

## **AIRPROX REPORT No 2013087**

**Date/Time:** 21 Jul 2013 1449Z (Sunday)

**Position:** 5057N 000 10W  
(8.6nm NNE of Shoreham)

**Airspace:** London FIR (Class: G)

**Reporting Ac** **Reported Ac**

**Type:** Cessna 152 Kingair B200

**Operator:** Civ Club Civ Comm

**Alt/FL:** 2000ft 2500ft  
QNH (1017hPa) QNH  
(1017hPa)

**Weather:** VMC CAVOK VMC CAVOK

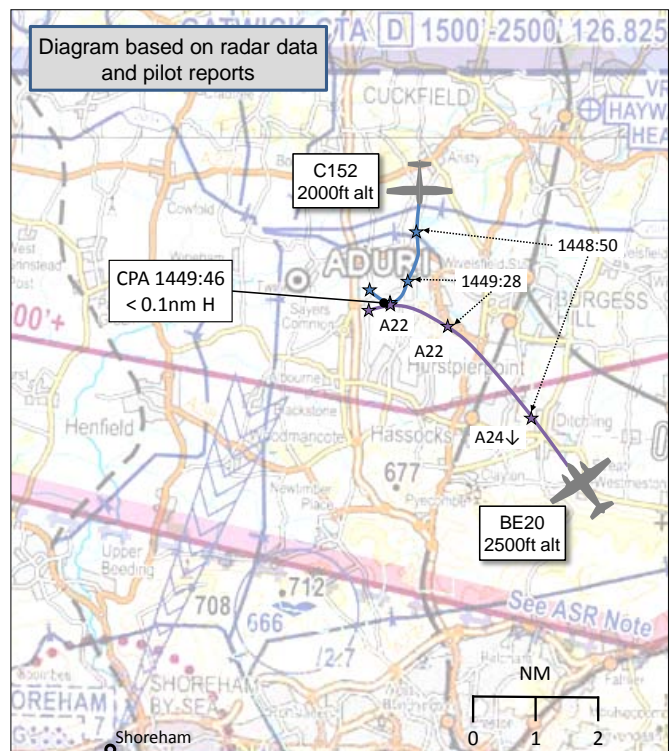
**Visibility:** 25nm 10km

**Reported Separation:**

50-100ft V/NK H NK

**Recorded Separation:**

NR V/<0.1nm H



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

**THE C152 PILOT** reports flying a predominantly white aircraft, VFR in VMC, at 90kt, with transponder Mode A selected (Modes C and S were not fitted). The pilot was returning to Shoreham following a 'trial lesson' and received joining instructions for a straight-in approach to RW20. He climbed the aircraft to 2000ft amsl (QNH 1017hPa) and set course for Shoreham. Having heard the B200 crew talking to Approach, the C152 pilot expected it to join from the east via left-base; realising that the B200 was faster than his aircraft, he expected to be No.2 in the approach sequence and that there would probably be a delay in receiving clearance for his approach. He then heard the B200 pilot report at ADURI and, realising that he was also approaching ADURI, briefly checked that he was referring to the correct reporting point on the approach plate before looking for the other aircraft. He reports that he saw the B200 in his 10 o'clock position, converging, 50-100ft above [UKAB Note 1: the pilot reported 10ft separation on RT]; he took control of the aircraft and rolled to the right to avoid the B200. The pilot reports that, if he had been informed that the B200 was following the RNAV (GNSS) approach to RW20 he would have chosen a different altitude for his own recovery.

He assessed the risk of collision as 'Medium'.

**THE KINGAIR B200 PILOT** reports flying a visual approach, inbound to Shoreham in a predominantly white aircraft, IFR in VMC, at 2500ft amsl (QNH 1017hPa) and 170kt, with strobe and navigation lights turned on and transponder Modes A, C and S selected on. Whilst inbound to 'initial fix' ADURI, the crew descended the aircraft to 2200ft amsl. They recall turning left and reporting their 'distance, altitude and intention' to Shoreham Approach when they were 5nm from ADURI. The B200's TCAS was on, but the crew did not see any traffic indications on it, and they report flying into sun. The crew recalls keeping an 'intensive' lookout and the co-pilot saw the C152 around their turn at ADURI and they turned left to avoid it; the Captain did not see the C152.

**THE APPROACH CONTROLLER** reports that the B200 was IFR inbound and the crew had requested a visual join for RW20. They were instructed to carry out a left-base join for RW20, not below 1600ft (QNH 1017hPa), and to report 5nm DME. The C152 called inbound at Burgess Hill and requested a straight-in approach. The controller instructed the C152 pilot to report at 6nm and informed him to expect to 'hold for the B200'. The B200 crew then reported their position as ADURI

at 2100ft; the controller queried the crew's intentions and he recalls that they reported joining visually along the RNAV (GNSS) approach. The pilot of the C152 reported the Airprox on the radio, estimating the vertical separation as '10ft'; the B200 crew acknowledged and stated that they were visual with the C152.

## Factual Background

The Shoreham weather at 1420 and 1450 was:

METAR EGKA 211420Z 14005KT CAVOK 24/17 1017  
 METAR EGKA 211450Z 12006KT CAVOK 25/17 1017

## Analysis and Investigation

### CAA ATSI

CAA ATSI had access to Shoreham RTF area radar recording, together with the written reports from the Shoreham controller and the pilots of both aircraft. The C152 was operating on a local VFR flight, returning to Shoreham from the north and was in receipt of a Basic Service from Shoreham Approach. The B200 was inbound IFR to Shoreham and was in receipt of a Procedural Service from Shoreham Approach. Shoreham ATC were operating split Aerodrome and Approach control services without the aid of surveillance equipment.

On arrival the B200 would have been expected to complete the RNAV (GNSS) approach for RW20. An extract from the UK AIP page AD 2-EGKA-8-4 is reproduced in Figure 1 below.

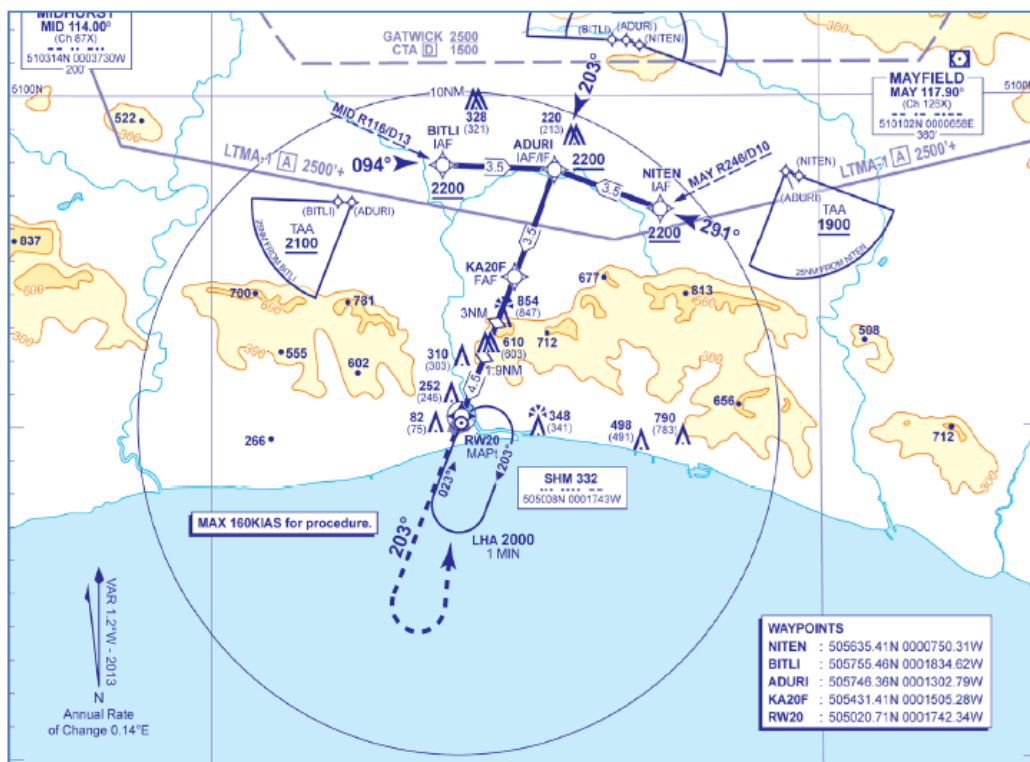


Figure 1 – extract from Shoreham Instrument Approach Chart RNAV (GNSS) RWY 20 (ACFT CAT A,B – ICAO)

## Factual History

At 1441:31 the B200 contacted Shoreham Approach and the following RTF exchange occurred:

B200: "Shoreham Tower good afternoon (B200)c/s out of four thousand nine hundred feet descending to two thousand five hundred feet and er request vo- er erm visual approach runway zero two out of ????? information papa"

ATC: "(B200)c/s thank you QNH one zero one seven say again your present level"

B200: "One zero one seven and altitude four thousand three hundred feet at the moment descending two thousand five hundred feet"

ATC: "(B200)c/s thank you cleared visual join runway two zero report on a five mile final runway two zero"

B200: "(B200)c/s say again the runway the active er on your ATIS is er zero two"

ATC: "Er no runway two zero" [note - subsequently confirmed as 20 on ATIS]

B200: "Runway two zero (B200)c/s"

ATC: 1442:23 "and (B200)c/s I see you're out to the east of the field join left base not below one thousand six hundred feet report five DME" [observed on D/F]

B200: "Er left and not below one thousand six hundred feet and to report er five DME for runway two zero (B200)c/s"

The controller then passed generic traffic information to another VFR aircraft regarding six aircraft to the east. It was noted that the B200, operating IFR on a procedural service, was not offered any traffic information.

At 1444:00 the B200 was 17nm south-east of Shoreham squawking 4146. The C152 was 11.3nm north-east of Shoreham, tracking north, squawking 3763 (Shoreham VFR conspicuity squawk), without Mode C level reporting.

At 1446:52 the B200 was 9.5nm east of Shoreham at 2500ft. The B200 pilot's written report indicated his intention was to make a visual approach, at 2500ft QNH1017, inbound to ADURI, descending to 2200ft.

When questioned, the controller indicated that, having instructed the B200 to join left base, he had an expectation that the B200 would join a visual left base inside 4nm.

The C152 contacted Shoreham approach at 1448:23, reporting at Burgess Hill, and requesting a straight in approach. The controller responded, "[C152 c/s] erm make a straight in approach report at er six mile final initially expect to hold there". The C152 pilot replied, "Report six miles and I got papa one zero one seven [C152 c/s]".

[Note: Radar showed the B200 8.7nm north-east of Shoreham, at 2500ft, tracking towards ADURI. The C152 was 10.3nm north-north-east tracking towards ADURI.]

The controller, when questioned, believed that by holding the C152 six miles north, this would allow the B200 to position ahead of the C152 onto final, and did not consider that there would be a confliction. The controller agreed that, in hindsight, the passing of traffic information regarding the C152 holding could have alerted the B200 pilot to the potential conflict.

At 1449:00 the B200 was 4nm south-east of ADURI at 2300ft, with the C152 2nm north-east of ADURI. The distance between the two aircraft was 2.9nm as shown in Figure 2.

At 1449:02, the following RTF exchange occurred:

B200: "[B200 c/s] is turning at er ????? ADURI"

ATC: "[B200] confirm you're doing the instrument approach runway two zero"

B200: "Affirmative [B200 c/s]"

ATC: "[B200 c/s] in which then you're cleared R-NAV approach runway two zero report final approach fix"

B200: "Report final approach fix and for the runway two zero [B200 c/s]"

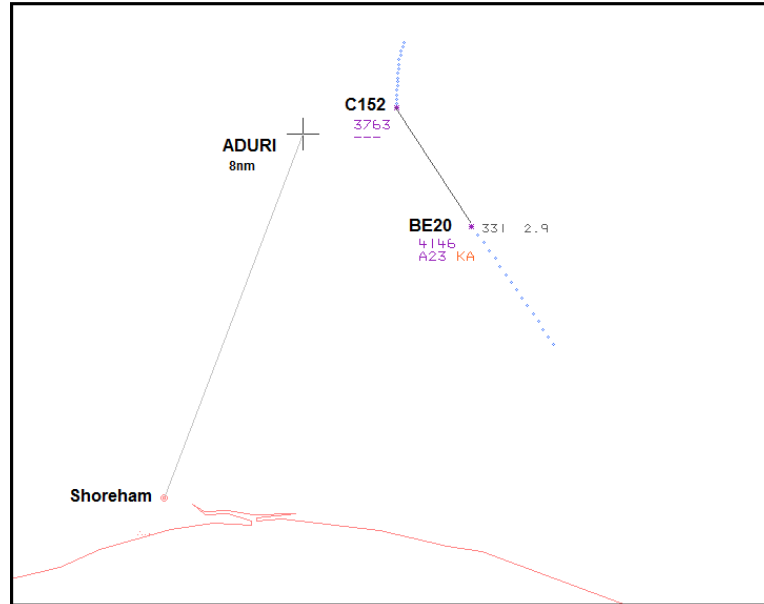


Figure 2- Swanwick MRT at 1449:00

The controller subsequently indicated that when the B200 pilot had called turning at ADURI, he believed that the pilot was intending to make an instrument approach and, when questioned, this was affirmed by the B200 pilot.

At 1449:38 the controller requested, "and [B200 c/s] report your level". The B200 pilot replied, "level two one zero [B200 c/s]". [2100ft]

[Note - Radar showed the two aircraft converging at a range of 0.4nm with the B200 in a left turn as shown in Figure 3 below.]

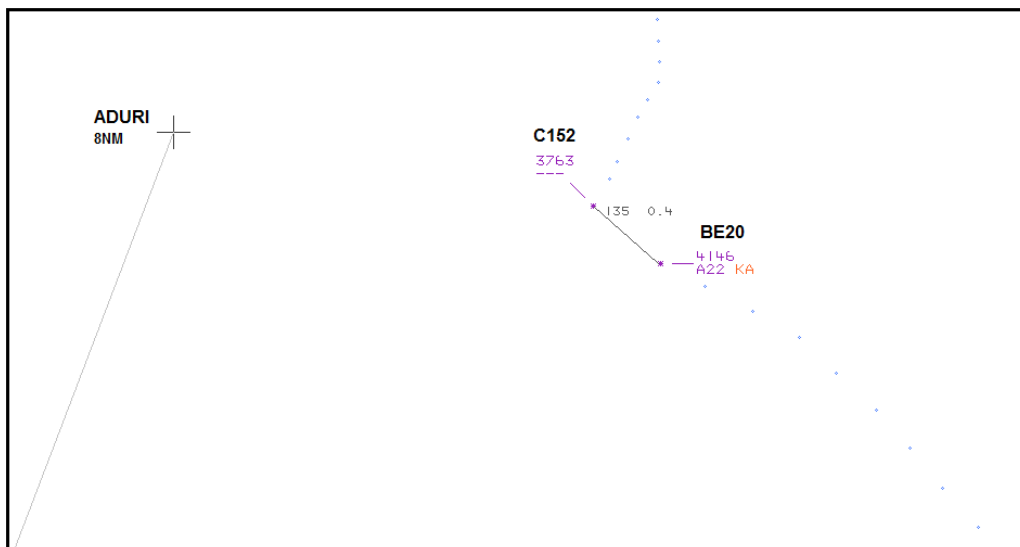


Figure 3- Swanwick MRT at 1449:38

[Note – During the next two radar updates the tracks of the two aircraft cross as shown in Figure 4 and Figure 5 below.]

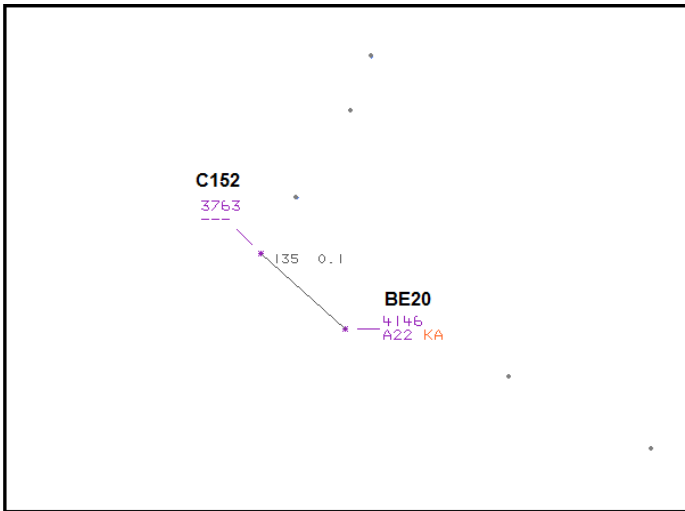


Figure 4- Swanwick MRT at 1449:42

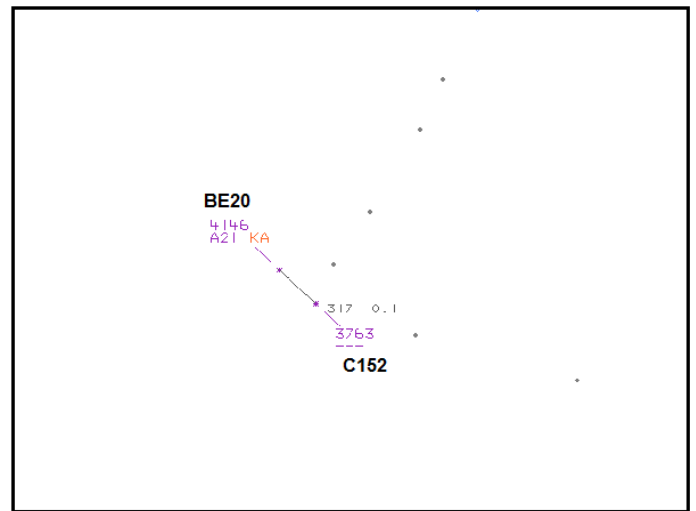


Figure 5 – Swanwick MRT at 1449:46

C152: *“Er Shoreham [C152 c/s] your King Air’s just almost hit me”*

ATC: *“Yeah [C152 c/s] I wasn’t sure where he was he was supposed to be joining left base visually erm do you wanna file an Airprox”*

C152: *“I will do”*

ATC: *“Okay”*

C152: *“It was about ten feet”*

ATC: *“and [B200 c/s] er unfortunately there is a pilot er you just passed quite close to he is intending to file an AIRPROX if you can give the Tower a call when you get on the ground please”*

B200: *“[B200 c/s] understand ????? in sight”*

The two aircraft continued inbound and landed without further incident.

At interview the controller recognised that the B200 pilot’s intentions and perception was different to his. The controller, with the benefit of hindsight, believed that he could have given more specific instructions for the B200 to join left base, turning final at less than 4nm, with updated traffic information on the C152 once it became known traffic.

### ATSI Analysis

There were two important points where the controller/pilot communication were such that there was a clear misunderstanding about the instructions passed and their intention.

The B200 pilot was initially cleared for a visual approach and instructed to report on five mile final. This was quickly changed to a left base join not below 1600ft, which is a standard join for aircraft joining the visual circuit. The controller’s perception was that the B200 would now join the visual circuit inside 4nm.

Meanwhile the B200 pilot, who was a foreign pilot and probably unfamiliar with the airfield, was navigating towards ADURI intending to report on a 5nm visual final. The B200 pilot was not aware that the controller wanted him to join the visual circuit inside 4nm. The RTF exchange

allowed for a certain degree of ambiguity and did not sufficiently convey the controller's intention for the pilot to join a short left base:

*ATC: "(B200)c/s thank you cleared visual join runway two zero report on a five mile final runway two zero"...*

Then:

*ATC: "...join left base not below one thousand six hundred feet report five DME"*

*B200: "...left and not below one thousand six hundred feet and to report er five DME for runway two zero"*

It probably suited the pilot to position towards ADURI (8nm final), to be tactically positioned for a 5 mile visual final (i.e. 5-DME) and the height-distance ratio imposed by the 1600ft restriction was also likely to result in a wide left base.

At this point the C152 had not called and was not a factor. When the C152 did call for a straight in approach, the controller believed that by holding it six miles north, it would be outside the visual circuit of the B200 and therefore was not in conflict.

A second point of confusion arose when the B200 reported turning at ADURI. The controller believed that the B200 pilot wanted an instrument approach, which the pilot affirmed. However the pilot had intended to continue visually using the navigation fix at ADURI. The controller was involved with clarifying the type of approach and had little time in which to pass traffic information on the C152, which was now in potential conflict. The B200 was in receipt of a Procedural Service and CAP774 UK Flight Information Services, Chapter 5, Paragraph 5, states:

*'The controller shall provide traffic information, if it is considered that a confliction 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.'*

The provision of timely traffic information regarding the six VFR contacts to the east and then more specific information regarding the C152, which the controller planned to hold six miles north, would have given the B200 pilot a better awareness of the traffic situation. This together with more specific joining instructions to join a short pattern at less than 4nm final could have given the B200 pilot a better understanding of the controllers plan.

## Comments

**THE B200's FLIGHT OPERATIONS & QUALITY AND SAFETY MANAGEMENT SYSTEMS MANAGERS** comment that all their pilots have TCAS training and have been briefed on operating in 'VFR' conditions. They note that the TCAS was operational all of the time without any indications and concluded that the distance between the aircraft was acceptable.

## Summary

The Airprox occurred at 1449:46, 8.6nm miles to the north-northeast of Shoreham Airport, within Class G uncontrolled airspace, between a C152 and a King Air B200. The B200 was making a visual approach, following the instrument approach track via ADURI at 2200ft. The C152 pilot was making a visual recovery in the area of ADURI at 2000ft and expected to be positioning behind the B200, which he believed was joining via left base to RW20. The Approach controller also believed that the B200 would route visually via left base, to remain within 5 DME. As the B200 pilot reported turning at

ADURI, the C512 pilot saw it and took avoiding action. At around the same time, whilst the B200 crew were turning left, the co-pilot saw the C152.

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

Information available included reports from the pilots of both ac, a transcript of the relevant RT frequency, radar photographs/video recordings, a report from the air traffic controller involved, and reports from the appropriate ATC and operating authorities.

The Board noted first that the B200 was being flown by a foreign crew who were unlikely to be familiar with Shoreham or local procedures, and consequently intended to route via ADURI for a long visual final using the RNAV (GNSS) procedure to assist them. Some members opined that the crew would have been better served if they had informed the Approach Controller of their specific intended routing from the outset, given that they may not have understood the nuance of the instruction they were given to join via Left-Base. Other Members noted that, although the controller had an expectation that the B200 would be joining via visual Left-Base inside 4nm, his joining instructions included an instruction to report at 5DME. The Board agreed that this was ambiguous in that the B200 had probably interpreted this as an instruction to report at 5DME on long finals rather than simply 5DME from the field. The ambiguity was compounded because the controller did not receive a clear readback.

Turning to ATC, the Board noted that Approach had not passed Traffic Information to either pilot and surmised that this was probably because he had expected to hold the C152 at 6nm final while the B200 joined inside 4nm; consequently he had not expected the aircraft to conflict. Nevertheless, the Board felt that a Traffic Information call to both pilots would still have been appropriate in these circumstances given that they were both joining visually from the same sector. When the B200 pilot reported at ADURI, the controller still did not perceive a conflict because the C152 pilot had not reported that he was specifically intending to route via that point. Nevertheless, the C152 pilot's call of 'Burgess Hill for a straight-in approach' implied that he would be routing at least close to ADURI, and the controller could have deduced this for himself. By the time that the controller understood that there was a conflict, there was very little time to pass Traffic Information.

Both aircraft were on the same frequency and the pilots should have been aware of each other's transmissions. The Board opined that, if the C152 pilot had mentioned that he intended to route via ADURI on his initial transmission then either the controller or the B200 crew may have realised sooner that there was a conflict. However, the Board agreed that, whilst he might have been better served if he had reported approaching ADURI, he was under no obligation to do so. Furthermore, the C152 pilot had been the first person to perceive the conflict when the B200 crew reported approaching ADURI, and had therefore demonstrated good overall situational awareness.

In determining the cause of the Airprox, considerable discussion ensued over the actions of ATC and the pilots before the Board finally concluded that, although both aircraft were in Class G airspace, the controller's ambiguous joining instruction to the B200 crew had contributed to them flying into conflict with the C152 (who had right of way). The Board discussed the degree of risk involved and agreed that this was a high-risk Airprox given that the C152 pilot's avoiding action had been made only after a very late sighting of the B200 such that, despite his best efforts, his turn would have had little or no effect on the separation distance achieved. The B200 co-pilot also saw the C152 very late, and took action, but the Board agreed that this was also too late to achieve much separation. Taking all of these factors into consideration, the Board concluded that separation had been reduced to the minimum and that none of the actions taken had improved matters; the Board therefore agreed that the degree of risk was Cat A.

The Board noted that, whilst the B200 was equipped with TCAS, the comments from the aircraft's operator suggested that the company, and therefore by implication the crew, may have false expectations as to the utility of TCAS in UK Class G airspace within which many aircraft may not be transponder equipped.

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

Cause: Following ambiguous instruction from ATC, the B200 was flown into conflict with the C152.

Degree of Risk: A

ERC Score<sup>1</sup>: 500

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<sup>1</sup> Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.