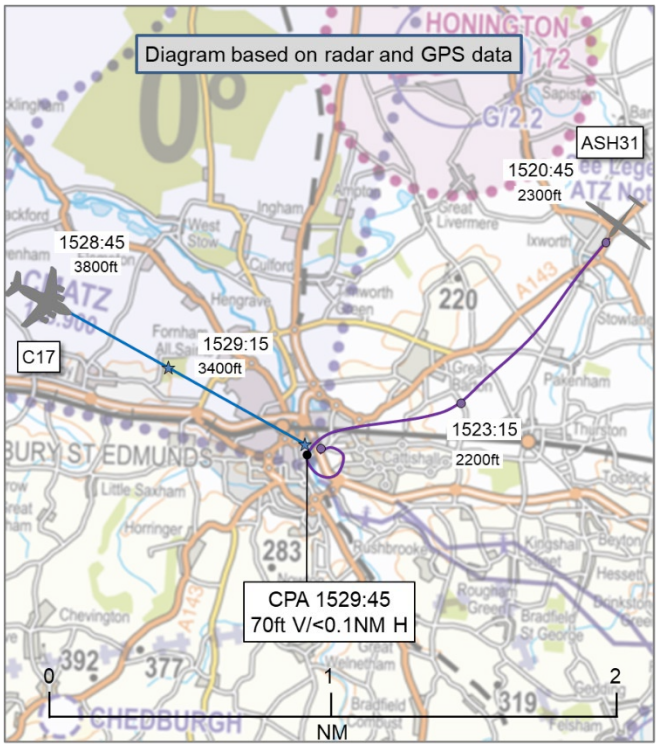
AIRPROX REPORT No 2024162

Date: 17 Jul 2024 Time: 1530Z Position: 5214N 00043E Location: Bury St. Edmunds

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	C17	ASH31
Operator	HQ Air (Ops)	Civ Gld
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Traffic	None
Provider	Lakenheath App	N/A
Altitude/FL	3270ft	3340ft
Transponder	A, C, S+	Off
Reported		
Colours	Grey	White
Lighting	Anti-coll, strobes, landing	None
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	3000ft	3300ft
Altimeter	QNH (1020hPa)	QFE
Heading	110°	Circling
Speed	220kt	55kt
ACAS/TAS	TCAS II	FLARM
Alert	None	Information
Separation at CPA		
Reported	0ft V/500ft H	0ft V/20m H
Recorded	70ft V/<0.1NM H	



THE C17 PILOT reports that, during arrival for a radar-vectored ILS at Mildenhall, multiple traffic calls were made by ATC for a variety of Class G traffic, with a mixture of transponding traffic visible on the aircraft's navigation display as TCAS traffic. The pilot-flying in the left-hand seat had spotted a glider at a similar altitude in the 1230 position, tracking slightly towards. The glider had then initiated what seemed to be a slight right-hand turn to point directly at the C17. With both pilots having visually identified the traffic, avoiding action had been taken by disconnecting the autopilot and initiating a sharp left turn of 60°. ATC was notified of the Airprox and that the C17 had no longer been following the assigned vectors due to the traffic. Subsequent vectors had been issued once clear of the traffic and a normal vectored ILS had been flown with the rest of the training remaining unaffected for the sortie.

The pilot perceived the severity of the incident as 'High'.

THE ASH31 PILOT reports that they had been flying a task from [departure airfield] to [destination airfield] and return. It had been a relatively long flight and they had been airborne for a little over 6½ hours. Conditions had been mixed, but in the last two hours of the flight conditions had improved significantly with blue skies and scattered cumulus with cloudbases around 5000ft. As they had tracked west there had been few cumulus ahead except for one on the eastern edge of Bury St Edmunds. The ASH31 pilot had arrived under the cumulus which had been producing reasonable lift and they had commenced a clockwise circling turn in the thermal at around 2500ft. The pilot reports that they had made 8 turns, were banked steeply in the thermal and had been climbing through 3300ft when they had seen the C17 approaching from the northwest at the same altitude. They had rolled out of the turn as quickly as they could, tracking slightly to the left, with maximum stick left […]. The ASH31 pilot does not recall seeing the C17 actually pass by as they had been focussed on getting out of the way, but did recall seeing it bank hard to its left. The ASH31 pilot recalls that they had heard the roar of the jet engines and, once that had subsided, had then turned right back into the thermal and saw the C17

tracking east. The time from taking avoiding action banking hard left to re-joining the thermal had been about 12sec. A colleague had been also flying from […] back to […], but some distance behind them so the ASH31 pilot had made a radio call warning them of the C17 now tracking in their direction. The other pilot commented that they had seen it approaching their position, but it had then turned [at a good] distance in front of them, presumably to land at […]. The ASH31 pilot recalls that they had re-established their glider in the thermal and completed the flight. The following day they had made numerous calls to […] and […] to discuss the incident and after six or seven attempts had been put through to the MATZ controller. They had discussed the incident, and the ASH31 pilot had passed their name and contact details and it had been agreed that if they intended to submit an Airprox they would advise [the ASH31 pilot] that this was their intention. The ASH31 pilot had not heard anything further until receiving the Airprox email at 1335 on 19th Jul 2024. They note that their glider is transponder equipped, but it had been a long flight and they had been marginal on battery voltage running their radio and LX8000 so had not had it switched on at the time. They also note that they had been a long way south of […] and […] and wanted to save the battery for Cambridge Radar just in case it had been required, as they knew it would be likely that they would be tracking through their Radio Advisory Zone. They recall that they had spoken to Cambridge Radar as they had transited back to […], but they had not requested that they use their transponder.

The pilot assessed the risk of collision as 'High'.

THE LAKENHEATH CONTROLLER reports that this report had been submitted on receipt of a notification from the Airprox Board. The C17 had made a left-hand turn to avoid a glider that they had seen 'within 500ft' over Bury St. Edmunds whilst they had been in the radar downwind for […] RW28. No target had been observed on radar at the time, however glider advisories had been issued beforehand.

Factual Background

The weather at Wattisham was recorded as follows:

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METAR EGUW 171520Z 34005KT 9999 SCT045 22/12 Q1020 NOSIG RMK BLU BLU=
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Analysis and Investigation

THE LAKENHEATH SUPERVISOR reports that the RAPCON Chief Controller (CCTLR) reviewed the events on 17th July from 1520–1530Z. A tape transcript had been provided offering exact details of the Airprox to better understand how the situation developed and if it could have been prevented.

LKH/1524:44 – [C17 C/S] [C17 C/S] heavy traffic 1 o'clock 15 miles manoeuvring type and altitude unknown appears to be a glider additional traffic 1 to 2 o'clock 10 miles southwest bound altitude indicates flight level 4300 also appears to be a glider.

[C17 C/S]/1525:03 – that is copied, [C17 C/S] we'll be looking.

[C17 C/S]/1525:25 – [C17 C/S] requesting lower if possible.

LKH/1525:30 – [C17 C/S] descend and maintain flight level 40 I'll get ya lower passing Cambridge traffic to your south 4 miles northeast bound 1700 potentially climbing to 3000.

[C17 C/S]/1525:42 – that's copy all descend to flight level 40 at the time thank you [C17 C/S].

LKH/1526:35 – [C17 C/S] heavy the initial traffic is now 1 o'clock 4 miles appears southeast bound type and altitude unknown appears to be a glider.

[C17 C/S]/1526:45 – that's copy all we'll be looking how many miles? [C17 C/S].

LKH/1527:05 – [C17 C/S] after completion of your approach fly runway heading cross departure end at or below 1300 and climb and maintain 3000 departure frequency will be 136.500MHz.

[C17 C/S]/1527:15 – after the approach ahhh climb 3000ft and maintain runway heading frequency 136.500MHz and don't pass the departure end above 1300 [C17 C/S].

LKH/1527:28 – readback correct.

LKH/1527:40 – [C17 C/S] the glider traffic now appears 1 to 2 o'clock 2 miles southeast bound.

[C17 C/S]/1527:46 – copied looking, nothing seen [C17 C/S].

LKH/1527:49 – copy.

LKH/1528:03 – [C17 C/S] traffic no longer observed turn 10° right descend and maintain 3000 Mildenhall altimeter 3013.

[C17 C/S]/1528:14 – descend to 3000 1013 [C17 C/S].

LKH/1528:17 – [C17 C/S] if you need a QNH 1020.

[C17 C/S]/1528:27 – 3013 is copied 10° to the right and descend to 3000 [C17 C/S].

[C17 C/S]/1529:41 – [C17 C/S] manoeuvring for traffic.

LKH/1529:45 – [C17 C/S] say again.

[C17 C/S]/1529:48 – manoeuvring left for traffic ahhh glider just went behind us potentially what 500 feet away.

LKH/1529:54 – copy.

LKH/1529:56 – [C17 C/S] are you responding to an RA?

[C17 C/S]/1530:00 – ahhh negative, it was not on traffic ahhh just visual with the traffic we just manoeuvred to the left now flying heading 065 [C17 C/S].

At 1524:44 Lakenheath issued Traffic Information to the C17 pilot on 2 observed primary targets indicating they had appeared to be gliders based on their very slow performance and lack of full radar data readout. Very shortly after this Traffic Information had been passed, the "perceived" glider operating around the MLD 135 radial at 10-12 DME had ceased to be observed by radar for the duration of playback. In the Chief Controller's opinion, their controller issued Traffic Information accordingly based on all known existing and observed targets displayed and this situation had been inevitable since there had been neither radar confirmation nor radio communications to build situational awareness of activity in the area.

The pilot of the glider in question had telephoned RAF Lakenheath RAPCON around 1400 on 18th July to enquire if the C17 pilot had indicated filing an Airprox and relayed they had not had their transponder on to save battery in the glider and that they had been monitoring Cambridge frequencies.

These occurrences are not uncommon in East Anglia, but there is a relationship growing between the glider community and other airspace users to increase aircraft safety within uncontrolled airspace.

UKAB Secretariat

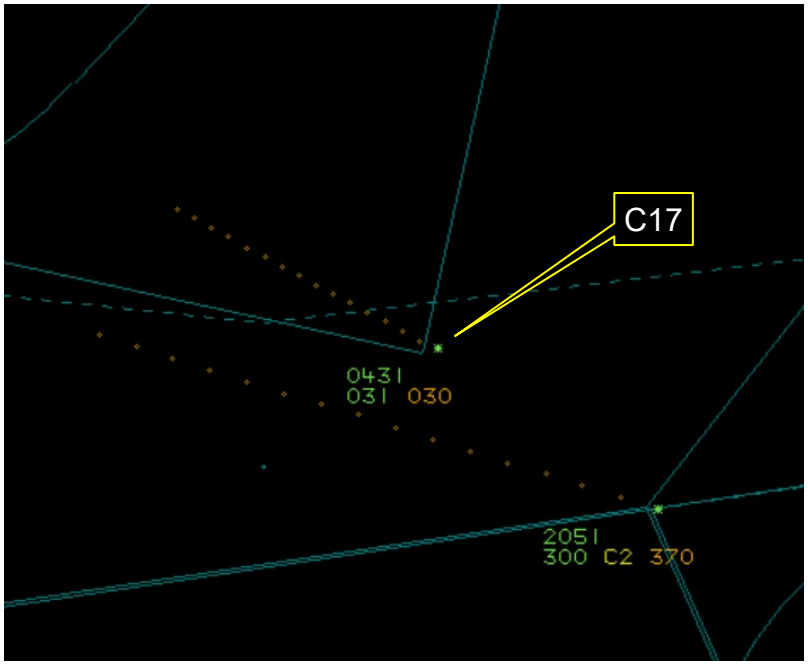


Figure 1: At CPA 1529:45 altitude 3270ft SPS

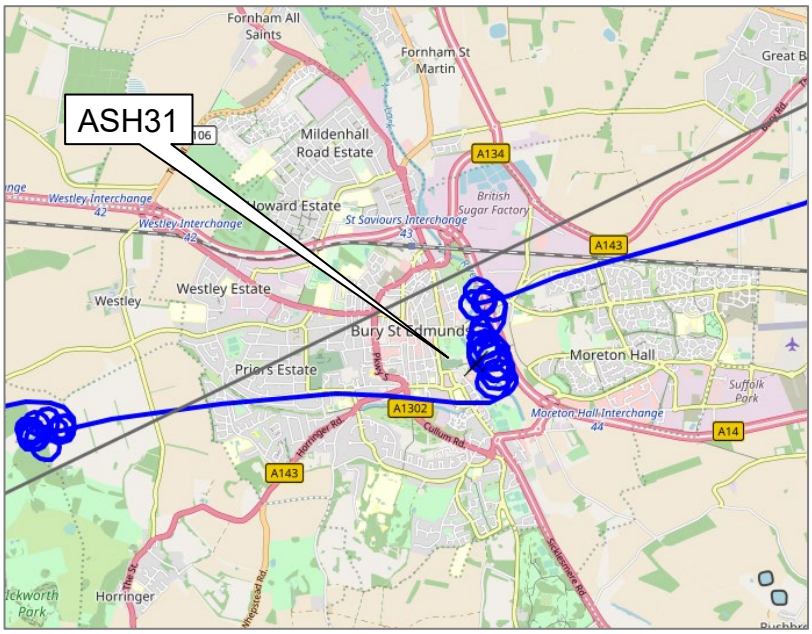


Figure 2: Image taken from ASH31 pilot-provided file at 1529:45, altitude 3340ft

Figure 3:1529:40 C17 3125ft ASH31 3268ft

Figure 4:1529:50 C17 2975ft ASH31 3268ft

Figures 3 and 4 at 10sec interval between screenshots – the ASH31 data did not refresh.

The C17 and ASH31 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[1]

Comments

HQ Air Command

It is encouraging to see reference from the Lakenheath controller that the relationship between gliders and other airspace users is growing. In this case the AIP would suggest the ASH31 pilot, holding a FRTOL, could have attempted to contact Mildenhall for a MATZ penetration. Given this is not a legal requirement, and the other constraints, such as battery life, one can understand why the glider pilot wished to preserve their battery for the Cambridge area transit, where they perceived a greater need for the radio and transponder. What can be observed is that a short radio call from the glider would have alerted the military controller to its presence. This may have led to an earlier detection by the C17 pilot or radar vectors around the glider's suspected location. It would be prudent for the gliding community to observe how these radio calls can and do make a difference. The military pilots can observe that despite best efforts of the gliding community, many will not be equipped with compatible EC, or hold a FRTOL, which allows them to contact any ATS provider. A good visual lookout remains the primary barrier to MAC, as evidenced by the pilots in this Airprox, and maintaining an awareness of the challenges glider pilots face to stay aloft will aid their ability to maintain vigilance in areas where gliders are likely to be found.

BGA

This incident occurred close to the boundary of the Lakenheath/Mildenhall CMATZ, which has one of the highest densities of military aircraft traffic in the UK. Where the legally-required Flight Radio Telephony Operator's Licence (FRTOL) is held and cockpit workload permits, glider pilots are encouraged to inform the Controlling Aerodrome ATC Unit if flying in or near any MATZ or CMATZ.

If the glider's transponder had been switched on, it may have registered on either the C17's TCAS or Lakenheath's radar, either of which could have warned the C17 pilot of the impending conflict. Given recent rapid advances in rechargeable battery technology, owners of transponder-equipped gliders may wish to re-equip with higher-capacity batteries that allow them to run their transponders for longer in flight.

The EC equipment fitted to almost all gliders warns of impending conflicts with other similarly equipped aircraft. This system mitigates the risk of Airprox with other gliders, but basic installations do not detect aircraft equipped only with transponders or ADSB-out (such as "Mode S+"), as the

[1] (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

C17 was in this case. However, recent versions of this EC equipment can optionally include a 1090MHz receiver subsystem and thereby warn of conflicts with transponder and ADSB-out-equipped aircraft. Updating glider EC hardware to add such a 1090MHz receiver subsystem would provide a useful additional safety barrier in airspace with a high density of transponder or ADSB-out equipped aircraft.

The glider pilot is to be commended for their persistence in telephoning Lakenheath ATC afterwards to discuss this incident. If in communication with an ATSU and workload permits, pilots should also make an RTF report of an Airprox, commencing with the words "AIRPROX REPORT" (see CAP 413 §9.12 et seq).

USAFE

This event is representative of occurrences surrounding the MATZ, where gliders commonly operate non-transponder/non-radio in an environment where they may experience flying in proximity to various types of military aircraft, in critical phases of flight. On this occasion the controller reported primary targets in the vicinity of the eventual Airprox and updated the information until the primary targets disappeared from radar.

In this occurrence, the ASH31 pilot prioritised battery conservation by keeping their transponder off. However, activating the transponder during transit could have enabled 2 extra barriers; being the ability for ATC to see the full details for the aircraft and the ability for the C17's TCAS to detect the aircraft. Lakenheath approach is available to provide a service to the pilot of any aircraft that wishes to request it when transiting through or close to the Lakenheath CMATZ. Passing aircraft making position reports to Lakenheath ATC enable the controller to gain specific information to assist in providing services to other operators on frequency.

The 'radio advisory zone' mentioned is a local agreement between Cambridge airport and Cambridge gliding centre which provides benefits to aircraft operating in that area. Pilots should also consider the benefit of obtaining a service from Lakenheath approach during transits of the area. Military air activity around RAF Mildenhall and Lakenheath is significantly busy and includes multiple types (fast jet, heavy aircraft and rotary). Whilst the C17 was operating on a VHF frequency, the majority of military traffic operates on UHF and cannot always be relied on to be heard by pilots keeping a listening watch of VHF frequencies. Due to the proximity of the units, Cambridge and Lakenheath approach commonly coordinate Air Traffic Services/Information between the units.

USAF carries out continuous engagement with all members of the flying community, including very close work with local gliding clubs and the BGA in order to reduce events such as this.

Summary

An Airprox was reported when a C17 and an ASH31 flew into proximity at Bury St. Edmunds at 1530Z on Wednesday 17th July 2024. The C17 pilot was operating under IFR in VMC and in receipt of a Traffic Service from Lakenheath, the ASH31 pilot was operating under VFR in VMC and not in receipt of a Flight Information Service.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, GPS data, reports from the air traffic controllers involved and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

The Board firstly considered the actions of the C17 pilot, noting that they had been in receipt of a Traffic Service from Lakenheath and been positioning for an ILS, with both flightdeck crew members maintaining a thorough lookout for other traffic operating within the surrounding area. Some traffic had appeared on the aircraft's TCAS display and been called by the Lakenheath controller, enabling generic situational awareness of traffic activity (**CF5**). The Board agreed that the C17 pilot had visually acquired

the ASH31 late (**CF7**) towards their 1230 position, and the handling pilot had reacted to its manoeuvring by rapidly disconnecting the autopilot and initiating a hard left turn to avoid the traffic. Members felt that the action had been at the limits of the aircraft's performance and in response to a serious risk of collision and that there had been little more they could have done at that stage.

Turning to the ASH31 pilot, members recognised the nature of the flight and the pilot's attempts to maintain battery power for their recovery but, whilst acknowledging the provisions of (UK)SERA.13001(c),[2] felt that operating in the vicinity of one of the busiest military airfields in the country without an active transponder (**CF4**) had reduced the likelihood of positive identification and consideration by both the C17 crew and the Lakenheath controller. When combined with a lack of radio calls to alert the Lakenheath controller to their presence (**CF3**) and incompatible electronic conspicuity equipment (**CF6**), members felt that this had limited the effectiveness of recognised barriers to mid-air collision and meant that the ASH31 pilot had not gained any situational awareness of the presence of the C17 (**CF5**) until they had sighted it. The Board recognised that the phase of flight that the ASH31 pilot had been in had required relatively constant direction change as they had worked towards gaining altitude, and that on visually acquiring the C17 at a late stage (**CF7**), the ASH31 pilot had done all possible at that time to avoid a collision.

In considering the actions of the Lakenheath controller, members recognised that this event had taken place in Class G airspace, but that its proximity to the Lakenheath CMATZ and in an area of significant military traffic had meant that their inability to positively identify and communicate with traffic in the area had made the event more likely and that there had been little more that the controller could have done with the information available to them. They stressed again the need for all aircraft operating in busy Class G airspace to carry and utilise electronic conspicuity equipment capable of receiving and transmitting information to a common standard which would help mitigate risk in cases such as this. As a minimum, members felt that radio calls from those that are suitably qualified are an important part of the picture-building toolkit available in reducing risk of collision. In this case, the Lakenheath controller had been unable to detect the ASH31 (**CF1**) and had possessed and shared only generic awareness of activity in the area (**CF2**).

When determining the risk of the Airprox, the Board considered the radar and GPS evidence alongside the reports from both pilots, noting that both had reported an extremely close encounter; therefore, the Board agreed that there had been a risk of collision (**CF8**). They noted that both pilots had been able to take late avoiding action but that the separation had been such that safety had been reduced to the bare minimum; Risk Category A.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024162			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Situational Awareness and Action			
1	Human Factors	• Conflict Detection - Not Detected	An event involving Air Navigation Services conflict not being detected.	
2	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
	Flight Elements			
	• Tactical Planning and Execution			
3	Human Factors	• Communications by Flight Crew with ANS	An event related to the communications between the flight crew and the air navigation service.	Pilot did not request appropriate ATS service or communicate with appropriate provider

[2] (UK) SERA.13001 Operation of an SSR transponder (c): Except for flight in airspace designated by the competent authority for mandatory operation of transponder, aircraft without sufficient electrical power supply are exempted from the requirement to operate the transponder at all times.

4	Human Factors	• Transponder Selection and Usage	An event involving the selection and usage of transponders	
	• Situational Awareness of the Conflicting Aircraft and Action			
5	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
	• Electronic Warning System Operation and Compliance			
6	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
	• See and Avoid			
7	Human Factors	• Identification/ Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots
	• Outcome Events			
8	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: A.

Safety Barrier Assessment[3]

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **partially effective** because the Lakenheath controller had only generic awareness of gliders in the area and could not detect the ASH31.

Flight Elements:

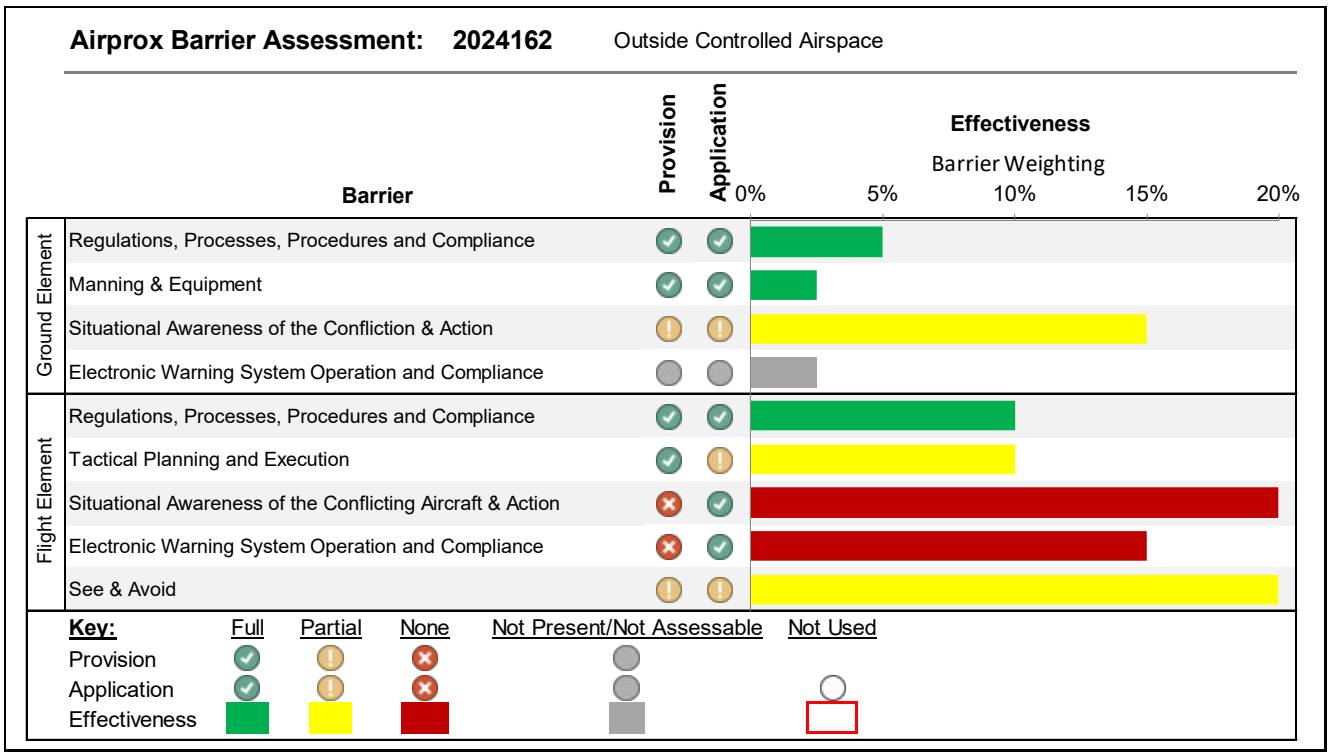
Tactical Planning and Execution was assessed as **partially effective** because the ASH31 pilot could have established R/T contact with Lakenheath and could have utilised their transponder to enable others' situational awareness.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the ASH31 pilot had no situational awareness of the presence of the C17 and the C17 pilot had only generic awareness of the presence of the ASH31.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because both aircraft carried electronic conspicuity equipment that had been incompatible with that carried by the other.

See and Avoid were assessed as **partially effective** because both pilots had achieved only a last-minute sighting of the other aircraft.

[3] The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the UKAB Website.


Airprox Barrier Assessment: 2024162
Outside Controlled Airspace
Barrier
Provision
Application
Effectiveness
Barrier Weighting
0%
5%
10%
15%
20%
Ground Element
Regulations, Processes, Procedures and Compliance
Manning & Equipment
Situational Awareness of the Confliction & Action
Electronic Warning System Operation and Compliance
Flight Element
Regulations, Processes, Procedures and Compliance
Tactical Planning and Execution
Situational Awareness of the Conflicting Aircraft & Action
Electronic Warning System Operation and Compliance
See & Avoid
Key:
Full
Partial
None
Not Present/Not Assessable
Not Used
Provision
Application
Effectiveness