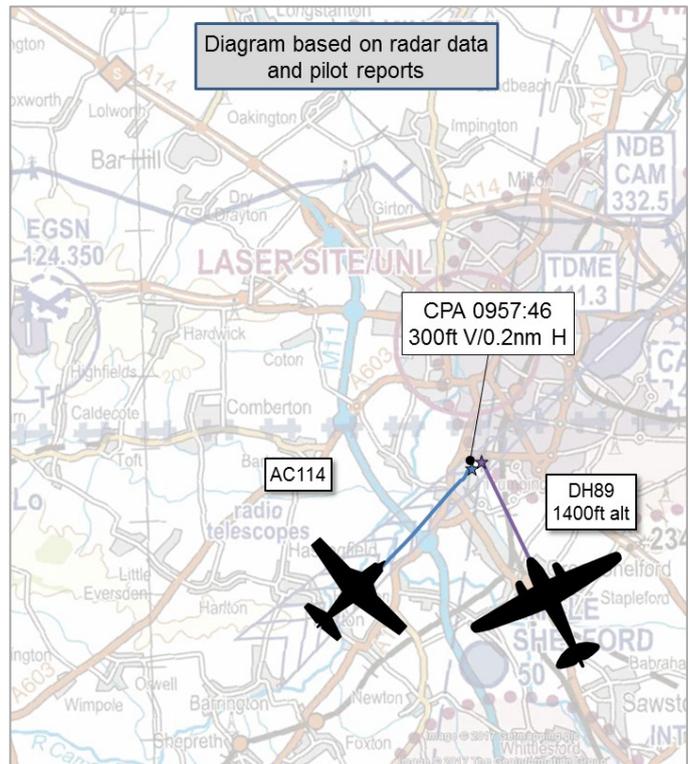


## AIRPROX REPORT No 2017165

Date: 19 Jul 2017 Time: 0945Z Position: 5210N 00007E Location: 3nm SW Cambridge Airport

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	AC114	DH89
Operator	Civ Trg	Civ Comm
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Procedural	Basic
Provider	Cambridge	Cambridge
Altitude/FL	↓1700ft	1400ft
Transponder	A, C, S	A, S
<b>Reported</b>		
Colours	White, Blue	Silver, White
Lighting	Beacon	NK
Conditions	IMC	VMC
Visibility	0nm	>10km
Altitude/FL	1700ft	1500ft
Altimeter	QNH (1004hPa)	QNH (1004hPa)
Heading	050°	340°
Speed	100kt	90kt
ACAS/TAS	TCAS I	Not fitted
Alert	TA	N/A
<b>Separation</b>		
Reported	300ft V/NK H	500ft V/0.25nm H
Recorded	300ft V/0.2nm H	



**THE AC114 PILOT** reports that she was on an IR training flight for RNAV approaches and was cleared for the procedural approach RNAV 05. She was IMC, descending on the procedure at 1700ft inside the final approach fix (4.8nm), and, she thought, within the ATZ, when 'TCAS' alerted her to traffic 300ft below (a Yellow alert). She aborted the approach and climbed immediately. She opined that had it not been for 'TCAS' she would have hit the other aircraft.

She assessed the risk of collision as 'High'.

**THE DH89 PILOT** reports that he was conducting a sightseeing flight in the vicinity of Cambridge, operating initially outside the ATZ. He was under a Basic Service and had been advised of the other traffic operating IFR on the RNAV approach. After seeing the traffic, he believed that his routing would be no factor, although he additionally descended to remain clear. The other traffic reported that they had a TCAS alert and were carrying out a missed approach.

He assessed the risk of collision as 'Low'.

**THE CAMBRIDGE CONTROLLER** reports that at approximately 09:55Z, a DH89 pilot called leaving Duxford at 700ft routing to Cambridge city, he was given a Basic Service, QNH 1004 and the pilot asked the Cambridge controller to confirm if he had any traffic on an instrument approach for RW05. This was confirmed, and the pilot was asked to report before crossing the final approach. He passed Traffic Information to the AC114 pilot on the DH89. The DH89 pilot then reported crossing the final approach at 1300ft and a further update in traffic was given and the DH89 pilot reported the aircraft in sight. Further Traffic Information was given to the AC114 pilot who reported having stopped her descent. The AC114 pilot subsequently reported that if she had not had TCAS she considered there would have been a risk of collision.

## Factual Background

The weather at Cambridge was recorded as follows:

METAR EGSC 190920Z 14006KT 9999 BKN013 21/18 Q1005  
 METAR EGSC 190950Z 14006KT 9999 BKN013 22/19 Q1004

## Analysis and Investigation

### CAA ATSI

An Airprox was reported in Class G airspace, between a Rockwell Commander 114B (AC114) and a DH89A Rapide 6 (DH89). The AC114 was completing an instrument approach at Cambridge, in receipt of a Procedural Service from Cambridge Approach. The DH89 was a VFR flight from Duxford, receiving a Basic Service also from Cambridge Approach.

ATSI had access to reports from both pilots and the controller, the area radar recordings and Cambridge R/T recordings. ATSI also received a copy of the Cambridge unit investigation report. A short interview with the Cambridge Approach controller was conducted by telephone. Screenshots in the report are taken from the area radar. All times UTC.

The AC114 was conducting an RNAV approach to RW05, and had flown outbound to the Initial Approach Fix, BEPOX, from the north-east, before turning back towards the Intermediate Fix, located 7.8nm south-west of the airfield (Figure 1).

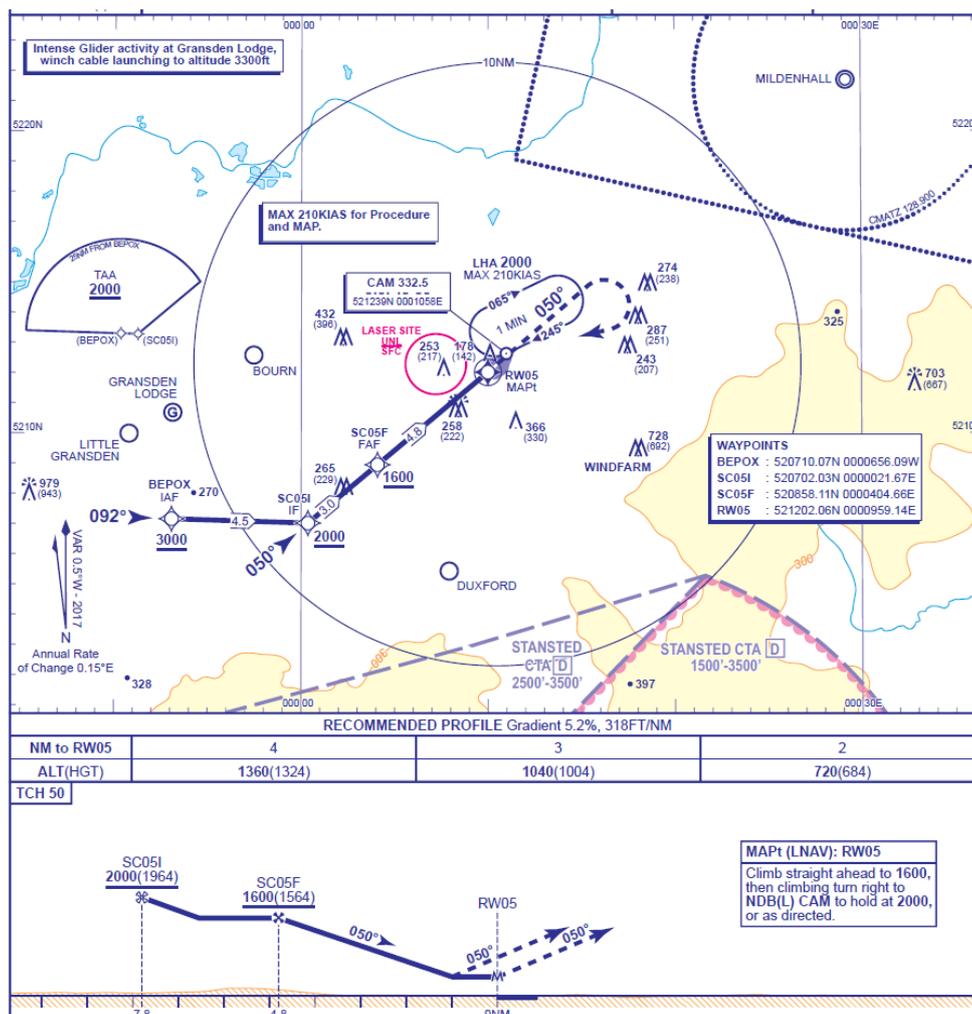


Figure 1 – RNAV 05

At 0955:00 the DH89, having got airborne from Duxford, called the Cambridge Approach controller, requesting to route around Cambridge City before continuing to Ely and then Newmarket. The pilot advised that they were passing 700ft, hoping to climb as high as 2000ft, although they stated that they didn't think they would be able to get that high. A Basic Service was agreed, and the pilot of the DH89 reported being aware of traffic on the Cambridge final approach (Figure 2).



Figure 2 – 0955:00

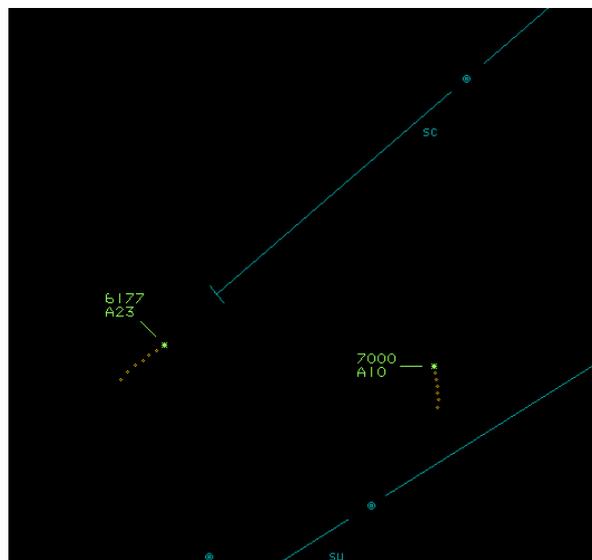


Figure 3 – 0955:50 (AC11 at 6.5NM)

The Cambridge controller confirmed, at 0955:25, that they had an AC114 on long final for RW05 and advised that it would complete a go-around towards Newmarket. The DH89 pilot acknowledged this, reported that they were approaching Addenbrooke's Hospital, and that they intended to route around the ATZ. The controller requested the level to be maintained by the DH89, to which the pilot repeated their intention to try and climb to 2000ft, and that if they were able to make that level, they would then request a routing overhead the city itself.

The controller acknowledged this and requested, at 0955:50, that the pilot report before crossing the RW05 final approach, advising that they would update the pilot on the position of the AC114. This was acknowledged by the pilot of the DH89 (Figure 3).

At 0956:00 the controller passed Traffic Information to the AC114 on the DH89, advising that it was east of the final approach, passing 700ft and routing towards the city. The AC114 pilot acknowledged this, advising that they could not see the DH89 as they were in cloud.

At 0956:20 the DH89 pilot reported passing 1300ft, advising that they would be going through the centreline very shortly (Figure 4).

At 0956:28 the controller requested a level check from the AC114, but received no reply. They repeated the request at 0956:40, and at 0956:50, the AC114 reported that they were leaving 2000ft in accordance with the procedure (Figure 5).

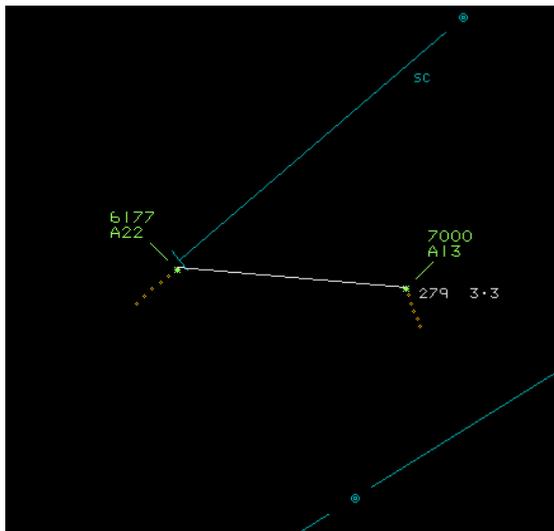


Figure 4 – 0956:20

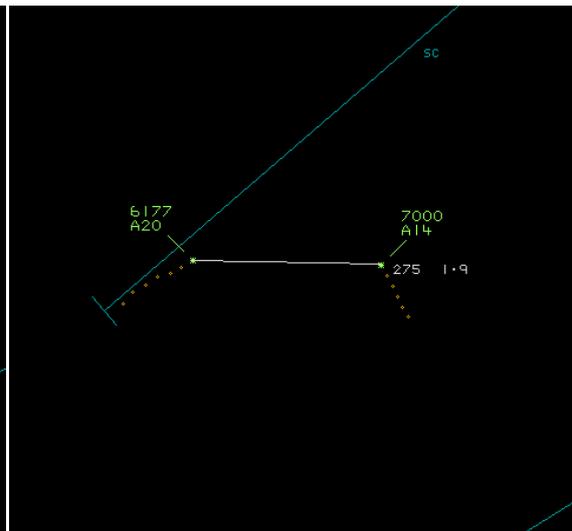


Figure 5 – 0956:50

Between 0956:55 and 0957:07 the controller was busy with another aircraft which had called them. At 0957:08 the controller passed Traffic Information to the DH89 on the AC114, advising that they believed the aircraft to be on a 3nm final descending from 2000ft (Figure 6).

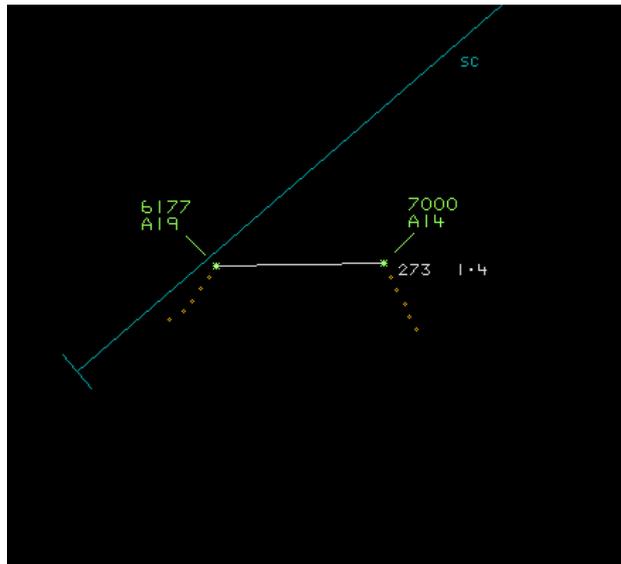


Figure 6 – 0957:08

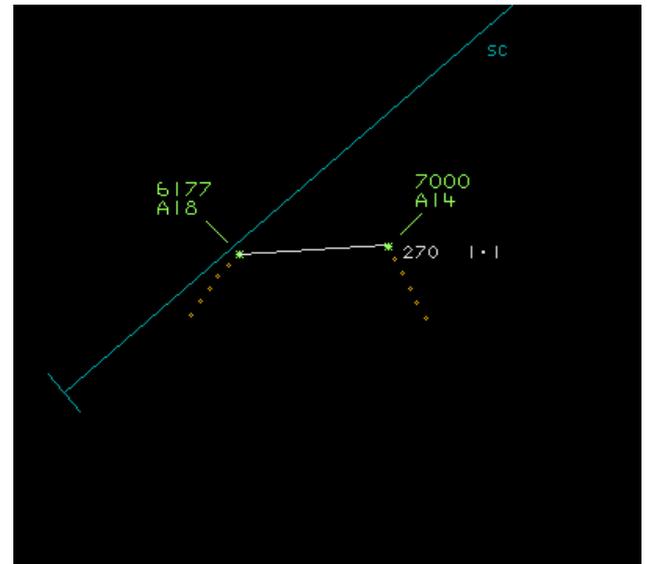


Figure 7 – 0957:15

At 0957:15 the DH89 pilot reported being at 1400ft and tracking around the edge of the city (Figure 7). The controller acknowledged this call and, at 0957:27, advised the AC114 that they had traffic crossing ahead at 1400ft to which they received no response (Figure 8).

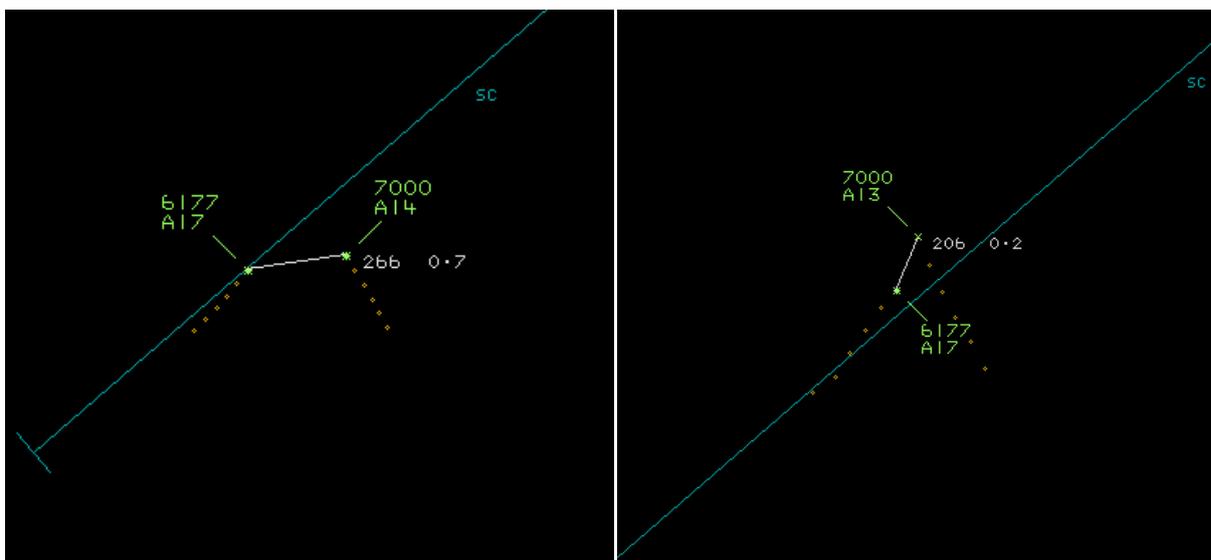


Figure 8 – 0957:27

Figure 9 – 0957:46

Between 0957:35 and 0958:00, the controller was again busy with another aircraft which had called them. CPA took place at 0957:46, with the aircraft separated by 0.2nm laterally and 400ft vertically (Figure 9). [UKAB note: using a different radar to the one that ATSI used, UKAB determined that the aircraft were in fact separated by 300ft vertically at CPA]

No Airprox was reported by either pilot to the controller at the time, although the pilot of the AC114 did subsequently advise they had stopped their descent due to the traffic ahead. In their written report, the pilot of the AC114 repeated a comment that they had made on the R/T at the time that, “Had it not been for TCAS, we would have hit the other aircraft, type unknown”. They reported receiving a TCAS TA on traffic 300ft beneath, and advised that they did not physically see the other aircraft. The AC114 was observed to descend to and then maintain 1700ft.

The pilot of the DH89 reported seeing the AC114 and, notwithstanding that they did not believe there to be a risk of collision, they had descended further to remain clear.

The Cambridge Approach controller, who was located in the VCR alongside the Tower controller, reported looking-for but not seeing either aircraft. Both aircraft were on the same frequency, and the pilot of the DH89 had advised very early on that they were aware of the presence of the AC114. Although Cambridge has radar, it was not available due to staffing.

Under a Procedural Service:

*The controller shall provide traffic information, if it is considered that a conflict may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however, there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance. The controller may, subject to workload, also provide traffic information on other aircraft participating in the Procedural Service, in order to improve the pilot’s situational awareness.<sup>1</sup>*

Further:

*Controllers may, subject to workload, initiate agreements (as defined in ATS Principles) with pilots of aircraft under a Basic Service to restrict their flight profile in order to co-ordinate them with aircraft in receipt of a Procedural Service. However, controllers shall limit the occasions on which they make such agreements to those where it is clear that a conflict exists, and only when controller workload permits.*

<sup>1</sup> CAP774 UK FIS Chapter 5 Procedural Service Para 5.5.

The controller was aware of the confliction and continued to provide updated Traffic Information to both aircraft. They had requested the DH89 report before crossing the final approach to enable them to update the AC114 on the position of the DH89. The controller commented that they have, on occasions, requested such crossing traffic to remain clear of the final approach. On this occasion, they believed that, because the pilot of the DH89 flew the route regularly and that sufficient information had been passed, the DH89 would deconflict themselves from the AC114.

The Airprox took place in Class G airspace, with both aircraft receiving Traffic Information in accordance with the services agreed, and with responsibility for collision avoidance remaining with both pilots. Notwithstanding, although the controller passed Traffic Information on more than one occasion, had they considered requesting the DH89 remain clear of the final approach area (either by holding or re-routing until they were sure the AC114 had passed), then the potential confliction would likely have been mitigated. The unit has stated that it will take this particular scenario as a “Lesson Learnt” and include it in the future training of approach controllers at Cambridge.

### **UKAB Secretariat**

The AC114 and DH89 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard<sup>2</sup>. If the incident geometry is considered as converging then the AC114 pilot was required to give way to the DH89<sup>3</sup>.

### **Summary**

An Airprox was reported when an AC114 and a DH89 flew into proximity at 0945 on Wednesday 19<sup>th</sup> July 2017 on the approach path of Cambridge Airport. The AC114 pilot was operating under IFR in IMC, and the DH89 pilot was operating under VFR in VMC. The AC114 pilot in receipt of a Procedural Service from Cambridge and the DH89 pilot in receipt of a Basic Service from Cambridge.

### **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board began by looking at the actions of Cambridge ATC. Members noted that the controller had done all that he was obliged to do in Class G airspace with one aircraft IFR on a Procedural Service and the other VFR on a Basic Service. That being said, controller members opined that, rather than just pass Traffic Information to both aircraft, having been aware that a conflict existed, he could have been more proactive and requested that the DH89 pilot either remained clear of the approach lane until the AC114 was clear or, if the DH89 pilot was visual with the AC114, ask the DH89 pilot to transit behind the AC114 on the instrument approach.

The Board then looked at the actions of the DH89 pilot. The DH89 pilot was flying multiple sightseeing trips, had requested a radar service from Cambridge ATC, but was informed radar was not available. Members noted that he had commented that Cambridge normally ask them to hold clear if there is an inbound on RW05, but that there was no request on this occasion. This had resulted in the DH89 pilot believing that there was sufficient time to cross the extended centreline ahead of the AC114. Notwithstanding, the Board noted that the DH89 pilot had said he was subsequently visual with the AC114, and had descended to increase the vertical separation even though he did not believe the aircraft were in confliction. Although the AC114 was required to give way to the DH89, the Board thought that, once visual with the AC114 on approach, and assuming there was sufficient time, good airmanship and courtesy to other aviators would have been for the DH89 pilot to have positively ensured he routed behind the other aircraft conducting an IFR

<sup>2</sup> SERA.3205 Proximity.

<sup>3</sup> SERA.3210 Right-of-way (c)(2) Converging.

approach. The Board were informed that, after this Airprox, the DH89's operating authority had changed their route procedures so that when Cambridge are using RW05 they fly to the east of the airfield, and when they are using RW23 they fly to the west. This seemed to be an eminently sensible plan that would avoid future conflicts with aircraft making approaches to Cambridge, and the Board commended the operating authority for their pro-active approach to safety.

The Board then turned to the actions of the AC114 pilot. Members noted that she was IFR on the approach, and IMC; although aware of the presence of the DH89 through the Traffic Information passed by Cambridge, she was not visual with the DH89. Some members wondered whether the AC114 pilot may have believed that she had some form of priority over the other aircraft because she was IFR on an instrument approach. In fact, the rules of the air in Class G airspace make no distinction between IFR/VFR or IMC/VMC and so, given that the AC114 pilot had the DH89 to her right, she was required to give way to the DH89 even though she was established on the approach. There was a discussion on the AC114 pilot's actions regarding the TCAS alert, with some members opining that she should have acted sooner than she did rather than press on with the approach. Others thought that she had climbed within sufficient time for the separation between the aircraft to safely increase, although they acknowledged that the AC114 pilot's contention that 'had it not been for TCAS she would have hit the other aircraft' seemed at odds with the fact that she had been given Traffic Information on the DH89 and could have acted sooner.

The Board then looked at the cause and risk of the Airprox. They agreed that both the AC114 pilot and the DH89 pilot had been given Traffic Information about each other and that the controller was aware of the impending conflict. It therefore seemed to the Board that all parties were aware of the situation, but the incident had arisen because nobody had positively taken action at an early enough juncture. Some members opined that they thought that the cause had been that the AC114 pilot had flown into conflict with the DH89 to which she was required to give way. Others thought that the controller had allowed the 2 aircraft to fly into conflict and should have been more proactive. A debate also ensued about the actions of the DH89 pilot and, although he assessed that there was no risk of collision, whether he should have acted more defensively given that he was also aware and ultimately visual with the AC114. The discussion ebbed and flowed until, in the end, the Board agreed that the incident was probably best described as the DH89 pilot flying close enough to the AC114 to cause its pilot concern. Turning to the risk, the Board noted that the DH89 pilot was visual with the AC114 and had also descended to further increase the separation. Accordingly, the Board determined that no risk of collision had existed and so they assessed the risk as Category C.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: The DH89 pilot flew close enough to the AC114 to cause its pilot concern.

Degree of Risk: C.

#### Safety Barrier Assessment<sup>4</sup>

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

#### **ANSP**

**Manning & Equipment** was assessed as **partially effective** because although Cambridge has radar, it was not used on this occasion due to manpower constraints.

**Situational Awareness & Action** was assessed as **partially effective** because the controller could have been more proactive with the DH89 by agreeing a course of action to deconflict from the AC114.

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<sup>4</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

## Flight Crew

**Situational Awareness & Action** was assessed as **partially effective** because both the AC114 pilot and the DH89 pilot had sufficient Traffic Information on each other but were not proactive enough in resolving the conflict early.

