

# Trial Airspace for National Beyond Visual Line of Sight Experimentation Corridor

## Airspace Change Decision for Trial 3 – Temporary Danger Area

CAP 2244



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## Chapter 1

# Executive summary

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## Objective of the Proposal

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1. The Sponsors Cranfield University and Cranfield Airport in collaboration with industrial partners (Aveillant, Blue Bear Systems Research, Thales and Vodafone) have developed a programme to prove a concept of safe Beyond Visual Line Of Sight (BVLOS) Un-manned Aerial System (UAS) operations alongside conventional traffic in non-segregated airspace. This is based around a corridor heading to the north east from Cranfield Airport, known as the National BVLOS Experimentation Corridor (NBEC).
2. The Sponsors intend to ultimately prove their concept in Class G (uncontrolled, unsegregated) airspace. However, before they can do this, they are requesting the establishment of a Temporary Danger Area (TDA), in support of Trial 3 of the overall BVLOS programme. A diagram of the TDA can be found at Appendix A.
3. The overall NBEC BVLOS programme contains 4 trials as follows:
  - Trial 1 BVLOS in the Cranfield Air Traffic Zone (ATZ) (closed to other traffic).
  - Trial 2 BVLOS in ATZ (open to other traffic) - achieved via sectorisation of the ATZ and restriction of traffic to certain procedures, in the same way Extended Visual Line of Sight (EVLLOS) operations have been conducted up until now.
  - Trial 3 Segregated BVLOS in NBEC (with TDA). This is the trial covered by this Airspace Change Proposal, ACP-2020-07.
  - Trial 4 Non-segregated BVLOS in NBEC (no TDA).

## Summary of the decision made

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4. The CAA has decided to approve, subject to the conditions listed on page 12, the establishment of a TDA for the segregation of hazardous activity for “Trial 3” of the Sponsors’ overall programme.

## Next steps

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5. The sponsors have to demonstrate that the necessary conditions have been met prior to submitting the first request for a NOTAM to active the TDA complex.

## Chapter 2

# Decision Process and Analysis

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## Chronology of Proposal Process

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### Statement of Need and Assessment Meeting

6. The Sponsors submitted a Statement of Need (SoN) on 28 January 2020. An initial Assessment Meeting (AM) was held on 22 July 2020 with a follow-up session on 13 October 2020. The Sponsors explained that the NBEC work consisted of a number of separate phases, progressing towards the ultimate aim of BVLOS RPAS operations in uncontrolled Class G airspace without segregation from occupied aviation.
7. Trial 1 and Trial 2 were limited to the Cranfield ATZ, while Trial 4 would involve flying RPAS BVLOS in Class G airspace unsegregated from other traffic. Trial 3 (the subject of this ACP) is an essential part of the progression by demonstrating the BVLOS capabilities over a longer distance but while still kept away from other aircraft.
8. The CAA determined that the proposal was in scope of CAP1616 and assessed the proposal for Trial 3 as an Airspace Trial, potentially requiring a TDA to protect both the RPAS and other aviators.
9. Minutes of the AM sessions, together with a copy of the slide presentation were published on the CAA Airspace Portal.

### Engagement

10. When proposing the establishment of a TDA, sponsors are required to undertake targeted engagement with aviation stakeholders on the safety and operational viability of their proposal in accordance with the requirements of Annex A of the CAA's Policy for Permanently Established Danger Areas and Temporary Danger Areas.
11. In this instance, the Sponsors identified and targeted relevant national representative organisations from the National Air Traffic Management Advisory Committee (NATMAC) as well as relevant local aviation and ground-based stakeholders. Initial contacts were made by email on 15<sup>th</sup> January 2021, with a Press Release posted on the Cranfield University website on 22<sup>nd</sup> January 2021.
12. The online briefing session took place on 29<sup>th</sup> January 2021, with an additional dedicated session held for a stakeholder who was unable to attend

- the main session due to technical issues. An online survey was launched on 4<sup>th</sup> February 2021, with details emailed to the relevant stakeholders and a reminder email sent on 12<sup>th</sup> March 2021, prior to the survey closing on 18<sup>th</sup> March 2021. This gave stakeholders a 6 week period in which to respond, during which 15 separate responses were submitted. The Sponsors then completed their analysis and Engagement Report and provided this to the CAA on 29<sup>th</sup> March 2021 as part of the overall ACP submission.
13. The CAA's review of the material identified that although the Sponsors had adapted the proposal in line with the "we asked, you said, we did" approach, they had not then sought confirmation that the changes addressed the identified issues, and that they didn't cause new ones. The CAA consequently required the Sponsors to undertake an additional feedback round, which took place between 28<sup>th</sup> May 2021 and 18<sup>th</sup> June 2021. A 3 week period was accepted by the CAA as being appropriate for this follow-up feedback exercise as it was half of the initial 6 week engagement period.
  14. The revised Engagement Report (v 3.0) was then submitted to the CAA on 25<sup>th</sup> June 2021, with the final update (v 3.1) submitted on 2<sup>nd</sup> July 2021. The 5 responses received confirmed that for the key low altitude airspace user groups, the communication and mitigation proposals were expected to be sufficient to address any safety and emergency service concerns.
  15. The Sponsors have confirmed their intention to undertake regular engagement with relevant stakeholders during the trial if the TDA is approved and implemented. The Sponsors have also confirmed their intention to collate, monitor and report to the CAA on the level and content of related complaints throughout the duration of the TDA. These Sponsor actions have also been stated as Conditions to the approval of the TDA.

#### **Proposal update and submission to CAA (Stage 4)**

16. The Sponsors submitted the first version of their documentation set on 19 May 2021. The CAA review of this documentation identified that some necessary information was missing, particularly around stakeholder engagement following the revision to the airspace design. As the missing information could not be provided within a few days, it was agreed that the sponsors would resubmit targeting publication of the AIC on 26 August 2021, rather than 1 July 2021 as originally planned.
17. The sponsors provided a full revised submission package on 25 June 2021, with further updates during July in response to specific points raised by the CAA.
18. The final versions of the sponsors' documents used for the CAA decision were version 2.6 of the ACP Proposal document (which includes the Trial Plan) submitted on 13<sup>th</sup> July 2021 and version 3.1 of the Target Engagement Evidence submitted on 2<sup>nd</sup> July 2021.

## **CAA Analysis of the Material provided**

19. As a record of our analysis of this material, the CAA has produced the following, which will be published on the CAA Airspace Change Portal:
  - Operational Assessment.
20. The CAA has also assessed the following aspects; the findings of these are included in under the associated sections of this decision document:
  - Engagement (including related consultation activities);
  - Environmental.

## **CAA assessment and decision in respect of Consultation**

21. Before the CAA will agree to an airspace trial, the Sponsor must demonstrate that it has engaged with aviation stakeholders (specifically, that is airspace users, air navigation service providers and airports only) to establish that the airspace trial will be safe and operationally viable. If the airspace trial is approved, the Sponsors must identify and inform the full range of relevant stakeholders that the airspace trial will be taking place, and during the period of the airspace trial undertake regular engagement with them whilst collating, monitoring and reporting on the level and contents of any related complaints.
22. We have assessed the targeted engagement completed by the change sponsor in support of their proposal to establish a TDA to support Trial 3 as part of the overall NBEC trial programme. The results of our assessment are covered in the 'Engagement' section above.

## **CAA Consideration of Factors material to our decision whether to approve the change**

### **Explanation of statutory duties**

23. The CAA's statutory duties are laid down in section 70 of the Transport Act 2000.

### **Conclusions in respect of safety**

24. The CAA's primary duty is to maintain a high standard of safety in the provision of air traffic services and this takes priority over all other duties.<sup>1</sup>

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<sup>1</sup> Transport Act 2000, Section 70(1).



25. In this respect, with due regard to safety in the provision of air traffic services, the CAA is satisfied that the proposals maintain a high standard of safety for the following reasons:
- All RPAS activities, that are part of Trial 3 will take place within the Cranfield ATZ or the TDA.
  - Trial 3 RPAS activities will only take place while Cranfield ATC are providing an ATC service and the TDA has been notified as active.
  - The Sponsors will provide a Danger area Crossing Service (DACCS) and Danger Area Activity Information Service (DAAIS) via Cranfield ATC
  - The CAA has received the RPAS Operator's Operating Safety Case (OSC). Prior to activation of the TDA, the CAA must have approved this OSC.
  - Prior to activation of the TDA, the CAA will have received and reviewed the stated Temporary Operating Instructions (TOIs) and Letter of Agreement (LoA). The TOIs should detail how emergency service aircraft and aircraft in distress can be safely expedited in or out of the TDA and how the trial can be suspended in the event of any safety-related issues that cannot be resolved.

### **Conclusions in respect of securing the most efficient use of airspace**

26. The CAA is required to secure the most efficient use of the airspace consistent with the safe operation of aircraft and the expeditious flow of air traffic.<sup>2</sup>
27. The CAA considers that the most efficient use of airspace is defined as 'secures the greatest number of movements of aircraft through a specific volume of airspace over a period of time so that the best use is made of the limited resource of UK airspace'.
28. The CAA considers the expeditious flow of air traffic to involve each aircraft taking the shortest amount of time for its flight. It is concerned with individual flights.
29. In this respect, the CAA is satisfied that efficient use of airspace is considered appropriately due to:
- The TDA being defined so as to use as small a volume of airspace as possible.
  - The TDA only being activated when needed, for a maximum of 90 days, typically in the order of up to 4 hours per day, twice a week, with no activations at weekends.
  - The Sponsors' commitment to prioritise emergency access.

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<sup>2</sup> Transport Act 2000, Section 70(2)(a).

## **Conclusions in respect of taking into account the Secretary of State's guidance to the CAA on environmental objectives**

30. In performing the statutory duties, the CAA is obliged to take account of the extant guidance provided by the Secretary of State<sup>3</sup>, namely the 2017 Guidance to the CAA on Environmental Objectives.
31. As a trial lasting no more than 90 days, the relevant Government Guidance is that for "temporary changes to airspace design" (CAP1616 paras B81-B85). In accordance with this, the sponsors have included local communities within their engagement activity and identified that the likely level of acoustic noise produced by the RPAS (which are fixed-wing and electric-powered) during operations would be 46dB(A) as measured from the ground. This is only 2dB(A) louder than the background level during the measurements (mainly birdsong), which the sponsors have assessed as being comparable to a quiet office. The sponsors have therefore concluded that the trial is unlikely to cause any significant impact to stakeholders on the ground through increased acoustic noise. The CAA has accepted this conclusion.
32. The CAA is therefore content that the noise impacts will not have an impact on health or quality of life.

## **Conclusions in respect of aircraft operators and owners**

33. The CAA is required to satisfy the requirements of operators and owners of all classes of aircraft.<sup>4</sup>
34. In this respect, the CAA is content that the requirements of operators and owners of all appropriate classes of aircraft have been considered<sup>5</sup> and the known impacts, as a consequence of establishing a TDA have been mitigated sufficiently, while ensuring the hazardous activity is contained.

## **Conclusions in respect of the interests of any other person**

35. The CAA is required to take account of the interests of any person (other than an owner or operator of an aircraft) in relation to the use of any particular airspace or the use of airspace generally.
36. In this respect, the CAA considers that the proposal will not have an impact on health or quality of life with regard to the interests of any other person due the Sponsors operating the UAS in such a way as to avoid overflight of residential, commercial, industrial and recreational areas as much as possible.

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<sup>3</sup> Transport Act 2000, Section 70(2)(d)

<sup>4</sup> Transport Act 2000, Section 70(2)(b).

<sup>5</sup> See approval condition c.

## **Integrated operation of ATS**

37. The CAA is required to facilitate the integrated operation of air traffic services provided by or on behalf of the Armed Forces of the Crown and other air traffic services.<sup>6</sup>
38. In this respect, the CAA is content that the proposal has no impact on the integrated operation of air traffic services.

## **Interests of national security**

39. The CAA is required to take account of the impact any airspace change may have upon matters of national security.<sup>7</sup>
40. In this respect, the CAA is satisfied that the proposal has no negative impact on national security.

## **International obligations**

41. The CAA is required to take account of any international obligations entered into by the UK and notified by the Secretary of State.
42. In this respect, the CAA is satisfied that the proposal has no impact on international obligations.

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<sup>6</sup> Transport Act 2000, Section 70(2)(e).

<sup>7</sup> Transport Act 2000, Section 70(2)(f).

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# CAA's Regulatory Decision

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## CAA's Regulatory Decision

43. Noting the anticipated impacts on the material factors we are bound to take into account and the conditions being met, we have decided to approve Trial 3 of the Cranfield NBEC programme and its associated TDA, with the conditions set out below.

### Conditions of approval

44. The following conditions are to be met:
1. The Operational Safety Case for this activity must be signed off before any NOTAMs are raised to activate the TDA.
  2. The full range of stakeholder groups must be informed of the CAA's regulatory decision, provided with confirmation of when the decision will be implemented and be made fully aware of the contents of any related Temporary Operating Instructions as required, and specifically the actions to take should access to the TDA be required.
  3. While the temporary change is in operation, the sponsor must undertake regular engagement with stakeholders.
  4. Appropriate measures must be put in place for the monitoring, collating and reporting on the level and contents of complaints to the CAA and stakeholders should be notified of the arrangements. The CAA expect reporting on complaints on a two-weekly basis throughout the operation of the TDA.
  5. The sponsor must record all approvals and denials to enter the TDA complex while it is active.
  6. Prior to activation of the TDA, the ATS Inspector for Cranfield Aerodrome must have received and be satisfied with the TOI's for the ATC in support of the operations are acceptable including the provision of DACs and DAAIS within the TDA.
  7. The sponsor shall submit all NOTAM requests for TDA activation to the CAA Airspace Regulation (Utilisation) team not later than 10:00 on the Friday of the week before they apply.
  8. Should the sponsor satisfy themselves that they have met the criteria for project success as stated in Section 2.2 of the "Final ACP Document" (version 2.6) before the end of the 90 TDA applicability period, they are to withdraw the AIC for the TDA immediately.

## Implementation

45. An Aeronautical Information Circular will be published on 26 August 2021. Individual activations of the TDA complex will be promulgated by NOTAM.
46. The TDA complex will be notified as EG D296A and EG D296B. The CAA activity reference number is 2021-07-0023.
47. Any queries relating to this airspace trial are to be directed to the SARG Airspace Technical Regulator via [airspace.policy@caa.co.uk](mailto:airspace.policy@caa.co.uk).

## Period of the Trial

48. The trial will take place between 26<sup>th</sup> August and 24<sup>th</sup> November 2021.

## On-going engagement and monitoring post-implementation

49. The Sponsors have stated their commitment to ongoing engagement with relevant aviation stakeholders, before, during and in-between the two parts of the airspace trial, whilst they have also confirmed their intention to collate, monitor and report to the CAA on the level and contents of any related complaints in line with the requirements of the airspace trial process.
50. If the basis of stakeholder feedback received during the airspace trial suggests that it is not achieving the anticipated outcomes, the CAA will investigate accordingly and take appropriate action.

## Post Implementation Review

51. Post Implementation Reviews are not required for airspace trials.

Civil Aviation Authority

*24 August 2021*

Appendix A – TDA Location

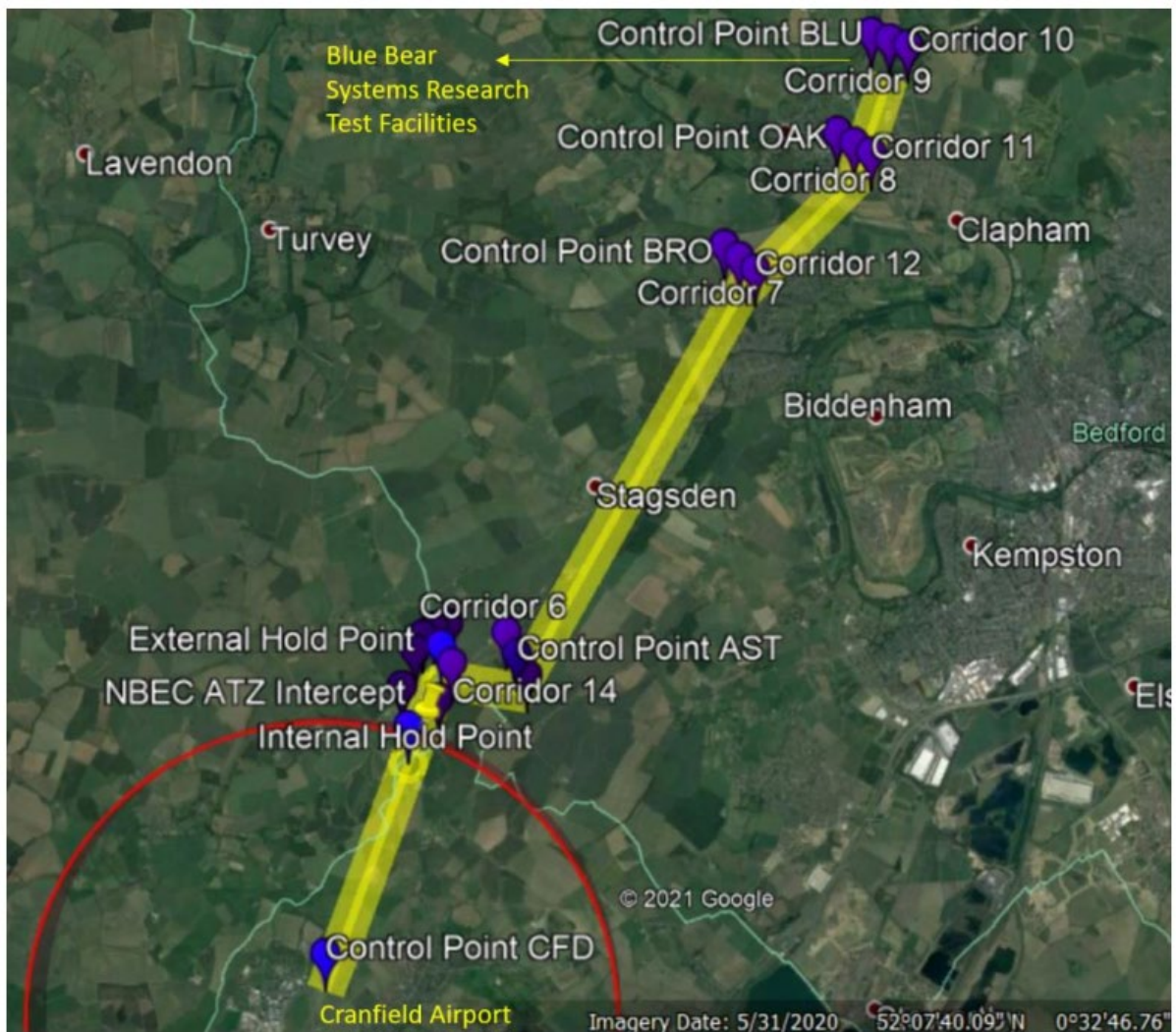


Diagram from the Sponsors' submission