CAA Environmental Assessment

Temporary Airspace Change Proposals

Title of airspace change proposal	Solent Transport TDA
Change sponsor	SKYLIFT UAV Limited
Project reference	ACP-2022-106
Account Manager	[redacted]

Instructions

In providing a response for each question, please ensure that the 'status' column is completed using the following options:

- YES
- NO
- PARTIALLY
- N/A

To aid the decision maker, highlight each question accordingly to illustrate what is:

resolved YES not resolved PARTIALLY not compliant NO

1. Introduction

SKYLIFT UAV Limited, "the change sponsor", is seeking to conduct an airspace trial to introduce a Temporary Danger Area (TDA) to facilitate Uncrewed Air Systems (UAS) operating Beyond Visual Line of Sight (BVLOS) in The Solent, which is a strait between the south coast of mainland Great Britain and the Isle of Wight. This project is part of the Solent Future Transport Zone which is funded by the Department for Transport. Current airspace regulations require that BVLOS activities involving aircraft without the appropriate Detect and Avoid (DAA) capability must take place in segregated airspace, typically in the form of a TDA. The change sponsor intends to use the airspace trial as an opportunity to test currently available DAA systems to "support the route to approval with the CAA" for the integration of Remotely Piloted Aircraft Systems (RPAS) operating BVLOS with other airspace users. In addition, the sponsor also aims to build and test a communication and flight planning tool, introduce a sensor network and to increase the complexity of flying from single operator aircraft to multiple operators. If approved, the trial will take place from May to October 2025. Flights will take place between the hours of 0900-1700 Monday to Friday with no weekend flying. The sponsor intends to conduct 7 weeks of flying, within which the TDA will

be activated for the specific weeks chosen. Approximately 6-8 flights are expected to take place on each operational day.

The final proposed TDA structure can be seen below in figure 1. The light blue lines reflect the lateral boundaries of the TDA structure. The stub to the north of the TDA (labelled with F, G, E and H) is intended to provide access to the TDA when the UAS is operating under Visual Line of Sight (VLOS), and it is within the stub that the aircraft operator will switch from VLOS to BVLOS. The stub contains the only take-off and landing site for the purpose of this trial. Vertically, the TDA structure will extend from the surface to 600ft AGL.

Figure 1 – the TDA structure (including the stub) overlaid on a satellite map.

The lateral dimensions of the proposed TDA have changed significantly throughout the trial ACP submission process with the final TDA structure shown in Figure 1 representing a significant reduction in volume, particularly over land when compared to the TDA structure first engaged upon. The Stage 4 Submission document (v2) lists how and why changes to the final proposed TDA structure have occurred. This trial ACP has followed the process listed

in CAP1616 v4[1].

2. Statement of Need		Yes/No
2.1	Does the Statement of Need include any environmental factors?	No
	The Statement of Need does not include any environmental factors.	

3. Information conveyed to those affected		Status
3.1	Has the change sponsor adequately provided a justification for the change?	Yes
	The sponsor outlines that the need for the TDA is to facilitate BVLOS UAS operations for the purposes of a UAS trial. Summarised below, in section 1.1 of the Stage 4 v2 document, the sponsor states that the trials aims are to: 1. Perform live flying trials with increasing complexity of flying from single operator / aircraft to multiple operators/aircraft and using VLOS to enter and exit the main TDA. 2. Gather operational evidence testing the currently available DAA solutions. 3. Test and develop operational procedures for multiple aircraft type / or multiple operators. 4. Introduce a network of sensors to receive signals from aircraft to infer location. 5. To test the capabilities of a 4-dimensional (latitude, longitude, height and speed) flight booking system, alongside the sensor network. The sponsor states that the testing proposed is not currently possible in any known simulated environment, and therefore a live operational trial is required. This trial is similar to a preceding trial undertaken by the sponsor in terms of location but differs due to the testing of multiple aircraft within a TDA that allows operations up to 600ft as opposed to 400ft in the previous trial, allowing greater vertical separation.	

[1] CAP1616 version 4 (CAP1616SUP) was superseded by CAP1616 version 5 in January 2024. This ACP followed the process as listed for airspace trials in CAP1616 v4.

3.2	Has the change sponsor adequately confirmed the effective period of the change?	Yes
	The sponsor states that the trial will last for six months, running from May to October 2025. Within this period, it is intended that there will be a maximum of 7-weeks of flying, taking place from Monday to Friday, between the hours of 0900-1700. The TDA will be activated for one week at a time, excluding the weekend days. The trial will start on the week commencing 12/05/2025, with the final week of operations taking place in the week commencing 11/08/2025.	
3.3	Has the change sponsor provided sufficient details of the frequency of flights?	Yes
	Section 5.1 of the Stage 4 Submission document (v2) contains the details regarding the frequency of flights. As mentioned in 3.2 above, there will 7-weeks of flying during which the TDA will be active between 0900-1700hrs, Monday to Friday with no weekend operations planned. The specific weeks chosen for operations are listed in Table 10, along with a short summary of what each operational trial seeks to achieve in each scheduled week of operation. It is expected that up to 8 flights per operational day will take place.	
3.4	Has the change sponsor provided sufficient details of the typical altitudes of operations?	Yes
	The proposed TDA will extend from surface to 600ft AGL. The sponsor indicates that other than take-off and landing, the UAS will mostly operate at a cruising height of 400ft AGL.	
3.5	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? *The diagrams should be of sufficient detail for those affected to identify where they live in relation of the changes in traffic pattern.*	Yes
	The sponsor has provided a satellite image overlaid with the proposed TDAs lateral boundary (see Figure 1 above). The Stage 4 Submission document (v2) does not include details regarding the proposed flight paths that will take place inside the TDA, however, it is suggested that the dimensions of the TDA can be used as a substitute to a swathe for the trial flights. Furthermore, no details regarding the chosen location for the sole take-off and landing site were provided although this will occur on land within the northern “stub” area. The sponsor states in section 2 of the final submission document that the landowner of the site chosen for take-off and landing has been engaged throughout the process, and that the precise location can be reviewed upon request by the CAA owing to commercial sensitivity. The CAA can confirm that the sponsor disclosed the location of the take-off and landing site upon request.	

3.6	Has the change sponsor adequately provided typical noise levels at key locations?	Yes

CAP 1616g requires sponsors to produce 65dB L_{ASmax} daytime (0700-2300) and 60dB L_{ASmax} nighttime (2300-0700) footprints for the loudest and most frequent types of aircraft operating in the trial. The sponsor scoped out the requirement for L_{ASmax} footprints on proportionality grounds, due to the noise levels produced by the aircraft at its cruise altitude of 400ft, as well as the fact that the trial will operate predominantly over the sea away from noise receptors. Further, L_{ASmax} footprints for the nighttime period were not required as trial flights will only take place between 0900-1700. The CAA accept the rationale for not producing the L_{ASmax} footprints for both the daytime and nighttime periods.

The sponsor provides an indication of the likely noise levels produced by both the loudest (FB3 UAS) and the most frequently operated (V23 UAS) aircraft. Chapter 10, Appendix: Noise Assessments presents measured noise data for both the FB3 and the V23 UAS. The methodology and equipment used for obtaining the noise level data is contained within the Stage 4 Submission (v2) document. It is stated that the methodology followed is consistent with the guidance contained in the CAA's CAP2506[2]. The sponsor has used the noise level measurement data in Table 1 (below) to perform a calculation of the likely noise level at 350ft.

UAS	**Height (m/ft) AGL**	**Average L_{ASmax} (dB)**
Skylift V23 UAS	46m / 150ft	47.55
Flying Basket FB3	100m / 328ft	54.05

Table 1 – Noise level measurement data for the Skylift V23 UAS and the Flying Basket FB3.

This reference data from Table 1 was then inputted into the formula listed below to calculate the approximate noise level at 350ft, as well as an additional calculation to include the +10dB tonal correction required by CAP 1616g/CAP 1616i for multi-rotor RPAS. This can be seen below in Table 2

UAS	**LASMAX**	**Equation Used** $LASmaxh = LASmax + 20 \times (\log10 \left(\frac{Rh}{h}\right))$	**LASMAX350 (dB)**	**LASMAX350 + 10dB tonal correction (dB)**
Skylift V23 UAS	47.55	=47.55+(20*log10(150/350))	30.19*	40.19

[2] CAP2506: Noise measurements from eVTOL aircraft: A review of available data | Civil Aviation Authority

	Flying Basket 3	54.05	=54.05+(20*log10(328/350))	53.49	63.49

Table 2 – Noise Metrics per UAS

**Note – It appears that Table 7 as presented in the Final Submission document (v2) contains a calculation issue with the Skylift V23 UAS row. The LASmax350(dB) field appears to have under calculated by 10dB. Therefore, the LASmax350 field should be 40.19, with the +10dB tonal correction field being 50.19. Crucially, this demonstrates that the V23 UAS would remain below 65dB L_{ASmax} (daytime) at cruise altitude and therefore below the threshold listed in CAP1616g for the purpose of informing stakeholders of the noise impacts from the trial.*

The noise assessment therefore demonstrates that the noise levels produced by both the noisiest and most frequently operated aircraft at 350ft (50ft lower than the intended cruise altitude during the trial of 400ft) would remain below the 65dB L_{ASmax} daytime threshold set for the purpose of informing stakeholders of the trials noise impacts. It should also be noted that the majority of the TDA is positioned over the sea, away from noise receptors. Regarding the take-off and landing portions of each flight, this will take place in a location on land, away from any non-involved noise receptors. Further, take-off and landing are intended to take place under VLOS and therefore would technically remain outside the scope of this ACP as a TDA is not necessarily required for VLOS operations.

3.7	Has the information at 3.1 to 3.4 above been adequately conveyed to those affected?	Yes
	The Stage 4 Submission document (v2) adequately provides the information referred to above in questions 3.1 – 3.4.	

4. Assessment of noise impacts		**Status**
4.1	Was the detail of the assessment of the noise impact agreed between the change sponsor and the CAA, or determined by the CAA (where there was no agreement)? *The CAA is required to consider the sponsor's assessment of the noise impact of each proposed temporary change to airspace design before it makes its decision on the proposal, unless it is satisfied that the specific details of the proposal mean that this is not needed. The detail of this assessment should be agreed between the sponsor and the CAA at an early stage of the sponsor's planning. Assessments may include consideration of both primary and secondary noise metrics. If agreement cannot be reached, the CAA will determine the detail of the assessment.*	No
	No specific requirements were made by the CAA beyond those listed in the CAP 1616 (v4) document. As per CAP 1616i para 2.12, the environmental assessment requirements are scalable and proportionate. Scaling may take place subject to the presentation of	

	appropriate rationale and evidence for doing so. The CAA accepts the sponsors approach to scaling the requirement for daytime 65 dB L_{ASmax} footprints as explained above in question 3.6.	
4.2	Has the assessment of noise impacts identified in Question 4.1 been adequately assessed and presented in the final submission to the CAA?	Yes
	See question 4.1 above. The sponsor adequately explains the grounds for scaling the requirement for L_{ASmax} footprints. This is supported with noise level data as well as operational diagrams and a traffic survey analysis of the airspace concerned by this trial.	
4.3	Summary of anticipated noise impacts from the final proposed temporary airspace change.	
	The Air Navigation Guidance 2017 requires the CAA to consider the noise impact of a trial ACP before making a decision. The noise assessment is used to inform the level of engagement required with potentially impacted stakeholders, and to portray the anticipated impacts to the affected communities and their representatives where a trial might affect the routes flown by aircraft below 7,000ft. The change sponsor did not identify any "non-involved" stakeholders on the ground that will be exposed to noise levels above the 65 dBA L_{ASmax} (0700-2300 Daytime) threshold set for the purposes of identifying and informing affected communities and their representatives. The location of the proposed TDA is mostly located over the sea away from noise receptors. The CAA have verified that the proposed take-off and landing site within the "stub" to the north of the TDA is also located away from any non-involved noise receptors. Further, take-off and landing is proposed to take place under VLOS and is therefore technically outside the scope of this ACP. For the purpose of airspace trials, CAP 1616 requires the trial sponsor to produce 65 db L_{ASmax} (daytime) and 60dB L_{ASmax} (nighttime) footprints for both the noisiest and most frequently used aircraft types. The sponsor has taken a scaled approach to the noise assessment, scoping out the need for L_{ASmax} footprints on the grounds of proportionality. For daytime activities the CAA accept this rationale. Nighttime L_{ASmax} footprints were scoped out due as this ACP concerns trial operations between the daytime hours of 0900-1700 only. The sponsor has provided an indication of the likely noise levels produced by both the loudest (FB3 UAS) and the most frequently operated (V23 UAS) aircraft. Chapter 10, Appendix: Noise Assessments presents measured noise data for both the FB3 and the V23 UAS. The noise assessment followed guidance listed within the CAA's CAP2506 document (Chapter 4). The noise levels recorded indicate that both the loudest and most frequently used aircraft would generate a noise level below the daytime 65dB L_{ASmax} threshold at a cruising altitude of 400ft. It should be noted that with the application of the +10dB tonal correction required by CAP 1616i for multi-rotor RPAS, the V23 has a calculated noise level of 50.19dB and the FB3 has a calculated noise level of 63.49dB at 350ft AGL. Therefore, regarding direct noise impacts, based upon the data and evidence provided the CAA conclude that the sponsor has taken a proportionate approach to the noise assessment. The majority of the TDA is positioned over the sea away from noise receptors. The eastern extremity of the TDA	

does encompass populated areas on land, however, as demonstrated with the noise level data, the threshold above which stakeholders need to be informed is demonstrated to not have been met with the noise level of both the loudest and most frequent aircraft being less than 65 db L_{ASmax} at cruising altitude (400ft).

In terms of consequential impacts, the sponsor has assessed the potential impact using only ADS-B track data as the upper limit (600ft) of the proposed TDA is outside of reliable radar coverage. It should be noted that not all aircraft transmit via ADS-B and therefore non-transmitting aircraft[3] would not be present within the sample data. The total movements recorded in the vicinity of the proposed TDA for the period April 2023-March 2024 are shown in the table below:

Month	Traffic Count
April 2023	1,000
May 2023	1,325
June 2023	1,220
July 2023	946
August 2023	1,216
September 2023	1,241
October 2023	927
November 2023	552
December 2023	708
January 2024	625
February 2024	344
March 2024	560
Full year	**10,664**

Table 3 – Traffic Count per Month (April 2023 – March 2024)

Further, the sponsor provides a traffic analysis survey undertaken for the month of August 2024 which is considered to be indicative of a busier summer month. Traffic at, or below, 599ft is shown in the below figure as green and this traffic makes up approx. 24% of all traffic detected in August 2024. The data presented shows that the majority of traffic recorded (86%) was operating at or above 600ft within the vicinity of the TDA and would not be affected by the proposed TDA and subsequent trial operations.

[3] CAP2498 published in June 2022 estimates that approximately 40% of General Aviation aircraft are equipped with an ADS-B out. This number is expected to increase over time and may be higher than when CAP2498 was produced.

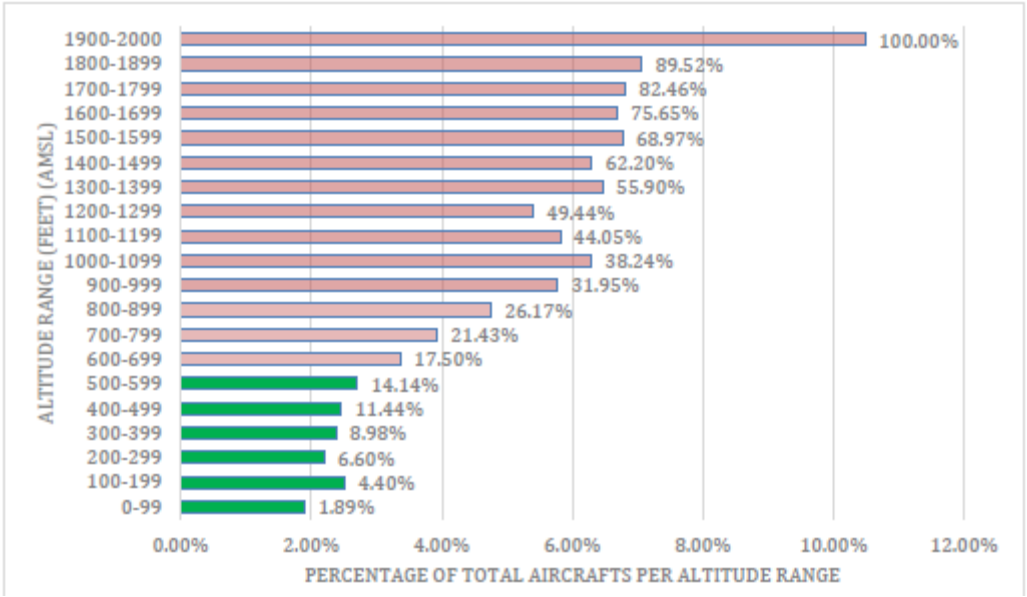

Figure 2 – Aircraft count by altitude range for August 2024, below 2,000ft AMSL

The lateral tracks of aircraft recorded on 29.08.2024 are presented to provide an indication of the representative traffic flows in the Solent area. The diagram shows that tracks remain concentrated primarily around local airfields with less traffic density evident over the Solent where the proposed TDA will be located. The sponsor uses this data to highlight that the TDA avoids neighbouring airfields and is expected to have "minimal impact" on their arrival and departure routings. It is anticipated that traffic following the coast of both the Isle of Wight (Cowes to Ryde) and the mainland (Southsea to Wittering) are the most likely traffic flows to be impacted by this trial. Except for high priority traffic (military / emergency services) the sponsor states that un-involved aircraft would have to fly above or around the proposed TDA. As much of the TDA is positioned over the sea, it is assumed that aircraft would likely opt to fly above the TDA as a contingency measure to allow a safe glide height back to land in an emergency scenario.

Figure 3 – Lateral tracks from 29.08.2024 – Traffic Analysis Survey

The CAA accept the sponsors assessment and conclusion of the likely indirect impacts based upon the data provided. Due to the temporary nature, location and relatively low TDA ceiling height of 600ft, it is expected that any indirect impact to non-involved traffic patterns would result in a negligible noise impact. The TDA will be activated for a maximum of 7 weeks within the 6-month trial period, and only between the hours of 0900-1700, Monday to Friday, further limiting any indirect impact.

5. Compliance with relevant policy and guidance from Government or the CAA		Status
5.1	Has the change sponsor satisfied all relevant policy and/or guidance, with regards to environmental impacts of the proposed airspace change? *Notably, has the change sponsor complied with the environmental requirements in:* • *CAP1616: Airspace change: Guidance on the regulatory process for changing the notified airspace design and*	Yes

	planned and permanent redistribution of air traffic, and on providing airspace information; • *CAP1616a: Airspace Change: Environmental requirements technical annex;* • *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.* If a change sponsor has not complied with any aspect of those documents, have they provided a rationale and is it reasonable?	
	The change sponsor has met all relevant environmental requirements listed in CAP 1616 (v4) for trial ACPs. A scaled approach was taken with regards to the noise assessment and the rationale and evidence for taking this approach is deemed reasonable. Indirect noise impacts have also been appropriately considered, as outlined in question 4.3 above.	

6. Recommendations/Conditions		**Status**
6.1	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. ***GUIDANCE NOTE:*** *Recommendations are something that the change sponsor **should try** 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.*	No
	None	
6.2	Are there any Condition(s) which the change sponsor **must fulfil** either before or after implementation (if approved)? If yes, please list them below. ***GUIDANCE NOTE:*** *Conditions are something that the change sponsor **must fulfil** either before or after implementation, if indeed the airspace change proposal is approved. If their proposal is approved, change sponsors **must** observe any condition(s) contained within the regulatory decision; failure to do so **will usually** result in the approval being revoked.*	Yes
	1. The change sponsor must notify the CAA at the end of the trial airspace change if any environmental related complaints were received.	

Environmental assessment sign-off	Name	Signature	Date
Environmental assessment completed by Airspace Regulator (Environment)	[redacted]	[redacted]	26.02.2025
Environmental assessment approved by Manager Airspace Regulation (or alternative delegation of authority)	[redacted]	[redacted]	10 Mar 25