Submission from Wing Aviation Pty Ltd
National Aviation Policy Issues Paper on Emerging Aviation Technologies

Wing welcomes the opportunity to provide comment on the Department of Infrastructure, Transport, Regional Development and Communications' (the Department) *National Aviation Policy Issues Paper on Emerging Aviation Technologies* (NEAT Paper).

Wing applauds the Government's commitment to developing a whole-of-government policy to foster innovation and investment in emerging aviation technologies. We believe the approach taken by the Government will lead to further domestic and global investment and innovation, ensure Australia remains a global leader in developing best-practice policy, and ultimately unlock the potential that a diverse drone ecosystem can offer industries and communities.

As a drone operator, manufacturer, and UAS Traffic Management (UTM) services provider, Wing is committed to promoting safe and responsible drone operations with appropriate regulatory oversight.

Wing in Australia
Wing, a subsidiary of Alphabet, has worked since 2012 on the development of a lightweight custom-designed aircraft and navigational system that delivers small packages to specific destinations on demand, safely, reliably and efficiently.

Drone delivery has the potential to radically improve the way we live by making the things we need in a hurry available in just minutes. Today, Wing operates what is likely the largest fleet of drones in Australia, offering an Australian and world-first commercial drone delivery service directly to customers in Logan, Queensland, and Canberra, Australian Capital Territory (ACT). Wing has delivered tens of thousands of packages to customer homes, supporting 16 local businesses in Canberra and nine local businesses in Logan to reach new customers by offering a safe, fast, and efficient means of last-mile delivery.

In addition to its delivery service, Wing has also developed a set of UAS Traffic Management (UTM) capabilities to help diverse sets of operators share the skies. Wing offers a free, publicly-available drone safety app, OpenSky, which provides relevant airspace and regulatory information to help drone users access the skies. As UTM services mature, OpenSky will grow to offer drone operators additional services such as controlled airspace authorisations.

Wing continues to grow and invest in Australia, with the intention of expanding our operations and investment in the years to come. As part of our expansion we are creating jobs in Queensland, the ACT and New South Wales. Our Australian team currently consists of RPAS pilots, geospatial

experts, software engineers, marketers, community engagement and policy experts, customer service representatives, facilities managers and operational staff, as well as those supporting our UTM and research and development programs.

We believe Australia has successfully fostered an environment to attract companies like Wing, and is one of a handful of countries that will pioneer and shape the future of drone delivery globally.

Australia's Drone Industry
Wing believes industry collaboration will contribute to a thriving ecosystem of domestic and international manufacturers and operators in Australia, and will ensure a range of use cases are realised in the next few years.

In Australia, industry has already demonstrated the benefits drones can provide in increasing community and workplace safety, productivity, job creation, STEM advancements, and breakthroughs in aviation technology. Australia is the only place in the world today, where families can have snacks and sunscreen delivered to their home by drone for a trip to the beach; where when swimming in the ocean, a drone overhead monitors for sharks and helps surf lifesaving know if any swimmers encounter trouble; and then when on the drive home, a local road isn't shut for line inspection for an entire day, because the work was done in just a few minutes by a drone.

Australia's drone industry is also benefiting from the maturity of the drone workforce. The talented and experienced unmanned aviation workforce has been central to the Australian drone industry's world-leading position. With investment in STEM education as well as dedicated drone curriculum in a growing number of primary and secondary schools, Australian students are now establishing clear pathways into a career in emerging aviation technologies with greater understanding of the real-world environments in which their skills can be applied.

Australia has staked out a leadership position in the advancement of drone technology, and we believe that is why some of the most significant drone developments in the world are happening here.

Drones Enable Economic Growth
As part of a smart and multimodal transport system, drone delivery can create new economic opportunities, enable local businesses to reach new customers more efficiently, conveniently and sustainably, increase productivity for those businesses, and save consumers time.

As noted in the NEAT Paper, there is work completed and underway to measure the economic benefits and opportunities associated with the growth of emerging aviation technologies. Given Wing's expertise, Wing has invested in economic modelling that explores the potential benefits specific to drone delivery.

Small retail businesses stand to benefit considerably from drone delivery, allowing local businesses to thrive, and encouraging and enabling new businesses to engage in e-commerce. Economic

modelling from data analytics consultancy AlphaBeta has shown drone delivery could grow retail sales in Australia by $2.2 billion by 2030, of which $750 million could accrue to small businesses. In addition to generating more sales, drone delivery could expand market reach for these businesses and reduce delivery costs by up to 80-90 per cent. This also equates to 180-200 million hours saved for consumers in 2030 by replacing customer pick-up journeys, as well as delivery times that are 60-70 per cent faster than other methods.[1]

The constraints of last-mile delivery has limited the ability of small businesses to reach customers who either need or demand home delivery. In Wing's operations in Logan and Canberra we have witnessed that by offering drone delivery, small businesses have grown, expanded the profile of their local products with new customers, and transitioned through difficult economic periods. In Logan one of our merchant partners has been in a position to retain staff by delivering coffee by drone as in-store foot traffic fell throughout COVID-19.[2]

As a contactless delivery solution, Wing has been uniquely positioned to meet the evolving needs of the communities in which we operate throughout the COVID-19 pandemic. We've seen a significant increase in demand for drone delivery service from those wishing to practice social distancing and reduce trips to the shops. This has included delivery of groceries and household items to people quarantining, and delivery of essential goods to vulnerable people who due to their age or other circumstances are unable to leave their home. In the future, we see considerable potential for utilisation of drone delivery in emergency and crisis situations, and for lifesaving items such as EpiPens or inhalers to be delivered in minutes.

The potential economic benefits of drone delivery extend beyond the traditional retail environment. In Australia, tradespeople make a total of 60 million unplanned trips to collect hardware items that they have either run out of or didn't know they needed until starting the job. These interruptions are costly. At an average of one hour each, they amount to $2 billion annually in labour and vehicle costs.[3] They can also result in larger workflow disruptions, leading to lost time for clients and, in some cases, expensive contract penalties for delayed projects. By replacing a share of these trips, drones would deliver cost and time savings across the construction industry that would allow businesses to take on and complete more projects, benefit governments as a key contributor to infrastructure development, and save households money and time otherwise spent waiting for work to be completed.

An Overarching Policy Framework

Wing agrees with the core principles identified by the Government and supports focusing on these core principles as part of an overarching policy development process that balances immediate goals with more medium term and long term priorities.

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[1] *"Drones will deliver benefits to Australian businesses, consumers and communities",* (October 2020), AlphaBeta. Accessed at: <*https://alphabeta.com/wp-content/uploads/2020/10/drone_delivery_impact_-_national.pdf* >

[2] *"Celebrating one year of drone delivery in Logan"*, Wing Medium (12 September 2020). Accessed at: <https://medium.com/wing-aviation/celebrating-one-year-of-drone-delivery-in-logan-e2a8b23f0100>

[3] *The Potential Benefits of Drone Delivery for Australian Construction and Maintenance,* (July 2020), AlphaBeta, pg 2.

We believe the whole-of-government approach will help to ensure policies are developed in consideration of each other, lessening the chance of unintended impacts and resulting in a longer-term policy framework that will allow innovation to flourish. Moreover, we support the Government's collaborative strategic approach in bringing all of the applicable policy areas and agency stakeholders together in one whole-of-government discussion, rather than multiple agencies tackling their area of policy responsibility independently in silos.

Wing is supportive of policies that continue to set high standards, whether it relates to safety of drones, their seamless integration into the airspace, or minimising impact on environments and communities. Wing has been encouraged by the Government's approach to outlining its vision and intention for policy while engaging with industry to understand how it can collaborate on creative and viable solutions to meet these policy objectives.

Safety

Wing welcomes the Civil Aviation Safety Authority's (CASA) commitment to safety and innovation. As the safety regulator, we believe CASA has adopted a forward-thinking approach that ensures UAS meet a high level of safety, while supporting the diversity of the drone industry in Australia.

Regulators, airspace users, and the public should have confidence that a drone operation meets an agreed benchmark level of safety. However, drones are diverse, featuring a range of operations (VLOS to BVLOS), aircraft (low automation to high automation), operators (small to large), and operating environments (rural to urban). Approval processes for drones should accommodate and encourage that diversity.

To that end, Wing supports approval processes that are risk-based, performance-based, and adaptable. The Specific Operations Risk Assessment (SORA) is a rigorous implementation of these principles, and incorporates input from regulatory authorities in 61 countries, including CASA, the US Federal Aviation Administration (FAA), and the European Union Aviation Safety Agency (EASA).

Frameworks such as SORA help to incentivise new approaches to safety by recognising a range of non-traditional design and operational mitigations. These design and operational options increase overall safety and promote public trust. By comparison, prescriptive frameworks that impose 'one size fits all' requirements, or frameworks that regulate parts of an operation rather than the operation as a whole, may be a disincentive to effective mitigations.

Wing supports international harmonisation. Harmonisation promotes competition, encourages innovation, and helps regulators to develop a shared body of experiences, resources, and expertise to support the growth of the industry. For example, Wing's extensive research and development in the United States enabled complex delivery operations in Australia; likewise, the FAA reviewed Wing's operational experience in Australia when considering Wing's approvals in the United States. Wing encourages regulators to ensure that operators, manufacturers, and UTM providers can freely participate in the market, subject to meeting applicable requirements for safety.

Security (Remote Identification)
Remote Identification (Remote ID) will be an important capability to support the safe integration of drones into the Australian airspace, and Wing supports the use of Remote ID to help promote responsible operations and improve security. Remote ID enables an observer on the ground, such as airport security or a member of the public, to identify a nearby UAS via app. With appropriate safeguards, Remote ID can:

- **Promote compliance** by improving accountability among registered UAS operators.
- **Facilitate the investigation** of accidents or serious incidents.
- **Identify and respond to security threats** and decide on the appropriate counter-UAS response.

Working together with regulators, industry has demonstrated how UAS operators can identify themselves through the UTM network. UAS operators can transmit their position to a UTM Service Supplier, either from the aircraft or from the ground station. The UTM Service Supplier can then share that information with other Suppliers to display to observers. Remote ID through the UTM network requires no additional equipment, protects privacy, and supports diverse recreational and commercial operators.

We think the policy goals outlined in the NEAT Paper are important, and we encourage the Government to engage with industry as well as regulators in other countries to identify how a robust UTM ecosystem, registration system, and Remote ID framework could be established using existing industry capabilities. We believe there is scope for industry to support the government in an inexpensive way with minimal implementation requirements, while promoting international harmonisation. Finally, Wing would also note that in order to address malicious use of non-compliant UAS, the Australian Government will need to invest in appropriate counter-UAS technologies. By itself, Remote ID cannot address all malicious operations with non-compliant (ie. non-participating) UAS.

Privacy
Wing believes it is crucially important for drone operators to be trusted members of the communities in which they operate. In the context of drone delivery, this means protecting the privacy of customers and non-customers (bystanders) alike. Wing has implemented strong policies and practices to protect the privacy of those in our operating areas and we support the Government working with the states and territories to arrive at a harmonised framework. We believe that a technology agnostic approach should be applied wherever possible.

Noise
Wing supports the Department's intention to develop and manage a national regulatory approach to noise management that encourages quiet operations consistent with local community expectations. The Department recently released its *Noise Regulation Review for Remotely Piloted Aircraft and Specialised Aircraft*. As part of the Department's review, Wing shared its detailed

position on drone noise in the context of neighbourhood delivery, which can be found on the Department's website.

The *Noise Regulation Review for Remotely Piloted Aircraft and Specialised Aircraft* captured the perspective of community members who live in the areas where Wing is currently offering delivery. We welcome the inclusion of this perspective as these are some of the first residents in the world who live in suburbs in which drone delivery is taking place every day, in the morning, afternoon and early evening on both weekdays and weekends.

As we operate in densely populated Australian suburbs and fly over tens of thousands of people every operating day, we too bring a unique and practical experience to the discussion, and look forward to contributing insight from the lessons we have learnt through our operations and by engaging in the community.

It is paramount for our business that we operate in a neighbourly way, including by offering a drone delivery service that is useful for our customers and acceptable to communities. We will continue to engage and learn from the feedback we receive, and this continues to drive our approach to community engagement, technical development, and operations.

The NEAT Paper outlines the potential use of UTM to "support awareness and compliance with a range of regulatory requirements" including noise. While Wing supports further exploration of this concept, we encourage a holistic approach that incentivises operators to reduce noise impacts through a range of mitigations (including aircraft design, operations, and community outreach).

Environment

Emissions

In the context of delivery, drones have already started to take cars and trucks off the road. Over time, it's not hard to imagine a world in which a tradesperson won't need to drive a four tonne truck to the store to pick up a set of screws that weigh just a few hundred grams, or for a two tonne car to be used to move a single meal across a suburb.

Research from AlphaBeta indicates that drone delivery could reduce traffic congestion in Australian cities by replacing 2.3 billion vehicle kilometres nationwide each year by 2030, which would reduce annual CO2 emissions by 550,000 tonnes. This is equivalent to the carbon storage of 17.5 million trees.[4]

In providing an alternative to existing last-mile delivery options, Wing hopes to encourage sustainable modes of goods transport to become the norm.

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[4] *"Drones will deliver benefits to Australian businesses, consumers and communities",* (October 2020), AlphaBeta. Accessed at: <*https://alphabeta.com/wp-content/uploads/2020/10/drone_delivery_impact_-_national.pdf* >

Wildlife

Wing believes operators have a responsibility to take steps to minimise potential impact to wildlife and we work closely with third-party avian, fauna and flora experts to guide our operations.

We support the initial recommendations in the NEAT paper and the establishment of a voluntary industry code. We also support using tools like UTM to share relevant wildlife information with operators, such as bird migratory maps.

Airspace Integration

Australia has emerged as a leader for the developing unmanned aviation industry. A combination of Australia's embrace of new technologies with a forward-leaning regulatory approach toward maintaining airspace safety has yielded one of the world's most supportive and operationally-ready environments for emerging aviation technologies.

Airspace integration is one of the most complex challenges for a functional and scalable unmanned ecosystem. To date, CASA has developed a holistic approach to evaluating and approving complex UAS operations recognising a range of capabilities and mitigations to ensure safety in the air. A performance-based approach to regulation will enable the safe and streamlined integration of unmanned aircraft. The SORA framework has demonstrated this in practice.

Avoiding prescriptive solutions on aircraft design or air traffic utilisation has fostered safe, innovative UAS operations that demonstrate Australia's continued commitment to pioneering cutting-edge approaches toward the future of aviation.

Fostering Future Innovation

We applaud the Government for its vision outlined in the NEAT paper and look forward to the opportunity to contribute to further policy development. The framework proposed is amongst the first-of-its-kind in the world, and the Government has demonstrated a willingness and ability to foster constructive dialogue between a wide range of relevant stakeholders. We also agree with the vision of approaching this iteratively in short, medium and long term priorities. By addressing the immediate policy needs the Government is providing a foundation for the industry to continue to innovate and invest. This will allow for flexibility in the rapid advancements in the drone technology space. We look forward to being a contributing industry partner as the Government advances this important work.

Appendix

Please find below further resources that speak to more in-depth policy positions Wing has shared on the following topics:

- **UTM** - UAS/Unmanned Traffic Management: a new approach to managing the volume and variety of drones
- **Noise** - Wing submission to the Department of Infrastructure, Transport, Cities and Regional Development's Issues Paper, Review of the Air Navigation (Aircraft Noise) Regulations 2018 - Remotely Piloted Aircraft
- **Registration** - Wing submission to Senate Subcommittee on Rural and Regional Affairs and Transport Consultation on Civil Aviation (Unmanned Aircraft Levy) Bill 2020
- **Remote ID** - Remote identification of drones
- **Community Engagement** - Best Practices for Drone Operators