

ACP-2023-061 Interim Trial report

Airspace Change Reference

London Health Bridge: ACP-2023-061

Authorship and Revision History

Version	Summary of changes
1.0	Publication
2.0	Revisions following CAA feedback

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1. Executive Summary

The London Health Bridge trial (ACP-2023-061) has been testing the safe integration of Beyond Visual Line of Sight (BVLOS) Uncrewed Aircraft Systems (UAS) deliveries within controlled airspace to support patient care between Guy's and St Thomas' Hospitals.

This interim report, prepared at the request of the CAA, provides a summary of progress within the London Health Bridge trial to date. The project remains ongoing, and this report captures key milestones and learnings achieved so far.



Operations have been conducted within a Temporary Reserved Area (TRA) with no safety incidents and no disruption to other airspace users. UAS deliveries have been validated across five NHS pathology testing categories, successfully integrated into existing clinical workflows, and supported by the use of fully-electric UAS, aligning with NHS Net Zero and Aviation 2050 sustainability goals.

The trial to date has demonstrated that UAS medical deliveries can be conducted safely within controlled airspace to support the provision of reliable, valuable patient care for the NHS. The next phase will continue to monitor these areas whilst conducting two-way deliveries and expanding to additional NHS sites through a trial extension with updated objectives.

2. Introduction

This report provides an update on ACP-2023-061, summarising progress to date, lessons learned, and recommendations to inform the next phases of this and further projects. Trial Overview:

Trial details	
Location of Trial	Between Guy's Hospital, Great Maze Pond, London, SE1 9RT; and St. Thomas' Hospital, Westminster Bridge Rd, London, SE1 7EH.
Airspace requirement	Trial Temporary Reserved Area (TRA)
Take-off location	Secure roof-top of Guy's Hospital (~65m AGL)
Delivery location	Secure roof-top of St Thomas' Hospital (~30m AGL)
UAS cruise altitude	Approx 250-300ft AGL. Max 400ft AGL.
TRA ceiling	450ft AMSL
Days	Monday - Friday

Timings	0900-1600L
Number of flights	Maximum 10 flights per day* (One flight is defined as a UAS departing Guy's Hospital, delivering to St Thomas' Hospital, and returning to Guy's Hospital). Not more than one delivery at a time.
Estimated time for each flight	Approx 4 mins

3. Trial Aims

The trial aims to move UAS operations a step closer to integration with crewed aviation, rather than segregation. The CAA is still gathering evidence to show that drones can safely share airspace with other aircraft. Our expanding operations will continue to provide this data for the CAA. This includes how often crewed aircraft and UAS operators conducting VLOS flights request to access the airspace.

It is also providing valuable healthcare insights that would not otherwise be identified. Through the trial, we are gathering healthcare data to demonstrate how expediting deliveries by UAS can:

- enhance patient care
- increase service efficiency
- improve sustainability
- provide service resilience
- support the centralisation of other NHS services, such as pathology and stock management.

The trial is also enabling us to identify and test both the physical and, importantly, the digital integration of a UAS delivery service into Electronic Health Record (EHR) systems and workflows at Guy's and St Thomas' using Apian's platform, providing insights to inform scaled, NHS services across multiple locations.

4. Trial Objectives

The trial has been designed to meet the healthcare objectives of the project by enabling BVLOS UAS delivery flights between Guy's and St Thomas' hospitals. Alongside the healthcare aims, the trial also has the following aviation objectives:

- Support the vision of the CAA's Airspace Modernisation Strategy (AMS) by trialling safe integration of BVLOS UAS operations using technology and procedures to remove the need for segregated airspace.

- Safely operate BVLOS within controlled airspace.
- Support CAA airspace policy development by demonstrating and validating procedures for the safe integration of UAS in controlled airspace.
- Support the Aviation 2050 Net Zero targets with fully-electric UAS services that have zero tailpipe emissions.
- Identify and collate data to enable robust evaluation of the trial objectives (aviation and healthcare).
- Support the CAA's Regulatory Sandbox for BVLOS by contributing data and evidence applicable to the sandbox objectives detailed in CAP2540.

5. Reporting on Initial Findings

5.1. Summary of Operations

operations included check-out flights conducted by the UAS Operator to ensure that all systems were fully operational and that safe operations could commence, as well as NHS validation testing, which was essential to confirm that all clinical and governance approvals were in place before starting live deliveries.

5.2. Safety & Risk Management Summary

Operations were conducted within the approved TRA under frameworks agreed with the CAA and NATS using the UAS Operational Authorisation process, ATC Procedures Safety Assessment (APSA), and a structured Hazard Identification approach to identify and mitigate safety risks. This was supported by close coordination with NATS and emergency services to ensure seamless integration with crewed aviation. NOTAMs were issued for all operational periods, and contingency procedures were established to manage any unexpected events.

, there were no safety incidents, no crewed aircraft access requests, and all UAS access requests were approved. These results demonstrate that the agreed mitigations were effective and confirm that BVLOS operations can be safely conducted within controlled airspace.

5.3. Healthcare Data Points

Impact Area	Achieved

Average time of delivery (flight time taken for medical payload to transfer from Guy's Hospital to St Thomas' Hospital by UAS)	Less than 2 mins
NHS pathology testing categories validated	<ol style="list-style-type: none"> 1. Specialist Haemostasis 2. Routine Haemostasis (aka Routine Coagulation) 3. Biochemistry (aka Chemistry) 4. Reference Chemistry (Tacrolimus level - Immunosuppressant Drug Monitoring) 5. Special Haematology
Number of NHS employees authorised to use the Apian platform (as of 1st May 2025)	65

5.4. Aviation Data Points

Operational Outcome	Result
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
Safety incidents	0
Crewed aircraft access requests	0
UAS access requests	2
UAS access requests accommodated	2
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

5.5. Healthcare Impact Highlights

[REDACTED] This document captures the emerging healthcare insights from the trial so far and illustrates the potential future impact when scaled

(subject to CAA approval) to include a wider range of use cases, healthcare sites (hospitals, pathology labs), and flights. While the trial has already demonstrated clear healthcare value, it has also identified areas where continued validation and data collection will strengthen the evidence base, and support the CAA's future assessments of UAS enabled healthcare logistics.

The following provides a high-level overview of key milestones and achievements to date:

- Generated valuable healthcare insights by demonstrating how UAS deliveries can drive financial savings, reduce emissions and enhance patient care through optimisation of clinical and operational productivity. Further data collection will enable detailed work to be completed in a number of areas including; redesigning models of care around on-demand delivery capability, supporting pathology service centralisation, and improving the resilience and reliability of NHS logistics services.
- Secured validation approval across five NHS pathology testing categories, confirming the safe and compliant integration of UAS deliveries into existing NHS clinical pathways.
- Demonstrated operational resilience during operations by supporting time-critical NHS needs, including the expedited delivery of potentially life-saving diagnostic samples during emergency cases of cardiac arrest and samples with short turnaround times for analysis that could not be tested on site [REDACTED]
- Proven the ability to significantly reduce sample transport times (from 30 minutes to 2 minutes on the existing route from Guy's Hospital to St Thomas' Hospital), helping clinicians to accelerate diagnosis, treatment decisions, and ultimately improve patient outcomes. Subsequent trial phases will be structured to evaluate the impact of sample transport times on patient care across hospitals with diverse use cases and ground transport systems
- Successfully integrated with various hospital systems (e.g. Electronic Health Records, Laboratory Information Management Systems) and operational requirements, highlighting the value of Apian's platform in enabling a seamless flow for teams across the lab, portering, and engineering departments. Further trials will seek to test digital integration into NHS systems for other NHS services (e.g. pharmacy) and in other healthcare settings (e.g. community services).
- Supported the wider growth of UAS capabilities within the NHS, helping to raise awareness of their benefits and build confidence in their role in transforming healthcare logistics.
- Supported research and contributed to the growing body of evidence on the safety of drone delivery for medical items, earning recognition and an award for the innovative work at internationally renowned events, including the International Society on Thrombosis and Haemostasis (ISTH) Congress and the Association for Diagnostics & Laboratory Medicine (ADLM) conference.
- Identified priorities for this trial adjustment request, while continuing operations, are focused on building on the achievements to date and include the need to:
 - Expand validation into additional NHS testing categories to enable a broader range of use cases both within and outside pathology.
 - Gather more operational and clinical data to strengthen the evidence base for scaling across the NHS.
 - Enable bi-directional deliveries to support wider clinical needs.

These priorities form the basis of the current ACP adjustment application

- In addition, Apian and its NHS partners have identified future areas of development that may form part of separate, subsequent requests to the CAA, these are to;
 - Expand operations to additional hospital sites and labs to meet growing NHS demand.
 - Continue working closely with regulators, clinicians, and partners to ensure safe, scalable integration within NHS systems.

5.6. Aviation Impact Highlights

The trial has provided valuable aviation insights into how BVLOS UAS deliveries can be safely integrated into controlled airspace (Class D) while supporting NHS operations. It has also highlighted areas requiring further testing to inform future policy and integration.

The table below summarises the key aviation objectives, their current status, and progress to date, using the categories: achieved, mostly achieved, partly achieved and not achieved.

Achieved – Objective fully met; evidence shows all expected outcomes delivered.

Mostly Achieved – Objective largely met; some gaps or external constraints prevented full completion.

Partly Achieved – Objective partly met; some progress made but key elements incomplete.

Not Achieved – Objective not met; limited or no evidence of progress.

Aims	Status	Summary
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.	Mostly achieved, taking into account the operational constraints of the TRA	Safe BVLOS operations are successfully being demonstrated within a TRA. BVLOS flights in controlled airspace without an additional airspace structure will be an important focus in continued operations and future work.
Safely operate BVLOS within controlled airspace.	Achieved	BVLOS flights were safely conducted under CAA approval within the TRA, with no safety occurrences reported.
Support CAA airspace policy development by demonstrating and validating procedures for the safe integration of UAS in controlled airspace.	Mostly achieved, taking into account the operational constraints of the TRA	Operational data and insights were shared monthly with the CAA to inform future policy. Further validation of procedures for non-segregated operations could be explored in a future trial adjustment or through further Airspace Change Proposals (that would be subject to CAA approval)
Support the Aviation 2050 Net Zero targets with fully-electric UAS services that have zero tailpipe emissions.	Mostly achieved	All flights were conducted using fully-electric UAS, demonstrating zero tailpipe emissions. Additional data will be collected

		to evidence sustainability benefits at scale.
Identify and collate data to enable robust evaluation of the trial objectives (aviation and healthcare).	Mostly achieved	Comprehensive data was collected on aviation performance, safety, and initial healthcare impacts. Further NHS data is required to fully evaluate benefits, particularly around bi-directional deliveries, clinical workflows, and scaling patient impact.
Support the CAA's Regulatory Sandbox for BVLOS by contributing data and evidence applicable to the sandbox objectives detailed in CAP2540.	Mostly achieved, taking into account the operational constraints of the TRA	Operational data have been submitted to the CAA Sandbox, contributing to the national BVLOS evidence base. Some objectives linked to non-segregated integration remain to be addressed in future work.

5.7. Targeted Aviation and Community Stakeholder Feedback

Throughout the period of operations, feedback from targeted aviation stakeholders and the local community was collected where appropriate and shared with the CAA as part of the trial's reporting process.

Communication was provided at key points, such as when updating stakeholders about the extension of operations. Importantly, no negative feedback was received during the trial, and several positive responses were noted. One local resident commented:

"I must confess to being completely unaware of the UAS activity even though I live pretty much under the flight paths. It's good to know it's going well and is so unobtrusive!"

This demonstrates that operations were conducted in a way that was low-impact, transparent, and unobtrusive for both the local community and airspace users. Detailed information regarding targeted aviation stakeholders and community engagement is available on the ACP portal (ACP-2023-061).

6. Lessons Learned & Recommendations

Whilst this report serves as an interim update, a lessons learned and recommendations review has been completed by the Airspace Sponsor to support continued development and progress. These are provided below. The reader should note that lessons learned will also be completed upon conclusion of the trial.

The trial continues to provide valuable insights into both aviation integration and healthcare logistics. While the outcomes have demonstrated clear benefits, several lessons inform how the trial will evolve (subject to CAA approval):

Operational

- The TRA enabled safe BVLOS operations but limits scalability; testing procedures for non-segregated integration will be essential.

- [REDACTED]

Healthcare

- Significant patient benefits demonstrated, but further NHS data is required to evidence outcomes at scale.
- Bi-directional deliveries are needed to unlock broader clinical value and operational flexibility.
- Additional sites and medical payloads are needed to provide further NHS data.

Stakeholder Engagement

- Limited but positive feedback was received; operations were largely unnoticed by the public and stakeholders. All feedback was provided to the CAA in accordance with the ACP approval.

Recommendations


At this interim point in the trial and building on the progress made so far, these recommendations are suggested to support the next stages of development and expansion across this and other related ACPs:

- Enable non-segregated BVLOS operations by continuing to work closely with the CAA and NATS to test and validate the procedures needed for safe integration into shared airspace.
- Expand operations to additional hospital sites and NHS Trusts, using a phased approach to create an interconnected drone delivery network that supports healthcare across multiple sites.
- Collect further data on operational performance, clinical impact, and environmental benefits to strengthen the evidence base for wider NHS adoption.
- Engage communities and stakeholders at each stage of expansion, ensuring communication with key local stakeholders, aviation partners, and NHS teams remains open, proportionate, and scalable.
- Continue contributing data to the CAA's BVLOS TRA Regulatory Sandbox to support the development of national policy for UAS integration.

The trial so far has provided valuable insights into how drones can safely support NHS logistics within controlled airspace. While positive results have been achieved, further testing and data collection will continue through this and other interrelated ACPs to build a robust foundation for future expansion.

7. Conclusion

The London Health Bridge trial (ACP-2023-061) has successfully demonstrated, between the dates outlined by this report, that BVLOS UAS operations can be safely and reliably integrated into controlled airspace (Class D) environments in the UK, while delivering measurable benefits for patient care.



From a healthcare perspective, the trial is generating valuable insights into how UAS enabled logistics can reduce delivery times, enhance patient care, improve operational efficiency, and support the centralisation of NHS services. It is demonstrating real world impact, including time critical responses during emergencies, and confirmed safe integration into existing clinical pathways.

From an aviation perspective, the trial, to date, has safely conducted BVLOS operations within this TRA, as no crewed aviation has so far requested access to the TRA and there has been effective use of coordination with other airspace users.

The operational data collected supports the CAA's Regulatory Sandbox and contributes directly to the evidence base for future airspace integration policy. However, several objectives, such as enabling bi-directional deliveries, and gathering further NHS data, remain priorities for the remainder of the trial (subject to CAA approval).

Stakeholder and community feedback has been limited but positive. No objections or concerns have been raised during the operational period, and one key community stakeholder, who is also a local resident, commented that they were unaware of the UAS activity despite living under the flight path, describing the service as unobtrusive. This suggests the operations were conducted with minimal disruption to both the local community and airspace users.

The trial continues to look to meet its core objectives of demonstrating safety, building an evidence base, and validating healthcare benefits. The trial has allowed us to identify key areas of focus for scaling. These next steps for this trial will include (subject to CAA approval):

- Expanding operations to additional hospital sites to meet growing NHS demand.
- Validating bi-directional deliveries to broaden clinical use cases.
- Collecting additional operational and clinical data to strengthen the evidence base for scaling.
- Continuing close collaboration with the CAA, NATS, NHS trusts, and other stakeholders to support safe and sustainable routine BVLOS integration.

The insights gained to date form a critical foundation for enabling safe, routine, and scalable BVLOS operations across London and beyond.