australian Government's leadership in UAS regulation provides a unique ability to support the efficiency and effectiveness of UTM by establishing processes to approve USSs and by developing regulatory requirements governing the use of interoperable UTM services by which UAS operators will demonstrate their fitness to fly safely in the Australian Airspace System. Requirements may specify authoritative information sources or performance and safety parameters for use in complex airspace.

#### UAS Technology for Recognition and Awareness

To fully integrate drones into the airspace, Wing supports the Government's efforts to prioritise wide scale adoption of ADS-B, including increased adoption rates by crewed aircraft. Utilisation of ADS-B out by crewed aircraft and ADSB-in by uncrewed aircraft enables UAS to use digital means to avoid ADS-B equipped crewed aircraft without further action by the crewed aircraft operator. Digital identification technology for UAS operations is also an important collaboration tool to support security and general awareness of UAS operations. Wing recommends the Government establish performance-based requirements for remote ID and allow operators to choose between network remote ID (NRID) and broadcast remote ID (BRID), subject to meeting the requisite level of performance. Though Wing supports allowing uncrewed operators to choose which remote ID technology is best suited to their particular operating environment, we firmly believe that NRID shows greater promise as an industry



standard in a UTM system. NRID provides for a much wider range of visibility compared to BRID and is able to make its information available to other users, as well as tailoring the accessibility for different users, while still maintaining the needed level of privacy. In short, NRID can deliver the same performance as BRID, without as many risks for the unrestricted data collection or aggregation associated with BRID, in areas with internet connectivity.

### Advanced Air Mobility (AAM)

Both AAM and UAS consider certain factors, including unique community needs and whether the uncrewed vehicles are able to uphold the required level of safety and efficacy. As with the UAS ecosystem, the Government would also benefit from encouraging the AAM industry to utilise ADS-B and to choose the remote ID technology that is best suited to their environment. However, AAM and UAS have significant differences, including size, needed infrastructure to perform operations, and implications of AAM transporting passengers. The complexity of large, passenger-carrying aircraft brings a much broader set of regulatory questions that are more akin to crewed aircraft. It will be important to tailor these regulations to account for different types of uncrewed aircraft, as UAS, particularly small UAS, will have different risk profiles and needs than AAM. As the AAM industry currently has not begun commercial operations in Australia and must account for additional complexities, AAM's regulatory timeline and level of maturity will not be as advanced as UAS.

Developing a comprehensive, industry-led UTM system is another critical part of integrating promising technologies such as UAS and AAM into the Australian Airspace System. Coordination between both crewed and uncrewed aircraft will further enhance safety, efficiency, privacy, and security in the airspace. Strategic deconfliction has demonstrated its efficacy as a conflict management technology, enabling both crewed and uncrewed operators to gain greater situational awareness through sharing flight plans for nearby operations to ensure there are no conflicts before they fly. This safe and effective data exchange will be essential to the successful functioning of a UTM system. While UTM will be invaluable for both the UAS and AAM industries, Wing recommends first developing and refining UTM in lower altitudes for UAS participants before applying it to the AAM ecosystem. The insights gained from deploying UTM with UAS participants will help guide deployment in the AAM industry as it progresses with additional technological advancements and public acceptance.

### Security

As the Government develops policy determining the appropriate use of counter-drone capabilities, Wing recommends adopting a federal regulatory approach crafted in close coordination with national security agencies. Given that the vast majority of drones in the airspace are legitimate and lawful entities, it is important that any counter-drone regulation combats rare nefarious actors without impeding beneficial drone activities. This federal



regulatory approach would help avoid fragmentation that would be detrimental to future growth and ineffective in addressing threats in a coordinated, efficient manner. States and localities have an essential role and authority in combating criminal activity. Approved local officials can and should conduct investigations and prosecutions. However, having a patchwork of different counter-UAS rules could cause confusion for legitimate UAS operators and lead to an influx of illicit activity in regions having less stringent enforcement. Though counter-UAS authority and policy should be developed and implemented at a federal level, there may be benefit in delegating counter-UAS authority to approved local officials. Any state, local, or territorial entities that have been authorised to perform mitigation and more sensitive identification counter-UAS functions should be given the opportunity to develop and gain experience initially on a temporary basis via a pilot program.

To maximise the utility of existing tools and technologies, the Government should encourage the UAS industry to construct and manage an identity and access management system. This system would leverage multiple databases to obtain basic identifying information from all registered drones, which would support the Government becoming the source of information for drone registration. Entities that have been designated to utilise identification counter-UAS technology can leverage such data to quickly correlate the information and identify proximate drones that have been detected. When accessing this information, it is critical that entities establish and maintain safeguards for privacy and data protection. Third parties would be best positioned to develop and maintain the systems accessing the database(s) of information.

Separate from this identity and access management system, the Government should establish a verified operator program. In this program, qualifying operators can voluntarily provide identifying information so they can be readily identified in the event of being detected and remotely identified. To foster continued UAS growth and innovation, it is critical to promote responsible actors, which comprise the vast majority of UAS operators. Regulators should empower relevant facilities and locales to appropriately and effectively use counter-UAS technology. Excessive counter-UAS restrictions could result in the unintended consequence of limiting the continued presence and growth of these legitimate drone operators.

## **Conclusion**

We applaud the Government's forward thinking approach in the drafting of this Green Paper, and welcome the opportunity to provide comment to this important policy work. We're grateful the Department has been inclusive in seeking outreach from a wide array of participants across aviation, and recognise the importance and potential of the UAS ecosystem. We agree that keeping safety paramount is key to unlocking both community benefit and acceptance, and would like to see outcomes-based approaches applied to policy areas beyond safety. Finally, we'd encourage the Government to look closely at the FIMS





program, and limit it to the most narrow of circumstances, so as not to position domestic Australian operators at a disadvantage globally by forcing them into a complicated centralised system that is unnecessarily limiting and expensive, and unique only to Australia.