

Beyond Visual Line of Sight (BVLoS) Un-manned Aerial System (UAS) operations in non-segregated airspace trial at Goodwood Aerodrome.

Airspace Change Decision for Trial - Part 1

CAP 2106A



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Chapter 1

Executive summary

Objective of the Proposal

1. The consortium partners (Sponsors) Trax International, uAvionix, Plane Finder and ANRA Technologies are working together with trial hosts Goodwood Aerodrome and The Aviation Innovation Centre, and trial participants Skyports, on a project that aims to prove a concept of safe Beyond Visual Line of Sights (BVLoS) Un-manned Aerial System (UAS) operations alongside conventional traffic in non-segregated airspace.
2. The Sponsors intend to prove their concept in a Transponder Mandatory Zone (TMZ), however, before they can do this, they are requesting the establishment of a Temporary Danger Area (TDA), in which they can develop the operating procedures and protocols and gain the required safety assurances. The dimensions of the TDA can be found at Appendix A.

Summary of the decision made

3. For Part 1 of this trial, the CAA has decided to approve, with the conditions listed on page 13, the establishment of a TDA for the segregation of hazardous activity.
4. The CAA will consider and decide on Part 2 of this trial once the Sponsors have demonstrated that their concept is acceptably safe following the completion of Part 1 and provided the CAA with the required evidence in an updated Part 2 submission.

Next steps

5. An updated Trial Plan evidencing how the Sponsors have proven that their concept is both safe and viable for Part 2 is to be submitted to the CAA no later than 12th Aug 2021, if they wish to commence part 2 on 23rd Sep 2021.
6. The CAA will make an assessment on the acceptability of the Part 2 conditions no later than 23rd Sep 2021¹.

¹ This deadline is subject to the sponsor submitting a satisfactory trial plan part 2 as stipulated.

Chapter 2

Decision Process and Analysis

Chronology of Proposal Process

Statement of Need and Assessment Meeting

7. The Sponsors submitted a Statement of Need (SoN) on 24 Sep 2020. An Assessment Meeting (AM) was held on 12 Nov 2020 at which the Sponsors outlined the following requirements for the airspace trial:
 - Demonstrate that BVLoS UAS 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.
 - Trial the solution in non-segregated airspace utilising:
 - i. A TMZ that will allow aircraft, transmitting a basic international standard of Electronic Conspicuity (EC) information, to enter the airspace.
 - ii. A network of ground stations that receive the EC information and re-broadcast it to all participating operators as part of an integrated air picture.
 - iii. An Unmanned Traffic Management (UTM) system that provides the software and interface for UAS operators to strategically and/or tactically detect and avoid other aircraft.
 - Request the establishment of a TDA at Goodwood Aerodrome in order to safely prove the solution.
8. The CAA determined that the proposal was in scope of CAP1616 and assessed the proposal as an Airspace Trial, with two distinct parts. Following further discussions with the Sponsors, it was agreed that Part 1 would utilise a TDA to prove the concept and Part 2 would lead to the request for a TMZ.
9. The review and possible approval of the 2nd part would only occur once part 1 of the trial was shown to be a success², to the CAA. Minutes of the AM together with a copy of the slide presentation were published on the CAA Airspace Portal.

² The part 1 success criteria are explained on page 29 of Trial Plan Part 1 v2,v3.

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 stakeholders. Details of the proposed TDA were distributed to all stakeholders by email on 10th December 2020 and a deadline of 15th January 2021 was specified, thereby giving stakeholders a period of five-weeks to review the details of the proposed TDA, determine the likely impact on them and respond accordingly. Due to a delay in the promulgation of this information to local general aviation stakeholders, the deadline was subsequently extended to 22nd January 2021.
12. The stakeholder list evolved during the engagement window as the Sponsors were contacted by organisations that had not been identified and targeted but had nonetheless expressed a legitimate interest in the proposal. The details were shared accordingly with these additional stakeholders and they were given the opportunity to provide related feedback.
13. An online briefing was facilitated for members of the Goodwood Aerodrome Consultative Committee to provide them with more details on the proposal and to help them understand the potential impacts on the local community. The Sponsors also facilitated online meetings for stakeholders who had raised specific concerns and/or questions to help them understand what they were and to discuss potential solutions to them.
14. Whilst the feedback received has been fairly and accurately reflected in the Trial Plan Part 1 submission, there were some minor omissions regarding safety related feedback (for example concerns regarding loss of control and airspace constraints) which are significant enough to have been acknowledged and addressed in the Summary of Stakeholder Feedback and Project Response table³. However, the change sponsor was proactive in responding to the feedback and the majority of stakeholders received a tailored reply acknowledging and addressing all of the salient points. The Sponsors also demonstrated their commitment to minimise the impact of their proposal on stakeholders through their willingness to modify it in light of feedback received. The actions and mitigations proposed by the sponsor

³ This observation was presented to the change sponsor and they explained that they were not considered to be influential on the development of the TDA and therefore decided not to include them in the table.

- in response to the feedback received are deemed entirely reasonable and adequate in the circumstances.
15. The Sponsors have confirmed their intention to undertake regular engagement with relevant stakeholders if the TDA is approved and implemented. The Goodwood Airport Consultative Committee will be briefed on a quarterly basis, whilst stakeholders will be notified of planned TDA activations and be given contact details through which they can make related enquires and/or notify the Sponsors of any planned intense aerial activity that would be affected by the activation of the TDA. 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.
 16. In addition to considering the engagement evidence provided by the Sponsors, the CAA has also reviewed and considered the contents of correspondence that it has received directly from stakeholders concerning this airspace trial. Stakeholders contacted the CAA directly to seek clarification on the regulatory oversight of the process being followed and notably to raise concerns regarding the proliferation/dependency on TDAs for UAS operations (and related safety implications) and the integration of other airspace users. The latter points have been considered against the requirements of our section 70 of the Transport Act duties and related commentary can be found below. An approval condition has also been placed on the sponsor to continue engaging relevant aviation stakeholders to pursue mitigations which safely reduce or eliminate the impact on transiting general aviation to the maximum extent possible (see Paragraph 45 c)).

Proposal update and submission to CAA (Stage 4)

17. The Sponsors initially submitted a Trial Plan Part 1 together with supporting material to the CAA on 29 January 2021. Following a review of the submission a number of clarification questions were posed to the Sponsors to ensure that the CAA could understand the impacts of the Trial. These included clarity on the requested size of the TDA, more detail on engagement during the Trial and a request to use an updated noise assessment tool. We made it clear to the Sponsors that the questions would enable us to make a more informed decision, but that the questions did not have to be answered in order for us progress the decision.
18. The Sponsors subsequently submitted a version 2 of Trial Plan Part 1 on 19 February 2021, which provided a number of updates and more detail, following the CAA's questions. A version 3 was also requested following the requirement to correctly calculate the noise impacts; this was received 26 February 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. As explained above, this airspace trial is being progressed in two parts and the Sponsors have confirmed their intention to facilitate a formal consultation concerning the establishment of a TMZ as Part 2 of this airspace trial. At this point, we have assessed the targeted engagement completed by the change sponsor in support of their initial proposal to establish a TDA as Part 1 of this airspace trial. 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.⁴
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 UAS activities, that are part of the Trial Part 1, will take place in the Goodwood Flight Restriction Zone (FRZ) or within the TDA when it is notified as active.
 - The CAA has received the UAS Operators Operating Safety Cases (OSCs). Prior to activation of the TDA, the CAA must have approved these OSCs' which, include a description of the UAS's buffer requirements⁵.
 - The Sponsors will ensure that a qualified Flight Information Service Officer (FISO) is available at Goodwood Aerodrome, whenever the TDA is notified as active, in order to provide a Danger Area Activity Information Service (DAAIS).
 - The Sponsors will have established an Electronic Conspicuity surveillance system (ECSS), prior to TDA activation.
 - 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.

⁴ Transport Act 2000, Section 70(1).

⁵ A buffer is required in order to mitigate any error with the UAS's positioning systems.

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.⁶
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:
 - Segregated airspace (TDA) only being activated when needed, for a maximum of 90 days, over 5 months and limited to 6 hours a day outside Goodwood Aerodrome's normal operating hours⁷.
 - The sponsors commitment to prioritise emergency access and pre-notified access to aircraft arriving or departing Goodwood Aerodrome.

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 State⁸, namely the 2017 Guidance to the CAA on Environmental Objectives.
31. The Government Guidance (CAP1616 paras B86-B88) requires Sponsors of Airspace Trials, of greater than 90 days, to explain how the Sponsor has considered and assessed the likely noise impact of its proposal. However, as this is a trial for an UAS, the noise impacts and limitations expected are not yet fully documented. The CAA therefore discussed the methodology for assessing the noise impacts with the Sponsor and provided them a Drone Noise Screening Tool (DNST), in order to best assess the impacts. The sponsor also agrees to allow the CAA, when able, to attend the trial and take noise readings if required in order to better understand drone noise.

⁶ Transport Act 2000, Section 70(2)(a).

⁷ If for any reason the aerodrome is closed to normal traffic during the day, the TDA could be activated between the hours of 0900-1800.

⁸ Transport Act 2000, Section 70(2)(d)

32. As result of using the DNST, the Sponsor has determined that they do not expect the noise from the UAS operations in this trial to exceed either the 51dB L_{Aeq,16hr} daytime (LOAEL) or the 45dB L_{Aeq,8hr} night-time LOAEL.
33. 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

34. The CAA is required to satisfy the requirements of operators and owners of all classes of aircraft.⁹
35. In this respect, the CAA is content that the requirements of operators and owners of all appropriate classes of aircraft have been considered¹⁰ 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

36. 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.
37. 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.

Integrated operation of ATS

38. 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.¹¹
39. In this respect, the CAA is content that the proposal has no impact on the integrated operation of air traffic services.

⁹ Transport Act 2000, Section 70(2)(b).

¹⁰ See approval condition c.

¹¹ Transport Act 2000, Section 70(2)(e).

Interests of national security

40. The CAA is required to take account of the impact any airspace change may have upon matters of national security.¹²
41. In this respect, the CAA is satisfied that the proposal has no negative impact on national security.

International obligations

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

¹² Transport Act 2000, Section 70(2)(f).

CAA's Regulatory Decision

CAA's Regulatory Decision

44. 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 Part 1 of this airspace trial, with the conditions set out below.

Conditions of approval

45. The following conditions are to be met:
- a) Operational Safety Cases (OSCs) from the different drone operators, must be approved by the CAA, prior to activation of the TDA.
 - b) Prior to activation of the TDA, the Air Traffic Service Inspector for Goodwood Aerodrome, must have received and be satisfied that the TOIs for the FISO, to support safe access into the TDA for emergency service aircraft and aircraft in distress, are acceptable.
 - c) Engagement activities should continue with all impacted stakeholders and the wider GA community. Mitigations to safely reduce or eliminate the impact on transiting GA, should be pursued to the maximum extent possible, including careful consideration not to activate between 1800-1900 (summer time) whenever feasible or if notified of intense aerial activity close to the TDA.
 - d) The CAA's Airspace Technical Regulator, for this airspace trial, should be updated regularly on the progress of the above engagement activity, together with evidence of the outcomes relating to points a and b.
 - e) Should the Sponsors satisfy themselves that they have met the criteria for project success as stated on page 29 of the trial plan part 1 before the end of the TDA activation period, then they are to withdraw the AIC for the TDA immediately.

Implementation

46. An Aeronautical Information Circular will be submitted on 26 Feb 21 in order to promulgate, by NOTAM, the activation of the TDA.
47. The Sponsors have been informed that any delay to activating the TDA as a result of the conditions not being met, does not automatically mean that an extension to the approved activation period will be granted¹³.
48. The TDA will be notified as EG D097 as part of the airspace trial ACP 2020-82 on the CAA Airspace Portal. The CAA activity reference number is 2021-04-0026.
49. Any queries relating to this airspace trial are to be directed to the SARG Airspace Technical Regulator via airspace.policy@caa.co.uk.

Period of the Trial

50. The period of the trial part 1 will be 8th Apr 21 – 23rd Sep 21.

On-going engagement and monitoring post-implementation

51. 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.
52. 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

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

Civil Aviation Authority

25th February 2021

¹³ Any request for an extension will follow the requirements of CAP1616 paras 321-323.

Appendix A – TDA Dimensions (2000ft AMSL).

