

## STATEMENT OF NEED

### Develop and deploy a solution for BVLOS Drone Operations in non-segregated airspace

#### The Existing Situation

1. CAP722, CAP1861 and CAP1915 indicate that, Beyond Visual Line of Sight (BVLOS) operations in the UK are possible in unsegregated airspace, subject to the 'Detect and Avoid' capability of the Unmanned Air System (UAS) being as good as the 'See and Avoid' capability of conventional aircraft under Visual Flight Rules (VFR).
2. If a UAS will be operating BVLoS with no detect and avoid capability, then segregated airspace (a Temporary Danger Area (TDA)) should be established. TDAs are required, because they reduce risks to conventional traffic imposed by Remotely Piloted Aircraft System (RPAS) to as low as practically possible.
3. It is understood that there are currently multiple live applications with the CAA for the establishment of TDAs to enable BVLoS RPAS operations. There is a risk that accepting these requests will create a patchwork of temporary airspace segregations across the UK which will quickly become unsustainable due to the impact on safety and efficiency, specifically:
  - SAFETY – more temporary segregated airspace increases the risk of infringements by other aircraft into the protected zone, which may result in mid-air collisions.
  - EFFICIENCY – more temporary segregated airspace limits access to aircraft into the protected zone, constraining the operations of other aviation activities (some which will also be essential to CV19 responses).

#### The Proposed Solution

4. The project aims to gradually demonstrate BVLoS operations in non-segregated (Class G) airspace are safe, can meet with regulatory approval and integrate seamlessly with manned aviation whilst still providing safe and efficient access to the airspace by all airspace users.
5. The solution will provide RPAS operators (and other equipped aircraft) with real-time, shared situational awareness of the airspace, enabling the remote operator to strategically and/or tactically detect and avoid other aircraft during BVLoS operations.
6. The eventual solution has three components, based on available and mature technologies and procedures, that are applied together in a new configuration:
  - a. A Transponder Mandatory Zone (TMZ) that enables aircraft to enter the airspace, providing they transmit a basic international standard of Electronic Conspicuity (EC) information.
  - b. A surveillance and broadcast environment created by a network of ground stations that receive the EC information from aircraft and rebroadcast it to all as an integrated air picture via international standards.

- c. An Unmanned Traffic Management (UTM) system that provides the software and interface for remote RPAS pilots to strategically and/or tactically detect and avoid other aircraft.

**What this proposal will involve**

- 7. This project has received funding from Innovate UK as part of the Drone solutions for COVID-19: Innovate UK Article 25 competition and the aim is to conduct a live trial of BVLoS operations in non-segregated airspace.
- 8. It is proposed that the location of the trial and trial preparation will be at Goodwood Airfield, who currently have a TDA in place for drone operations. This project has the full support of the Goodwood TDA applicant, the Goodwood Aviation Innovation Centre and Goodwood Aerodrome. This project aims to integrate with Goodwood’s current operation to ensure minimal impact on the current airspace users.
- 9. The project will develop an airspace trial plan in accordance with CAP1616. The trial plan will contain the evidence necessary for the CAA to approve a live demonstration of BVLoS operations within an established Temporary TMZ within Class G airspace. The evidence for the trial will first be gained from testing within the protection of the Goodwood TDA<sup>1</sup>. For this reason, it is likely that we will seek an extension to the timescales and/or operating hours of the existing TDA.
- 10. The proposal involves a series of phases:

Phase	Proposed Activity	Approx. Timescales
Existing Goodwood TDA	Installation of a network of EC receivers and transmitters with robust and effective coverage down to below 400ft AMSL	Q4 2020
	VLoS RPAS flights integrated with controlled fixed wing aircraft that demonstrate both the coverage and technical specifications of the air/ground receive/transmit functions and UTM system.	
TMZ Preparation	A consultation with aviation stakeholders on the specific aspects of the BVLoS trial including the size, location and equipage requirements of the TMZ.	Q4 2020
	Submission of a trial plan to the CAA including a safety assessment in accordance with CAP1616 for an airspace trial to demonstrate BVLoS operations within non-segregated airspace (TMZ).	Q1 2021
Introduction of TMZ	The establishment of a Temporary TMZ for a live demonstration of BVLoS operations which can be accessed by all suitably equipped airspace users.	Q1/2 2021
Close of TMZ Trial	A final trial report outlining the requirements that enable BVLoS operations within non-segregated airspace.	Q2 2021

<sup>1</sup> The BVLoS Development Pathway (CAP1861) suggests, that tests in segregated airspace should precede tests in a non-segregated environment.