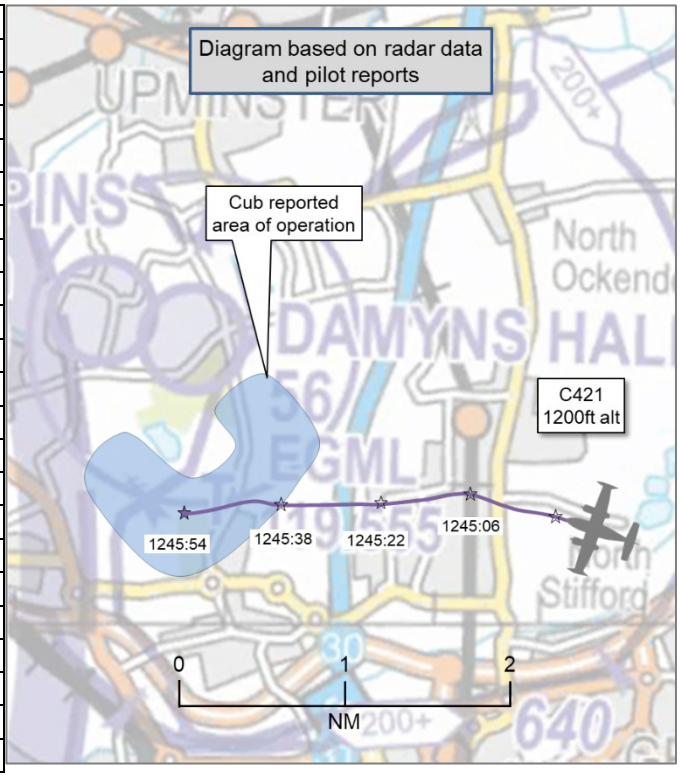
AIRPROX REPORT No 2022017

Date: 25 Feb 2022 Time: ~1246Z Position: ~5131N 00013E Location: ~1NM S Damyns Hall

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Piper Cub	C421
Operator	Civ FW	Civ Comm
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Listening Out	Basic
Provider	Damyns Hall	Heathrow SVFR
Altitude/FL	NK	1200ft
Transponder	Not fitted	A, C, S
Reported		
Colours	White	Blue, White
Lighting	None	Nav, Strobe
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	650ft aal	1200ft
Altimeter	QFE (1027hPa)	QNH (NK hPa)
Heading	030°	NK
Speed	60kt	145kt
ACAS/TAS	Not fitted	Not fitted
Separation at CPA		
Reported	100ft V/100m H	Not seen
Recorded	NK V/NK H	



THE CUB PILOT reports that they were completing standard circuits from Damyns Hall Aerodrome on RW32, at 1000ft circuit altitude QFE. They were on the turn from base leg to final when [the C421] tracked through Damyns Hall Airspace [sic] at approximately 750ft. They recall that the other aircraft was pretty well headed towards them on their 2-3 o'clock so would estimate [the other aircraft] would have been on a course of around 270° to 300°. They took avoiding action of pitching nose down and then continued on final approach to land.

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

THE C421 PILOT reports that they were unaware of the Airprox until they received an email. At the reported time they were in the area holding as per instructions from London to co-ordinate with traffic on the approach to London City Airport prior to them proceeding onward as per their clearance to transit London.

THE SVFR RADAR CONTROLLER reports that no report of an Airprox was made on the frequency at the time stated, and this report was written 11 days after it occurred with the details to the best of their memory. They were operating as Heathrow SVFR only, with a high workload with London City using RW27 and Heathrow landing 27L. [The pilot of the C421], a light twin engine fixed-wing aircraft, had called onto the frequency. Their workload at the time was high. In order to [to allow time to] coordinate with Thames, Heathrow Final Director, and Heathrow Tower, [the C421 pilot] was asked to remain outside controlled airspace while under a Basic Service. An initial clearance was given for the tasking, which upon further consideration against the inbound London City traffic and the positioning of [the C421], was modified. [The C421 pilot] was instructed to orbit outside controlled airspace to ensure deconfliction against the London City traffic before then being cleared onwards again into the London City and London CTRs. At no time did [the C421 pilot] make any report of an Airprox before going enroute with the next frequency at the completion of their tasking.

Factual Background

The weather at London City was recorded as follows:

```
METAR EGLC 251250Z AUTO 29014KT 9999 BKN043 10/M00 Q1027
```

Analysis and Investigation

NATS Safety Investigations

Safety Investigations were informed by the UK Airprox Board that the pilot of [Cub c/s] had reported an Airprox with [C421 c/s] overhead Damyns Hall airfield. [The C421 pilot] was in receipt of a Basic Service from Heathrow Special VFR.

Information available to the investigation included:

- CA4114 form.
- Radar and R/T recordings.
- Redacted Airprox report.
- Non-standard Flight Notification.

[The C421 pilot] was operating a [Civ Comm] flight departing and returning to [departure/destination airfield], under the auspices of Non-Standard Flight (NSF) Reference [redacted], The NSF requested that the aircraft operate at 1500ft on a series of runs, as shown in Figure 1, through the airspaces of London City, Heathrow, and Gatwick.

As per the terms of the NSF, the operator of [C421 c/s] sought tactical approval for the flight [in advance] and this was granted by the Airport Group Supervisor and the Supervisors of London City and Gatwick ATSUs.

According to the Airprox Report, in the run-up to the incident the pilot of [the Cub c/s], a PA-18 Piper Cub without a transponder, had been flying VFR circuits at Damyns Hall Airfield (EGML) at circuit altitude of 1000ft on QFE. EGML is an airfield 8.3NM east of London City. The airfield elevation is 52ft.

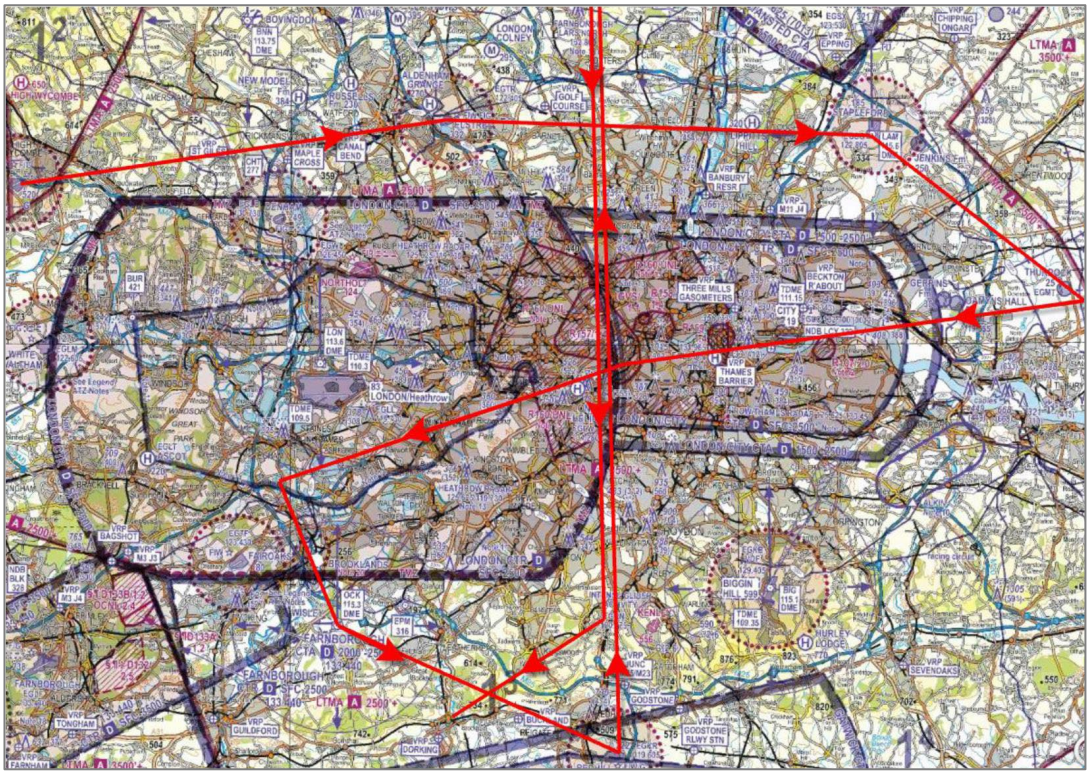


Figure 1 – [C421 pilot's] requested track is shown in red.

The pilot of [the C421] checked in with the Heathrow Special VFR controller at **1231:01** when they were 9NM from London City, bearing 335°, tracking east. The controller issued them an SSR code [redacted], the London QNH of 1027hPa and placed them on a Basic Service under VFR . The pilot requested an altitude of 1200ft for their tasking.

Coordination for the flight to transit London City airspace was concluded on the telephone with the Thames Controller at **1235:54** so the pilot of [the C421] was cleared to transit the London City CTA not above 1200ft. The SVFR controller then discussed [the C421's] track with the Heathrow Tower controller on the telephone. As this conversation did not end with a solution for the proposed routeing through the Heathrow approach track being agreed, at **1238:19** the SVFR controller instructed the pilot of [the C421], now tracking west 13NM east of London City at 1200ft, to orbit in their present position, left-hand.

Whilst establishing in the orbit, at **1238:50** [the C421] at 1200ft was 2.6NM bearing 280° from a primary target (their closest point of approach with this target) which was south of EGML airfield by 2NM heading northeast. This is shown in Figure 2. This primary target had been intermittently displayed on the controller's radar up to this point in the EGML area. It is not possible for Safety Investigations to conclusively state that this target was [the Cub].

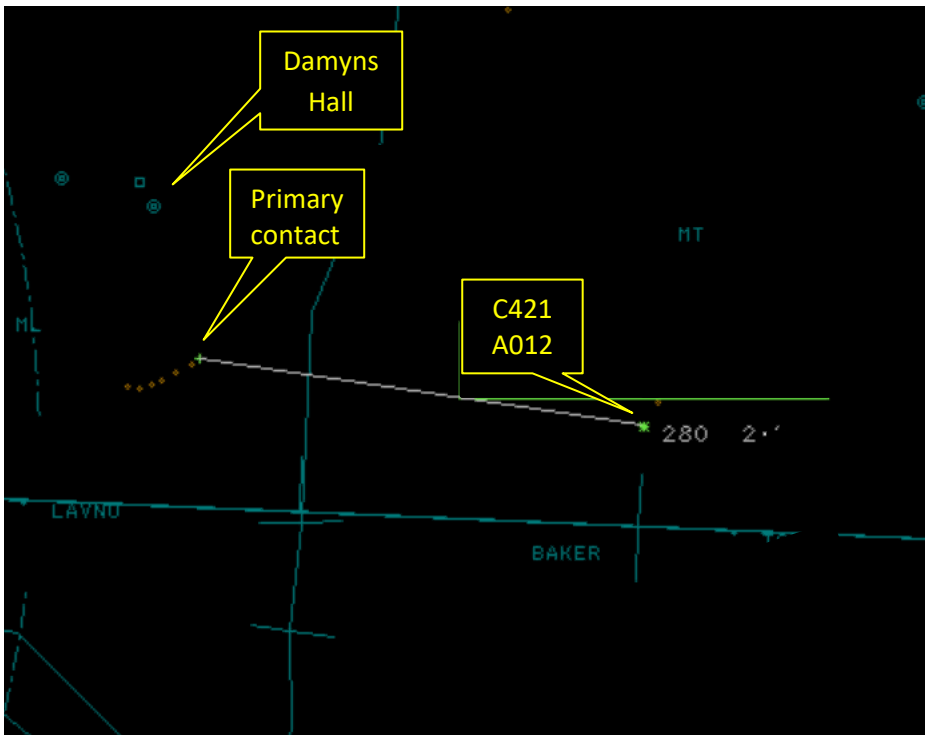


Figure 2 - **1238:50**. Closest point of approach between [C421] and unknown primary only target south of Damyns Hall, believed to be potentially [Cub c/s].

The pilot of [the Cub] stated in their Airprox report that at **1240** they were descending through 650ft on QFE of 1027hPa, and turning through 030° onto final for RW32 at EGML when they observed [the C421] 300-400ft away, 100-150ft above them, in their 2-3 o'clock position. Note: whilst not in close proximity, the position of the primary return correlated with the pilot narrative of [the Cub] reference their aircraft and relative position of [the C421].

The pilot of [the Cub stated that they assessed [that the C421] was at an altitude of approximately 750ft and that they took avoiding action of 'nose down and continued on final to land'. The pilot stated that they assessed the risk of collision as medium.

After further telephone calls between the SVFR and Heathrow controllers, at **1242:12** the pilot of [the C421] was instructed to complete one further left-hand orbit and then resume their routing, not

above altitude 1300ft. The pilot of [the C421] duly rolled out of their orbit at **1245:04** and tracked west.

Shortly afterwards, a primary return, tracking southeast, commenced displaying to the west of Damyns Hall. Figure 3.

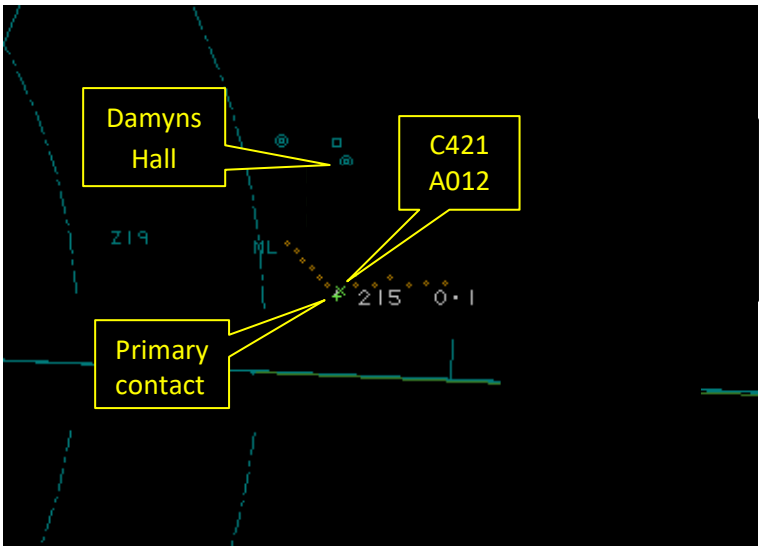


Figure 3 – **1245:54**

This return came into proximity with [the C421] and the closest point of approach occurred at **1245:54** and was measured as 0.1NM with no height information. The primary return continued to sporadically display, tracking southeast, not in correlation with the report from the pilot of [the Cub].

[The C421 pilot] continued to track west, passing south of Damyns Hall at an indicated 1200ft prior to entering controlled airspace and being issued a Radar Control Service.

The CA4114 from the SVFR controller stated the sector was being operated as standalone during a period of high workload. The controller had no recollection of any conflict or the event.

The pilot of [the C421] did not report an Airprox or mention the sighting of another aircraft on the SVFR controller's frequency and, apart from the primary targets detailed above, a review of the radar by Safety Investigations was not able to positively identify any other radar targets or geometries that were similar to the scenario described by the pilot of [the Cub]. As such Safety Investigations has been unable to definitively identify the conflict as reported by the pilot of [the Cub].

The Airprox occurred when the pilot of [the Cub] stated that [the C421] passed 100ft above them at a lateral distance of between 300ft and 400ft. [The C421] was being provided with a Basic Service outside controlled airspace, and both aircraft were operating VFR. As such, therefore, there were no separation requirements.

It has not been possible for Safety Investigations to positively identify [the Cub] on radar, and no report of an Airprox or aircraft sighting was made by the pilot of [the C421].

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and the C421 was identifiable using SSR. There were a number of primary-only returns that appeared in the vicinity of the reported Airprox however, it is not been possible to positively identify any of these as being the Cub aircraft. The C421 pilot commenced an orbit at approximately **1238** to the south and east of Damyns Hall and at approximately **1244** they rolled out of the orbit and tracked in a westerly direction, routing to the south of Damyns Hall. At **1245:54** the C421 passed 1NM to the south of Damyns Hall, its closest

point to the airfield, and at this time there was a primary-only return 0.1NM from the C421, Figure 4.

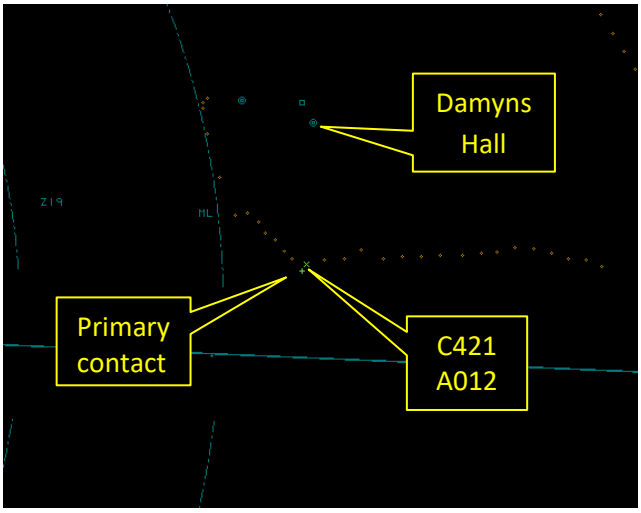


Figure 4 – C421 1NM S Damyns Hall

After the C421 had passed Damyns Hall, a number of primary returns appeared sporadically including one which appeared to continue to track in a south-easterly direction, Figure 5, and one in the vicinity of the extended centre line for RW32 at Damyns Hall, Figure 6.

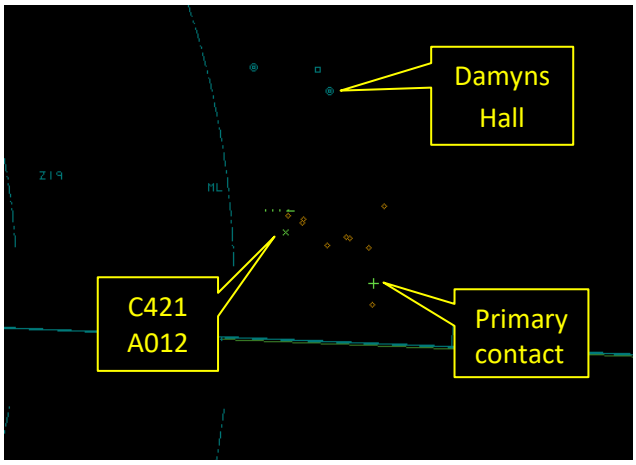


Figure 5 – **1246:01**

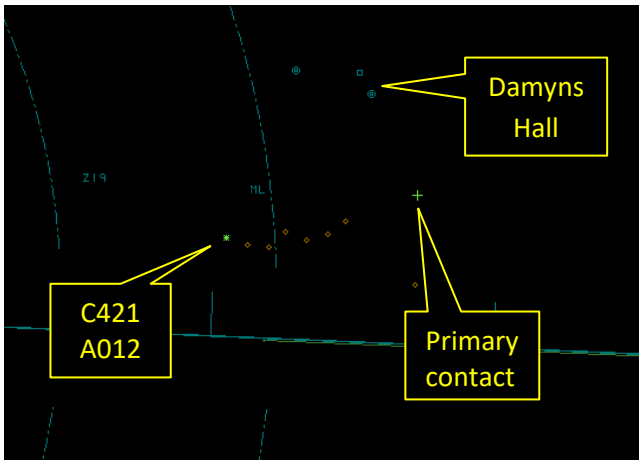


Figure 6 - **1246:20**

It has not been possible to determine whether any of these primary returns were the Cub aircraft.

The Cub and C421 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] An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.[2]

Summary

An Airprox was reported when a Cub and a C421 flew into proximity approximately 1NM south of Damyns Hall airfield at approximately 1246Z on Friday 25th February 2022. Both pilots were operating under VFR in VMC, the C421 pilot in receipt of a Basic Service from Heathrow SVFR and the Cub pilot not in receipt of an ATS.

[1] (UK) SERA.3205 Proximity.
[2] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, 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 first considered the actions of the Cub pilot and a GA pilot member stated that Damyns Hall can be a particularly busy airfield at times and, given its location with regard to the surrounding controlled airspace, pilots of aircraft flying in the vicinity find it difficult to integrate with the traffic pattern. Following on from this, members discussed the advantages of utilising EC equipment when operating in areas such as this and the Board wished to highlight to pilots that additional funding has been made available for Electronic Conspicuity devices through the CAA's Electronic Conspicuity Rebate Scheme, which has been extended until 31st March 2023.[3] Members agreed that as the Cub pilot had been listening out on the Damyns Hall frequency and had not had any EC equipment, their situational awareness would be limited to that of aircraft transmitting on the Damyns Hall frequency only and as such, they had not had any prior awareness of the presence of the C421 (**CF4**). Members also agreed that he Cub pilot had become visual with the C521 at a late stage (**CF5**), at which point they had lowered the nose of their aircraft to avoid.

The Board then discussed the actions of the C421 pilot and noted that the flight had been planned to operate at a particularly busy time of day. Members appreciated that there are occasions when such activity is required during these time periods however, members agreed that if such flights can be undertaken outside busy periods it would be advantageous to do so. An ATC member went on to comment that, due to the operation being at a busy period, it had not been a surprise that the C421 pilot had been required to orbit outside of controlled airspace whilst the necessary coordination had taken place. The Board agreed that, once instructed to orbit the C421 pilot had fully complied however, they may not have sufficiently adapted their plan to account for the possibility of interaction or requirement for integration with other traffic in the vicinity during their extended time and routing outside controlled airspace, including circuit traffic at Damyns Hall, (**CF2**) and as such they had not planned to either avoid, or conform with, the pattern of traffic at Damyns Hall (**CF3**). The Board appreciated that there would have been an increased workload for the C421 pilot at this time which may have impacted their lookout with members agreeing that the C421 pilot had not become visual with the Cub at any point (**CF6**). Members noted that the C421 pilot had not had any EC equipment available and that, having received no Traffic Information specific to the Cub aircraft, they had had no prior awareness of it presence (**CF4**).

Next the Board considered the involvement of the Heathrow SVFR controller and members agreed that they had not been required to monitor the flight of the C421 under a Basic Service (**CF1**) and, although not required, it would have been advantageous if they had made the C421 pilot aware that there had been primary only radar returns observed in the area.

Finally, in assessing the risk of collision, the Board discussed that as neither pilot had had any awareness of the presence of the other, both had been relying on their lookout for collision avoidance. Members agreed that, in this case, safety had not been assured and that there had been a risk of collision (**CF7**), but that the action of the Cub pilot had generated sufficient separation to reduce that risk, although not remove it entirely. Accordingly, the Board assigned a Risk Category B to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022017			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Situational Awareness and Action			

[3] https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/

1	Contextual	• ANS Flight Information Provision	Provision of ANS flight information	The ATCO/FISO was not required to monitor the flight under a Basic Service
	Flight Elements			
	• Tactical Planning and Execution			
2	Human Factors	• Insufficient Decision/Plan	Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation	Inadequate plan adaption
3	Human Factors	• Monitoring of Environment	Events involving flight crew not to appropriately monitoring the environment	Did not avoid/conform with the pattern of traffic already formed
	• Situational Awareness of the Conflicting Aircraft and Action			
4	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
	• See and Avoid			
5	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
6	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots
	• Outcome Events			
7	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: B

Safety Barrier Assessment[4]

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 **not used** because under a Basic Service the controller had not been required to monitor the flight of the C421.

Electronic Warning System Operation and Compliance were assessed as **not used** because, although Heathrow SVFR has an electronic warning system available, it is not configured to alert for the aircraft in this situation.

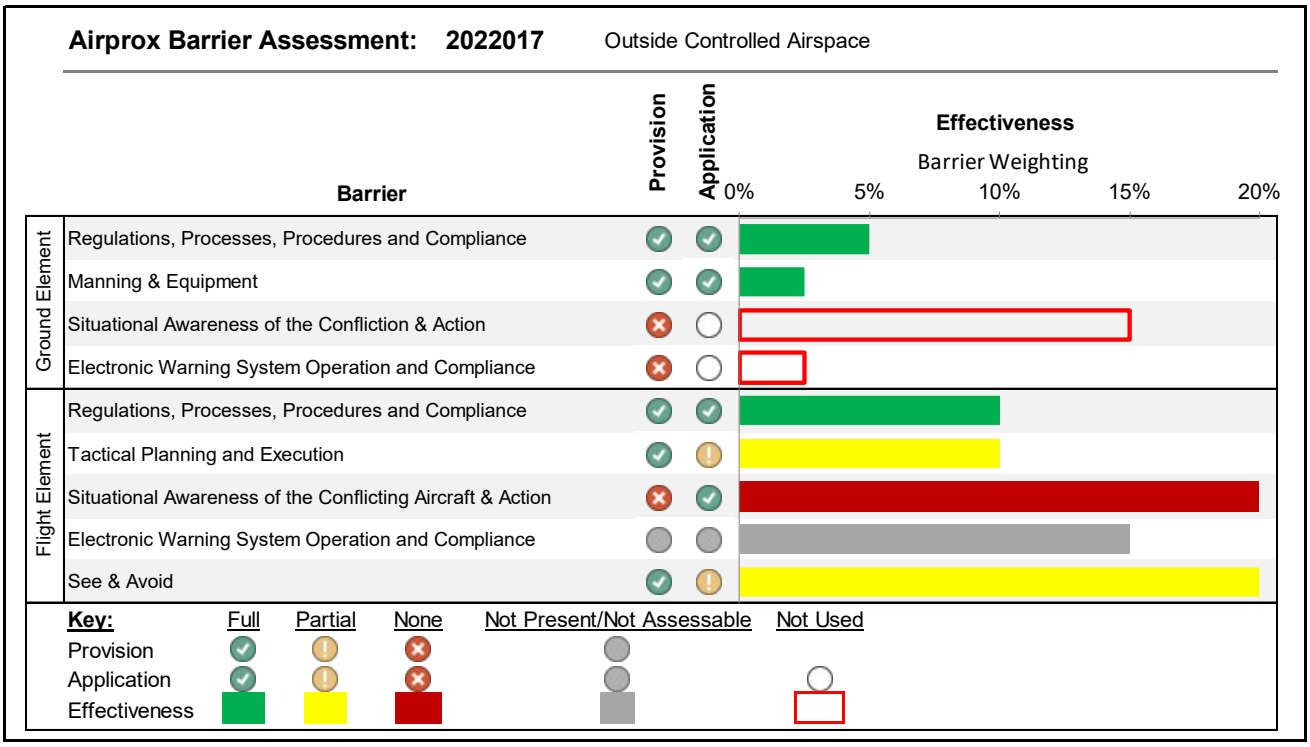
Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the C421 pilot had not sufficiently adapted their plan following the instruction to hold outside controlled airspace and they had not avoided the pattern of traffic that had been formed by the Cub.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had had any prior awareness of the presence of the other.

See and Avoid were assessed as **partially effective** because although the Cub pilot had become visual with the C421, it had been at a late stage.

[4] 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: 2022017
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