

# CAA Environmental Assessment

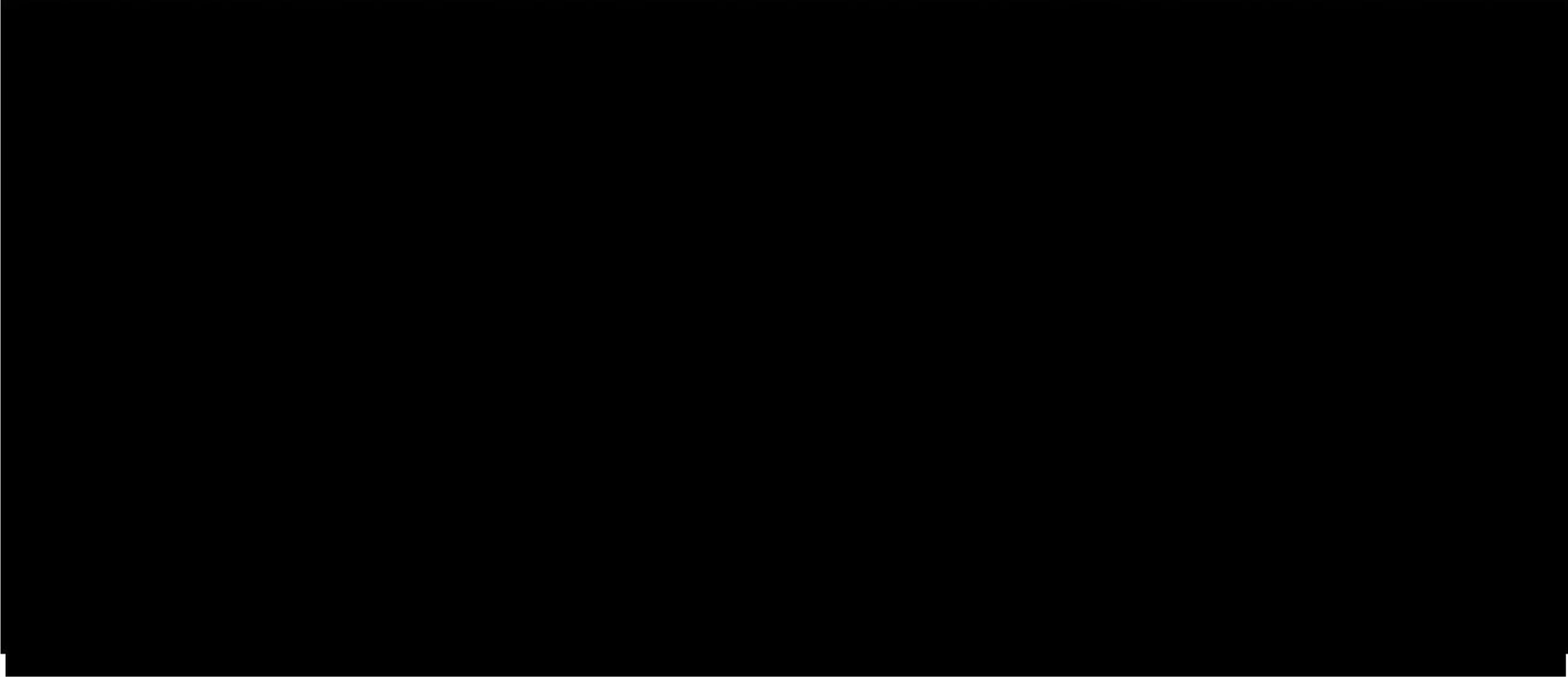
## Airspace Trial

Title of airspace change proposal	London Health Bridge
Change sponsor	Apian Ltd.
Project reference	ACP-2023-061
Account Manager	[REDACTED]
<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"> <li>• YES</li> <li>• NO</li> <li>• PARTIALLY</li> <li>• N/A</li> </ul> <p>To aid the decision maker, highlight each question accordingly to illustrate what is:</p> <p>resolved <span style="background-color: #90EE90;">YES</span> not resolved <span style="background-color: #FFD700;">PARTIALLY</span> not compliant <span style="background-color: #FF0000;">NO</span></p>	
<h3>1. Introduction</h3> <p>This airspace change proposal (ACP) is for a Temporary Reserved Area (TRA) within the London City Control Zone (CTR) - Class D Controlled Airspace (CAS) to allow for beyond visual line of sight (BVLOS) uncrewed aircraft systems (UAS) flights between laboratories at Guy's and St Thomas' hospitals in the inner-city London boroughs of Lambeth and Southwark. The trial is planned for a period of 6 months to conduct feasibility flights using UAS for the distribution of high-priority pathology samples and medicines between the two NHS hospitals. This project is part of the CAA TRA Regulatory Sandbox, intended to test and trial concepts which develop methods of integrating UAS with crewed aircraft within defined volumes of airspace to support potential future operations in unsegregated airspace.</p>	

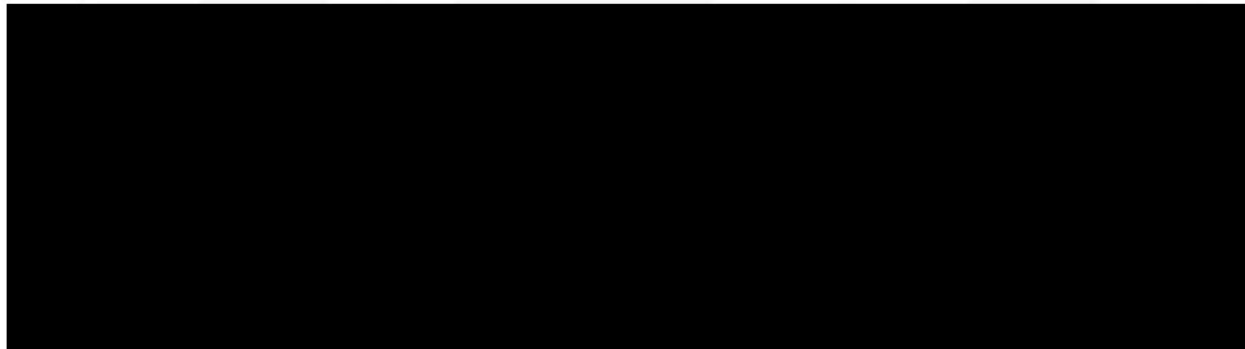
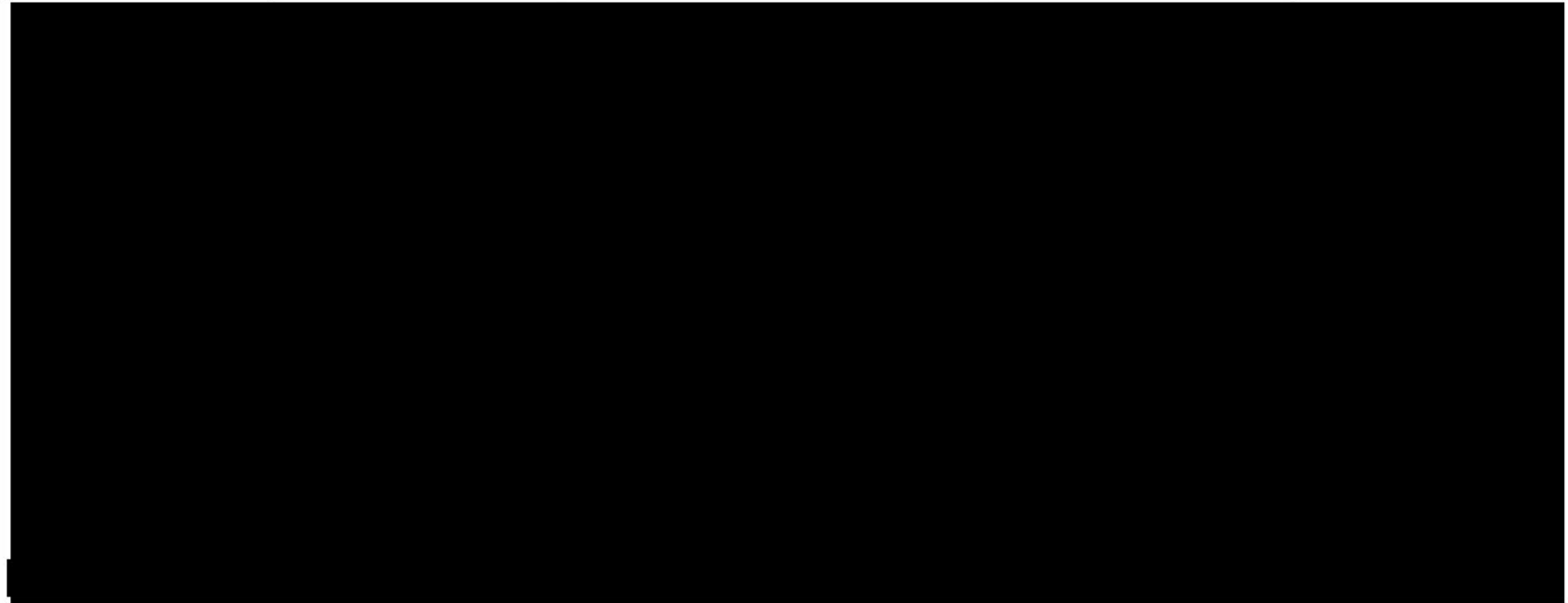
2. Statement of Need		Yes/No
2.1	Does the Statement of Need include any environmental factors?	No
	No, the Statement of Need does not include any environmental factors. The sponsor does refer to the trial ' <i>promoting sustainability</i> ' as an identified opportunity arising from the ACP.	

3. Information to be conveyed to those affected		Status
3.1	Has the change sponsor adequately provided a justification for the change?	Yes
	<p>The sponsor has justified the ACP on the basis that it is one of the Regulatory Sandbox proposals selected to contribute towards the objectives of CAP 2533: Airspace Policy Concept: Airspace Requirements for the Integration of Beyond Visual Line of Sight (BVLOS) Unmanned Aircraft.</p> <p>The Airspace Policy Concept fulfils the CAA's obligation under the Civil Aviation Authority (Air Navigation) Directions 2017 to, "<i>develop and publish procedures, and guidance on such procedures, for the development, making and consideration of a proposal [...] for an airspace trial</i>". As such, this Airspace Policy Concept describes the airspace structures considered appropriate to support the operation of BVLOS UAS as part of the transition toward integrated and unsegregated operations.</p>	
3.2	Has the change sponsor adequately confirmed the effective period of the change?	Yes
	The proposed TRA will be notified for a duration of 6 months from 20 September 2024 until 20 Mar 2025.	
3.3	Has the change sponsor provided sufficient details on the expected frequency of flights participating in the trial?	Yes
	<p><i>For trials longer than 90 days yet shorter than 12 months, sufficient details on the expected frequency (both absolute and as a percentage of total traffic during the trial period) of flights participating in the trial must be provided.</i></p> <p>The sponsor plans to conduct a maximum of 10 delivery flights per day. A delivery has been defined as a UAS departing Guy's Hospital, delivering to St. Thomas' Hospital and returning to Guy's Hospital. No more than one delivery will be made at a time.</p>	

3.4	Has the change sponsor provided sufficient details on the timing of flights participating in the trial?	Yes
<p>The sponsor plans to conduct the trial activity from Mondays to Fridays during the period between 0900 – 1700. Each flight will be approximately 4 minutes long. No night operations are planned.</p> <p>The TRA will be activated by NOTAM at least 24 hours prior to operation of the UAS. Daily operations are stated to be supported by Heathrow Radar NATS on an ‘as needed’ basis and deconfliction with other crewed and uncrewed aircraft would be managed by NATS in coordination with the UAS operator. The Trial Submission Pack (v1.7) does not specify the procedure for deactivation of the TRA when the UAS flights have been completed.</p>		
3.5	Has the change sponsor provided sufficient details on the typical altitudes of flights?	Yes
<p>The sponsor has indicated a UAS cruise altitude of [REDACTED] above ground level (AGL), up to a maximum of 400 ft (~122 m). The height of the take-off location at Guy’s Hospital is identified at approximately [REDACTED] and the delivery location at St. Thomas’ Hospital is approximately [REDACTED] (see Table 2-Trial Submission Pack v1.4).</p> <p>The sponsor has confirmed that the minimum vertical separation from overflown buildings and obstacles will be [REDACTED]</p> <p>[REDACTED]</p> <p>The sponsor has undertaken preliminary geospatial analysis to identify buildings within the TRA which exceed [REDACTED] in height and has stated that [REDACTED] and structures exceeding [REDACTED] height will not be overflown at any time.” (Ch.3 of Wing’s noise inputs in support of London Health Bridge Airspace Change Proposal (ACP) application, v4.1).</p>		
3.6	<p>Has the change sponsor adequately provided a qualitative description of changes to traffic patterns, illustrated using operational diagrams overlaid on Ordnance Survey maps or similar?</p> <p><i>For trials longer than 90 days yet shorter than 12 months, operational diagrams that illustrate the estimated overflight swathe of trial traffic, up to 7,000 feet must be provided.</i></p> <p><i>The diagrams should be of sufficient detail for those affected to identify where they live in relation of the changes in traffic pattern.</i></p>	Partial

	<p>The sponsor has provided a basic qualitative description of changes to traffic patterns, delineating the proposed trajectory from the take-off site (Guy's Hospital) to the delivery location (St. Thomas' Hospital) within the proposed TRA. (See section 3: Delivery mission profile within the noise assessment document titled, 'Wing's noise inputs in support of London Health Bridge Airspace Change Proposal (ACP) application').</p>  <p>The map is not of sufficient resolution to enable affected stakeholders to identify where they live in relation to the proposed changes in traffic patterns and the document has been identified as a '<i>commercial in confidence</i>' report not available for '<i>wider review</i>'. It is not clear whether the sponsor intends to make the diagram public or provide an alternative means for those affected to identify where they live in relation of the changes in traffic pattern.</p>	
<p>3.7</p>	<p>Has the change sponsor adequately provided an assessment of noise impacts?</p> <p><i>For trials of 90 days or less, typical noise levels at key locations must be provided.</i></p>	<p>Partial</p>

	<p>For trials longer than 90 days yet shorter than 12 months, LAmax footprints illustrating the loudest and most frequent types of aircraft that will be participating in the trial must be provided:</p> <ul style="list-style-type: none"> <li>• 65 dBA Lmax footprints for noise from day flights (0700 to 2300)</li> <li>• 60 dBA Lmax footprints for noise from night flights (2300 to 0700).</li> </ul> <p>For trials longer than 90 days yet shorter than 12 months, equivalent footprints that illustrate where the trial traffic would otherwise have flown (this assumes that any aircraft that partakes in the trial would have flown on an alternate route that reflects current operations).</p> <p>For trials extending beyond 12 months, noise assessments using annualised noise metrics must be provided.</p>	
	<p>As the proposed trial is for a period of 6 months, the sponsor is required to present 65 dB LAmax footprints from day flights. No night operations are planned and therefore there is no requirement to present 60 dB LAmax footprints for noise from night flights. In this case, the sponsor has not submitted noise footprints but has opted to present approximate LAmax levels at key locations.</p> <p>The sponsor has identified 'community-sensitive areas, such as childcare centres and schools with playgrounds or sport fields.' These are designated by the operator as [REDACTED]. The sponsor's noise assessment indicates that the designation is made on the basis of, 'the strategic reduction of at-risk population on the ground (ground risk mitigation measure)', rather than as a specific noise mitigation measure. The sponsor does not appear to have included identification of any residential areas in [REDACTED] or included any other category of noise sensitive receptors.</p> <p>Generalised key locations have been described by the sponsor as, 'intermediate points along the intended UA flight route as well as the take off and delivery sites at Guy's and St. Thomas' Hospitals'. The sponsor has not identified any specific key locations but has stated that these can be effectively represented by the level flyover and delivery flight conditions.</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	



It is generally accepted that the noise produced by UAS is more annoying than from a fixed-wing aircraft at the same L<sub>Amax</sub> level, and for assessments related to CAP 1616, a +10 dB tone correction must be applied to noise exposure levels calculated for multi-rotor UAS until such time that this aspect is better understood. The UAS platform proposed for the trial is described as a hybrid with both fixed wing and multi-rotor function and therefore, the values presented are subject to the +10 dB correction factor.

	<p>[REDACTED]</p> <p>Maintaining these separation distances should enable the operator to stay below the daytime noise threshold of 65 dB LAmax, however, this does not take account of noise sensitive receptors in residential buildings particularly those at higher elevations, such as high-rise apartments etc. In addition, the calculated noise values do not take account of any acoustic factors that can cause noise levels to fluctuate around estimated values, which may be a factor given that the margin between the calculated noise level and the threshold noise value is very small.</p> <p>It is stated that, [REDACTED] and that the UAS in cruise phase will maintain a minimum height of approximately [REDACTED] above overflown buildings, while not exceeding the maximum allowed height of 120 m (400 ft) AGL'. The sponsor has not indicated how the stated separation distances comply with the relevant safety/operational requirements.</p> <p>The sponsor has also used geospatial data to identify buildings within the proposed TRA exceeding [REDACTED] in height with the sponsor stating that these structures will not be overflown (Wing's noise inputs in support of London Health Bridge Airspace Change Proposal (ACP) application v4.1). If these structures are not overflown, then it is assumed that the sponsor's proposed operational conditions relating to [REDACTED] criteria will apply, which means that buildings above [REDACTED] in height may only be subject to a nominal horizontal separation distance of [REDACTED]. Were this to be the case, the calculated noise level for receptors in high rise buildings could significantly exceed the 65 dB LAmax noise level threshold. It is not clear from the sponsor's submission whether the [REDACTED] [REDACTED] has factored sufficient lateral separation distances for tall buildings [REDACTED] not directly overflown, to ensure noise levels may be kept below 65 dB LAmax.</p> <p>The sponsor has provided additional noise calculations based on A-weighted equivalent continuous sound levels (LAeq 16h) but these have been disregarded as the limited duration of the trial (6 months) means that annualised noise metrics are not relevant. The sponsor has also presented supporting information regarding typical background noise levels for city locations/activities and comparative sound levels for various ground transport vehicle categories however, these are of limited value in evaluating the specific noise impacts associated with the proposed ACP.</p>	
<p><b>4. Assessment of noise impacts</b></p>		<p><b>Status</b></p>
<p>4.1</p>	<p>Has the assessment of noise impacts identified in Question 3.7 been adequately assessed and presented in the final submission to the CAA?</p>	<p>Partial</p>
	<p>There is a significant amount of uncertainty associated with the noise impacts of this ACP due to [REDACTED]</p>	

	<p>the identification of key noise sensitive receptor locations potentially impacted and their associated L<sub>max</sub> spot levels have not been provided.</p>
4.2	<p>Summary of anticipated noise impacts from the final proposed airspace trial.</p>
	<p>The requirement to provide L<sub>max</sub> spot noise levels at key noise sensitive receptor locations was agreed with the sponsor as an alternative to the provision of L<sub>max</sub> noise footprints, however, as neither requirement has been fully met in the final submission, the calculated noise values are considered indicative only and the CAA does not have sufficient evidence to verify the noise impacts associated with this ACP.</p>

5. Compliance with relevant policy and guidance from Government or the CAA		Status
5.1	<p>Has the change sponsor satisfied all relevant policy and/or guidance, with regards to environmental impacts of the proposed airspace change?</p> <p><i>Notably, has the change sponsor complied with the environmental requirements in:</i></p> <ul style="list-style-type: none"> <li>• <i>CAP1616: Airspace change: Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information;</i></li> <li>• <i>CAP1616a: Airspace Change: Environmental requirements technical annex;</i></li> <li>• <i>DfT Air Navigation Guidance 2017: Guidance to the CAA on its environmental objectives when carrying out its air navigation functions, and to the CAA and wider industry on airspace and noise management.</i></li> </ul> <p>If a change sponsor has not complied with any aspect of those documents, have they provided a rationale and is it reasonable?</p>	Partial
	<p>CAP1616 (v4 paragraph 314) requires submission of a trial plan, which should include a clear explanation of:</p> <ul style="list-style-type: none"> <li>• what data and outcomes the trial sponsor needs in order to prove or otherwise that the trial has been a success</li> <li>• how the sponsor has considered and assessed the likely noise impact of its proposal and how this will inform the level of stakeholder engagement required.</li> </ul>	



	<p>The sponsor has not indicated whether there will be an evaluation of noise impacts associated with the trial which could determine the social impacts of the trial, as part of their Statement of Need objective of, 'promoting sustainability'. Sustainability is also stated as an 'opportunity' with the proposed trial set to, "serve as a scalable model for the wider adoption of drones within the Trust and throughout the NHS". The use of the trial to provide robust noise data from UAS operated within a densely populated city environment would help inform this opportunity and provide valuable learning for future deployment. A condition requiring submission of 3-D trajectories of UAS movements during the trial is proposed to help identify [REDACTED] and to provide an opportunity to link [REDACTED] noise complaints lodged during the trial period.</p> <p>The sponsor has provided an indicative noise impact assessment based on calculated separation distances between the UAS and likely noise sensitive receptors during cruise and delivery phases. The noise sensitive receptors used to define [REDACTED] do not appear to include residential receptors, particularly those in multistorey buildings above [REDACTED] in height that might be more vulnerable to noise from the overflight phase. [REDACTED]</p> <p>[REDACTED] the sponsor will be required to inform all relevant non-aviation stakeholders or representative groups within the TRA of the trial objectives, operating conditions and contact details in order that stakeholders can relay any queries or complaints.</p>
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6. Recommendations/Conditions		Status
6.1	<p>Are there any Recommendations which the change sponsor <b>should try</b> to address either before or after implementation (if approved)? If yes, please list them below.</p> <p><i><b>GUIDANCE NOTE:</b> Recommendations are something that the change sponsor <b>should try</b> 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.</i></p>	No
	No, there are no Recommendations which the sponsor should try to address either before or after implementation of the trial (if approved).	
6.2	Are there any Condition(s) which the change sponsor <b>must fulfil</b> either before or after implementation (if	Yes

	<p>approved)? If yes, please list them below.</p> <p><b><i>GUIDANCE NOTE:</i></b> Conditions are something that the change sponsor <b>must fulfil</b> either before or after implementation, if indeed the airspace change proposal is approved. If their proposal is approved, change sponsors <b>must</b> observe any condition(s) contained within the regulatory decision; failure to do so <b>will usually</b> result in the approval being revoked.</p>	
	<p>Yes, the sponsor must fulfil the following Conditions either before or after the implementation of the trial (if approved).</p> <ul style="list-style-type: none"> <li>• The sponsor must provide 3-D trajectory data for all UAS flights conducted during the trial period. The data must be submitted in .csv format and must include the latitude, longitude and height coordinates correlated with the timings of the individual flights, together with GIS (Esri shape file) format to show the flight trajectories. The data must be submitted to the CAA during the trial period at intervals of one, three and six months.</li> <li>• The sponsor must provide evidence, before the trial commences, that all stakeholders have been informed of the trial objectives, planned operations (including effective period of the trial, expected frequency and timings of UAS flights, typical altitudes and noise levels), together with the sponsor's contact details in order that stakeholders can relay any queries or complaints. The list of stakeholders to be informed must include noise sensitive receptors, identified as residences, schools, hospitals and places of worship.</li> <li>• The sponsor must collate, monitor and report to the CAA on the level and contents of any complaints associated with the trial throughout its period of operation. The CAA expect reporting on the level and contents of any stakeholder feedback received on a fortnightly basis throughout the duration of the trial (this should include nil returns). The sponsor should send these reports to the assigned Account Manager/Case Officer."</li> </ul>	

Environmental assessment sign-off	Name	Signature	Date
Environmental assessment completed by Airspace Regulator (Environment)	██████████		25/07/2024
Environmental assessment approved by Manager Airspace Regulation (or alternative delegation of authority)	██████████		