

MINUTES OF DEVELOP AND DEPLOY A SOLUTION FOR BVLoS DRONE OPERATIONS IN NON-SEGREGATED AIRSPACE ACP2020-82 ASSESSMENT MEETING HELD ONLINE ON 12 NOVEMBER 2020

12 November 2020

All Attendees

Present	Appointment	Representing
[REDACTED]	Principal Airspace Regulator	CAA
[REDACTED]	UAS Sector Lead	CAA
[REDACTED]	Future Systems Deployment Lead	CAA
[REDACTED]	Principal Airspace Regulator (IFP)	CAA
[REDACTED]	Airspace Regulator (Engagement & Consultation)	CAA
[REDACTED]	Airspace Regulator (Utilisation)	CAA
[REDACTED]	CAA Innovation Services Lead	CAA
[REDACTED]	Airspace Regulator (Technical)	CAA
[REDACTED]	Airspace Regulator (Environmental)	CAA
[REDACTED]	ATS Inspector Operations	CAA
[REDACTED]	Consortium Member	Trax
[REDACTED]	Consortium Member (Minutes)	Trax
[REDACTED]	Consortium Member	Trax
[REDACTED]	Consortium Member	Trax
[REDACTED]	Consortium Member	uAvionix
[REDACTED]	Consortium Member	Anra
[REDACTED]	Consortium Member	Planefinder
[REDACTED]	Project Partner	Goodwood Innovation Centre
[REDACTED]	Project Partner	Goodwood Aerodrome
[REDACTED]	Project Partner	Skyports

CAA Assessment Meeting Opening Statement

CAA noted that the agenda and presentation were received in advance of the Assessment Meeting and confirmed that the documents must be published by the sponsor, together with minutes of the meeting, on the Airspace Change portal page. CAA explained the purpose of the meeting and confirmed that the meeting was an Assessment Meeting and not a Gateway. The CAA reinforced that the sponsor was required to provide a broad description of their proposed approach to meeting the CAA’s CAP 1616 requirements, but the CAA was not deciding whether the proposed approach met the detailed requirements of the CAA’s process at this stage. The purpose of the Assessment Meeting (set out in detail in CAP 1616) was broadly:

- for the Sponsor to present and discuss their Statement of Need,
- to enable the CAA to consider whether the proposal concerned falls within the scope of the formal airspace change process,
- to enable the CAA to consider the appropriate provisional Level to assign to the change proposal.

Additionally, the sponsor was required to provide information on how it intended to proceed to fulfil the requirements of the airspace change process and to provide information on timescales. Lastly, the sponsor was required to provide information on how it intended to meet the engagement requirements of the various stage of the airspace change process.

Agenda Item	ACTION
<p>Item 1 – Introduction (Slides 2-6)</p> <p>An introduction of all attendees on the call.</p> <p>The CAA read out the CAA Assessment Meeting Opening Statement.</p>	
<p>Item 2 – The Project (Slide 7)</p> <p>█ provided the CAA with background to the project, touching on the application to and funding by UK Research and Innovation (UKRI). The concept of this particular project was explained and the overall aim which is to develop a solution for Beyond Visual Line of Sight (BVLoS) drone operations in non-segregated airspace.</p> <p>█ introduced the consortium members and the project partners and explained that Goodwood Aerodrome have agreed to host the project.</p> <p>█ explained the parts of the trial and the requirement for a Temporary Danger Area (TDA) which will facilitate initial BVLOS testing, to develop the safety assurances to then enable transition into BVLoS operations in a Transponder Mandatory Zone (TMZ) which will be the trial element of the project. The consortium would like the TDA and the TMZ application to covered with a single ACP.</p>	
<p>Item 3 – Statement of Need (discussion and review) (Slides 8-10)</p> <p>The Statement of Need was uploaded to the CAA Portal by the consortium on 29th September 2020. At the time of submission, a TDA was active at Goodwood, put in place by the Goodwood Innovation Centre, this TDA has now expired.</p> <p>█ read out the Statement of Need.</p> <p>The CAA asked for clarification on the long-term goal; is it to operate BVLoS with or without TMZ. █ confirmed that the goal was to operate BVLoS within a TMZ.</p> <p>The CAA asked for clarity on the length of the trial, as that could impact on CAP1616 requirements. █ responded that the whole project should last approximately 9 months, with the trial period expected to be 1-2 months in length. It will not be longer than 90 days. There are some time constraints from UKRI associated with the funding.</p>	

<p>The CAA stated that in CAP1616 for a trial that is less than 90 days the CAA still ask for an indication of noise levels. The CAA asked how that data might be gathered and what nature of information might be provided?</p> <p>█ responded that the consortium are aware that, as part of the temporary airspace and trial processes, indications of noise impacts should be provided but were unaware that noise monitoring or metrics such as contours were required. The consortium are also aware that they must demonstrate that they have engaged with stakeholders and included noise impacts in that engagement. UAV routes are being considered that avoid all residences in order to mitigate against any noise impacts. █ stated that there is currently no provision for a noise assessment such as contours or dB levels at this time, as they are unaware it is required for a trial less than 90 days, however noise impacts are not being ignored and will form part of the engagement/consultation and UAV route development.</p> <p>The CAA confirmed that there is no requirement for noise metrics (LAeq), but there is a requirement to provide an indication of noise.</p> <p>Paragraph B83 of CAP1616 talks about specific noise levels at different locations, which is the reference the CAA would like the consortium to consider.</p> <p>█ asked whether other applicants for TDAs have been asked to do this and how they have gone about it. █ from Skyports explained that in his experience other applications have not had a requirement and added that the drone only creates noise on take-off and landing – it is almost silent in fixed wing mode. █ also raised that without the requirement for the TMZ, drones could operate from Goodwood with no requirement for noise analysis.</p> <p>█ explained that this project could be an enabler for further developments, therefore the CAA would like to consider the impacts of drone noise and are keen to gather data that would be beneficial in the future. The CAA welcomed a discussion separately to this meeting to discuss approaches to noise and the potential for CAA involvement in noise measurement.</p> <p>ACTION 1: Meeting between the Consortium and CAA Environment Team to be arranged.</p>	<p>Consortium</p>
<p>Item 4 – Concept of Operations (Slides 12-19)</p> <p>█ explained about the TDA that existed previously at Goodwood Aerodrome. Due to the amount of BVLoS testing that is required combined with the likely limited associated hours of operation of the TDA< the consortium believes that a new TDA will be required for more than 90 days. Goodwood Innovation Centre explained that the long-term aim is to have the capability for operators and manufacturers to operate BVLoS in a TMZ i.e. without a TDA. If this project is successful, Goodwood Innovation Centre may decide to carry out a separate CAP1616 ACP to establish a permanent TMZ. █ added that there is no ambition for the consortium to extend beyond the project end date.</p>	

<p>█ provided background information on the operating environment of Goodwood Aerodrome and the surrounding airspace.</p> <p>The CAA asked about the role of the FISO and how unequipped aircraft will enter the TMZ. █ responded that procedures would need to be established and that is something that will be developed as the project progresses. █ informed the CAA that there are fixed wing and rotary pilots on the consortium who will enable workable solutions to be found.</p> <p>█ explained the milestones for the project (slide 15). He stated that one of the key challenges is how the technology is used and what the UAV operator can and cannot do with the information they have. █ added that the consortium is keen to work with the relevant CAA departments as testing progresses before the trial plan is submitted.</p> <p>█ stated that the consortium and UKRI would like the procedures and protocols developed as part of the concept to be as transferrable as possible to other UTM users and in different areas; the outcome of the project cannot be a solution only applicable to Goodwood.</p> <p>█ presented the slides on the technical specifics of the project (slides 16-19).</p> <p>The CAA stated that they are currently undertaking a limited consultation on carriage of equipment within a TMZ. It is the CAA's intention that current policy will change, allowing any aircraft with a barometric pressure setting to be allowed to enter, which will compliment the intentions of this trial.</p> <p>The consortium stated that the trial information is intended to be notified via AIC.</p> <p>The consortium confirmed that the SmartSkies platform will be used to bring together data feeds and provide a detect capability for the UAV operator as well as the FISO. As well as tactically avoiding other airspace users, the operator will also be able to plan and manage the flights using the platform. The project understands that this will require approval from Goodwood's ATS Inspector Operations.</p>	
<p>Item 5 – Issues or opportunities arising from proposed change (Slide 20)</p> <p>█ talked through the issues identified on the slide.</p>	
<p>Item 6 – How to address identified issues (Slide 21)</p> <p>█ informed the CAA that the consortium has applied to the CAA Sandbox. █ stated that the consortium is aware of the challenges, as this project crosses a number of different CAA departments. The aim is to work constantly with these departments, rather than presenting an unsighted plan towards the end of the project.</p>	
<p>Item 7– Provisional indication of the scale level and process requirements*</p>	

<p>█ stated that this is a cross over between a TDA request and a Trial request and the aim is for it to be under one ACP, rather than have two separate processes running.</p> <p>The CAA stated that there appeared to be 3 different elements to the project and that if this is the case then there would be different regulatory requirements which would need to be considered.</p> <p>The CAA asked the consortium when the trial intended to start and █ responded that the TDA will come first in order to develop the assurances and then the TMZ trial will come afterwards. The trial will be the TMZ part of the project.</p> <p>Discussion took place on the best course of action and it was decided that the consortium needed to discuss further what would be required with regards to whether there would be one overall trial plan, under one ACP, or separate ACPs for a TDA and a TMZ. It was agreed that a subsequent meeting with the CAA would take place and this meeting would be recorded, and the minutes added as an addendum to these minutes.</p> <p>ACTION 2: Further discussions need to take place concerning which process should be applied.</p> <p><i>* When the sponsor submits their gateway materials for each Gateway at the agreed submission deadline, the period between this and the gateway decision will be an analysis by the CAA Airspace Regulatory team (Airspace Regulation) of the documentation submitted, for the purposes of making a recommendation to the CAA Gateway decision maker(s). In conducting the gateway assessment, the CAA is assessing the process employed and its compliance with the guidance stipulated within CAP1616. It is not an assessment of the merits of the submission itself, which is reviewed at Stage 5 - Decision. We may request, documentation from the sponsor that is referred to in the gateway submission but has not been provided as part of the Gateway submission materials. We may also request the sponsor to provide information by way of clarification relating to statements or assumptions made in the submission. Any further information sought by Airspace Regulation at this stage is for clarificatory purposes and is only for determining compliance with the CAP 1616 process.</i></p> <p><i>In any instance where a sponsor has not met the requirements of the process, we will inform them after the gateway decision and advise of next steps.</i></p>	<p>CAA/Consortium</p>
<p>Item 8 – Stakeholder Engagement (Slides 23-24)</p> <p>█ stated that the consortium would be aiming for engagement with stakeholders to begin in December 2020.</p> <p>The CAA confirmed the requirements of the stakeholder engagement required to establish a TDA, that it is engagement, not consultation. The CAA stated that a TDA should be established in accordance with the Policy Statement (Policy for Permanently Established Danger Areas and Temporary Danger Areas) not CAP1616.</p> <p>Once the approach to this ACP has been agreed, The CAA would need to discuss internally as to which process, within CAP1616 would best suit the change sponsors requirements.</p>	
<p>Item 9 – Provisional process timescales* (Slide 25)</p> <p>█ explained that the timeline was drafted on the assumption of being able to start in November 2020, however the consortium are currently waiting on the grant agreement from UKRI.</p> <p>█ explained that the TDA request is expected to be beyond 90 days due to the amount of testing work that is required to be undertaken. As part of this</p>	

<p>work other specifically briefed traffic, via controlled GA integration, will be given access to the TDA as part of the testing.</p> <p>The CAA informed the consortium that any commercial aircraft involved in the testing must have the relevant documentation/authorisations from their flight operations inspector prior to them taking part.</p> <p>The CAA informed the consortium that NATS have now published the AIC's for 2021, so the current timeline will need to be amended with those dates accounted for. The CAA also suggested that any engagement or consultation should take account of the Christmas/leave period.</p> <p>ACTION 3: The timeline should be updated.</p> <p><i>* The timeline agreed may become subject to change by the CAA. This is because the Secretary of State for Transport has directed the CAA to prioritise GNSS applications and this may have an impact on your ACP if we need to direct resource accordingly.</i></p>	<p>Consortium</p>
<p>Items 10 – Questions (Slide 26)</p> <p>A question was asked about the Flight Restriction Zone (FRZ) and if the TMZ overruled it and whether a hobbyist would need permission to fly in the TMZ. The CAA stated that the FRZ will still remain in place and the TMZ will be another layer. The current policy is small unmanned aircraft are not required to comply with the rules of the TMZ.</p> <p>█ asked if a small unmanned aircraft must adhere to TDA. The CAA stated that a TDA is not restricted airspace, it is segregated airspace, but the operator/pilot should ensure they have enough information to operate safely within the TDA.</p> <p>█ committed to speak to █ (CAA) regarding the FRZ/TMZ and the regulations regarding unmanned aircraft operating within a TMZ/TDA to provide clarification to the consortium.</p>	
<p>Item 11 – Next steps & AOB (Slide 27)</p> <p>█ outlined the actions that have arisen from the meeting.</p> <p>█ concluded the meeting by confirming that the CAA would need to discuss whether the project being proposed is a trial, or whether it is establishing a TDA and then a trial later in the project. The CAA would then also need to consider whether it falls better into one or two separate ACPs. █ stated that the consortium should provide a preference however, if it was to be done under one ACP, then the CAA would expect a trial plan, as per CAP1616, for approval. █ explained that it would be challenging to submit a trial plan upfront as the testing in the TDA is required to inform the trial plan for BVLoS operations within the TMZ. As per Action 1, it was agreed that the Consortium would review the preferred process and then set up an addendum meeting with the CAA.</p> <p>█ asked is there a mechanism within the policy statement for a TDA longer than 90 days. █ explained that sponsors are required to write to the CAA and justify an extension, for example due to extraordinary circumstances, however he would need to be guided by his principle regulators if it was to extend simply because the work couldn't be achieved in time.</p>	

ACTIONS ARISING FROM DEVELOP AND DEPLOY A SOLUTION FOR BVLoS DRONE OPERATIONS IN NON-SEGREGATED AIRSPACE ASSESSMENT MEETING

Subject	Name	Action	Deadline
Meeting Minutes	Consortium	Produce draft meeting minutes.	24 Nov 2020 ¹
Environmental data	Consortium	Arrange follow up meeting with CAA Environment Regulator to discuss noise data.	27 Nov 2020
ACP category	Consortium	Follow up meeting to discuss which process is appropriate Trial vs. temporary airspace change followed by a trial.	27 Nov 2020
Project Timelines	Consortium	Project timeline to be updated to take account of the AIC schedule and any changes following outcome of the meeting to finalise process.	27 Nov 2020
Meeting Minutes	Consortium	Meeting Minute uploaded to the CAA Portal.	1 Dec 2020

¹ Draft minutes to be produced following the Addendum meeting held on the 17th of November.

MINUTES OF ADDENDUM MEETING FOLLOWING THE ASSESSMENT MEETING HELD ON 12 NOVEMBER 2020 (DEVELOP AND DEPLOY A SOLUTION FOR BVLoS DRONE OPERATIONS IN NON-SEGREGATED AIRSPACE)

17 November 2020

All Attendees

Present	Appointment	Representing
	Principal Airspace Regulator	CAA
	Airspace Regulator (Engagement & Consultation)	CAA
	Airspace Regulator (Utilisation)	CAA
	Airspace Regulator (Technical)	CAA
	Airspace Regulator (Environmental)	CAA
	Principal Airspace Regulator	CAA
	Consortium Member	Trax
	Consortium Member (Minutes)	Trax
	Consortium Member	uAvionix

■ welcomed the group and gave a brief recap of the overall project which aims to develop and deploy a solution for BVLoS drone operations in non-segregated airspace.

■ summarised the current challenges, as discussed at the meeting on the 12th, around how there are three elements of the project with overlapping requirements as part of the regulatory process:

1. CAP1616 Part 1a Temporary changes to the notified airspace design (for the establishment of a TDA and the subsequent TMZ)
2. Annex 1 of the CAA Policy for the Establishment of Permanent and Temporary Danger Areas (for the establishment of a TDA)
3. CAP1616 Part 1b Airspace trials (for the trial of innovative procedures and technologies to enable BVLoS operations in non-segregated airspace)

■ explained that the project needs to establish a TDA in order to be able to undertake the testing that will determine the operating procedures and protocols which will then be used to inform the trial within a TMZ. Following the assessment meeting on the 12th of November and the feedback provided by the CAA, the consortium have discussed the potential approaches and have determined that they would like to capture all three processes under one trial, however they will ensure that the other two sets of requirements are also captured as part of this overarching process.

■ explained that the consortium therefore proposes to deliver the trial plan to the CAA in three parts:

1. Trial plan 1: Part 1 will outline the overall project, its ambitions and timescales and will provide all the information currently available. It will also outline what information will be provided later in the project and the expected timescales for this information. ■ noted that trial plan part 1 would not require any specific CAA permissions.
2. Trial plan 2: ■ explained that this would be the formal submission/request for the TDA. It would be expected to be submitted on the 30th January 2021 with the aim of AIC publication 11th of April.
3. Trial plan 3: Part 3 will include all the information needed for the formal trial request and for the establishment of the TMZ. This will include all the safety assurances and information

gathered during the TDA stage. ■ explained that the project anticipates that the actual trial period will be between 2 – 3 months. Part 3 is expected to be submitted to the CAA in July 2021.

■ invited CAA thoughts on the proposals.

The group discussed Trial Plan part 1 and how it fits within the regulatory processes. Several questions were asked around whether Trial Plan Part 1 would require any formal approval from the CAA and whether it would be better for the Part 1 and Part 2 submission to be aligned.

■ clarified that part 1 will include a high-level Stakeholder engagement plan for the TDA and high-level plans for the TMZ consultation. ■ added that the Consortium are keen to share with the CAA as much information as early as possible; given the innovative nature of the project, this will enable potential areas of concern to be anticipated in advance of the submissions and will provide certainty about the proposals for both the CAA and the consortium. ■ clarified that the project is not intended to be a phased trial and reiterated that Part 1 is not seeking any CAA permission.

After further discussion, ■ suggested that the Trial Plan Part 1 could be termed as the 'Trial strategy' as it would not be a Trail Plan as per CAP 1616, this is because a Trial Plan requires approval and must contain enough information for an approval to be made; Trial Plan Part 2 and 3 would be phased and form the trial submission which will be formally approved by the CAA. ■ pointed out that the CAA had approved a phased trial plan, this year, for the MoD. This approach would align with the CAP 1616 trial process. ■ agreed and confirmed that what they had considered to be a Trial Plan Part 1 will be shared with the CAA as a Trial Strategy and that it would not be approved by the CAA; it would, however, provide further details, especially regarding noise/environment and engagement.

The group moved on to discuss timelines and ■ gave a brief overview of the timelines that have been determined based on the 28-day TDA approval period, and the latest date for AIC submissions. ■ raised concerns around ensuring that appropriate review periods for the CAA are allocated as part of the project timeline and that in some circumstances, 28 days may not be sufficient, as this was not going to be an approval for a TDA under the TDA Policy, it is going to be a TDA request as part of an Airspace Trial. ■ suggested that the full timeline will be available in the Trial Strategy and would welcome the CAA's feedback on the review periods. ■ confirmed that he will be able to review the engagement and consultation sections of the part 1 plan early next week (wk com 23rd of Nov).

There was discussion around sharing each part of the trial plan on the ACP portal and ■ confirmed that there wouldn't be an issue with making the documents available for publication.

■ commented around the environmental information and ensuring that it is considered at all stages of the trial. ■ reassured that there is a specific section in the trial strategy dedicated to noise impacts and considerations and this will be included, and where appropriate updated, in the Part 1 and 2 submission documents. ■ added that the CAA would be welcome to undertake noise monitoring during the trial.

■ explained that the project has the opportunity to present data to the CAA as the project progresses and this may assist with the evolution of the trial plan. ■ added that there are some opportunities to look at the way the trial is run and suggested that the possibility of continuous monitoring or feeding data to the CAA could be explored. ■ also added that the project is hoping to be a CAA Innovation Project/sandbox.

■ closed the meeting by outlining that the minutes from this supplementary meeting should be added to the original assessment meeting minutes and submitted to the CAA as per the usual CAP1616 process.

MINUTES OF SECOND ADDENDUM MEETING FOLLOWING THE ASSESSMENT MEETING HELD ON 12 NOVEMBER 2020 (DEVELOP AND DEPLOY A SOLUTION FOR BVLOS DRONE OPERATIONS IN NON-SEGREGATED AIRSPACE)

1 December 2020

All Attendees

Present



Appointment

Principal Airspace Regulator
Consortium Member
Consortium Member

Representing

CAA
Trax
Trax

A further meeting took place online between the CAA and Trax to confirm points on the process requirements. It was decided that for full transparency the notes taken at this meeting would be added to the minutes from the assessment meeting and published on the CAA Portal. For the purpose of these minutes the first phase is the establishment of the Temporary Danger Area (TDA) and the second phase is the establishment of the Transponder Mandatory Zone (TMZ).

█ noted concerns around submission requirements for the phase in which the TDA would be established. Highlighting the differential in submission requirements for a TDA established through the CAP1616 Temporary Process and a TDA established through the CAP 1616 Trial process. Concerns were particularly noted around:

- Requirements of the Trial Plan
- Engagement v Consultation requirements

█ confirmed that the establishment of the TDA in the first instance would be used to calibrate systems etc and build up evidence culminating in a BVLOS UAS flight with a manned system. This final flight would itself be subject to the appropriate OSC being approved by the CAA - Unmanned Air System Team. Initial BVLOS operations between manned and unmanned would be segregated.

█ noted it was the intent to request the establishment of a TDA for greater than 90 days, however it was unlikely this structure would be activated greater than 90 days.

█ noted that in accordance with the temporary process, structures would not normally be established for greater than 90 days. It was understood within trials structures may be required to be established for greater than 90 days due to the nature of trial work. Both these points are reflected in the CAA Directions from DfT.

█ noted the Temporary process was outlined in CAP1616 where amplifying guidance to establish some TDAs is defined within the Danger Area Policy Paper. This guidance is specifically linked to the Temporary Process and generally predicated upon the 90-day caveat, where 'scaling' is offered within this guidance based upon consideration of proportionality of the proposed impact.

█ further noted, as has been discussed previously, a phased trial may be more appropriate, particularly as the point of the first TDA is to establish and set a baseline for information and systems to inform the second phase. In addition, the first phase will culminate in the mixing of specially briefed manned and unmanned traffic-flight in the TDA (if BVLOS, clearly subject to OSC). The first phase is therefore clearly informing the second phase, suggesting a 'crawl walk run approach' to an overall trial.

When considering the requirements of a phased trial, noting the point of the first phase is to inform the second phase, there would be an expectation the initial trial plan would not include the level of detail required for the second phase within the first phase submission, particularly noting the novel aspect of this trial and the use of the first phase to inform the second. It may be relevant for the first

phase trial plan to proportionality outline the intent and requirement of the first phase in order for it to be considered a success (this would be aligned with your actual aims and mirrors what you would be required to be submitted by any sponsor if a TDA was requested through the Temporary Process also, i.e. define what you are actually doing) accompanied by an overview of the entire trial, which the second stage submission would expand upon.

Regarding the Consultation v Engagement, [REDACTED] confirmed the following with the Consultation team & Engagement team; proportionality is at the core of an ACP, ensuring relevant engagement is conducted, where specific consultation is a form of engagement. The trial process outlines a requirement for consultation with aviation stakeholders (para316), this similarly aligns with the consultation statement in (para 300) the temporary process. In both instances the overriding principal of proportionality will always be considered, where the sponsor is able to provide a justification and rationalisation of scaling of the Engagement activities, demonstrating how they will ensure the overall objective of the engagement is achieved in a proportionate way. This by its nature will take into account the overall impact of the proposed change.

Cognisant of the consortium's timeframes and the links to the AIRAC cycle, the CAA can confirm that the decision process for a trial does not take place within a prescribed gateway (usually they are the last Friday of every month), but instead takes place in accordance with the resource availability where the decision time required is generally related to the complexity of the proposal. From the initial description of the requirement for the first phase this would suggest this could align to the decision time line outlined in the Danger Area Policy, however this could not be guaranteed at this stage as it would be subject to the receipt of the proposal.

[REDACTED] requested that the previous assessment meeting minutes are reviewed and sent back as swiftly as possible as Trax would like to upload these documents to support their Engagement process, [REDACTED] agreed to pass this request to the Technical Regulator and request he feedback as soon as practicable.