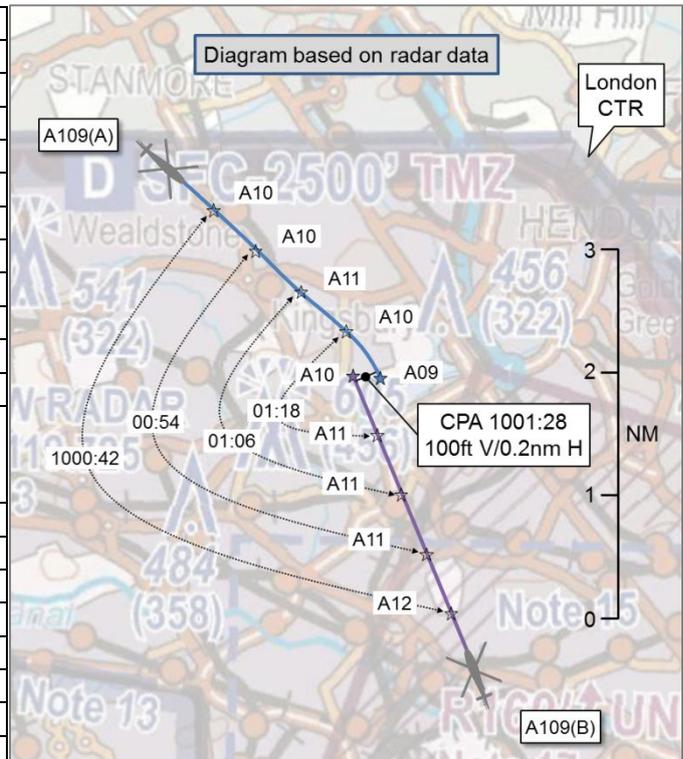


AIRPROX REPORT No 2016131

Date: 10 Jul 2016 Time: 1001Z Position: 5134N 00014W Location: Brent Reservoir

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	A109(A)	A109(B)
Operator	Civ Comm	Civ Comm
Airspace	London CTR	London CTR
Class	D	D
Rules	SVFR	VFR
Service	Radar Control	Radar Control
Provider	TC Heathrow	TC Heathrow
Altitude/FL	900ft	1000ft
Transponder	A,C,S	A,C,S
Reported		
Colours	Black/white	Black
Lighting	Nav, strobe	Landing on both wheel fairings facing forward
Conditions	VMC	VMC
Visibility	10km	NK
Altitude/FL	1000ft	1200ft
Altimeter	QNH (1009hPa)	QNH
Heading	140°	350°
Speed	140kt	100kt
ACAS/TAS	TCAS I	Not fitted
Alert	TA	N/A
Separation		
Reported	50ft V/0.25nm H	Not seen
Recorded	100ft V/0.2nm H	



THE A109(A) PILOT reports that he had left Bovingdon on the R133 radial for Brent enroute to Battersea. He was still in partial cloud so he asked Heathrow Special for an SVFR clearance to Battersea. He was told of traffic leaving Battersea on a VFR clearance [A109(B)] and he said that he may be able to accept a VFR clearance nearer the zone because the cloud base was generally higher over London. He then received a clearance into the zone via Brent, SVFR not above 1000ft, so he descended for the zone boundary and became fully visual with London ahead just under the cloud. He listened out to Battersea on Box 1 to get a better understanding of traffic, especially because it was busy as a result of the Silverstone Grand Prix event and had earlier offered to route via Alexandra Palace and Helicopter Route H4 to avoid associated traffic. He noted opposite direction traffic on TCAS but, as he approached Brent, the A109(B) pilot, operating on a VFR clearance, reported to Heathrow that he was descending to maintain VFR and this was acknowledged by the controller. He called Heathrow and told them that he was unhappy about A109(B) descending as he could not see it and with the cloud layer still ahead of him it would be obscured until they were at the same level. He had no response to this from the controller, so he initiated a descent and the other A109 passed by his right-hand side - he did not see it until it was abeam. He continued to Battersea and landed. He spoke to Heathrow on the telephone to understand what went wrong. He believed that as he was SVFR inside CAS then he would be protected. He did not file at this point as he was not sure if the pilot of the other aircraft had seen him in which case he opined that an Airprox may not have been the appropriate mechanism for reporting this. He managed to obtain the contact details of the other pilot and spoke to him later. He confirmed that he had not seen him until he was abeam.

He assessed the risk of collision as 'Medium'.

THE A109(B) PILOT reports that he was informed by Heathrow SVFR that an A109 was in his 2 o'clock at 2nm, below his helicopter. He needed to descend slightly in order to remain clear of cloud. He informed ATC and changed heading slightly to the left to ensure separation. ATC did not respond. He called again before descending, because of the lowering cloud base to the north of Battersea, to maintain VMC. He did not see the other traffic. He reported that at the time of the Airprox he was 200ft below cloud.

THE HEATHROW SPECIAL VFR CONTROLLER reports that the A109(A) pilot requested clearance to enter the CTR SVFR routing to Battersea via Brent at not above 1000ft. He was advised that there would be opposite direction VFR traffic on that route. The opposite direction traffic was leaving Battersea on the Brent routing VFR at not above 1300ft, this was also an A109[B]. Traffic Information was also passed to this pilot. South of the reservoir, A109(B) pilot advised he was descending to maintain VMC, an update on traffic was given. A109(A) pilot made a comment about this which was not fully heard due to on-going coordination with Battersea heliport. The relative position of the opposite direction VFR traffic was confirmed at this point.

Factual Background

The weather at Heathrow was recorded as follows:

EGLL 100950 21011KT 170V240 9999 FEW005 BKN009 18/18 Q1009 BECMG BKN012=

The UK AIP¹ states that:

VFR flights shall be conducted so that a helicopter flying by day at 3000ft amsl or below remains clear of cloud, with the surface in sight, in a flight visibility of at least 1500m.

Additionally²:

Clearance for Special VFR flight in the UK is an authorization by ATC for a pilot to fly within a Control Zone although he is unable to comply with IFR. When operating on a Special VFR clearance, the pilot must comply with ATC instructions and remain at all times in flight conditions which enable him to determine his flight path and to keep clear of obstacles. Therefore, it is implicit in all Special VFR clearances that the aircraft remains clear of cloud and in sight of the surface. It may be necessary for ATC purposes to impose a height limitation on a Special VFR clearance which will require the pilot to fly either at or not above a specific level.

CAP 493 (Manual of Air Traffic Services Part 1)³ states:

Standard separation is to be applied between:

(1) IFR flights and Special VFR flights;

(2) Aircraft cleared for Special VFR flights (except where a reduction is authorised by the CAA).

[i.e. separation between VFR and SVFR flights is not required.]

Analysis and Investigation

CAA ATSI

ATSI had access to reports from one pilot, the area radar recording and recordings of the Heathrow SVFR frequency. ATSI also had access to the controller's report and subsequent unit

¹ ENR 1.2-1.

² ENR 1.2-3.

³ Section 1, Chapter 2, Page 8, Paragraph 8C.1 Separation.

investigation. Screenshots produced in the report are provided using the Swanwick MRT, levels referred to are altitudes.

At 0955:50, the A109(A) pilot contacted Heathrow Radar and requested zone entry inbound to Battersea. The controller was busy but acknowledged the request, issued the SSR code 7052 together with the QNH and asked the pilot to standby.

At 0957:00, the controller returned to the A109(A) pilot and requested his details. The pilot requested a 'Brent' join Special VFR (involving a routing via Brent Reservoir). The controller issued generic Traffic Information about two opposite direction helicopters routing via 'Brent' and provided a Basic Service. The pilot offered to route via Alexander Palace and H4 but the controller asked the pilot to standby while they found out the flight rules of the second opposite direction helicopter, the departing A109(B).

At 0958:01, the controller commenced a telephone conversation with Battersea to co-ordinate the A109(A) inbound. During this conversation, the pilot of the A109(A) remarked that they may be able to accept a VFR clearance as the cloud was breaking up.

At 0958:38, the A109(B) pilot called the controller on departure from Battersea and, once the controller established a VFR clearance was required, gave the A109(B) pilot a clearance to leave via Brent.

Figure 1 depicts the traffic situation at 0959:00, just after the R/T exchange where the controller had given the clearance to the A109(B) pilot.

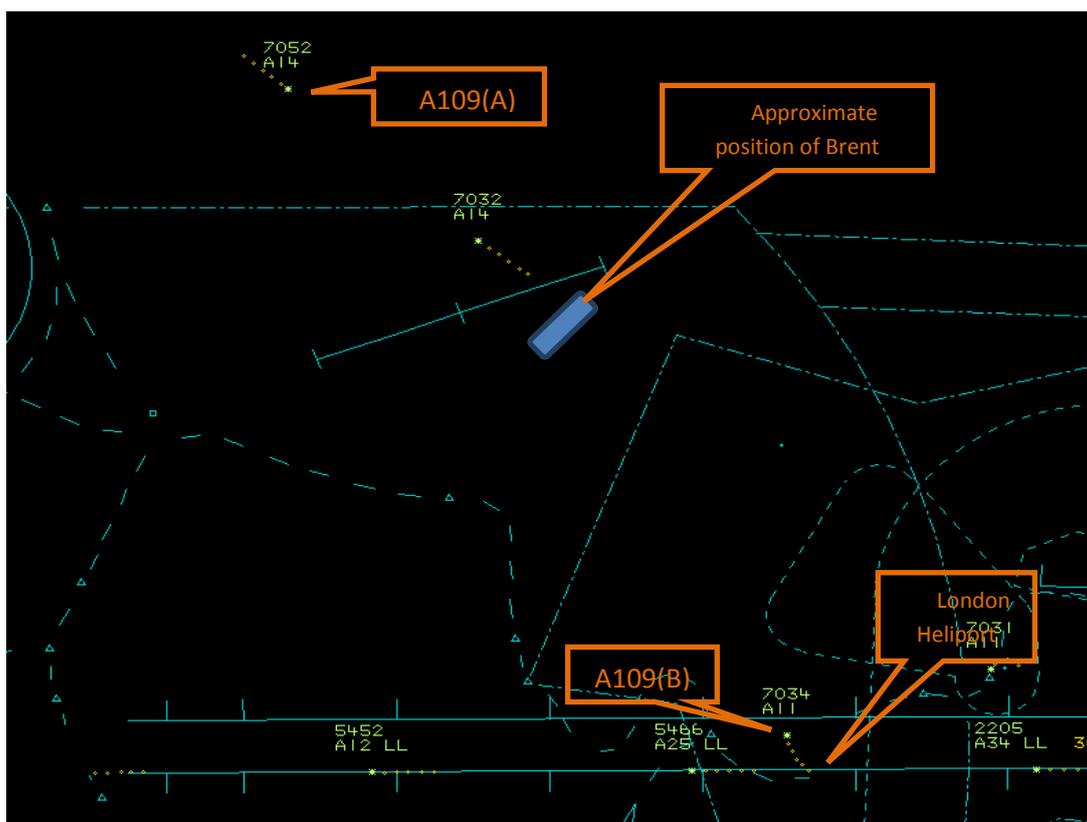


Figure 1 - Swanwick MRT at 0959:00.

At 0959:05, the controller issued Traffic Information about A109(A) to another A109 pilot who had earlier taken a similar clearance to the A109(B). This aircraft (code 7032 in Figure 1) was about to leave the Heathrow SVFR area. Mutual Traffic Information was given to the A109(A) pilot along with clearance to join SVFR not above 1000ft and route via Brent Reservoir.

At 1000:20, (Figure 2), the controller upgraded the service to the A109(A) pilot to a Radar Control Service (as the A109(A) had entered controlled airspace) and gave Traffic Information about the A109(B) which was just south of the reservoir and 300ft above. The two aircraft were approximately 5.5nm apart at this time.

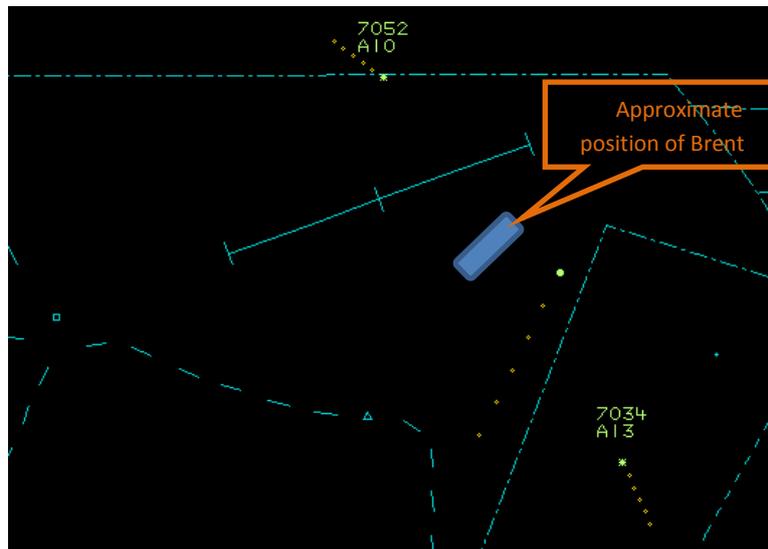


Figure 2 Swanwick MRT at 1000:20. A109(A) 7052, A109(B) 7034.

At 1000:48, the A109(B) pilot reported descending to 1000ft to maintain VMC. The controller immediately gave Traffic Information to the A109(B) pilot about the A109(A) stating that the opposite direction traffic was 2.5nm away. The telephone call with Battersea, which had commenced at 0958:01, was still in progress.

At 1001:10, the pilot of the A109(A) stated that he was not happy with the A109(B) pilot descending to his level. No reply from the controller was received (the controller was still engaged in the conversation with Battersea). He repeated the message at 1001:18

The controller immediately replied and gave an update of the Traffic Information, stating that the aircraft was 100ft above and 2nm to the south. Figure 3 shows the traffic situation at this time (1001:18).



Figure 3 Swanwick MRT at 1001:18.

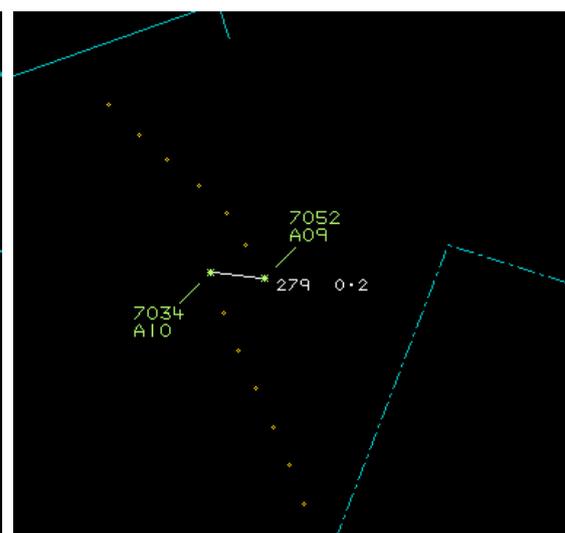


Figure 4 Swanwick MRT at 1001:27.

The CPA occurred at approximately 1001:27. Due to the update rates of the radar the closest measurable distance between the two aircraft was at 1001:30 (Figure 4) when the aircraft were 0.2nm horizontally and 100ft vertically apart.

There are very detailed and extensive procedures for helicopter flights into and out of London Heliport, these vary considerably depending on the severity of the weather conditions and the runways in use at both Heathrow and London City airports. Prior co-ordination and approval was required for departures from London Heliport, that approval being issued by the Heathrow SVFR controller.

The weather conditions were such that although the visibility was sufficient for VFR operations, there was a low cloud-base which was fluctuating along the proposed route of the two aircraft involved. The visibility and cloud base appeared to be more appropriate for a VFR clearance in the Battersea area and thus the departing A109(B) pilot requested a VFR clearance.

This was a busy day for helicopter traffic within the Heathrow SVFR area of responsibility and the controller was endeavouring to achieve the most efficient use of the airspace by combining VFR and SVFR traffic. The controller needed to make a decision based on the rules of service provision and efficiency within the airspace. The A109(A) pilot's offer of an alternative route may have been necessary if the departing aircraft had required an SVFR clearance [because ATC were required to separate aircraft if they were both under SVFR, but not if it was VFR].

The controller issued a clearance to the A109(B) pilot together with Traffic Information about the opposite direction inbound A109(A). Traffic Information was provided to both pilots about the others' routing, this being updated immediately the outbound aircraft reported descending due to a lowering cloud-base in the vicinity of Brent Reservoir.

The open telephone conversation with Battersea throughout the lead-up to the Airprox could have served to distract the controller, yet the controller continued to discharge the appropriate ATC service to the many aircraft on frequency, not just the two involved in the Airprox.

The controller was not required to separate the two aircraft as only one pilot was under a Special VFR clearance. Timely and accurate Traffic Information was provided to both pilots as required.

UKAB Secretariat

The two A109 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard⁴. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right⁵.

Summary

An Airprox was reported when two A109s flew into proximity at 1001 on Saturday 10th July 2016. Both pilots, operating in VMC, were in receipt of a Radar Control Service from Heathrow TC. The A109(A) pilot was in receipt of a SVFR clearance, the A109(B) pilot was operating VFR.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from both pilots, the controller concerned, area radar and RTF recordings and reports from the appropriate ATC and operating authorities.

The Board first noted that both pilots were in receipt of a Radar Control Service from the Heathrow SVFR controller and that both were routing via Brent Reservoir, which is within the Class D airspace of the London CTR about 6nm north of Battersea; their chosen route was not a recognised Helicopter Route within the CTR. From the reports received from the pilots, the weather conditions to the north of the CTR appeared to be worse than those being experienced in the Battersea area. Accordingly the A109(A) pilot had requested to enter the CTR from the north on a SVFR clearance, and some members wondered whether he had the expectation that all other aircraft would also be SVFR and

⁴ SERA.3205 Proximity.

⁵ SERA.3210 Right-of-way (c)(1) Approaching head-on.

thus ATC would provide separation. As it happened, because of the better weather in the Battersea area, the A109(B) pilot had requested and been issued with a VFR clearance, and some members wondered whether the A109(A) pilot had fully assimilated this. Notwithstanding, members noted that the A109(A) pilot had offered to avoid other traffic by routing via Alexandra Palace along Helicopter Route H4 to Battersea. However, the NATS advisor commented that SVFR controllers would not be likely to issue clearances for that route in inclement weather conditions because of the various height restrictions and other conditions on that route.

Board members noted that, because the A109(B) pilot was operating VFR, the only responsibility of the controller was to pass Traffic Information to both flights; there was no requirement to separate VFR and SVFR flights. Consequently, the main requirement for safe operation was for both pilots to see and avoid each other which therefore required them not to enter cloud and to conduct their operations appropriate to the weather conditions outside of cloud. Helicopter members opined that this explained why A109(B) pilot found it necessary to descend to comply with his clearance to remain clear of cloud. Furthermore, they commented that pilots should carry out their flights at appropriate speeds to ensure the safety of their operation in the visibility they encountered; in this respect, they noted that the pilot of A109(A) had reported his speed as 140kt, which, they opined, was quite high for the reported weather conditions.

The Board wondered whether task pressures had affected the actions of both pilots given that the Airprox had occurred in the busy helicopter operating period of the Formula 1 meeting at Silverstone where time constraints and company pressure may have been a factor. Although A109(B) pilot had no doubt obtained a relevant weather forecast, they wondered whether he had fully assimilated the fact that the weather was deteriorating to the north and that an SVFR clearance might have been more appropriate. An SVFR clearance would have potentially delayed his operation and the NATS advisor confirmed that the only way of separating the two helicopters within the CTR if both were SVFR would have been to have kept A109(B) on the ground at Battersea until A109(A) arrived, thereby delaying A109(B)'s departure. Acknowledging that such a delay might have been unwelcome, in view of the weather conditions experienced by both pilots the Board considered that A109B pilot requesting an SVFR clearance would have been an appropriate action to ensure that any possibility of collision was removed.

The Board then discussed the actions of the SVFR controller. Members agreed that the controller had passed appropriate and timely Traffic Information to both pilots as required under the remit of the SVFR and VFR flights that were being conducted. In view of the clearances issued, members recognised that it was up to the pilots to translate this information into appropriate action to avoid each other.

In looking at the barriers that were relevant to this incident, the Board agreed that the following were contributory factors:

- **Flight Crew Acting on Information** was considered to have been only **partially effective** because, although the A109(A) pilot had descended slightly on noting the A109(B) pilot's descent to his altitude, he could have both slowed down and deviated from track in order to improve his chances of avoiding a collision.
- **Flight Crew Operational Threat Awareness and Management** was also considered to have been only **partially effective** because the A109(A) pilot appeared to think that ATC would provide more separation, and the A109(B) pilot could have requested an SVFR clearance for greater safety through ATC separation.
- **Flight Crew Electronic Warning System and Resolution Action** was also assessed as being only **partially effective** because A109(B) did not have a suitable system fitted.
- **See-and-Avoid** was considered **ineffective** because neither pilot saw the other until after CPA, largely because of the poor weather conditions.

The Board then considered the cause and risk of the incident. They noted that the A109(A) pilot had the advantage of his helicopter being equipped with TCAS and was able to monitor A109(B)'s approach. Members further noted that A109(A) pilot received a TCAS TA but that he only saw

A109(B) as it passed abeam. For his part, the Board noted that the A109(B) pilot did not see A109(A). Notwithstanding that both pilots were aware of each other as they closed, the Board considered that the cause of the Airprox was effectively a non-sighting by A109(A) pilot and a non-sighting by A109(B) pilot. In discussing the risk, many members initially considered that because the two helicopters had passed so close to each other with no effective visual contact by either pilot, it was only fortuitous that a collision had not occurred and that the risk should therefore be Category A. However, other members pointed out that the A109(A) pilot, on hearing that A109(B) pilot was descending to his altitude, had sensibly descended 100ft to provide some element of separation. Therefore, although safety had been much reduced below the norm, his action had prevented a possible collision. After a short debate, the Board unanimously agreed that the Airprox should therefore be assessed as risk Category B.

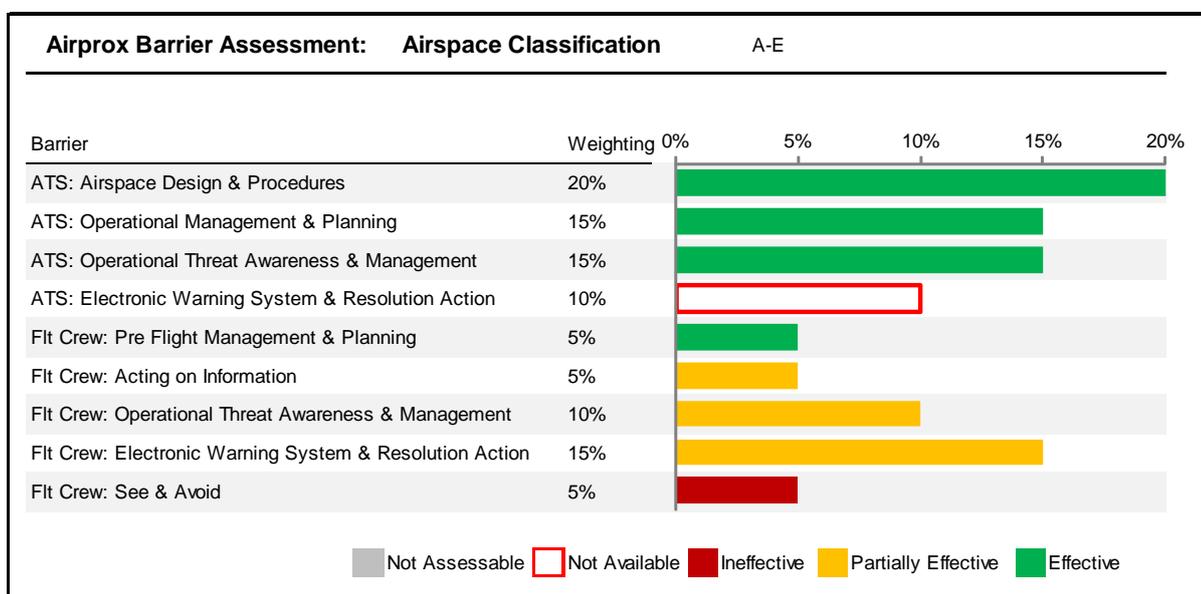
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by A109(B) pilot and effectively a non-sighting by A109(A) pilot.

Degree of Risk: B.

Barrier Assessment:

Modern safety management processes employ the concept of safety barriers that prevent contributory factors or human errors from developing into accidents. Based on work by EASA, CAA, MAA and UKAB, the following table depicts the barriers associated with preventing mid-air-collisions. The length of each bar represents the barrier's weighting or importance (out of a total of 100%) for the type of airspace in which the Airprox occurred (i.e. Controlled Airspace or Uncontrolled Airspace).^{6*} The colour of each bar represents the Board's assessment of the effectiveness of the associated barrier in this incident (either Fully Effective, Partially Effective, Ineffective, Not Available, or Not Assessable). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident.



⁶ Barrier weighting is subjective and is based on the judgement of a subject matter expert panel of aviators and air traffic controllers who conducted a workshop for the UKAB and CAA on barrier weighting in each designation of airspace.