



Australian Association for Unmanned Systems (AAUS) RPAS Noise Advisory Group

Position Paper on RPAS Noise Regulation in Australia 22 November 2019

Background

In November 2018 the Australian Capital Territory (ACT) Government established an inquiry into commercial drone / remotely piloted aircraft system (RPAS) operations taking place in the Territory¹.

In July 2019, the Inquiry report was released, with one of the findings being that no Territory or Federal Authority had clear responsibility for regulating noise associated with drone/RPAS activities. Prompted by the ongoing ACT Government inquiry, the Department of Infrastructure, Transport, Cities and Regional Development (DITCRD) launched a review of the existing Australian Air Navigation (Aircraft Noise) Regulations 2018 to determine their applicability to drone operations. In June of 2019, The Department made public its view that these regulations are applicable and that a range of commercial and recreational drone operations within Australia will require approvals regarding noise. The review will determine the scope and breadth of noise regulations applicable to the drone/RPAS sector.

On September 27, 2019 DITCRD released an Issues paper as part of the review of the Air Navigation (Aircraft Noise) Regulations 2018 (the Regulations) and to seek comments through consultation². The issues paper contains proposed noise regulation of drones and urban air mobility (UAM) aircraft.

The Australian Association for Unmanned Systems (AAUS) acknowledges the potential intrusion drone/RPAS operations can have on the public and that it is an issue of important concern to the community. AAUS also acknowledges that as Australia's peak national body for the RPAS and emerging urban air mobility sectors, it has a responsibility to proactively work with Government and community stakeholders towards addressing this concern.

AAUS has formed an advisory group to lead the development of an all-of-industry position on noise regulations applicable to the sector. Through the outcomes of the advisory group, AAUS would like to proactively represent industry needs and provide this as an input to the DITCRD.

¹ https://www.infrastructure.gov.au/aviation/environmental/aircraft-noise/noise_regulation_for_rpa_drones.aspx

² https://www.infrastructure.gov.au/aviation/environmental/aircraft-noise/files/Issues_Paper-Review_of_Air_Navigation-Aircraft_Noise_Regulations_2018-RPA.pdf

Further, the advisory group will develop and represent a unified industry response to the outcomes of the DITCRD review.

The AAUS RPAS noise advisory group consists of the following AAUS members:

- Jake Andrew (The Institute for Drone Technology)
- Reece Clothier (Boeing / AAUS)
- Andrew Crowe (Mirragin)
- Jackie Dujmovic (Hover UAV)
- Geoff Durham (XRotor)
- Ken King (Freespace Operations)
- Anthony Marsh (AirAssess / Monash University)
- Andrew McDonald
- David Steinfeld (Patching Associates)
- Adam Welsh (DJI)
- Greg Tyrrell (AAUS, Chair)

Our Scope

The objective of the AAUS RPAS Noise Advisory Group was to develop an industry position on the subject of RPAS noise regulation and to provide considered commentary to the proposed RPAS noise regulation outlined in the DITCRD Issues paper released on 27/9/19.

Regulatory Objective

Noise regulations can have a significant impact on the emerging RPAS and Urban Air Mobility (UAM) sector and the many benefits they deliver to the community. Benefits include those directly through the provision of new services (e.g., aerial imagery, surveying, and delivery) or downstream benefits like those from enhancing public services (e.g., fire and emergency response), enhancing the efficiency and environmental sustainability of existing industries (e.g., infrastructure management and farming), through to the creation of new jobs. These benefits will continue to grow as the industry matures and new applications are realised.

It must also be recognised that the technical and operational restrictions potentially required to be compliant with noise regulations will have a significant impact on the sector and its ability to continue to deliver and grow the benefits it offers the community.

The primary objective of noise regulations must achieve an equitable balance between the public's right to freedom from unreasonable disruption and the loss of benefit delivered to individuals and the community as a whole as a result of noise regulation.

Guiding Principles

The development of an appropriate regulation to address RPAS and UAM noise is complex and will take time. Before developing or modifying regulations, it is important that industry, Government, and community stakeholders agree on the principles guiding the development for these regulations.

We believe that the development of RPAS and UAM Noise regulations should be:

- **Open** – Industry, community and other relevant stakeholders should be part of the process.
- **Objective** – The rationale and basis for any regulation must be disclosed and be directly traceable to the public concern it seeks to manage.
- **Fair** – Not impose unreasonable cost or restriction on an emerging and beneficial industry. Regulations should not establish requirements above and beyond those applicable to other industries or activities.
- **Balanced** – Reflect a balancing of the needs of all stakeholders.
- **Flexible** – Be outcome-based to provide manufacturers, operators and end users flexibility in their approach to meeting requirements.
- **Future proof** – Account for the changing use cases, innovation in technology, growth in industry activity, and changing public and political sentiment.
- **Harmonised** – Regulations and their enforcement should be harmonised across all States and Territories and only one agency should have responsibility.
- **Compatible** – Noise regulations should not conflict with other regulatory requirements on RPAS and UAM. Where there is conflict, safety requirements shall always have precedence.
- **Enforceable** – Regulations should be measurable and enforceable.
- **Living** – Regulations should be periodically reviewed to account for changing social attitudes.
- **Clear** – Regulations should be clear, concise, and effective.

Commentary to Proposed RPAS Noise Regulation outlined in DITCRD Issues Paper (released 27/9/19)

DITCRD proposed Regulation in Italic Black

AAUS RPAS Noise Advisory Group response in Blue

Having regard to future development of drone operations in Australia, the department is proposing:

- a. *Concentrating Commonwealth noise regulations for drones on their air navigation (not their base of operations) based on:*
 - *drone size, weight, and design;*
 - *tested noise levels e.g. effective perceived noise in decibels, sound exposure level, LAMax (the maximum noise level reached) or weighted noise levels which are used for traditional aircraft;*
 - *operational height and location e.g. commercial/industrial/residential/rural/remote areas; and*
 - *particularly in built-up and residential areas, the use of restrictions based on total number of flights per day, the duration of flight, how many flights per hour and time of flights (day/night).*

[AAUS RPAS Noise Advisory Group comment]: We agree to the need for noise regulations for drones in Australia in some circumstances and the identified parameters for regulation seem sensible. As stated, regulation should account for not only the source but operational factors (time, flight profile, frequency of operations, as well as type of location overflow), aggregate levels, the psychoacoustic response of individuals, and potential differences in society's acceptance of the disruption for different applications (e.g., medical drone).

- b. *Regulations not applying to recreational drones, all drones below 250 grams and drones operating under standard operating conditions.*

[AAUS RPAS Noise Advisory Group comment]: We agree that initial noise regulations should not apply to recreational drones and all drones below 250g.

As for drones operating under standard operating conditions (SOC), the working group identified the potential for drones operating under SOC to create disruptive noise when operating in urban environments. However, such operations are generally not sustained / frequent in a single area and should not be occurring immediately over populated areas. Thus, the working group agreed that drones operating under SOC should be exempt from noise regulations, with the caveat that this be reviewed should there be any significant change in the disruption caused by drone operations under SOC. Specifically, due to an

increase in the number, duration frequency, or distribution of SOC drone operations.

Potentially by limiting the requirement for approval to those that are operating outside of the SOC, any noise regulation requirement could be handled during the approval process for an Exemption or Area Approval or similar instrument under CASR Part 101.

Further, the working group believes that CASA could look at adopting an approach for RPAS noise regulation compliance in a manner similar to that used for SORA risk robustness requirements. Compliance requirements to the regulation could then be tailored in line with the potential noise impact.

A substantial portion of the commercial industry operate drones outside of SOC. As such, a tailored and proportionate approach to the regulation of noise may help to reduce unnecessary impacts to industry for operations with low disruption profiles.

- c. *Regulations not applying to particular types of operations including emergency services, agricultural and other prescribed service operations (e.g. lifesaving patrols, essential medical supply delivery).*

[AAUS RPAS Noise Advisory Group comment]: We agree with this proposed regulation as public benefit far outweighs any noise disruption. Noise regulation should account for differences in public acceptability for different RPAS/UAM applications.

- d. *Drones that meet recognised international aircraft noise certification standards not requiring approval under the Regulations (as is the case now with other aircraft types).*

[AAUS RPAS Noise Advisory Group comment]: We agree with this proposed regulation.

- e. *Benchmarking acceptable noise levels for overflying different land use areas (including residential areas) having regard to acceptable noise levels permitted from other similar noise generating equipment under State/Territory legislation.*

[AAUS RPAS Noise Advisory Group comment]: Benchmarking RPAs/UAM is a sensible approach to inform operators of their impact and protect sensitive areas. The Government's proposed method of benchmarking revolves around determining allowable noise levels based on land-use-areas affected and noise level of similar electrical appliances. The application of "land use area" in determining noise compliance can enhance operations (allowing noisier drone operations) but also add undue complexity to the airspace & make operational requirements / compliance unnecessarily difficult to navigate. In lieu of "similar-noise-generating-equipment" it is proposed to classify RPA types according to their noise profile and assign minimum distance profile ("RPA-noise-classification") to protect the community.

The AAUS proposed RPA-noise-classification should take into consideration the type of

RPA operations undertaken and weight limits of the RPA. Under this method A) ad-hoc operations under current Standard Operating Conditions (SOC) should not require “RPA-noise-classification”. B) ad-hoc operations under non-SOC operation should only be “RPA-noise-classified” where RPA weight-criteria is exceeded. C) all RPA operations revolving around delivery and continuous high traffic area flight operations should be “RPA-noise classified”. The “RPA-noise classification” should not reflect a generic “similar noise generating equipment” value that can vary between States, but rather be based on the specific flight characteristics (take-off, landing, slow-stationary flight & rapid movements & operations) having consideration for acoustic weighting and potential for tonal characteristics.

The distinction of “different-land-use-areas” should be considered in a nuanced context. While it may greatly benefit by introducing areas with less stringent noise obligations (i.e. high traffic / industrial areas), it can quickly devolve in a mosaic of zones conflicting between states and territories. Such variety of operational constraints will be complex to operate in and difficult to comply with. A simple Federal driven overarching approach should be considered for different land use areas with a small number of easily identifiable zone types.

It is expected that in this manner small ad-hoc drone operations which are not expected to draw significant noise impact are unaffected, yet larger aircraft or aircraft who operate in high trafficked areas meet community noise limit expectations. The RPAS/UAM industry is still in its infancy with an large amount of potential yet to be unlocked. The approach detailed above should continue to foster additional development and growth while protecting the community at large from un-due noise impact. This stance is an iterative approach and should be reviewed as regulations mature and RPA operations gain prevalence in the Australian sky.

It is noted that future air traffic management systems for RPAS/UAM (i.e., commonly referred to as “UTM”) may provide the necessary system for the operational/tactical management of noise across individual aircraft and aggregated activity in identified areas.

- f. Allowing noise regulation of drones by State/Territory Governments where this is consistent with the application of their regulations to other types of noise disturbance from operating equipment and not inconsistent with Commonwealth legislation.*

[AAUS RPAS Noise Advisory Group comment]: We disagree with the proposal to allow State or Territory governments to regulate noise and believe that a single federal approach is required to keep regulation fair and harmonised across Australia. Allowing noise regulation of drones by State or Territory Governments could introduce confusing and inconsistent regulation that would be difficult for operators to follow and complex for authorities to enforce.

We believe the following are key reasons why this issue should remain solely within the

Federal purview:

- 1) Federal pre-eminence over the airspace is an important principle that needs to be maintained. Allowing States or Territories to set their own noise regulation undercuts this principle as it will hinder routing of operations and lead to a patchwork of operational areas for flights. It could also open the way for noise regulation being used as a proxy to deny use of specific airspace, much as landing and take-off rights are currently being used by local councils to curtail access.
- 2) State-based regulations are bad for business and interstate commerce. A complex mix of different regulatory regimes will balkanize the airspace and hinder businesses from scaling across the Australian market. The ability to expand and scale across the Australian market is an important precursor to the development of Australian RPAS and UAM service providers, software and hardware companies that can compete globally, and in ensuring that Australia attains a prominent place in this new industry.
- 3) State-based or localised regulation could well have safety implications. If delivery or other services are routed to favour State noise constraints and without a safety first mentality, this could lower safety levels. It is important, therefore, to keep noise regulation at the Federal level and ensure that noise is balanced against other concerns such as safety.
- 4) State-based or localised regulation could hamper manufacturers from building to an acceptable Australian standard. It is hoped that manufacturers will build to meet noise standards. Without clear national standards we could see a situation where several State standards are present and manufacturers either ignore this confusing mix of regulatory standards or only build to meet select standards. A strong analogue can be found with car manufacturing. The automotive industry build to meet Australian national standards

Given the arguments on keeping noise regulation solely within the Federal purview, and Federal Government's greater ability to manage issues across multiple stakeholder groups, we would argue that noise regulation for RPAS/UAM remain within the Federal sphere. We believe the Federal Government is best placed to take a view on benefits of these emerging aviation sectors and dispassionately balance the issues and benefits that arise with new technologies.



About AAUS

The Australian Association for Unmanned Systems is Australia's oldest and largest industry advocacy group for drones. AAUS represents drones across all three domains: land, sea, and air. AAUS' objective is to promote a professional, safe and commercially viable unmanned systems industry. AAUS achieves this through its industry advocacy and promotion, education and outreach, and networking activities.

AAUS provides a single representative voice for the full breadth of the drone / unmanned systems industry. AAUS' 2000+ membership spans small-to-large enterprise, manufacturers, licensed and unlicensed operators, training providers, academic institutions, Government, and other supporting services to the Australian drone / Remotely Piloted Aircraft System (RPAS) industry.

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