



**The Future of Transport Regulatory Review: Future of Flight
DfT Open Consultation, 28 September 2021**

Response from the Institute of Acoustics

Introduction

The Institute of Acoustics (IOA) is the professional body for those working in the field of acoustics and noise management. Our members include consultants, academics and regulators. Our activities include working for the building industry, developers and local authorities in all matters associated with sound and noise management in the built and natural environment. This response has been compiled by members of the Institute and endorsed by its Governing body.

Background

The IOA recognises that growth in the use of new and novel aircraft in the coming years has potential to cause noise disturbance and health impacts on communities across the UK. The IOA agrees there is a need to take steps to address this in accordance with the Noise Policy Statement for England (NPSE).

The IOA welcomes the inclusion of options for regulating noise in the consultation and we would like to give our views on the two questions that are asked on noise:

1 Is your preferred approach to regulating new and novel aircraft noise setting locally enforced aircraft noise limits, standards attached to the aircraft themselves, or another approach?

2 At which points should we measure the noise impact of new and novel aircraft when gathering data on noise? Why?

Noise Management Framework

The response of humans and animals to noise from drones is likely to be different from the response to other aircraft, which has been well researched and is well regulated internationally and in the UK. Drones have different acoustic characteristics, including tonality, that affects the response to noise. Drones are also likely to operate considerably differently, operating at lower altitudes and in closer proximity to people. Furthermore, being more manoeuvrable will be likely to make the non-acoustic factors that affect responses to noise different. Developing regulations and guidance to manage and mitigate noise from drones will therefore



require further research into these areas, research which we understand government is yet to carry out.

Nonetheless, the regulatory framework that exists for managing aircraft noise (discussed below) is a valuable starting point.

Further, in welcoming the consultation's discussion on specific approaches to the regulation of drone noise, the IOA would encourage clarification on the tools available so that significant adverse noise impacts are avoided and adverse impacts are minimised from commercial drone operations. For example, while commercial aircraft are exempt from Statutory Nuisance, it is not yet clear whether drone operations would also be exempt (discussed below). Moving forward, it would be beneficial for the Government to provide clarity on this issue.

At the international level the International Civil Aviation Organisation's (ICAO) Balanced Approach to managing aircraft noise sets out the four main elements of aircraft noise management:

- (A) Noise at source;
- (B) Land use planning;
- (C) Operating procedures; and
- (D) Operating restrictions.

We suggest that this framework provides an appropriate basis to be adapted in managing drone noise, in that all noise management measures available under each element should be explored, with Statutory Nuisance as a potential option to be overlaid as a fall-back enforcement mechanism. In response to consultation question number one, we comment on each of these four elements below, after responding to consultation question number two.

Response to Consultation Noise Question Number 2

Consultation question number two asks '*At which points should we measure the noise impact of new and novel aircraft when gathering data on noise? Why?*'

Noise impacts should be assessed at noise sensitive receptors such as residential properties, schools, places of worship, care facilities, relevant commercial premises etc. In the case of residential properties, it is common practice to assess noise impacts based on noise levels experienced at the building façade. This is because in general residential buildings have similar designs and their occupants have similar sensitivities. For other noise sensitive receptors this is usually not the case and the noise impact should be assessed within the premises based on its specific acoustic design and sensitivity.



A. Noise at Source

We support the CAA's approach to setting limits on sound power levels of drones in different categories of use, as articulated in CAP1789B. In considering noise at source further, we would suggest that the hover test could be elaborated to include a fly by measurement condition, and to consider – for example - the difference in noise emission as they ascend and descend. This would assist in the ongoing management of drone noise, but also in the modelling and assessing of drone noise as part of an impact assessment before operations begin.

We note the proposed approach to require lower sound power levels in future, with limits reducing by 2dB every 2 years. This is in line with ICAO's Committee on Environmental Protection (CAEP) approach to managing noise from fixed wing aircraft, which has been successful over many years. Given the potential for a large number of commercial drones in UK skies, we would however ask if the 1dB reduction per year is ambitious enough in order to drive best practice as new technologies are innovated, regulated and integrated?

B. Land Use Planning

New commercial drone operators will require both CAA permissions to operate and planning permission to operate (a fleet of) drones from a base site. The IOA would welcome clarification on the place of drone noise within these permissions processes. Will for example noise issues be considered as part of the CAA commercial permissions process?

Planning permission for new operating facilities should require a noise impact assessment that will be considered by the local planning authority when considering the application for approval. At the current time there is very little guidance as to how to predict, assess and mitigate noise from drone operations. New guidance on assessing and mitigating drone noise should therefore be developed, at a national level, to provide a body of knowledge to be used in a consistent way by those involved in drone operations. We recognise that resource is required to address this point.

The IOA would be happy to assist with the development of this guidance. Guidance could be formed using research into the dose/effects of drone noise, criteria for assessment (i.e. identifying the impact levels at which significant adverse effects and adverse effects occur), and importantly guidelines as to what mitigation is available and reasonable so as to reduce impacts to a minimum in given situations in line with the Noise Policy Statement for England.



C. Operating Procedures

Procedures requiring aircraft to fly in ways that reduce noise impact on communities are used around the country, specific to each airport as set out in the CAA in the Aerodrome Aeronautical Information Publication (AIP). These make a significant contribution in reducing noise impacts by routing aircraft away from communities, and requiring pilots to use procedures that reduce noise from aircraft on arrival to and departure from each airport. There are, however, limits on what can be achieved due to the limitations on the manoeuvrability of conventional aircraft and safety requirements. For drones there is potential for considerations and adaptations to operating procedures to deliver greater noise benefits. Further work is needed to understand the implications on operation and platform location, design and management in order to develop best practice.

D. Operating Restrictions

Some airports restrict hours of operation, numbers of flights, individual aircraft noise emissions, or impose seasonal noise quotas to limit the amount of noise emitted by the aircraft fleet in operation. The Balanced Approach requires that all other measures are used before operating restrictions are introduced. As drones may become widespread across the UK, operating restrictions should become one element of drone noise management to be used depending on the extent of noise impact for each case, and bearing in mind the potential cumulative impact of drone noise from multiple operations in an area. According to the 2020 Connected Places Catapult report on 'enabling UTM in the UK', research is needed into drone noise, noise reduction and operational mitigations, including designated routes, restricted areas, or red zones as enabled using Unmanned Traffic Management (UTM).

Drone Nuisance

Commercial drone operations are associated with different forms of nuisance (eg. privacy). With regard to drone noise, the IOA would welcome clarification from the Government on where responsibilities for managing and controlling drone noise falls. The CAA has a role in their permission process, but will this be limited to licencing drones that meet the given noise emission levels or will it go further to consider noise impacts on noise sensitive receptors?

Local authorities will have a role when granting planning permissions for drone operation bases, but will they also have powers to issue statutory nuisance notices regarding airborne drone operation (under the terms of the Environmental Protection Act 1990)? While commercial aircraft are exempt from Statutory Nuisance (as set out in Section 60 of the Civil Aviation Act 1982), it is not yet clear whether drone operations would also be exempt, and, if so, under what conditions. This issue



should be clarified in order to help regulators and operators to work together to manage effectively the noise impact from drone operations.

Conclusion

The IOA recommends that an Industry Working Group is set up to develop guidance on the prediction, assessment, monitoring and management of drone noise. This would best be done at a national level to provide those involved in developing and managing drone operations with a common, robust and comprehensive understanding of what can and should be done to minimise noise disturbance in accordance with national policy. The IOA has successfully worked with other industries in the past (e.g. noise from wind turbines) on guidance of this kind. We would be interested in exploring with Government how we might assist in a similar way with this issue.

The Institute of Acoustics

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Institute of Acoustics
Silbury Court
406 Silbury Boulevard
Milton Keynes
MK9 2AF

Email: ioa@ioa.org.uk