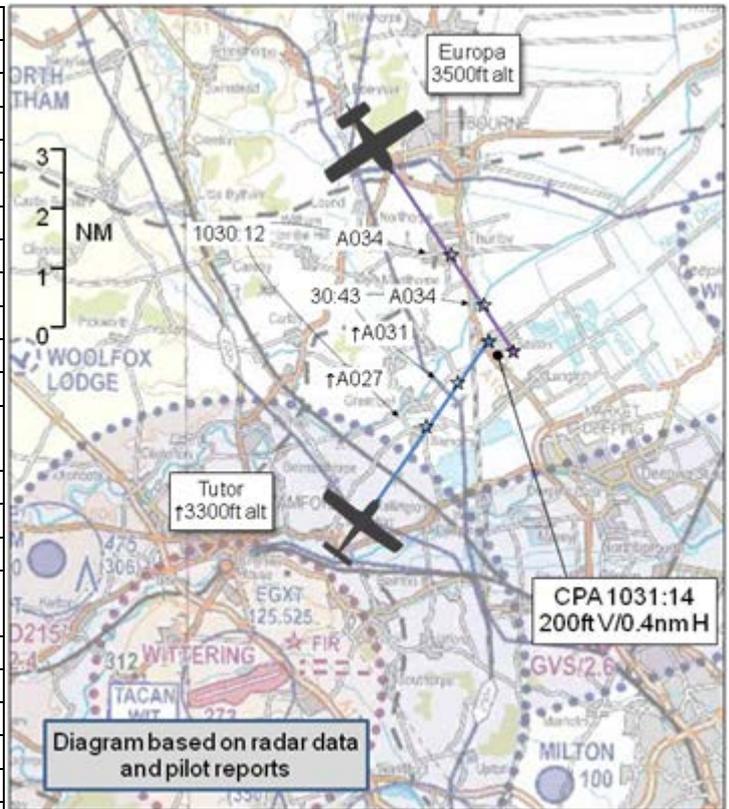


**AIRPROX REPORT No 2016216**

Date: 23 Sep 2016 Time: 1031Z Position: 5243N 00021W Location: 7nm NE RAF Wittering

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	Tutor	Europa
Operator	HQ Air (Trg)	Civ Pte
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Basic
Provider	Wittering	Wittering
Altitude/FL	FL32	FL35
Transponder	A,C	A,C
<b>Reported</b>		
Colours	White	NK
Lighting	Strobes, nav, landing	NK
Conditions	VMC	NK
Visibility	NK	NK
Altitude/FL	4700ft	NK
Altimeter	RPS (1015hPa)	NK
Heading	045°	NK
Speed	100kt	NK
ACAS/TAS	TAS	Unknown
Alert	TA	Unknown
<b>Separation</b>		
Reported	100ft V/200yd H	Not seen
Recorded	200ft V/0.4nm H	



**THE TUTOR T1 PILOT** reports that he was at approximately 4700ft and about 7nm NE Wittering in the vicinity of Langtoft village, heading NE, when ATC called pop-up traffic 1nm NE, at a similar level. The traffic was not sighted. After his initial visual scan, the traffic was still not sighted, so he manoeuvred to provide a better view and to displace vertically in order to deconflict. He obtained a late sighting of traffic approximately 100ft above, 200 yards laterally. There was a late return on TAS appearing at approximately 1nm. The traffic appeared to be low-wing, single-engine propeller, red and white, possibly a Robin. It was routing south-east, level. Its pilot did not respond to his wing-rock so he presumed that he had not seen them. The sortie continued uneventfully.

He assessed the risk of collision as 'Medium'.

**THE EUROPA PILOT** reports that after looking at his logs he was flying to Cambridge on that day and would have passed Wittering about the time of the Airprox. He does try to keep a good look-out but does not remember seeing any other aircraft in close proximity, nor does his passenger, who also keeps a good look-out. He always speaks to RAF Waddington, if they are available, squawking Mode C, until they ask you to call Wittering. He was sorry that he could not remember anything specifically on a date that far back. [UKAB note: due to uncertainty of aircraft 2's identity, its pilot was only advised about the Airprox on 6<sup>th</sup> February, some 4 months after the event.]

**THE WITTERING CONTROLLER** reports that he was informed by the SFSO of an incident involving a Tutor aircraft under his control at the approximate time stated. No concerns were raised by the aircrew at the time, and the first time he discovered any issue was 4 days later. He has no recollection of any incident during the day in question.

## Factual Background

The weather at Wittering was recorded as follows:

EGXT 231050Z 22011KT 9999 FEW030 SCT250 17/10 Q1024 BLU=

## Analysis and Investigation

### Military ATM

An Airprox occurred at approximately 1031hrs, 7nm north-east of RAF Wittering, between a Tutor conducting an air experience sortie and a light aircraft (Europa) in transit to Cambridge. The Tutor was receiving a Traffic Service from Wittering Zone (UHF) and the light aircraft was believed to be receiving a Basic Service (BS) from Wittering Zone (VHF).

Portions of the tape transcripts between the Wittering Zone controller and the Tutor pilot are below:

To	From	Speech Transcription	Time	Remarks
Tutor	Zone	[Tutor C/S] Identified Traffic Service, own navigation, on leaving the MATZ manoeuvre as required in the block between 2000, 7000', Barnsley 1017. Climb-out restriction now lifted.	10:28:29	UHF Zone is used exclusively for Tutor Ops.
Zone	Tutor	Traffic Service with the climb-out restriction cancelled. When clear of the MATZ in the block 2000-7000' on the Barnsley 1017, [Tutor C/S]	10:28:42	
Different Tutor (on air test)	Zone	[Tutor C/S] traffic SW 4 miles manoeuvring, 400' above.	10:28:53	Tutor on an air test – not involved in the Airprox.
Zone	(Air test) Tutor	[Tutor C/S].	10:28:57	
Tutor	Zone	[Tutor C/S] pop-up traffic NE, 2 miles, tracking south indicating 300ft above.	10:30:59	
Zone	Tutor	Traffic in sight [Tutor C/S].	10:31:01	

Although VHF tape transcripts for the period were not completed, transmissions between the Wittering Zone controller and a Europa are described below:

Time	Description
10:27:42	[C/S], a Europa, en route from Gamston to Cambridge calls 1nm NW Bourne (Lincs) at 3600ft on 1017HPa
10:28:05	[Europa C/S] is instructed to squawk 3750 with ident.
10:36:22	[Europa C/S] is given Chatham RPS, instructed to squawk 7000 and freecall en route.

Figures 1-4 depict the positions of the Tutor and the light aircraft at times when the Wittering Zone controller passed Traffic Information, as well as other relevant times. The pictures have been produced using the radar replay utilising the Claxby radar feed and do not necessarily reflect what the Wittering controller saw on his radar screen at the time.

At 1028:29 (Figure 1), the Tutor pilot had just called Wittering Zone on a downwind-leg departure. He was identified and provided with a Traffic Service by the Wittering Zone controller.

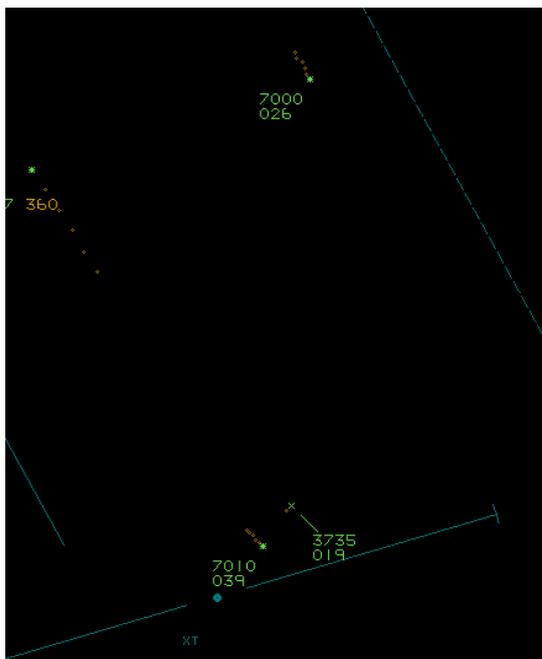


Figure 1: Geometry at 1028:29  
(Tutor SSR 3735; light aircraft SSR 7000).

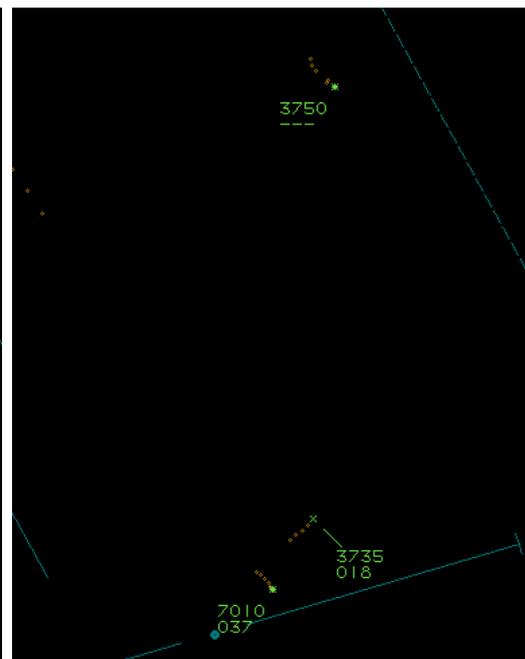


Figure 2: Geometry at 10:28:37  
(Tutor SSR 3735; light aircraft SSR 3750).

At 1028:37, the light aircraft, now approximately 15nm NE of Wittering, changed from SSR 7000 to 3750, which indicates that the pilot was receiving a Basic Service from Wittering Zone (conspicuity unverified).

At 1030:59 (Figure 3), the Wittering Zone controller passed Traffic information on “pop up traffic, NE, 2nm, tracking S, indicating 300ft above”. The Tutor pilot subsequently replied that the traffic was in sight. No Traffic Information was passed on VHF at the time.

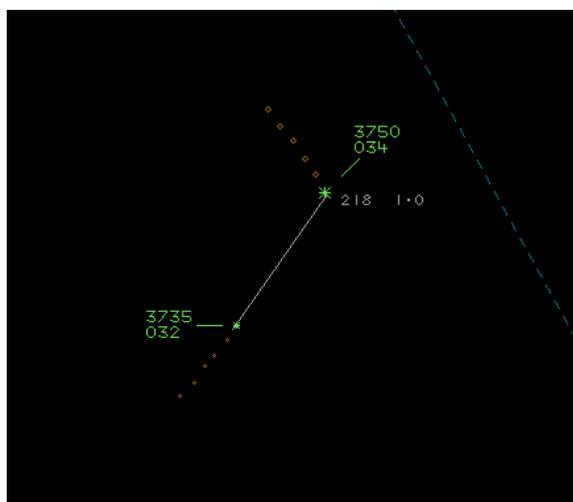


Figure 3: Geometry at 1030:59  
(Tutor SSR 3735; light aircraft SSR 3750)

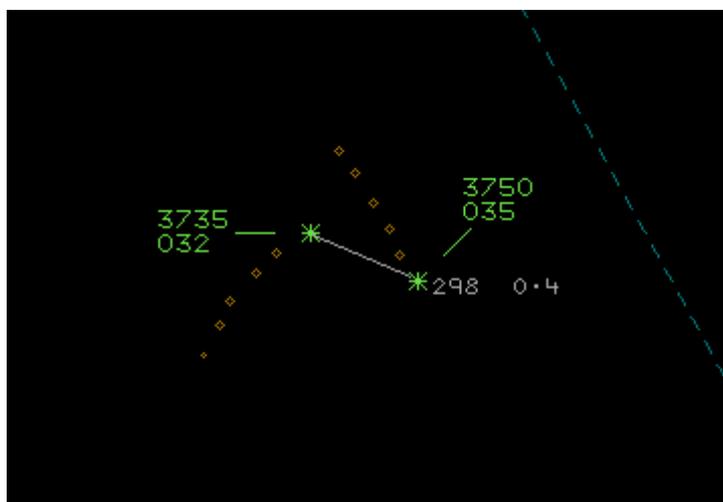


Figure 4: Geometry at 1031:15  
(Tutor SSR 3735; light aircraft SSR 3750)

At 1031:15 (Figure 4), the two aircraft passed at their CPA, which was 0.4nm laterally.

As the Airprox was not reported to ATC at the time, it was several days before the controllers were made aware of the incident. Confusion over the time of the incident (pilot's report stated 1141hrs Local rather than UTC) also meant that the initial ATC investigation identified the incorrect controller. It was several months before the error was noticed, by which time the controllers were unable to make any contribution of value.

The configuration of RAF Wittering ATC is that there are 2 radar consoles, one for the Approach Controller and one for the Zone Controller. The Zone Controller works all Tutor general handling on UHF and, although not a LARS unit, GA transits on VHF, while Approach works Tutor recoveries and other UHF traffic. There is no option to split down the tasks further should the traffic situation dictate. Although there was no statement in the DASOR regarding traffic/workload, on good weather days it is normal for workload on both positions to be high.

Based on the replays provided by the RAC, the conflicting light-aircraft was visible throughout the period that the Tutor was on frequency. It had been maintaining a steady track south-east, first under control of Waddington ATC, then changing SSR to 7000 before changing again to the Wittering Zone conspicuity Basic Service code. It had also climbed from an indicated altitude 2600ft to 3500ft. The nature of the 3750 SSR code is that it is unvalidated and unverified, and there is no indication that the controller had identified the aircraft for monitoring purposes. There was no requirement to pass Traffic Information under a Basic Service. The pilots of both aircraft were believed to be speaking to the same controller; however, they were on different frequencies. At the time of writing, it has not been confirmed that the Europa was the light-aircraft involved.

Regarding provision of a Traffic Service, CAP774, Chapter 3, states that:

*'The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'*

*Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting aircraft's observed flight profile indicates that it will pass within 3 NM and, where level information is available, 3,000ft of the aircraft in receipt of the Traffic Service... Controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5 NM, in order to give the pilot sufficient time to meet his collision avoidance responsibilities and to allow for an update in traffic information if considered necessary.*

*However, the controller is not required to achieve defined deconfliction minima and pilots remain responsible for collision avoidance even when being provided with headings/levels by ATC.*

When Traffic Information was passed to the Tutor pilot on the light aircraft, the Wittering Zone controller described it as 'pop-up' and at a range of 2nm, which is not accurate when compared to the replay data and not timely if the light aircraft was actually displayed on the Wittering Zone controller's radar screen throughout, especially considering that it was receiving a service from them. It would be a reasonable expectation that the controller should have passed more timely Traffic Information, subject to workload. That said, the transcripts indicate that the pilot was able to visually acquire the traffic soon after.

The Tutor pilot's narrative suggests that they were at 4700ft RPS 1015HPa, higher than depicted in the radar replay and that they were not visual when the TI was first passed. A manoeuvre to both deconflict and get a better view allowed a late sighting of the conflicting aircraft, which was described as possibly a Robin. The aircraft was equipped with TAS but received a late alert, when the conflicting traffic was at range of approximately 1nm.

Given the lack of information provided in the DASOR submitted by Wittering ATC e.g. no detail of controller workload, radar picture, etc. and the discrepancies between the Tutor pilot's narrative and the transcripts and replay, it is difficult to get a full understanding of the controlling situation at the time of the occurrence, however, ATC was a failed barrier in this instance. This highlights the importance of Airprox being reported either on frequency or by landline as soon as possible after the event.

## UKAB Secretariat

The Tutor and Europa 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>1</sup>. If the incident geometry is considered as converging then the Europa pilot was required to give way to the Tutor<sup>2</sup>.

## Comments

### HQ Air Command

First and foremost, the investigation into this incident was severely hampered by delays in informing and tracing the pilots and controllers involved; it should serve as a reminder to all pilots involved in Airprox of the importance of declaring it on the frequency in use at the time of the incident, or at the earliest opportunity after landing.

From the limited evidence, it seems that all the expected barriers to MAC in a Class G environment were available – the Tutor was equipped with a TAS and the Europa with a transponder that could interact with it; both pilots were in receipt of an Air Traffic Service; and the prevailing weather conditions do not appear likely to have impeded the ability of either crew to see-and-avoid the other aircraft. However, the TAS barrier was weakened as there was no alert prior to visual acquisition of the Europa by the Tutor pilot, and the ATS barrier was probably weakened by a combination of the Europa pilot's choice of ATS (Basic, rather than Traffic) and the lack of timely and effective TI from the Wittering controller (though the reasons why the TI was not forthcoming are not apparent from the evidence available). When TI was issued, the Tutor pilot manoeuvred to improve his chances of visual acquisition, and it is this combination of the TI and aircraft manoeuvring that enabled the Tutor pilot to visually acquire the Europa and increase separation.

This incident shows that, even when the barriers to MAC are all in place, aircraft can still get close to each other. Pilots should not place an overreliance on any single barrier (such as TAS or ATS) and should continually conduct a thorough visual scan outside the cockpit.

## Summary

An Airprox was reported when a Tutor and a Europa flew into proximity at 1031 on Friday 23<sup>rd</sup> September 2016. The Tutor pilot was operating under VFR in VMC, in receipt of a Traffic Service from Wittering on UHF. The Europa pilot was believed to be in receipt of a Basic Service from Wittering on VHF. The Tutor pilot was issued with Traffic Information on 'pop-up' traffic, which he sighted 100ft above and 200 yards laterally. The Europa pilot had no recollection of seeing the Tutor.

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

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

The Board were disappointed that a full report from the pilot of the Europa and the Wittering controller were not available due to the fact that the Tutor pilot had not reported an Airprox on the Wittering frequency, either in the air or on the ground after landing. Unfortunately, on his subsequent report the time of the Airprox had been incorrectly stated and this had made it difficult to establish the identity of the other aircraft and the controller concerned. By the time the Europa pilot had been informed about the Airprox, some months after it had happened, it was understandable that he could not remember the specific details of his flight. Fortunately, he did recollect that that neither him, nor his passenger, saw any other aircraft in close proximity. The Board wholeheartedly endorsed the HQ Air Command comments that stressed the importance of pilots filing an Airprox as soon as possible,

<sup>1</sup> SERA.3205 Proximity.

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

ideally notifying their intention on the frequency if practical so that ATC and other pilots who might be involved could ensure that details were recorded.

The Board noted that both pilots were operating under VFR in VMC outside CAS. The Tutor pilot was in receipt of a Traffic Service on UHF and the Europa pilot was in receipt of a Basic Service on VHF, both from the same Wittering controller. Some Board members wondered why the Tutor pilot would not have been operating on the VHF frequency given that the most likely threat from airborne conflict was from civilian GA aircraft. The Military HQ BM Safety advisor explained that the UHF frequency is used as a 'quiet frequency' for Tutor operations in order to allow pilot training to continue without the background noise from the number of calls made on the VHF frequency. Board members understood the rationale for this comment, but some members remained unconvinced that the Wittering VHF frequency would be so busy as to make it unworkable.

The Board then discussed the actions of the Wittering Zone controller. He had identified the Tutor and had agreed a Traffic Service with the pilot at 1028:29. Shortly afterwards, at 1028:37, the radar recording shows the Europa's SSR code change to a Wittering squawk, to indicate that the pilot was receiving a Basic Service from the controller. However, it was not until 1030:59 (2mins 22secs later) that Traffic Information was issued to the Tutor pilot on 'pop-up' traffic at 2nm, tracking south, indicating 300ft above. The radar recording shows the aircraft were 1nm apart at the time, after which the Tutor pilot reported the other aircraft in sight. ATC members commented that, although a recording of the radar used by the Wittering controller was not available, the fact that the Europa had changed to a Wittering squawk was indicative that it was in communication with the controller and it was likely that it would have been displayed on the radar some time before the information was passed to the Tutor pilot. ATC members were nonplussed as to why Traffic Information had not been issued earlier, and wondered whether the controller had been distracted from his display during that period. The fact that ATC did not pass timely Traffic Information to the Tutor pilot who was under a Traffic Service was considered to be a contributory factor. Equally, although only under a Basic Service, ATC members considered that duty of care requirements meant that the controller should probably have issued Traffic Information to the Europa pilot also.

The Board noted that the Tutor pilot reported that he had received a late return on TAS, with the other aircraft only indicating at approximately 1nm. Late warning returns from Tutor TAS have been reported in previous Airprox, and GA members wondered if the cause of these late warnings could be due to the relative positioning of the transponder and TAS aerials on the aircraft. That being said, with the Europa being above the Tutor, it would be expected that the Europa's under-fuselage transponder aerial would be relatively unblanked to the Tutor.

The Board then looked at the safety barriers that were relevant to this Airprox and decided that the following were key contributory factors:

- **ATS Conflict Detection and Resolution** was considered as only **partially effective** because the controller did not detect the conflict sufficiently early to pass timely Traffic Information to the Tutor pilot, and did not provide any Traffic Information to the Europa pilot.
- **Flight Crew Situational Awareness** was also considered to have been **partially effective** because although late, the Tutor pilot was informed about the other aircraft and did receive a TAS alert, albeit also late.
- **Onboard Warning/Collision Avoidance Equipment** was assessed as only **partially effective** because although the Tutor pilot did receive a TAS alert, it was only at 1nm. The Europa pilot's aircraft was not equipped with any collision avoidance equipment but, because his aircraft was transponding, this allowed the Tutor's TAS to warn its pilot of the Europa's presence.

The Board then turned its attention to the cause and risk of the Airprox. The Board confirmed that, ultimately, because both pilots were operating in Class G airspace it was their responsibility to 'see

and avoid' each other despite the assistance of ATC. The Tutor pilot reported that he had received a TAS alert when the two aircraft were 1nm apart, had seen the Europa approximately 100ft above at a range of 200yd, and had carried out a wing-rock but with no response from the Europa pilot. Although the Europa pilot could not recollect the specific details of his flight, he did report that neither him, nor his passenger, could remember seeing any aircraft in close proximity. Accordingly, the Board concluded that the cause of the Airprox was a late sighting by the Tutor pilot and a possible a non-sighting by the Europa pilot. Notwithstanding the pilots' own responsibilities, the Board also agreed that the fact that ATC had not passed timely Traffic Information to the Tutor pilot when he was under a Traffic Service was a contributory factor. Turning to the risk, the Board noted that although the Europa pilot had not seen the Tutor and the Tutor pilot only obtained a late sighting of the Europa, the Tutor pilot did have time to wing-rock to acknowledge his sighting and could therefore have taken avoiding action if he had considered it necessary. As a result, the Board judged that although safety had been degraded, there had been no risk of a collision and the Airprox was therefore assessed as risk Category C.

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

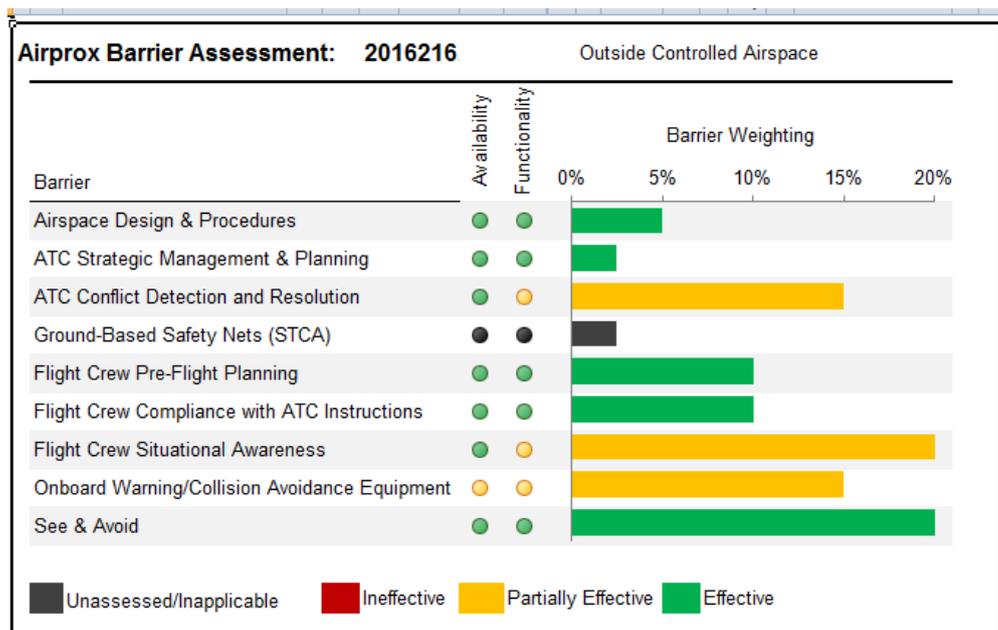
**Cause:** A late sighting by the Tutor pilot and a possible a non-sighting by the Europa pilot.

**Contributory Factor:** ATC did not pass timely Traffic Information to the Tutor pilot.

**Degree of Risk:** C.

**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).<sup>3</sup> 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, or Unassessed/Inapplicable). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident.

<sup>3</sup> 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.