


CAA Operational Assessment

Title of airspace change proposal	London Health Bridge
Change sponsor	Apian
Project reference	ACP-2023-061
Account Manager/Technical Regulator	[REDACTED]
Case study commencement date	19/01/2024
Case study report as at	01/08/2024
<p><i>Instructions</i></p> <p>In providing a response for each question, please ensure that the 'status' column is completed using the following options:</p> <ul style="list-style-type: none"> • YES • NO • PARTIALLY • N/A <p>To aid the SARG Lead it may be useful that each question is also highlighted accordingly to illustrate what is:</p> <p>resolved YES not resolved PARTIALLY not compliant NO</p>	

<p>Executive Summary</p> <p>Apian, in conjunction with Guy's and St Thomas' NHS Foundation Trust (GSTT) is proposing to conduct feasibility flights using Uncrewed Aircraft Systems (UAS) for the distribution of high-priority pathology samples and medicines between these two NHS hospitals. This use of UAS has the potential to speed up delivery times thereby enhancing patient care, saving costs, and promoting sustainability. The transport of these time-sensitive small and medium-weight healthcare items will be conducted by UAS flying beyond visual line of sight (BVLOS). In order to do this in the area selected for this activity (which is within Class D controlled airspace), current regulation requires the activity to be contained within temporary restricted airspace (TRA). This project is part of the CAA TRA sandbox for UAS, and as such will provide data for the further investigation of suitable airspace structures for the integration of RPAS with conventional crewed aircraft.</p> <p>This pilot project also aims to serve as a scalable model for the wider adoption of drones within the Trust and throughout the NHS. The ACP is proposed as a trial for up to 6 months duration. Proposed dates are 7th October 2024 – 7th April 2025.</p>
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1.	Justification for change and options analysis (operational/technical)	Status
1.1	Is the explanation of the proposed change clear and understood?	YES
	The proposal is for a Temporary Restricted Area (TRA) within the London City CTR (Class D CAS) to allow for BVLOS RPAS flights between Guy's and St Thomas' hospitals (2.3km).	
1.2	Are the reasons for the change stated and acceptable?	YES
	<p>The proposal has several aims:</p> <ul style="list-style-type: none"> a. Support the vision of the Airspace Modernisation Strategy (AMS) by trialling safe integration of BVLOS UAS operations using technology and procedures to remove the need for segregated airspace. b. Safely operate BVLOS within controlled airspace. c. Support CAA airspace policy development by demonstrating and validating procedures for the safe integration of UAS in controlled airspace. d. Support the Aviation 2050 Net Zero targets with fully-electric UAS services that have zero emissions. e. Identify and collate data to enable robust evaluation of the trial objectives (aviation and healthcare). f. Support the CAA's Regulatory Sandbox for BVLOS by contributing data and evidence applicable to the sandbox objectives detailed in CAP2540. 	
1.3	Have all appropriate alternative options been considered, including the 'do nothing' option?	YES
	The proposal is for a temporary structure to trial the activity in the CTR. A TRA is not segregated airspace but enables ATC to manage the operation of RPAS. The RPAS flights will operate within the TRA. The daily UAS operations will be operated by Wing, supported by Heathrow Radar NATS airspace management services on an as needed basis, and the deconfliction with other crewed or uncrewed aircraft will be managed by Wing in coordination with NATS.	
1.4	Is the justification for the selection of the proposed option sound and acceptable?	YES
	This trial is also part of the CAA TRA sandbox and as such will provide data for the further investigation of suitable airspace structures for the integration of RPAS with conventional crewed aircraft within CAS.	

2.	Airspace description and operational arrangements	Status
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2.1	Is the type of proposed airspace design clearly stated and understood?	YES																													
<p>The proposed structure is a trial of a Temporary Reserved Area within the London City Class D CTR. The structure is a quadrilateral extending from Guys to St Thomas' hospitals approximately 2.5km long, lower limit – Surface, upper limit 450ft AMSL. Coordinates and diagram below.</p>  <p style="text-align: center;">— — — Proposed TRA outlined with airspace restricted areas indicated</p> <table border="1" data-bbox="353 992 1310 1321"> <thead> <tr> <th rowspan="2">ID</th> <th colspan="2">Latitude</th> <th colspan="2">Longitude</th> </tr> <tr> <th>DD</th> <th>DMS</th> <th>DD</th> <th>DMS</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>51.5010780</td> <td>51° 30' 03.8808" N</td> <td>-0.1198825</td> <td>00° 07' 11.577" W</td> </tr> <tr> <td>2</td> <td>51.5037626</td> <td>51° 30' 13.54536" N</td> <td>-0.0863038</td> <td>00° 05' 10.69368" W</td> </tr> <tr> <td>3</td> <td>51.5008644</td> <td>51° 30' 03.11184" N</td> <td>-0.0858235</td> <td>00° 05' 08.9646" W</td> </tr> <tr> <td>4</td> <td>51.4978281</td> <td>51° 29' 52.18116" N</td> <td>-0.1204496</td> <td>00° 07' 13.61856" W</td> </tr> </tbody> </table> <p style="text-align: center;"><i>Table 3 – TRA Lat/Long WGS84 Coordinates</i></p>			ID	Latitude		Longitude		DD	DMS	DD	DMS	1	51.5010780	51° 30' 03.8808" N	-0.1198825	00° 07' 11.577" W	2	51.5037626	51° 30' 13.54536" N	-0.0863038	00° 05' 10.69368" W	3	51.5008644	51° 30' 03.11184" N	-0.0858235	00° 05' 08.9646" W	4	51.4978281	51° 29' 52.18116" N	-0.1204496	00° 07' 13.61856" W
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2.2	Are the hours of operation of the airspace and any seasonal variations stated and acceptable?	YES
	The hours of operation are stated in the proposal as “daylight hours between 0900-1700L”. Proposed dates are 19th September 2024 – 18th March 2025 thus covering autumn – winter - spring. During the winter (between 27 th October 2024 – 6 th February 2025) when sun set is prior to 1700L the last flight should not be commenced less than 10 minutes prior to sunset. Ref Sunset times here .	
2.3	Is any interaction with adjacent domestic and international airspace structures stated and acceptable including an explanation of how connectivity is to be achieved? Has the agreement of adjacent States been secured in respect of High Seas airspace changes?	YES
	The TRA is within the London City CTR and Heathrow Radar ATC will ensure that no other aircraft are given clearance to enter the TSA while the RPAS is flying.	
2.4	Is the supporting statistical evidence relevant and acceptable?	YES
	Subject to ORA acceptance, and approval of OA.	
2.5	Is the analysis of the impact of the traffic mix on complexity and workload of operations complete and satisfactory?	YES
	In normal operation there will be no additional workload or complexity on the ATC operations within the London City CTR. The only workload envisaged will be in the rare circumstances where a HEMS helicopter requires access to the TRA, in which case ATC will coordinate with the Wing UAV pilot/controllers.	
2.6	Are any draft Letters of Agreement and/or Memoranda of Understanding included and, if so, do they contain the commitments to resolve ATS procedures (ATSD) and airspace management requirements?	YES
	A LoA between NATS and Apian and Wing will be in place (The LoA and TOI have been agreed in principle prior to approval). This includes procedures for procedures Helicopter HEMS/NPAS operators to operate within the TRA if necessary. The TRA will extend from SFC to 450 feet amsl.	
2.7	Should there be any other aviation activity (low flying, gliding, parachuting, microlight site etc) in the vicinity of the new airspace structure and no suitable operating agreements or ATC Procedures can be devised, what action has the change sponsor carried out to resolve any conflicting interests?	YES
	Access for emergency services is assured when required, procedures are outlined in the LoA.	
2.8	Is the evidence that the airspace design is compliant with ICAO SARPs, airspace design & FUA regulations, and Eurocontrol guidance satisfactory?	YES

	This is a trial of an airspace structure to provide non-segregated operation of RPAS within controlled airspace. The design and operation is compliant with ICAO SARPs, airspace design & FUA regulations, and Eurocontrol guidance. This activity is intended to inform future policy on the potential for future accommodation and integration of new types of aircraft operation.	
2.9	Is the proposed airspace classification stated and justification for that classification acceptable?	YES
	Airspace classification remains the same (Class D).	
2.10	Within the constraints of safety and efficiency, does the airspace classification permit access to as many classes of user as practicable?	YES
	The airspace classification will remain the same. Access by other aircraft to the TRA will be managed by NATS TC SVFR ATC in coordination with Wing. This permits access to the airspace by as many classes of user as practicable.	
2.11	Is there assurance, as far as practicable, against unauthorised incursions? (This is usually done through the classification and promulgation.)	YES
	The CTR is Class D CAS. NATS TC SVFR ATC will coordinate with Wing to ensure that aircraft are not provided with a clearance to enter the portion of the CTR which is notified as a TRA unless safe to do so.	
2.12	Is there a commitment to allow access to all airspace users seeking a transit through controlled airspace as per the classification, or in the event of such a request being denied, a service around the affected area?	YES
	Access to the CAS will be unchanged. NATS TC SVFR ATC will be in contact with the RPAS operator and will be able to ensure traffic can enter the area affected when the UA is not airborne. Due to the low ceiling of the TRA (450ft amsl), and the compliance with low flying rules for conventional flight, transit of crewed aircraft through the TRA will be very rarely required (expected only for the purposes of emergency services).	
2.13	Are appropriate arrangements for transiting aircraft in place in accordance with stated commitments?	YES
	Due to the low ceiling of the TRA, the requirement for aircraft to transit (below 450ft amsl) is unlikely. However, if required, transiting aircraft in the Class D airspace would be managed by NATS TC SVFR ATC in coordination with Wing.	
2.14	Are any airspace user group's requirements not met?	NO
	There were no outstanding issues from any airspace users during stakeholder engagement. See engagement assessment.	
2.15	Is any delegation of ATS justified and acceptable? (If yes, refer to Delegated ATS Procedure).	N/A


2.16	Is the airspace design of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to contain horizontal and vertical flight activity (including holding patterns) and associated protected areas in both radar and non-radar environments?	YES
	To be confirmed by RPAS Team. The sponsor has indicated that the proposed TSA is larger than required so that it can be a simple shape that is easily understood and identified by all airspace users.	
2.17	Have all safety buffer requirements (or mitigation of these) been identified and described satisfactorily (to be in accordance with the agreed parameters or show acceptable mitigation)? (Refer to buffer policy letter.)	YES
	To be confirmed by RPAS Team, pending approval of ORA. All contingency and emergency buffers are contained with the TRA.	
2.18	Do ATC procedures ensure the maintenance of prescribed separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures?	YES
	Final TOI and APSA along with final LOA reviewed prior to providing final decision. Final AIC also reviewed to ensure all documentation is aligned. Receipt of the required documents was set as a condition of operational approval for the ACP, they were subject to review prior to issuing acceptance. TOI Letter of review sent to NATS.	
2.19	Is the airspace structure designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace?	YES

	<p>To be confirmed by RPAS Team, pending approval of ORA. Re overflight of buildings, buildings to be overflown by at least [REDACTED] Building greater than [REDACTED] will not be overflown (laterally avoided by at least [REDACTED]).</p> <p>[REDACTED] They have given 10 as shown below but this does not include any variation in wind.</p> <div data-bbox="360 341 1962 927" style="background-color: black; width: 100%; height: 367px; margin-top: 10px;"></div>	
2.20	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, have appropriate operating arrangements been agreed?	YES
	The TRA is within the London City CTR Class D airspace, and NATS TC SVFR ATC will ensure that aircraft are only given clearance to enter the TRA in accordance with the procedures outlined in the LOA between NATS and Wing. The TRA also overlaps restricted area R157 (Hyde Park)	
2.21	Where terminal and en-route structures adjoin, is the effective integration of departure and arrival routes achieved?	YES
	No impact on EGLC, and London Heilport departure and arrival routes.	

3.	Supporting resources and communications, navigation and surveillance(CNS) infrastructure	Status
3.1	Is the evidence of supporting CNS infrastructure together with availability and contingency procedures complete and acceptable? The following are to be satisfied:	YES
	<ul style="list-style-type: none"> • Communication: Is the evidence of communications infrastructure including RT coverage together with availability and contingency procedures complete and acceptable? Has this frequency been agreed with AAA Infrastructure? 	YES
	<p>Communications between the RPAS Pilot in Command (PIC) and NATS TC SVFR ATC will be via telephone. The Wing PIC has access to a dedicated phone (landline/mobile) for contact with LTC and has the appropriate direct line for the TC SVFR position. Prior to commencing flights, the Wing PIC will contact TC SVFR to complete a line check which will also require TC SVFR to make a return call. There is a quick dial button on the TC VCCS panel. If the line checks fail, then flights shall not take place until rectified.</p>	
	<ul style="list-style-type: none"> • Navigation: Is there sufficient accurate navigational guidance based on in-line VOR or NDB or by approved RNAV-derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/ Eurocontrol standards? For example, for nav aids, has coverage assessment been made, such as a DEMETER report, and if so, is it satisfactory? 	YES
	<p>Navigation of the RPAS is via GNSS. Navigational accuracy and coverage will be determined by the RPAS Team</p>	
	<ul style="list-style-type: none"> • Surveillance: Radar provision – have radar diagrams been provided, and do they show that the ATS route/airspace structure can be supported? 	YES
	<p>Surveillance suitability will be assessed by the RPAS Team. NATS TC ATC will utilise extant surveillance provision to manage traffic within the CTR and ensure safe separation from the TRA. The RPAS operator (Wing) will monitor the positions of the RPAS within the TRA at all times.</p>	
3.2	Where appropriate, are there any indications of the resources to be applied, or a commitment to provide them, in line with current forecast traffic growth acceptable?	N/A

4.	Maps/charts/diagrams	Status
4.1	<p>Is a diagram of the proposed airspace included in the proposal, clearly showing the dimensions and WGS84 coordinates?</p> <p>(We would expect sponsors to include clear maps and diagrams of the proposed airspace structure(s) – they do not have to accord with aeronautical cartographical standards (see airspace change guidance), rather they should be clear and unambiguous and precisely reflect the narrative descriptions of the proposals.)</p>	YES
	A diagram of the TRA and coordinates are included in the submission.	
4.2	Do the charts clearly indicate the proposed airspace change?	YES
4.3	Has the change sponsor identified AIP pages affected by the change proposal and provided a draft amendment?	N/A
	The change will be notified by AIC.	
4.4	Has the change sponsor completed the WGS84 spreadsheet and submitted to the CAA for approval?	N/A

5.	Operational impact	Status
5.1	<p>Is the change sponsor’s analysis of the impact of the change on all airspace users, airfields and traffic levels, and evidence of mitigation of the effects of the change on any of these, complete and satisfactory?</p> <p>Consideration should be given to:</p>	YES

	<p>a) Impact on IFR General Aviation traffic, on Operational air traffic or on VFR General Aviation traffic flow in or through the area.</p>	<p>YES</p>
<p>At altitudes below 450ft amsl, the only traffic expected to operate within the TRA are emergency services helicopters HEMS/NPAS, and Metropolitan Police Service UAS. Procedures for coordination of these are detailed in the LOAs.</p>		
	<p>b) Impact on VFR Routes.</p>	<p>YES</p>
<p>None. ATC will provide clearance to cross the CTR in accordance with their normal operations but ensuring aircraft remain clear of the TRA when active. The London Heli route H4 runs along the Thames and is vertically and laterally separated from the TRA.</p>		
		
<p>To enter the TRA requires flying lower than 450ft amsl over a highly built-up populated area, which would be in contravention of the 500ft rule (flying closer than 500ft to any person, vessel, or structure). No VFR conventional aircraft should be flying at this altitude, and only HEMS/NPAS are anticipated to require access to the TRA.</p>		

	c) Consequential effects on procedures and capacity, i.e. on SIDs, STARs, holds. Details of existing or planned routes and holds.	YES
	None.	
	d) Impact on airfields and other specific activities within or adjacent to the proposed airspace.	YES
	There are no airports or heliports impacted by operations within the proposed TRA.	
	e) Any flight planning restrictions and/ or route requirements.	YES
	None	
5.2	Does the change sponsor consultation material reflect the likely operational impact of the change?	YES

Case study conclusions – to be completed by Airspace Regulator (Technical)	Yes/No
Has the change sponsor met the SARG airspace change proposal requirements and airspace regulatory requirements above?	YES
<p>The sponsor has developed a TRA structure that is simple in design so as to be easily understood by stakeholders and to safely contain the activity being undertaken. ATC procedures and LoAs have been developed to ensure that the BVLOS activity can be safely undertaken within the London City CTR while minimising the impact on other airspace users. The activity will be weekdays, from 0900-1700 local, with two weekend operations proposed. The trial will commence on 19th September 2024 and continue until 18th March 2025. Draft AIC has been provided.</p>	

RECOMMENDATIONS/CONDITIONS/PIR DATA REQUIREMENTS	Yes/No
Are there any Recommendations which the change sponsor should try to address either before or after implementation (if approved)? If yes, please list them below.	YES

<p><u>GUIDANCE NOTE:</u> Recommendations are something that the change sponsor <u>should try</u> to address either before or after implementation, if indeed the airspace change proposal is approved. They may relate to an area in which the change sponsor is reliant upon a third party to actually come to an agreement and consequently they do not carry the same ‘weight’ as a Condition.</p>	
<p>1. Should the sponsor satisfy themselves that they have completed all the necessary flights before the end of the TRA publication period, they are to withdraw the AIC for the TRA immediately.</p>	
<p>Are there any Condition(s) which the change sponsor <u>must fulfil</u> either before or after implementation (if approved)? If yes, please list them below.</p>	<p>YES</p>
<p><u>GUIDANCE NOTE:</u> Conditions are something that the change sponsor <u>must fulfil</u> either before or after implementation, if indeed the airspace change proposal is approved. If their proposal is approved, change sponsors <u>must observe</u> any condition(s) contained within the regulatory decision; failure to do so <u>will usually</u> result in the approval being revoked. Conditions should specify the consequence of failing to meet that condition, whether that be revoking the ACP or some alternative.</p>	
<p>1. All 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 area of the CTR covered by the TRA be required.</p> <p>2. All Letters of Agreement or Temporary Operating Instructions should be presented to CAA Airspace Regulation in final, signed form prior to activation of the TRA.</p> <p>3. Appropriate measures must be put in place for the monitoring, collation 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 TRA.</p> <p>4. While the trial is in operation, the sponsor must undertake regular engagement with stakeholders.</p>	
<p>Are there any specific requirements in terms of the data to be collected by the change sponsor for the Post Implementation Review (if approved)? If yes, please list them below.</p>	<p>YES</p>

GUIDANCE NOTE: PIR data requirements concern any specific data which the change sponsor ***must*** collate post-implementation, if indeed the airspace change proposal is approved. Please use this section to list any such requirements so that they can be captured in the regulatory decision accordingly.

1. A log of all flights must be recorded and provided to the CAA.
2. A report must be collated detailing flights, to be produced after 1 month, 3 months and at the conclusion of the trial. These reports must include plots of the trajectories flown, data describing the number of flights, days of operation, details/reasons for interruptions to the flight schedule etc.
3. 3D flight trajectory and altitude data for all flights must be recorded. Plots showing flight trajectories (e.g. weekly or monthly) must be provided as part of the progress reports (as described in (#2) above).
4. A log of all stakeholder feedback (positive and negative) must be maintained.

General summary

The sponsor has developed a TRA structure that is simple in design so as to be easily understood by stakeholders and to safely contain the activity being undertaken. ATC procedures and LoAs have been developed to ensure that the BVLOS activity can be safely operated within the London City CTR while minimising the impact on other airspace users. The activity will be for a small number of flights (circa 10 return flights per day) every weekday for a six month period. The flights will cruise at [REDACTED] and both the take-off & landing point (Guy's Hospital) and delivery point (St Thomas' hospital) are within secure roof-top locations at [REDACTED] respectively (above street level and away from public areas).

A program of community and public engagement is planned during the trial to gauge impacts on stakeholders on the ground and gather feedback. The CAA will be kept informed of any feedback and/or complaints throughout the trial.

Comments and observations
<p>[REDACTED]</p> <p>[REDACTED] They gave 10 examples, but these did not include any variation in wind. However, the trial will enable data to be captured to verify the trajectory conformance and containment.</p> <p>The method of operation of the proposed TRA essentially segregates the RPAS from conventional aircraft. Whilst this is not strictly integration as per the objective outlined in CAP2533, it is safe and is a step in the right direction.</p>

Operational assessment sign-off	Name	Signature	Date
Operational assessment completed by Airspace Regulator (Technical)	[REDACTED]	[REDACTED]	30 Jul 2024
Manager Airspace Regulator comment / Decision	Name	Signature	Date
Operational assessment conclusions approved by Manager Airspace Regulator	[REDACTED]	[REDACTED]	30 Jul 2024

Manager Airspace Regulator Comments and Decision:

Assessment is noted and comments are contained within the Decision Log