



**National Physical Laboratory**

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## Response to the House of Commons Science and Technology Select Committee: Commercial and recreational drone use in the UK inquiry

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The National Physical Laboratory (NPL) is the UK's National Metrology Institute and is at the heart of both the National Measurement System and UK's leadership in the international system of measurement that underpins UK and international trade.

The National Physical Laboratory conducts research across a wide range of areas to support established and emerging technologies and industries which includes work on autonomous vehicles and drone technologies.

### **The effectiveness of built-in drone safety features, such as tracking and monitoring capabilities, in mitigating the risks of civilian drones**

1. There are a variety of questions that need to be addressed to establish the potential effectiveness of built-in drone safety features, some of which we raise below:
2. Are the tracking and / or monitoring capabilities ubiquitous? Will they be required to meet the same specifications and standards across all civilian drones? If there are a range of capabilities, it will be harder to estimate how well they mitigate the risk. In addition, there needs to be consideration of how the information will be collected and analysed, what the protocols for the identification of threats will be and then deciding what action should be taken. These issues cannot be considered in isolation.
3. Are the data and communications protocols for each 'built in' system standardised? Having a standardised system will help ensure that the same types of data are available from all drones, that the data can be collected to fit within a set programme or system, and that it will be comparable. It is important that the quality of the data can be verified, and that the limitations and the uncertainties associated with the data are understood before it is acted upon.
4. If a drone is built from parts, rather than bought directly from a shop, you would need to ensure that the component parts contained the required 'built in' features. This may be a very difficult area to regulate.
5. We would like to emphasise the importance of the standardisation of processes and protocols for improving safety. It is also vital to understand the inherent uncertainties contained in data sets to be able to estimate how effective the safety measures are.

## **The effectiveness of anti-drone technology in mitigating the risks of civilian drones**

6. Anti-drone technology can be effective in reducing the risks associated with civilian drones, this relies upon the integration of effective detection, identification and tracking data.
7. Anti-drone technologies need to be able to act over a suitable range, so that those operating the technology can remain safe.
8. The technologies must not cause further damage or endanger life, so it is essential that there is a controlled descent of the drone.
9. A problem which has recently had a large amount of coverage is the impact that civilian drones can have on airports, causing flight delays and cancellations, disruptions for passengers and significant financial losses for airlines. Anti -drone technology for use at airports must not exhibit “jammer” type characteristics and present a threat to airport / airplane operations through radio-frequency interference.

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