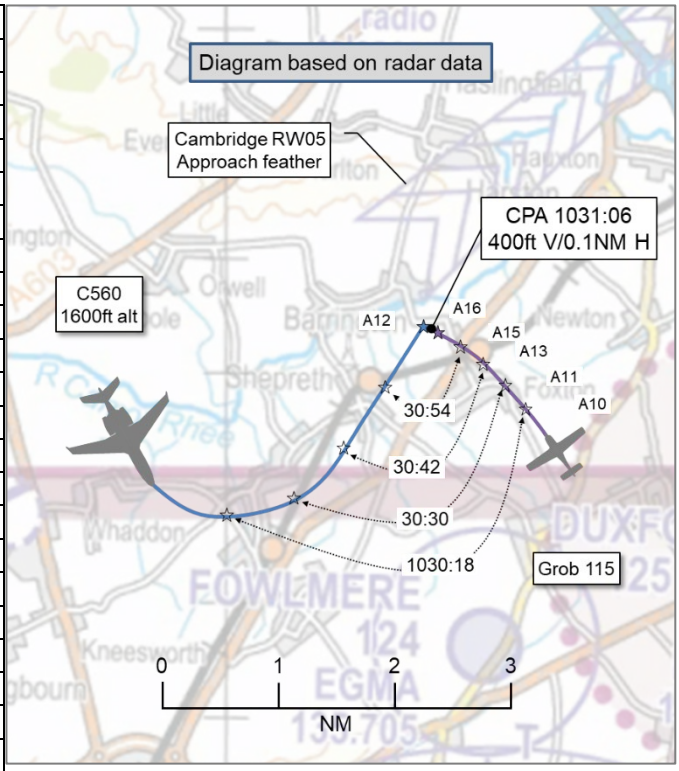
AIRPROX REPORT No 2022108

Date: 20 Jun 2022 Time: 1031Z Position: 5207N 00003E Location: Barrington

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	C560	Grob 115
Operator	Civ Comm	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Procedural	Listening Out
Provider	Cambridge	Fowlmere
Altitude/FL	1200ft	1600ft
Transponder	A, C, S+	A, C, S+
Reported		
Colours	White	White
Lighting	'All', inc. landing	Anti-col
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1600ft	1600ft
Altimeter	QNH (1020hPa)	QNH (NK hPa)
Heading	048°	340°
Speed	170kt	80kt
ACAS/TAS	TCAS II	Not fitted
Alert	RA	N/A
Separation at CPA		
Reported	<200ft V/<0.1NM H	200ft V/0.5NM H
Recorded	400ft V/0.1NM H	



THE C560 PILOT reports being cleared for a procedural NDB [approach] at Cambridge for RW05, operating in receipt of a Procedural Service. Having completed the base turn, the pilot contacted Cambridge Tower and was advised that an aircraft appeared to be climbing towards the RW05 centreline. It was made clear that this was not a radar/Traffic Service because [the information was provided from] a repeated radar picture on the Tower ATM screen. The crew continued to scan for traffic. Shortly afterwards, a Traffic Advisory was issued for TCAS traffic approaching less than 200ft below, ahead and to the right. Immediately a Resolution Advisory was issued and the crew responded appropriately. This involved a rapid descent and a further RA demanding a further increase of descent [rate]. The other aircraft was seen to be in the 1 o'clock position, very close, at less than 200ft above, as their aircraft bottomed at approximately 1100ft QNH. ATC were advised and the aircraft continued to land.

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

THE GROB 115 PILOT reports climbing after take-off and departure to the north on 'Fowlmere traffic frequency'. They had a late visual contact [with the other aircraft], probably because of cumulus clouds, and made a left climbing turn to stay visual and avoid collision.

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

THE CAMBRIDGE CONTROLLER reports they had a C560 commencing an NDB approach into Cambridge. As per the LoA, they called Duxford to check they had no traffic which could affect the Cambridge instrument approach. Duxford reported no traffic. The controller warned the C560 pilot about Gransden Lodge [gliding airfield] and that there might be gliders operating to the west of Cambridge. When the C560 was approximately base turn complete, they could see traffic on the radar screen. They passed approximate information to the C560 pilot to the best of their ability, whilst reminding them that they were 'non-radar' and asked if they wished to discontinue the approach. The pilot asked if the traffic

would cross him left-to-right or right-to-left and they informed the pilot that they were unable to tell because they were 'non-radar' but that they believed the conflicting traffic was tracking north-westerly. The pilot reported a TCAS RA which was acknowledged. When the pilot was clear of conflict they asked if they wished to continue the approach or go around for a second approach. The pilot informed them they wished to continue and so was passed to the Tower [frequency] and continued to land. The pilot stated they would be filing an Airprox by phone after landing.

Factual Background

The weather at Cambridge was recorded as follows:

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METAR EGSC 201020Z 36011KT 9999 FEW027 BKN038 16/08 Q1020
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The Letter of Agreement between IWM Duxford Airfield and Fowlmere Airfield[1] states[2] as follows:

'Fowlmere Departures RWY 07
Fowlmere departures and circuit traffic from RWY 07 shall not exceed 500ft AGL until clear of the Duxford ATZ (see fig 3). Once airborne traffic is to contact Duxford 122.080Mhz for traffic information.'

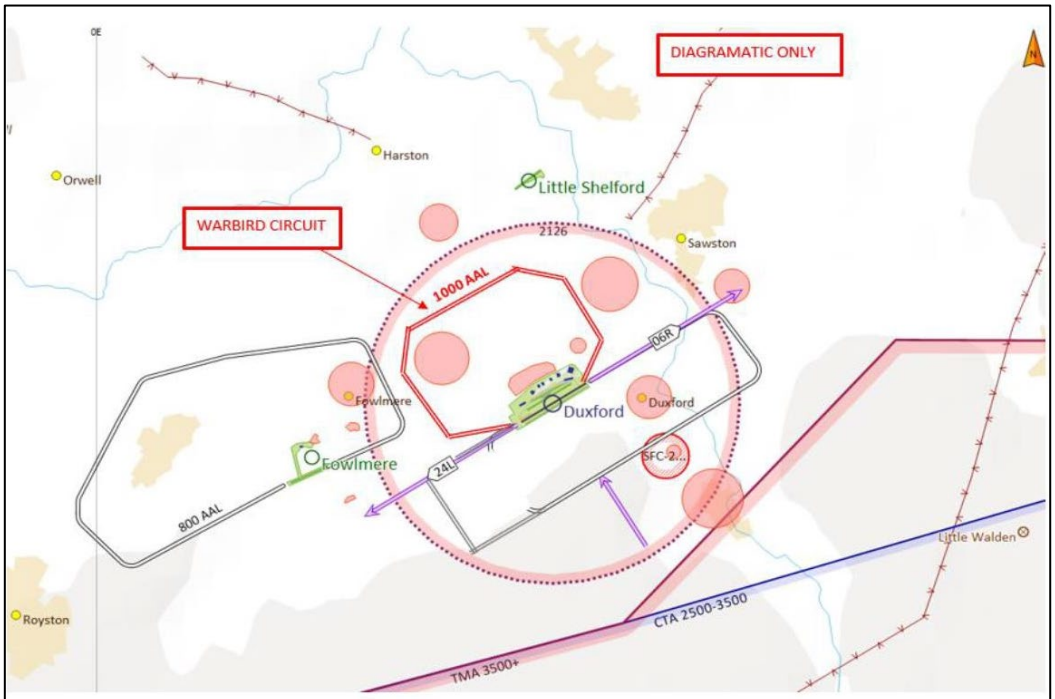

Fig 3

Analysis and Investigation

CAA ATSI

At 1024:35 the pilot of the C560 contacted Cambridge Approach advising that they were in the descent to an altitude of 4000ft direct to the CAM (NDB). The Approach controller confirmed that it was a Procedural Service, passed the QNH and latest ATIS letter and reaffirmed their clearance to the CAM in a descent to 4000ft which was read-back by the pilot (Figure 1).

[1] Version 2.0
[2] Annex A, section A1.3, paragraph A1.3.2.

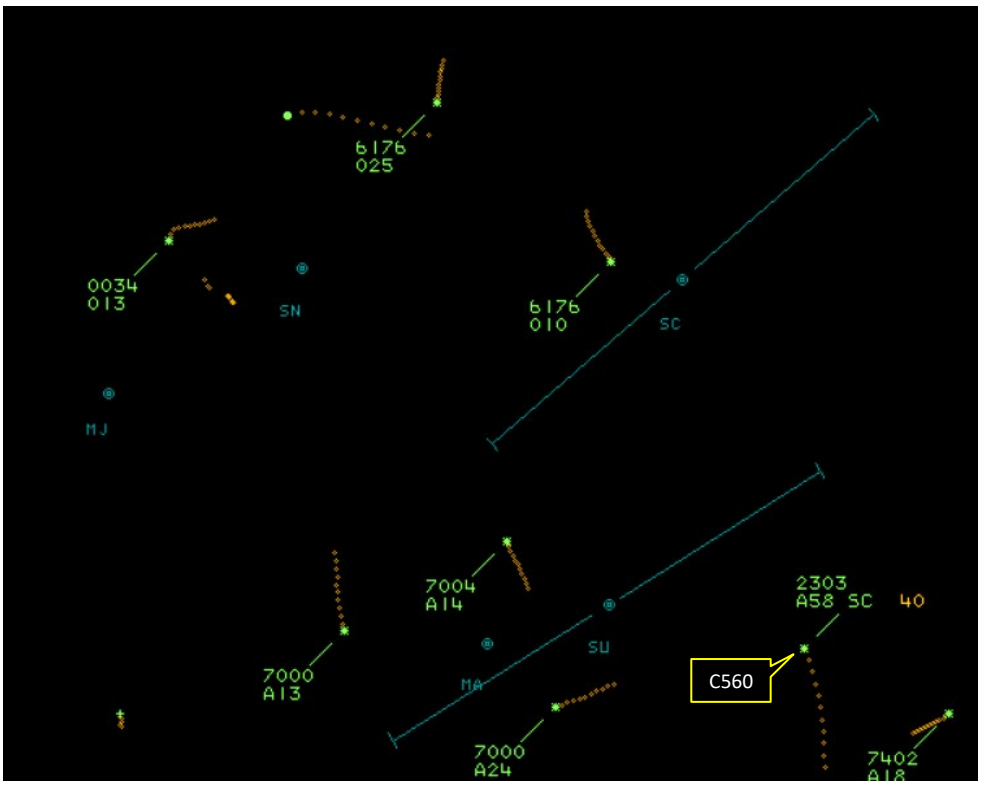

Figure 1 – 1024:35

The C560 pilot then requested to go straight to beacon outbound on arrival. The controller confirmed the runway in use (05) and asked the type of approach the pilot required (an NDB). The controller then cleared the pilot to descend to 3000ft, advising no delay expected for the NDB approach and requesting a beacon outbound call which the pilot read back. The controller then went on to request a call from the pilot as they passed 4000ft which was acknowledged by the pilot.

At 1026:30 the pilot reported passing 4000ft and also the beacon outbound. The controller cleared the pilot for the NDB approach and requested a base turn complete call (Figure 2).

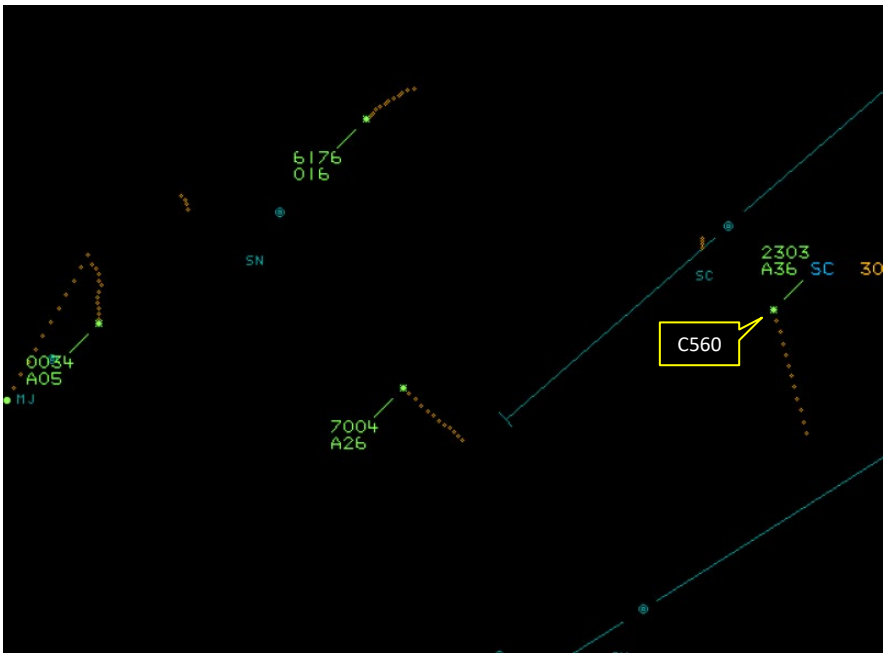

Figure 2 – 1026:30

At 1027:58 the controller requested a passing level from the pilot which was given as 2700ft (Figure 3).

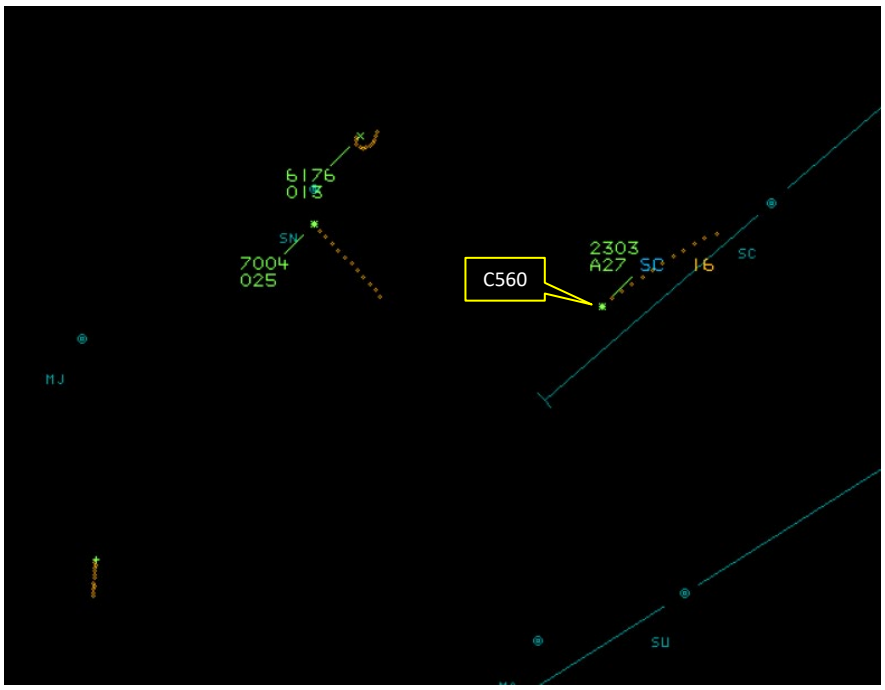

Figure 3 – 1027:58

At 1028:42 the controller advised the pilot that the Gransden Lodge gliding site was active with up to ten gliders, stating that those gliders should be staying relatively local to the site (Figure 4).

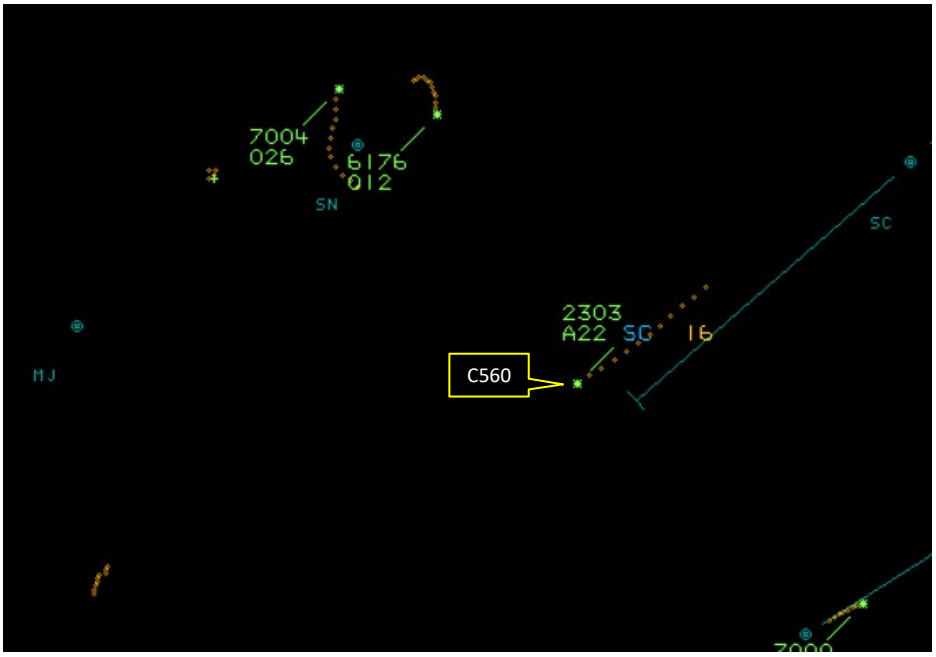

Figure 4 – 1028:42

At 1029:00 the G115 became visible on the area radar replay, having apparently just got airborne from Fowlmere (Figure 5).

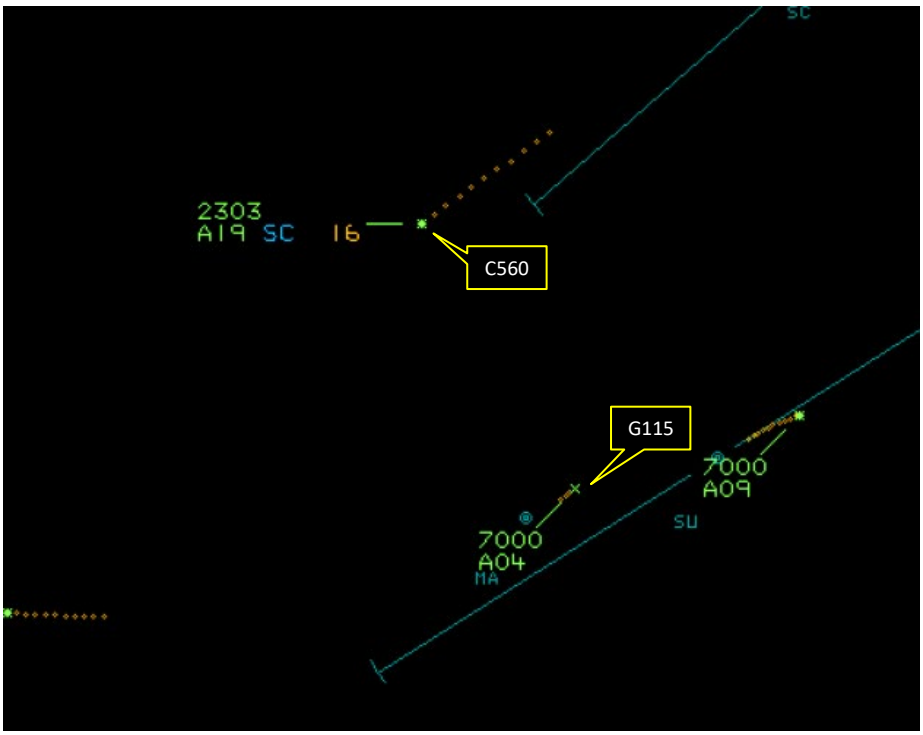

Figure 5 – 1029:00

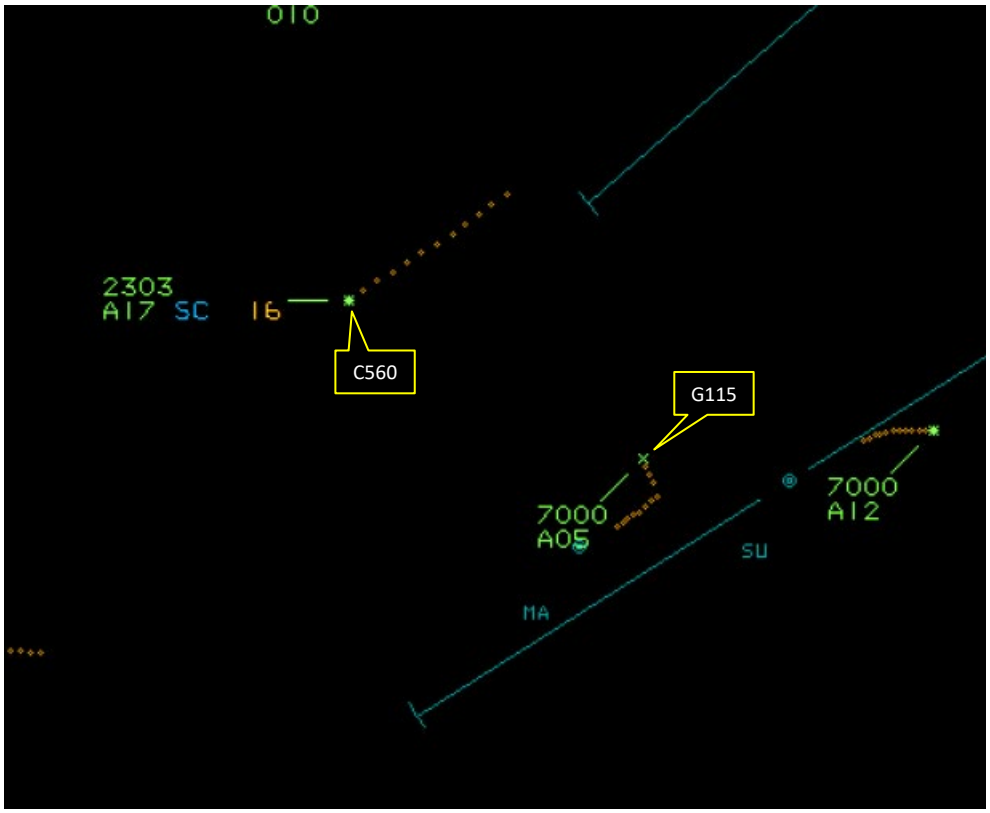

Figure 6 – 1029:30

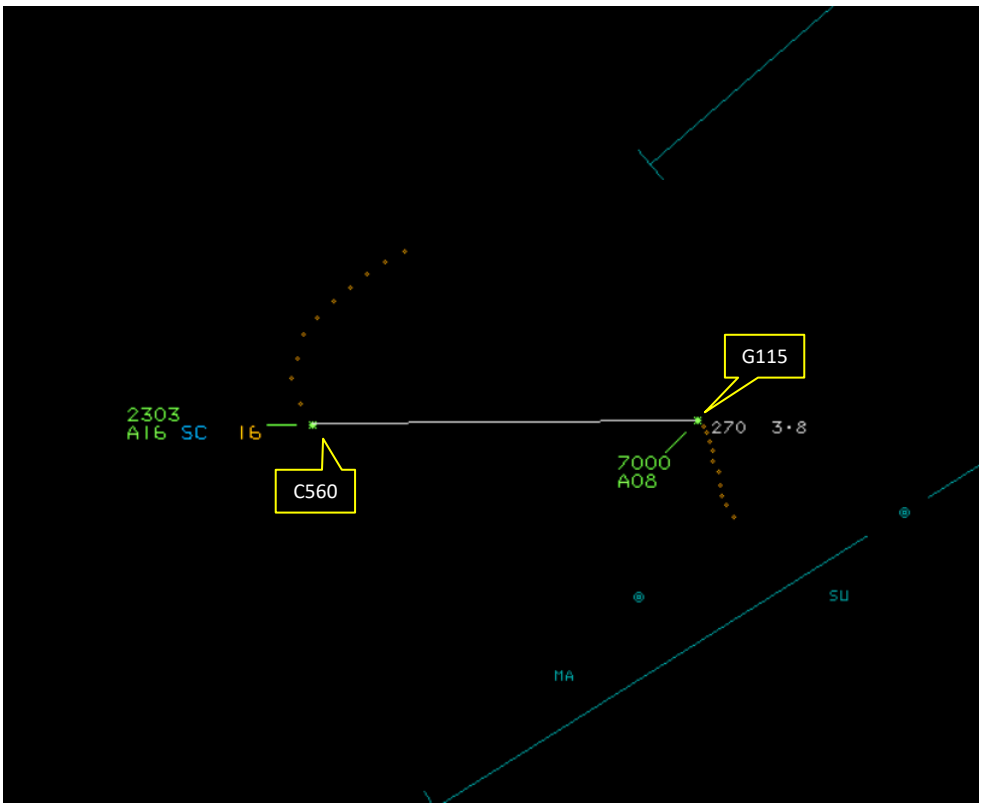

Figure 7 – 1030:00

At 1030:10 the Cambridge controller advised the pilot of the C560: *"Just caution sir I am non-radar. I can see a return on the ATM believed to be southwest of Cambridge, believed to be north-westbound indicating 1000ft. Just advise if you wish to discontinue the approach, keep a very good lookout"* (Figure 8).

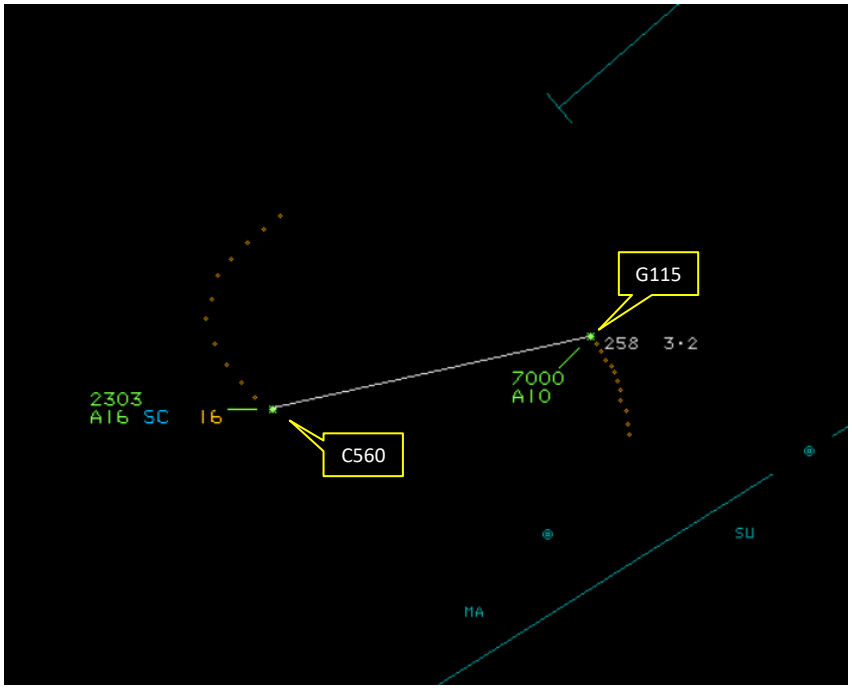

Figure 8 – 1030:10

The pilot replied *"Roger wilco. Where's the traffic is it right-left or left-right?"* The controller replied *"I'm non-radar so I can't tell. But I believe he's north-westbound passing 1000ft in the climb"*, which the pilot acknowledged *"yeah, no worries".*

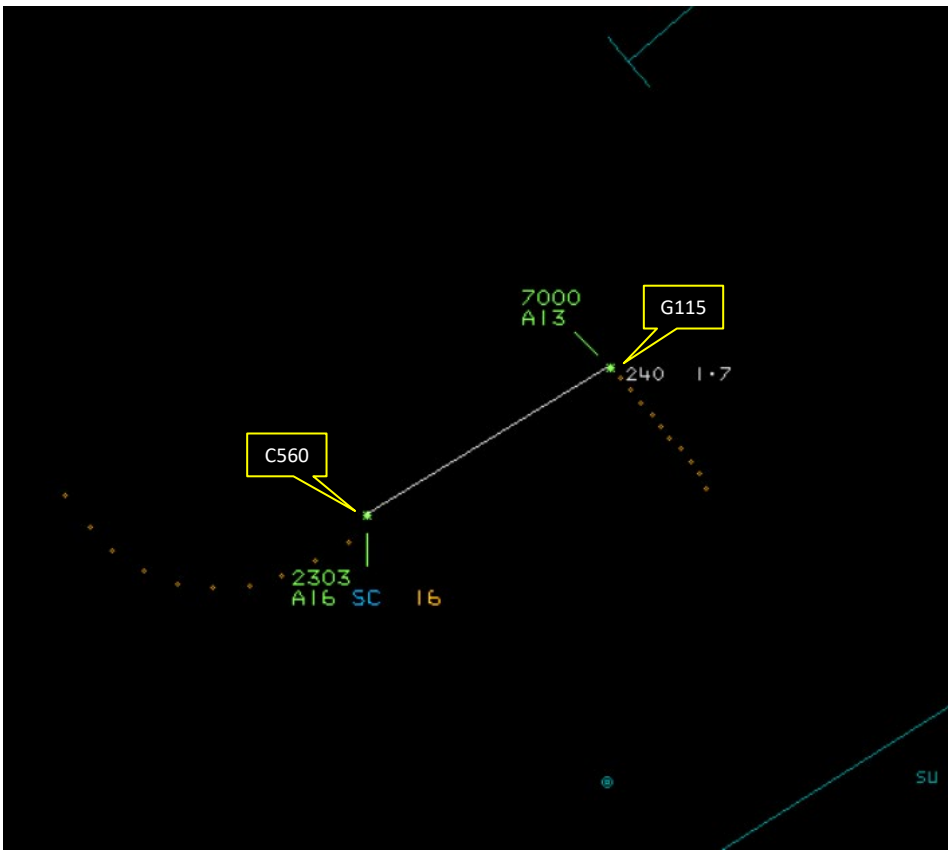

Figure 9 – 1030:40

At 1030:58 the pilot started to transmit their callsign but then stopped (Figure 10).

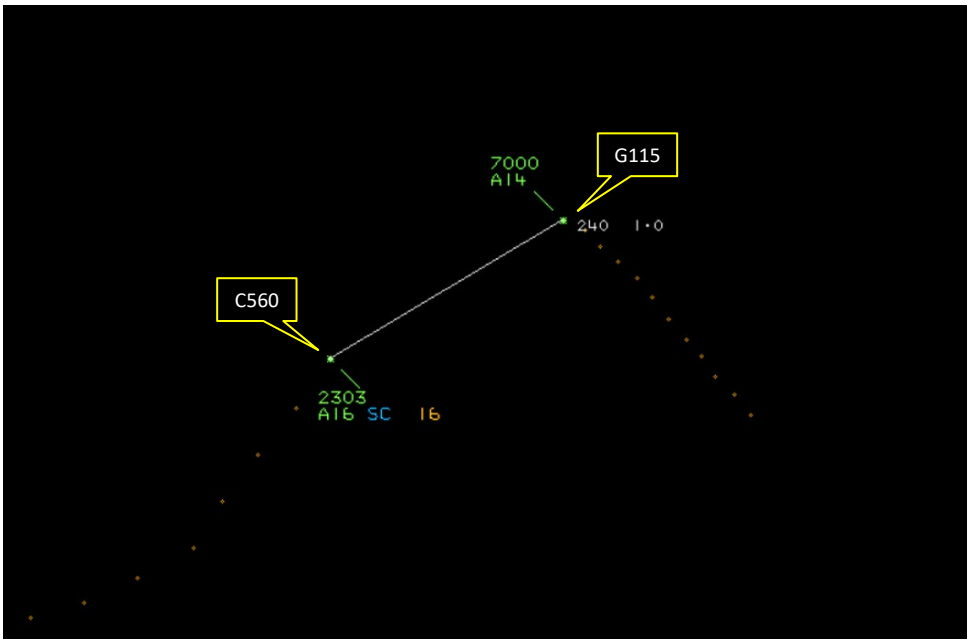

Figure 10 – 1030:58

Then at 1031:02 the pilot reported a TCAS RA which the controller acknowledged (Figure 11).

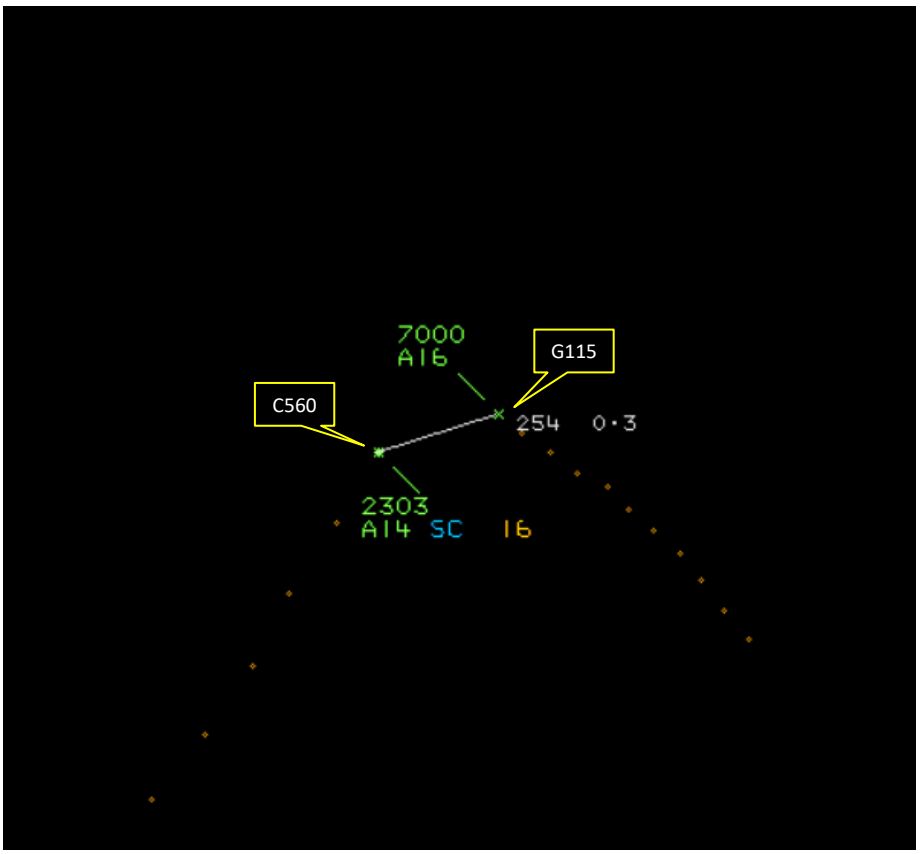

Figure 11 – 1031:02

CPA occurred at 1031:07 with the C560 passing 0.1NM ahead of, and 400ft below, the G115 (Figure 12).

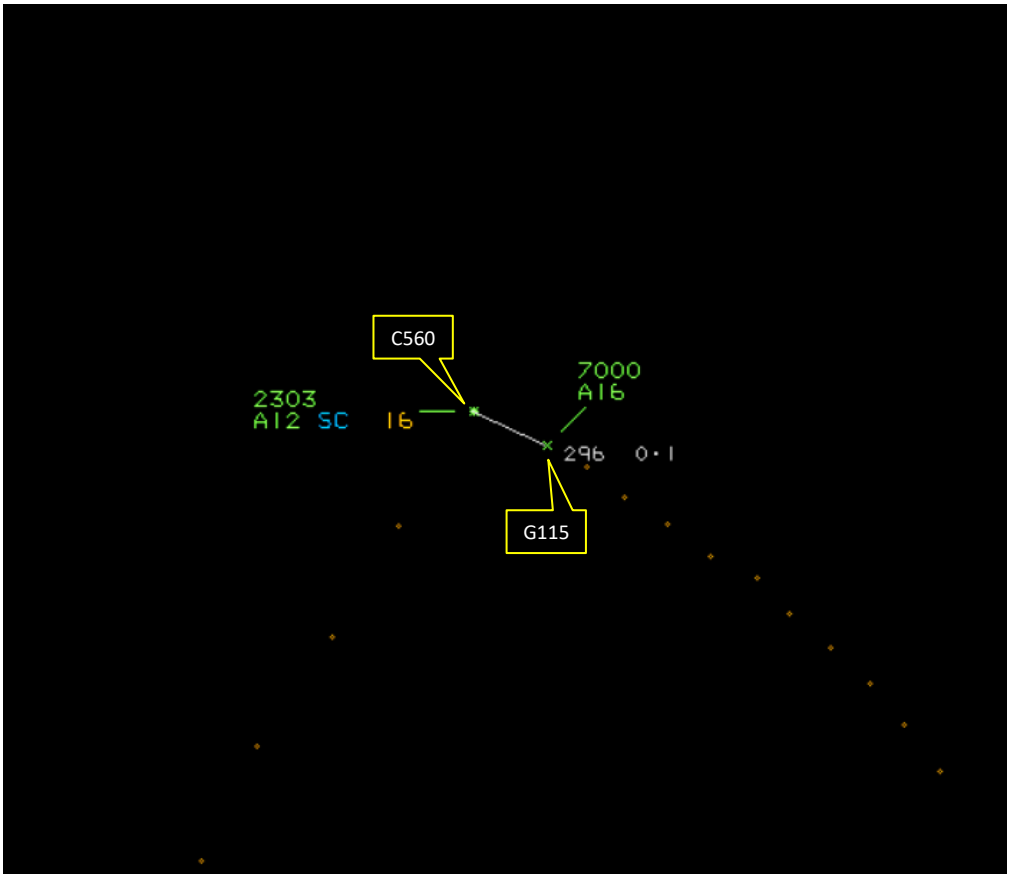

Figure 12 – 1031:07 CPA

Analysis
ATSI had access to reports from both pilots and the Cambridge Approach controller. Area radar and the Cambridge Approach Tower RTF and telephone calls were also reviewed. An initial investigation report was also submitted by Cambridge ATC advising that no further investigation would be required.

In accordance with CAP 774 UK Flight Information Services, the definition of a Procedural Service is:

> *"an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions, and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic".*

Normally the Approach controller at Cambridge would be co-located in the Tower. However, for social distancing reasons, the decision had been taken to relocate to the radar room. The Approach controller saw the conflict between the C560 and the G115 on the main radar display, otherwise they would not have been aware of the presence of the G115.

The pilot of the C560 reported scanning for the confliction after having been warned by the controller. They then received a TCAS TA followed immediately by a TCAS RA. The pilot reported seeing the G115 in their one o'clock position, *"very close at less than 200ft above"*.

The pilot of the G115 reported *"late visual contact probably because of cumulus clouds".* They reported making a *"left climbing turn to stay visual and avoid collision".*

The Cambridge unit investigation concluded that:

"APP was open and the traffic levels were light. Although providing surveillance derived traffic information is not normally within the remit of an APP ATCO, it was entirely appropriate for the ATCO to use the information presented in front of them to assist in exercising their CAP 774 requirements for Duty of Care.

[C560 C/S] was provided with appropriate information without utilising radar techniques to assist the pilot in assessing the confliction and allowing [them] *to determine a safe course of action. In this case T-CAS intervened before the pilot and a collision was avoided".*

Whilst there is a procedure at Cambridge which requires the controller to contact Duxford when the Cambridge Runway 05 instrument approach is active, to check for possible conflicting traffic, no such arrangement is in place with Fowlmere where no ATS is provided.

The unit investigation confirmed that there were only 3 controllers on duty for that shift (due to Covid/resourcing), only one of which was qualified to provide surveillance-based services. The unit intended to provide such services for 5.5 hours out of the 8 hour shift. The unit reported that there had been "*ten corporate IFR movements that day, and also a C130 arrival as well as other IFR movements. The majority of these movements were handled with the benefit of a radar service".* The C560 arrived during the period the radar controller was on a mandatory break.

Conclusion
The C560 crew responded to a TCAS RA having just received a TCAS TA as their aircraft came into confliction with the G115.

The pilot of the G115, although passing through a published instrument approach area, did not contact Cambridge Approach either to advise of their presence or to obtain Traffic Information which may have been useful for the safe conduct of their flight.

Traffic Information provided by the Approach controller to the C560 crew based on the data provided by the main radar display appears to have given the crew early warning of the confliction.

UKAB Secretariat

The C560 and Grob 115 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[3] If the incident geometry is considered as converging then the C560 pilot was required to give way to the Grob 115.[4] The UK 1:500,000 VFR chart contains the following information:

> 'Pilots are strongly recommended to contact aerodrome ATSU before flying within 10NM of any aerodrome marked with instrument approach feathers.'

Cambridge Occurrence Investigation

Incident Details

Runway 05 was in use, Tower and Approach were split with APP operating non-radar. Staff shortages due to COVID affected the watch, leaving 3 ATCOs for the duration of the day, only 1 ATCO was valid in APS.

The flying for the day was planned to be moderate traffic with a mix of VFR GA and IFR corporate arrivals and departures, as such Radar was planned to be open for 5.5 hours of the shift, the maximum reasonably practicable.

Gransden Lodge Gliding site, 10NM west of Cambridge and proximate to the outbound leg for any instrument approach for Runway 05, was notified as active with 10 gliders.

At 1024 [C560 C/S], a C560 was inbound to Runway 05 at Cambridge and was placed under a Procedural Service and was cleared to the CAM in the descent to altitude 4000ft. [C560 C/S] requested an NDB for Runway 05 and was cleared as requested.

The APP ATCO called Duxford at 1025 and informed them of the aircraft making the instrument approach to runway 05 in accordance with the letter of agreement, asking if they had any traffic. Duxford replied that they had "nothing known".

At 1028:38 an aircraft squawking 7000 could be seen departing runway 07 at Fowlmere and routing towards the Cambridge FAT. The APP ATCO informed the [C560 C/S] that they were non-radar but traffic observed on the ATM was believed to be to the southwest of Cambridge believed to be north-westbound indicating 1000ft and offered the opportunity to discontinue the approach. The pilot requested an update on the traffic, "where is the traffic? is it right-left or left-right?" They were reminded that the ATCO was non-radar, but the traffic was believed to be northwest bound, 1000ft in the climb.

The Tower ATCO called to advise that they were looking out the window to attempt to get the unknown traffic visual, however, as the Tower ATCO got visual with the unknown aircraft, the [C560 C/S] pilot reported a TCAS RA.

At 1031:04 [C560 C/S] reported TCAS RA and [was] observed to descend from 1600ft to 1100ft. APP offered [C560 C/S] a further attempt at the approach or [asked if they were] happy to continue. The pilot reported clear of conflict and just configuring. [C560 C/S] climbed to 1400ft and reported happy to continue the approach, the aircraft could be seen still on the FAT. [C560 C/S] was transferred to Cambridge Tower for landing and landed at 1034.

[3] (UK) SERA.3205 Proximity.
[4] (UK) SERA.3210 Right-of-way (c)(2) Converging.

Comments

APP was open and the traffic levels were light. Although providing surveillance derived Traffic Information is not normally within the remit of an APP ATCO, it was entirely appropriate for the ATCO to use the information presented in front of them to assist in exercising their CAP 774 requirements for Duty of Care.

[C560 C/S] was provided with appropriate information without utilising radar techniques to assist the pilot in assessing the confliction and allow them to determine a safe course of action. In this case TCAS intervened before the pilot and a collision was avoided.

Further to this, Duxford was notified of the Airprox as they regularly work traffic departing Fowlmere and may have been providing a service to the unknown traffic, however, they reported they had no evidence of working this aircraft and they did conduct a broadcast on 122.080MHz, alerting traffic that the Cambridge FAT was active.

Recommendations

The APP ATCO took all appropriate measures to avoid 2 aircraft becoming proximate. No further actions required.

Summary

An Airprox was reported when a C560 and a Grob 115 flew into proximity at Barrington at 1031Z on Monday 20th June 2022. Both pilots were operating in VMC, the C560 pilot under IFR in receipt of a Procedural Service from Cambridge Approach and the Grob 115 pilot under VFR, not in receipt of a FIS.

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 members first discussed the actions of ATSU personnel. The Duxford FISO had not been aware of the Grob 115 or its pilot's intended routing and so could not have passed Traffic Information to the Cambridge controller. The Cambridge controller was not 'radar qualified' so although they had had some situational awareness of the Grob 115 from the radar track on the ATM screen (but notably not including its pilot's intentions) they had been constrained by the privileges of their licence in the degree to which they could pass Traffic Information to the C560 pilot. As a result, Traffic Information had been passed that traffic was '*believed to be southwest of Cambridge, believed to be north-westbound indicating 1000ft*'. The Board commended the Cambridge controller for passing Traffic Information but noted that the C560 pilot had also been 'southwest of Cambridge' and hence their request to ascertain whether the other traffic was (crossing) '*right-left or left-right?'*. The controller had responded that '*I'm non-radar so I can't tell. But I believe he's north-westbound passing 1000ft in the climb*'. With hindsight, members felt that the controller could have passed this information but the controller had already informed the C560 pilot to '*advise if you wish to discontinue the approach, keep a very good lookout*' and in any case, the Grob 115 would have appeared on the C560 TCAS by this stage, providing the necessary situational awareness for the C560 pilot. The Board agreed that the lack of a 'radar qualified' controller had been a contributory factor (**CF1**) and that the Traffic Information provided had been insufficient to resolve the conflict (**CF2**). The Board also emphasised that this was not a criticism of the airfield or controller but a statement of the effectiveness, or otherwise, of the relevant barriers, which were not fully effective for valid reasons. Turning to the pilots, members agreed that the C560 pilot had had sufficient situational awareness to be able to give way to traffic converging on the right but that they had not done so (**CF3**, **CF6**) but rather had reacted to the TCAS RA (**CF8**) to take avoiding action. Members felt that the C560 pilot may have been better served by discontinuing the approach (**CF5**). With regard to the Grob 115 pilot, they had had no situational awareness of the

C560 (**CF7**) and had then compounded the situation by not contacting Duxford as required by the Duxford/Fowlmere Letter of agreement (**CF3**), climbing to the Cambridge NDB approach platform altitude (probably unwittingly) and crossing the instrument approach path within 10NM of Cambridge and without contacting the Cambridge controller, contrary to the advice contained on the 1:500,000 scale VFR chart (**CF3**, **CF4**). Members noted that the insights derived from previous Airprox had resulted in local procedures to mitigate the risk of Airprox, or worse, but that any procedure was only as good as the pilots that observed them. Turning to risk, some members felt that both pilots' late sightings (**CF9**) were such that safety had been much reduced. However, after further discussion, the Board agreed by majority that separation at CPA was such that any risk of collision had been avoided, Risk C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022108			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Manning and Equipment			
1	Organisational	• ATM Staffing and Scheduling	An event related to the planning and scheduling of ATM personnel	
	• Situational Awareness and Action			
2	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
	Flight Elements			
	• Regulations, Processes, Procedures and Compliance			
3	Human Factors	• Use of policy/Procedures	Events involving the use of the relevant policy or procedures by flight crew	Regulations and/or procedures not complied with
	• Tactical Planning and Execution			
4	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
5	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
	• Situational Awareness of the Conflicting Aircraft and Action			
6	Human Factors	• Lack of Action	Events involving flight crew not taking any action at all when they should have done so	Pilot flew close enough to cause concern despite Situational Awareness
7	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			
8	Contextual	• ACAS/TCAS RA	An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system resolution advisory warning triggered	
	• See and Avoid			
9	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

Degree of Risk: C.

Safety Barrier Assessment[5]

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

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

Ground Elements:

Manning and Equipment were assessed as **partially effective** because a surveillance qualified controller was not available.

Situational Awareness of the Confliction and Action were assessed as **partially effective** because the non-surveillance qualified Cambridge Approach controller was constrained by the privileges of their licence and was not able to pass more specific Traffic Information.

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the C560 pilot did not give way to traffic converging from the right.

Tactical Planning and Execution was assessed as **partially effective** because the Grob 115 pilot did not contact Duxford and then flew through the Cambridge approach path, within 10NM of Cambridge aerodrome and at the NDB approach platform altitude, and did not contact the Cambridge controller.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the Grob 115 pilot did not have situational awareness on the C560 and the C560 pilot did not use their situational awareness from Traffic Information and TCAS to adapt their plan.

See and Avoid were assessed as **partially effective** because both pilots saw the other aircraft at a late stage.