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Department of Infrastructure, Transport, Regional Development and Communications
FAO: Director, Airspace and Emerging Technologies
By email: drones@infrastructure.gov.au
GPO Box 594
Canberra
ACT 2601

30th October 2020

Subject: Response to Emerging Aviation Technologies - National Aviation Policy Issues Paper

Dear Sirs,

As a leading global consulting firm specialising in airport and aviation development matters, we welcome the Department's publication of the Emerging Aviation Technologies issues paper and the open request for the public, industry and stakeholders for comment.

The Department should also note that in addition to our core consultancy business, we provide a Certified Air/Ground Radio Service (CA/GRS) in two regional airports and therefore have operations that could be impacted by any changes to how airspace is controlled.

Our response to the Department's consultation request is contained within the Appendix to this letter. That Appendix is structured using the Department's suggested questions.

We would welcome continued dialogue with the Department and other bodies in the industry as the nature of Drones / RPAS and eVTOL continue to evolve and, hopefully, impact our collective lives for the better.

Yours faithfully,
for Landrum and Brown

Gary Gibb, President – Asia Pacific / Chief Strategy Officer

Appendix – Landrum and Brown Response

Do you agree with the proposed core principles for the National Emerging Aviation Technologies policy?

We concur with the proposed core principles as shown below.

Source: Page 6 of the Emerging Aviation Technologies - National Aviation Policy Issues Paper

We would concur with the premise that safety should come first. Certainly, safety in its own right needs to be front and centre but it will also be critical in ensuring that the opportunities for industry growth, new technology and investment can be realised. As has been seen with the progress of autonomous vehicles, safety will be inextricably linked to the viability of the opportunities to be realised. Similarly, community and environmental acceptance are key to the optimisation of the technology, especially in the longer term when the potential for widespread urban air mobility can be safeguarded in an environmentally sustainable way.

Will the proposed approach to policy development adequately allow for the future direction, operations and investments of your business/organisation?

The proposed approach to policy development is sound. The “whole-of-government” approach makes sense given the impact of aviation on Australia and the opportunity to provide certainty to potential industry organisations looking to invest. We would hope that the co-ordination efforts of the Department are undertaken not only at a Federal Government level, but also with State Governments.

In terms of the proposed approach, we feel that the policy development, if progress towards it is openly communicated, would allow us to incorporate outcomes into the future direction and needs of our business.

Are there any other approaches that could benefit the sector?

We feel that the policy development could be supported in this fast-moving space by some clear time boundaries. There is a risk that, as noted in the paper, traditional approaches to policy development are not able to align with the speed at which the sector is developing. Within reason, any policy delivered in a timely manner (and that is clearly capable of being revised over time) would be better than a delayed policy while the technology moves forward at pace.

The ten statements that define the proposed approach to policy development are, rightly, broad. The following are some notes (on a by exception basis) on our thoughts;

1. Airspace integration

This work should consider the role of Airservices Australia and Defence as the only ANSP providers in Australia, and the potential change to allow other parties into this arena.

2. Safety

Regulation will need to allow safety knowledge based on experience to evolve. Risk based frameworks (potentially with defined safety metrics) should be enabled rather than just broad “undertake safety assessment” statements. There should be defined thresholds to be met.

3. Security

We consider that there should be an alignment of security standards to changes between new and traditional aviation models, and that such standards should be adjusted following changes in risk.

4. Noise

Use of the word “quieter” suggests, to us, a focus on overall “volume” of activities rather than the pitch, nature and frequency of such noise. Experience from the traditional aviation industry is that assessment of all the factors associated with noise should be considered in order to assess the nuisance and health impacts.

Any eventual process should certainly consider the use of the Aircraft Noise Ombudsman (ANO) in an expanded role.

5. Environment

No comment.

6. Privacy

No comment.

7. Electric Vertical Take-Off and Landing Vehicles

The derivation of safety zones and / or obstacle free surfaces from new eVTOL landing sites needs, in our opinion, to be properly worked through. Adoption or modification of existing international and Australian standards that are decades old is unlikely to be suitable to the needs of the emerging industry or to the safety profile of the new transport technology options. The practical implications of standards should be considered during preparation with potential landing sites and examples considered. Any new standards need to be closer in nature to say ICAO Annex 14 and / or MOS 139 rather than the nature of the National Airports Safeguarding Framework.

We would recommend that some example sites are “tested” in a desktop or “digital twin” style environment for their suitability to emerging standards. This is not meant to pre-approve sites, but more to test the impact of rules on some real-world examples. The examples could be drawn from the real world but anonymized. Example sites could be; a rural hospital parking area, a medium height level roof top in a CBD, a park area in a CBD, a site in a technology / logistics park.

8. Infrastructure

No additional comments, other than the approval process should seek to be as consistent as possible between States.

9. Technology trials

The technology journey is such that temporary exemptions from any new (or interim) rules and regulations will be required for newer technologies to be tested. We feel that the framework developed needs to allow for this in order for Australia to remain at the forefront of implementation trials and technology development while also maintaining safety in the more mature aspects of the technology.

10. Central coordination

Our prime view on the issue of coordination is one of alignment between Federal and State arrangements. Where possible there should be little or no difference in the rules implemented between States. Such differences will make trading across our internal border more complex that it needs to be.

What level of service and regulation do you expect from the Government?

We feel that the focus needs to be on safe and considerate adoption of the new technologies. Appropriate protection of the public, environment, and our expected norms is paramount. Those who develop new technology have the right to be protected (through say patents) and the regulations should not interfere with such protections, nor should they overly protect early entrants to the market.

What are your expectations of the Government's role and responsibilities in the management of drones and eVTOL vehicles?

We feel that the current Australian Aviation State Safety Programme is a robust base as a starting point for the management of the emerging technology. Further use of the principles in this programme would aid with common understanding.

What are the key opportunities that these new technologies could deliver for Australia?

We consider that there are likely to be many potential benefits. We also feel that benefits will come from unexpected sources as the technology evolves, price points alter, and awareness grows.

In the contact of Australia, we consider that it may be helpful to consider opportunities falling into three groups that will need to be enabled by the same rules but cognisant of the different contexts between our urban centres and the rest of the country;

- Urban Areas Specific Opportunities;
- Regional Area Specific Opportunities; and
- Common Opportunities, including those where new technology replaces helicopter operations.

The new technology offers the potential for elements of road congestion reduction. We consider that the level of reduction needs to be considered in more detail, as the perceived benefits could be complex to achieve.

For example; if use of eVTOL were to achieve substantial modal split in passengers to / from airports then the number of eVTOL movements themselves would be significant. The table below looks at two scenarios of an airport with a departing passenger flow of say 3,000* people per hour and having a broadly comparable number of people arriving to the airport terminal precinct.

"Surface Access" Mode Share using eVTOL	Resultant nominal hourly flow of passengers using eVTOL to arrive at the airport.	Number of people in a group per eVTOL aircraft	Resulting number of eVTOL movements per hour	Corresponding time between eVTOL movements
1%	30 people	2.5 to 1.5	12 to 20	5 to 3 minutes
10%	300 people	2 to 1	150 to 300	24 to 12 seconds

* 3,000 departing passengers per hour is a broad proxy for the (pre-COVID) departing passenger flow at the major capital city airports in Australia.

In either scenario the level of new (or repurposed) infrastructure required would be significant.

If one were to undertake similar analysis for, say, "last mile" of various delivery van routes then the scale of traffic removed from roads and imposed into the air would become apparent. Such assessments would, we feel, be important in the context of risk assessments supporting regulatory and policy decisions.

We see the technology has a part to play in;

- Reducing congestion
- Reducing the need for capital intensive ground-based roads and infrastructure and hence burden on the tax payer
- Opportunities to improve outer suburb access to jobs in inner cities (Urban Air Transport)
- Reduced emissions through use of electrified vehicles.
- Offering improved security (money or high value goods transfer),
- Modal shift,
- Filling low volume movement gaps in traditional transport infrastructure networks,
- "Last mile" journeys and / or deliveries,
- Rural area urgent distribution of supplies and medicines,
- Surveys and inspections[1], and

- Provision of differentiated transport services (premium, economy, etc.).

In Regional Areas, the complexity of airspace congestion reduces and, in some ways, opens up greater opportunity for use of the technology with a lower risk consequence score arising from failure in flight.

Where helicopters currently dominate the provision of aerial delivery services, we feel that the following benefits could be likely;

- Reduced costs of capital acquisition and operating costs,
- Less moving parts, greater reliability and more potential for mass production/low cost virtuous cycle.
- Reduced injuries and deaths from pilot error and/or equipment failure,
- Reduced emissions from electric vehicles,
- Reduced noise nuisance from smaller airframes and rotors.,
- Improved access to hazardous or difficult terrain during search and rescue operations and reduced risk to personnel during hazardous operations,
- Development of see and avoid technology that could morph into road/sea vehicle safety,
- Improved covert surveillance operations, and
- Improved communications and tracking systems.

[1] Surveys and Inspections would include work on;

- Power lines (new routes and existing infrastructure),
- High rise buildings,
- Telecommunication towers and wind farm turbines (new locations and existing infrastructure),
- Bridge structures,
- Proposed and existing road, rail and other remote provision infrastructure,
- Aircraft and airport maintenance inspections, and
- Inspection of inaccessible small spaces.

It should also be noted that relatively benign nature of our climate in Australia lends itself to drone and eVTOL operations

What are the most significant barriers to realising these opportunities?

International standards driven by ICAO will likely occur behind the progress of the emerging technology. It is recognised that it takes five to ten years to initiate new SARPS. Further, ICAO rules are ostensibly written to harmonise international civilian air transport. Therefore, until civilian drones etc fly internationally there could arguably be little need for ICAO to intervene.

Australia, to ensure safety and world leading regulation, will probably need to act in advance of any such international rules, but in a manner that will be flexible enough to allow compliance at some later date. If there is no future merging of standards, then the Australian market will be differentiated from the international one. This will likely be to the detriment of Australia in the longer term.

We expect the overlap in Federal and State Government responsibilities and desires to complicate the preparation of new rules and regulations.

We would propose that model aircraft rules are not separated; recreational and commercial rules should be contained in the one CASR Part and be aligned as far as is possible.

We would propose that rules are “performance based” and not “prescriptive” to enable further advancement in the technologies without having to frequently update the rules.

What issues or actions should the government prioritise to facilitate the growth of emerging aviation technologies?

Seek to ensure a clear national (Federal) policy and not allow a State by State piecemeal system to come into existence. As part of this we would suggest that rules are incorporated into Federal aviation legislation including operator, maintainer, licencing, etc. to ensure national regulations take precedence.

To what extent should Australia's approach be harmonised with approaches taken in other countries?

We feel that where possible the two should be aligned. Australian rules should seek to clarify or open up international rules. Lessons from other jurisdictions must be taken on a rolling basis. At present, we would propose that New Zealand rules may be used as an example of good practice.

Where Australian rules come into existence before international ones, there must be provisions for "Grandfathering" compliance should the new rules be more onerous. Such an approach would allow Australia to take a proactive approach to regulation while lowering the risks to investors of rule change in the future.

Are there other issues that the Australian Government should consider?

The following are some broad topics that could be considered as part of the work;

- Local manufacturing opportunities;
- Battery or fuel cell technology exploration;
- Whether or not to accept certification of technology by other Nation States;
- Use software systems to support the human operation of them, rather than totally rely on software systems being overseen by humans; and
- Use the opportunity that UAM brings to totally reorganize the aviation system away from its decades old origins to be cognizant of modern systems and approaches.