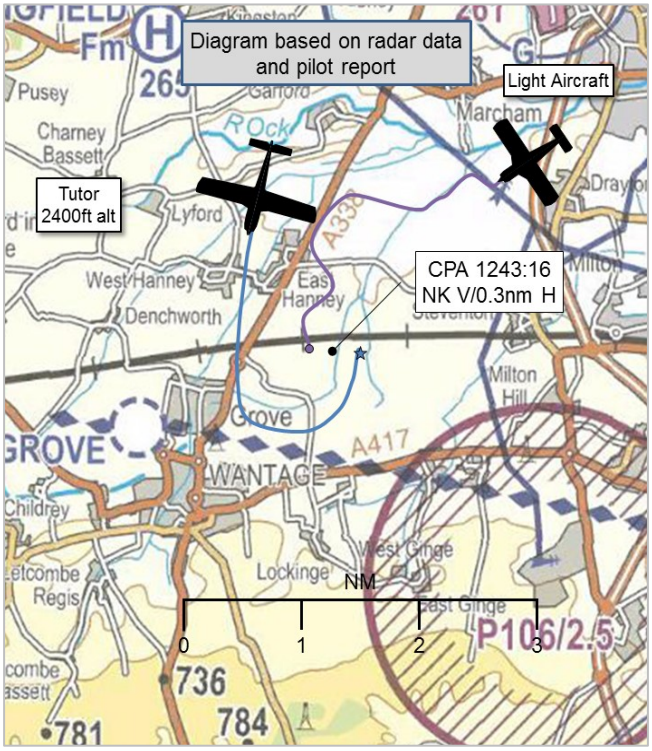
AIRPROX REPORT No 2016180

Date: 09 Aug 2016 Time: 1243Z Position: 5137N 00123W Location: NE of Wantage

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Tutor	Light Aircraft
Operator	HQ Air (Trg)	Unknown
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	NK
Service	Traffic	
Provider	Benson	
Altitude/FL	2400ft Alt	NK
Transponder	On/C, S	None
Reported		
Colours	White, Blue	NK
Lighting	Nav, Landing, HISL	
Conditions	VMC	
Visibility	25km	
Altitude/FL	4000ft	
Altimeter	QNH (1018hPa)	
Heading	90°	
Speed	100kt	
ACAS/TAS	TAS	
Alert	None	
Separation		
Reported	0ft V/100-200ft H	NK
Recorded	NK V/0.3nm H	



THE TUTOR PILOT reports that the aircraft was climbing through 4000ft approx. 3nm east of Wantage in order to gain altitude and clear airspace for aerobatics. Traffic information was passed by Benson ATC and a white low-wing aircraft was seen closing; he initially thought it was another Tutor. No FLARM or TAS indications were seen and he questioned ATC whether it was a Tutor but they confirmed primary contact only. The other aircraft then started to manoeuvre around and closer to his aircraft, closing inside 0.5-1nm; it appeared to be trying to position and maintain in his 6 o'clock. He attempted several turns to move away, but the aircraft persisted then broke away to the right, before again manoeuvring to position very close behind in his 6 o'clock. At this stage he elected to descend to a lower level in an attempt to move away, while informing ATC of the descent and attempting to reassure the cadet. The other aircraft then broke away. He says that the uninvited actions by the other pilot curtailed his sortie, compromised safe separation and degraded his ability to monitor other traffic and aircraft systems for the duration of the incident. After landing, he spoke to the Benson Approach Controller who confirmed his recollection of the incident and positioning. The other aircraft was predominantly white with some blue or black markings, low wing, fixed gear, nose wheel. He maintained his IAS of 100-120kts. No TAS or FLARM indications were seen.

He assessed the risk of collision as 'Medium to Low'.

THE LIGHT AIRCRAFT PILOT could not be traced.

THE BENSON CONTROLLER reports that he was the Approach controller at the time of the incident. He was controlling 3 general handling Tutors and 1 helicopter. He recalls that all aircraft were operating under a Traffic Service. Meteorological conditions were 'Blue' with multiple gliders operating in the vicinity of Benson. FLARM was displayed in the Approach room with the Supervisor being able to help with additional information on primary only contacts. The Tutor was operating

approximately 10nm to the west of Benson general handling between the surface and the base of controlled airspace on the Benson QNH. He called traffic South East of the Tutor at 3nm, tracking North West, slow moving, no height information. No information was displayed on FLARM. The Tutor pilot responded not visual. The primary contact then manoeuvred around the Tutor. The tutor then asked if another company Tutor was operating in his vicinity, he replied that the other Tutor was South West by 5 miles. The Tutor pilot thought that the primary contact was 'tail chasing him'. When asked if he required assistance the Tutor pilot said he did not. The Tutor returned to Benson within 5 minutes. The Tutor pilot stated that the other aircraft involved looked like a Jabiru[1]. The Tutor pilot did not declare an Airprox at the time. He tried to maintain track identity on the primary contact in order to obtain where it was from, however it faded from radar cover. He also phoned adjacent units asking if they had worked a Jabiru in the area but they had not.

He perceived the severity of the incident as 'Low'.

Factual Background

The weather at Benson was recorded as follows:

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METAR EGUB 091250Z 29010KT 9999 BKN048 19/05 Q1025 BLU NOSIG
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Analysis and Investigation

Military ATM

An Airprox occurred on 16 Aug 16 at approximately 1245 UTC, 3nm East of Wantage between a Tutor conducting general handling and a low-wing, single-engine, light-aircraft. The Tutor was receiving a Traffic Service from RAF Benson when the light aircraft appeared and began to manoeuvre in close proximity, as though tail-chasing the Tutor.

Portions of the tape transcripts between Benson and the Tutor are below:

From	To	Speech Transcription	Time
[Tutor C/S]	Benson App	Benson, [Tutor C/S], is the other Tutor in the same vicinity as myself.	12:45:02
Benson App	[Tutor C/S]	[Tutor C/S], err [Non Airprox Tutor #1 C/S]'s currently South West of you five miles.	12:45:06
Benson App	[Tutor C/S]	[Tutor C/S], there is err one primary contact within one mile currently West of you tracking East bound slow moving no height information.	12:45:18
[Tutor C/S]	Benson App	Err [Tutor C/S], he's very close to me.	12:45:28
[Tutor C/S]	Benson App	Benson, [Tutor C/S], the other primary contact that's in my right three o'clock currently, approximately two nautical miles, is he transponding?	12:46:13
Benson App	[Tutor C/S]	[Tutor C/S], err that is the primary contact I was talking about err no mode… no transponder and nothing seen on FLARM.	12:46:24
[Tutor C/S]	Benson App	[Tutor C/S], roger.	12:46:32
Benson App	[Tutor C/S]	[Tutor C/S], are you still visual with that traffic?	12:46:45
[Tutor C/S]	Benson App	Affirm...Yep. He's trying to manoeuvre around me I think.	12:46:48
Benson App	[Tutor C/S]	[Tutor C/S], roger. Would you like to manoeuvre in the Oxford area?	12:46:54

[1] A Jabiru is a high wing aircraft, the Tutor pilot report a low wing aircraft.

From	To	Speech Transcription	Time
[Tutor C/S]	Benson App	[Tutor C/S], just standing by I think this other contact appears to be trying to err tail chase me so I'm just staying straight and level at this time.	12:47:00
Benson App	[Tutor C/S]	Roger.	12:47:09
Benson App	[Non Airprox Tutor #1 C/S]	[Non Airprox Tutor #1 C/S], traffic South West, one mile, tracking north bound indicating one hundred feet below.	12:47:21
[Non Airprox Tutor #1 C/S]	Benson App	Visual [Non Airprox Tutor #1 C/S].	12:47:27
[Tutor C/S]	Benson App	[Tutor C/S], I'm just descending to low level.	12:47:36
Benson App	[Tutor C/S]	[Tutor C/S], Roger. Do you require any assistance?	12:47:40
[Tutor C/S]	Benson App	Err Negative. That contact has now turned away	12:47:44
Benson App	[Tutor C/S]	Roger.	12:47:47
[Non Airprox Tutor #1 C/S]	[Tutor C/S]	[Tutor C/S], from err [Non Airprox Tutor #2 C/S] did you get a registration?	12:47:55
[Tutor C/S]	[on Airprox Tutor #2 C/S]	[Tutor C/S], a negative.	12:47:59
[Non Airprox Tutor #2 C/S]	[Tutor C/S]	… …	12:48:03
[Non Airprox Tutor #2 C/S]	Benson App	Benson Approach, [Non Airprox Tutor #2 C/S], we're now inbound for a visual recovery and we'll be for a err no comms re-join.	12:48:05
Benson App	[Non Airprox Tutor #2 C/S]	[Non Airprox Tutor #2 C/S], copied. Benson operating runway zero one right hand. QFE one zero one nine. Report visual with the aerodrome.	12:48:13
[Non Airprox Tutor #2 C/S]	Benson App	Zero one err right hand, one zero one nine. [Non Airprox Tutor #2 C/S] will report when visual. Err correction will report visual [Non Airprox Tutor #2 C/S].	12:48:20
Benson App	[Tutor C/S]	[Tutor C/S], would you like us to try and keep tabs on the err primary contact?	12:48:28
[Tutor C/S]	Benson App	[Tutor C/S], affirm. I'll have to err try and raise a DASOR on that. I'm currently abeam Didcot err looking for visual recovery.	12:48:33
Benson App	[Tutor C/S]	[Tutor C/S], roger, traffic left, eleven o'clock, two and a half miles, crossing left right, slow moving, no height information.	12:48:40
[Tutor C/S]	Benson App	[Tutor C/S], roger.	12:48:48

The radar analysis shows a primary contact in close vicinity to the Tutor which first appears at 12:41:38 then disappears and reappears over a period of several minutes until the Tutor calls for recovery at 12:48:33. During this time, the Benson Approach controller was working two other general handling Tutors and an IFR departure. The 2 aircraft were closest at 12:43:47 (Figure 1).

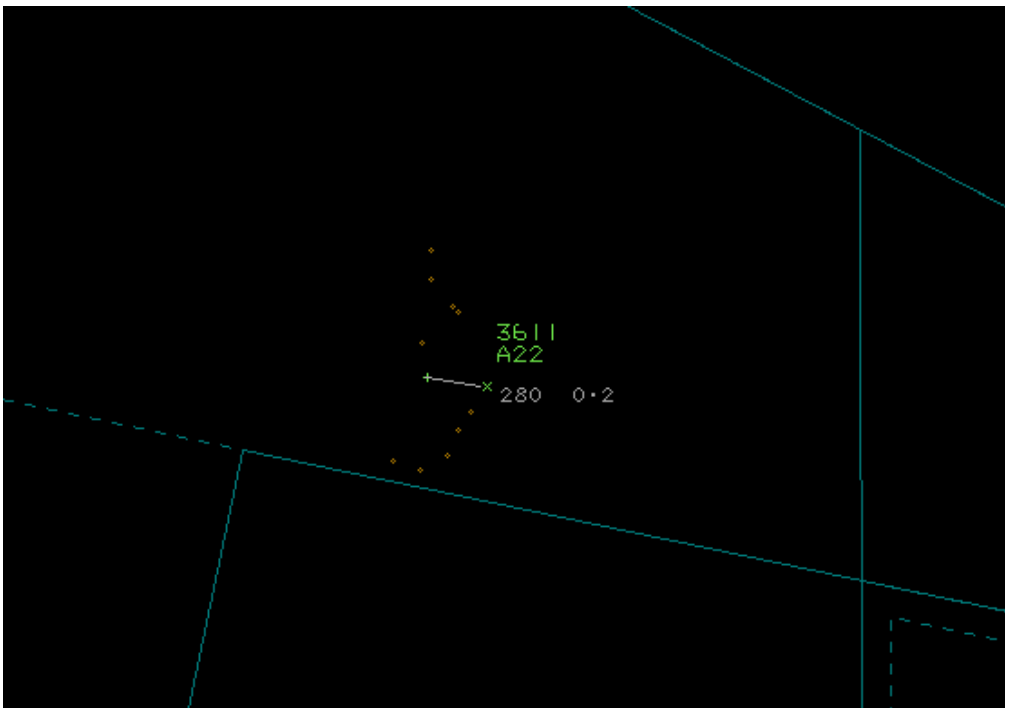


Figure 1: Geometry at 12:43:47 (Tutor SSR 3611; primary contact)

At 12:45:18 (Figure 2), Benson Approach passed traffic information on a primary contact to the West and within 1nm of the Tutor.

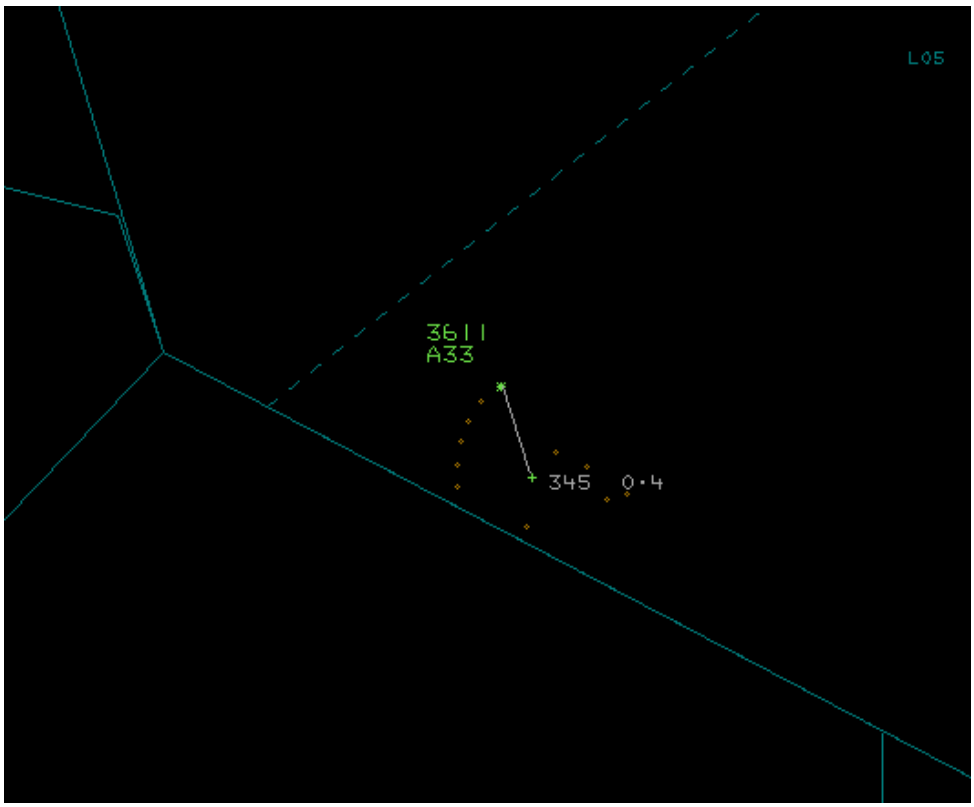


Figure 2: Geometry at 12:45:18 (Tutor SSR 3611; primary contact)

At 12:47:00 (Figure 3), the Tutor pilot described the movements of the light aircraft as tail-chasing. Although not visible at that time, throughout the period radar analysis shows that the primary

contact follows a similar flight path to the Tutor and correlates with the pilot's report of the conflicting aircraft positioning itself in the Tutor's 6 o'clock.

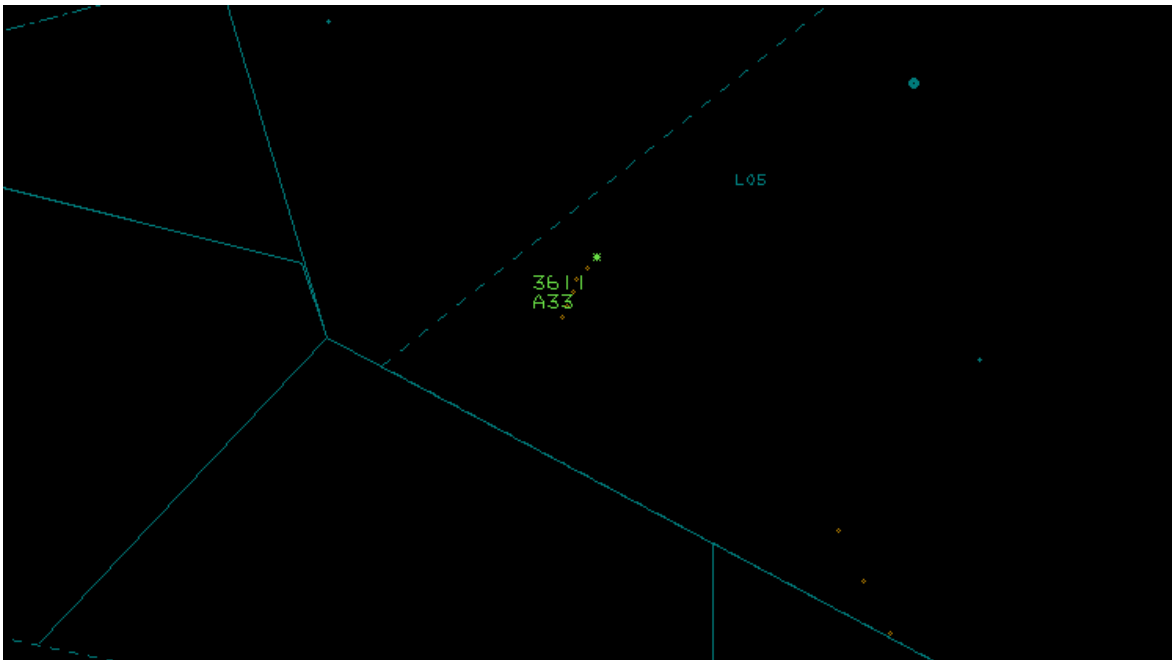


Figure 3: Geometry at 12:47:00 (Tutor squawking 3611; primary contact not shown on radar)

The Benson Approach Controller reported passing the Tutor pilot traffic information on the primary contact, first at a range of 3nm and again as the primary contact moved closer. Although not always timely or accurate, the information allowed the pilot to acquire the light aircraft visually. The Benson Supervisor used the FLARM display in the approach room in order to try to identify the light aircraft, however there was no correlating information.

The Pilot's report indicates the uninvited nature of the other aircraft and that they felt safe separation had been compromised; that said, traffic information and lookout were both effective barriers. The lack of SSR code on the radar display, along with reported lack of TAS or FLARM information, would indicate the light aircraft was not transponding nor FLARM equipped, making these two barriers ineffective.

UKAB Secretariat

The Tutor and Light Aircraft pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[2]. If the incident geometry is considered as overtaking (the unknown aircraft following the Tutor) then the Tutor pilot had right of way and the Light aircraft pilot was required to keep out of the way of the other aircraft by altering course to the right[3].

The radar recordings show the Tutor in proximity to unknown aircraft three times during the sortie (Figures 4, 5 and 6). Unfortunately it is not possible to determine if this was the same aircraft as that reported near Wantage because the contact is intermittent and therefore cannot be positively tracked throughout the encounter. As only primary-radar tracks, no height information is available to determine the vertical separation from the Tutor. Figure 4 has been used as the main Airprox CPA, this is based on the area the Tutor pilot reported the Airprox occurring but this may not be the closest point (vertically and horizontally) that the aircraft came due to the absence of Mode C from the unknown light aircraft.

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

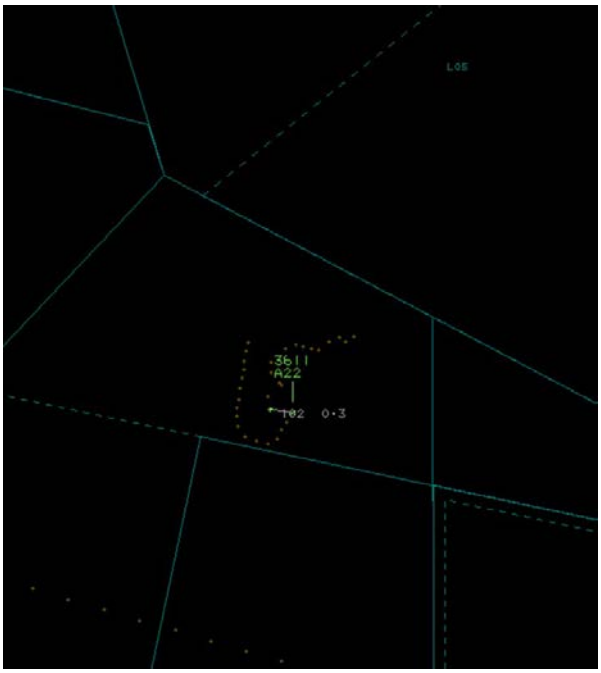


Figure 4: 1243

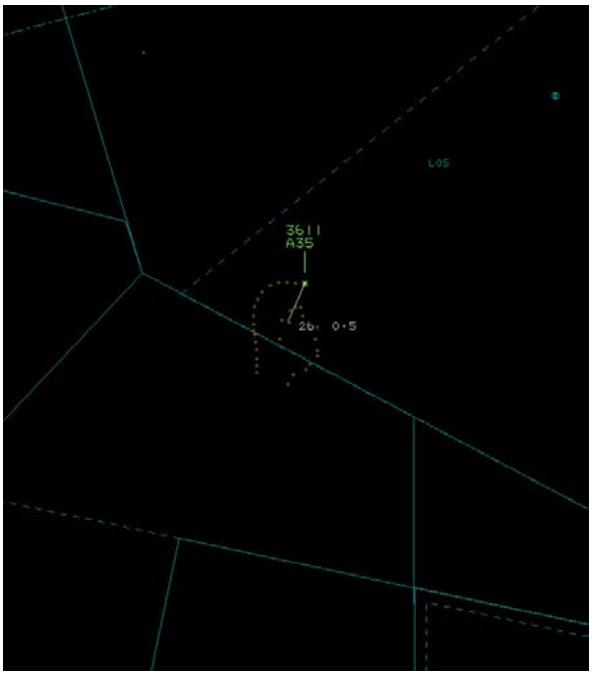


Figure 5: 1247

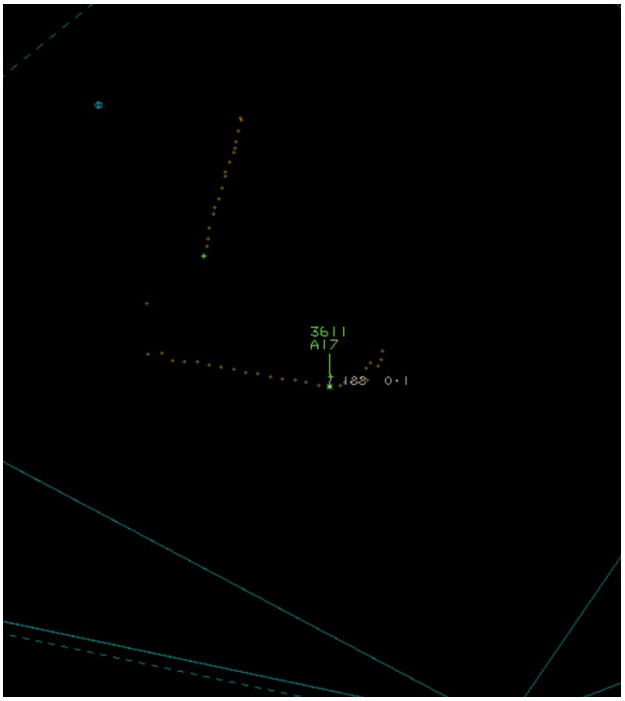


Figure 6: 1249

Comments

HQ Air Command

It is a shame that the pilot of the other aircraft could not be traced so that we could understand his intentions. The radar replays indicate intermittent primary contacts with an aircraft in the vicinity of the Tutor which support the Tutor pilot's version of events; however, without any electronic conspicuity aids (Transponder or FLARM) or use of radios, we cannot confirm what the other aircraft was doing. The Tutor pilot was convinced that it was trying to 'tail chase' with him which, if this was the case, could be regarded as reckless behaviour. Regardless of the unknown aircraft's intentions, safe separation was compromised, albeit that the pilots were in visual contact with each other.

Summary

An Airprox was reported when a Tutor and a Light aircraft flew into proximity at 1243 on Tuesday 9th August 2016. The Tutor pilot was operating under VFR in VMC and in receipt of a Traffic Service from Benson. The Light aircraft pilot could not be traced.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of a report from the Tutor pilot, 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 were disappointed that it had not been possible to trace the unknown light aircraft pilot; a report from the other aircraft involved in the Airprox would have enabled them to fully determine the actions and intentions of both pilots and reach a better understanding of the incident, this would have resulted in allowing them to determine the cause and degree of risk effectively. GA members highlighted that civilian aircraft don't normally tail-chase other aircraft; notwithstanding, they acknowledged that the Tutor pilot was of the opinion that this had been the case. Some members wondered if the encounter had simply been a coincidence of track alterations by the unknown pilot as he tried to avoid the Tutor but, without his perspective on the incident, this was impossible to substantiate just from the intermittent radar returns from the other aircraft.

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

- **Onboard Warning/Collision Avoidance Equipment** was assessed as being **ineffective** because the unknown light aircraft either did not have a transponder fitted or switched on and therefore the Tutor's TAS was not able to function to alert the Tutor pilot to the other aircraft's proximity.

The Board then considered the cause and risk of the incident. They agreed that the aircraft had been in proximity to each other and that the Tutor pilot had believed the other aircraft was deliberately flying close to his aircraft. Unable to assess the separation between them or intentions of the other aircraft, the incident was assessed as the Tutor pilot being concerned by the proximity of the unknown light aircraft. Turning to the risk, members reluctantly agreed that there was insufficient evidence to reach a conclusion, and so the Board assessed the risk as Category D.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Tutor pilot was concerned by the proximity of the unknown light aircraft.

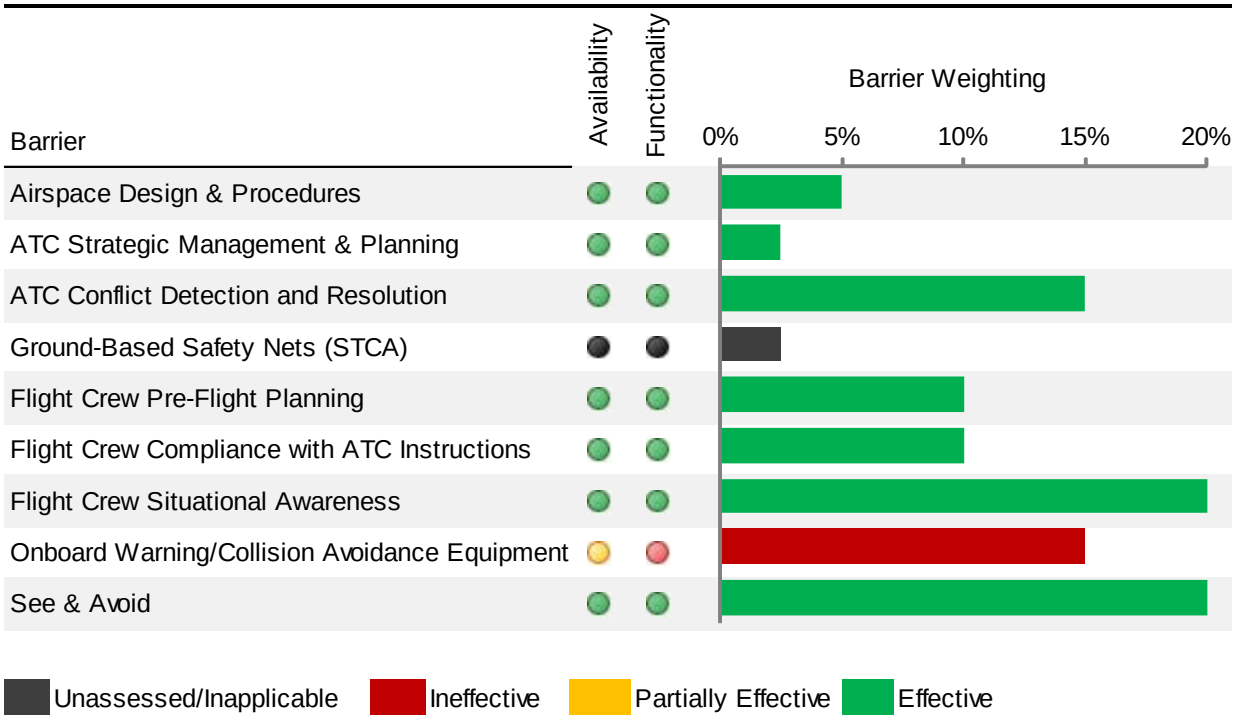
Degree of Risk: D.

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).[4] 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.

[4] 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.

Airprox Barrier Assessment: Outside Controlled Airspace



Barrier Effectiveness		Functionality		
		Non-functional	Partially Functional	Functional
Availability		**1**	**2**	**3**
Completely Unavailable	**1**	1	2	3
Partially Available	**2**	2	4	6
Available	**3**	3	6	9

Key:

- Effective
- Partially Effective (If the system was partially available but fully functional score availability as 2.5)
- Ineffective
- Unassessed/Inapplicable

Barrier	Availability			Functionality			Unassessable / Absent
	Fully (3)	Partially (2)	Not Available (1)	Fully (3)	Partially (2)	Non Functional (1)	
Airspace Design and Procedures	Appropriate airspace design and/or procedures were available	Airspace design and/or procedures were lacking in some respects	Airspace design and/or procedures were not appropriate	Airspace design and procedures functioned as intended	Airspace design and/or procedures did not function as intended in some respects	Airspace design and/or procedures did not function as intended	The Board either did not have sufficient information to assess the barrier or the barrier did not apply; e.g. TCAS not fitted to either aircraft or ATC Service not utilised. Note: The Board may comment on the benefits of this barrier if it had been available
ATC Strategic Management and Planning	ATM were able to man and forward plan to fully anticipate the specific scenario	ATM were only able to man or forward plan on a generic basis	ATM were not realistically able to man for or anticipate the scenario	ATM planning and manning functioned as intended	ATM planning and manning resulted in a reduction in overall capacity (e.g. bandboxed sectors during peak times)	ATM planning and manning were not effective	
ATC Conflict Detection and Resolution	ATS had fully serviceable equipment to provide full capability	ATS had a reduction in serviceable equipment that resulted in a minor loss of capability	ATS had a reduction in serviceable equipment that resulted in a major loss of capability	The controller recognised and dealt with the confliction in a timely and effective manner	The controller recognised the conflict but only partially resolved the situation	The controller was not aware of the conflict or his actions did not resolve the situation	
Ground-Based Safety Nets (STCA)	Appropriate electronic warning systems were available	Electronic warning systems is not optimally configured (e.g. too few/many alerts)	No electronic warning systems were available	Electronic warning systems functioned as intended, including outside alerting parameters, and actions were appropriate	Electronic warning systems functioned as intended but actions were not optimal	Electronic warning systems did not function as intended or information was not acted upon	
Flight Crew Pre-Flight Planning	Appropriate pre-flight operational management and planning facilities were deemed available	Limited or rudimentary pre-flight operational management and planning facilities were deemed available	Pre-flight operational management and planning facilities were not deemed available	Pre-flight preparation and planning were deemed comprehensive and appropriate	Pre-flight preparation and/or planning were deemed lacking in some respects	Pre-flight preparation and/or planning were deemed either absent or inadequate	
Flight Crew Compliance with Instructions	Specific instructions and/or procedures pertinent to the scenario were fully available	Instructions and/or procedures pertinent to the scenario were only partially available or were generic only	Instructions and/or procedures pertinent to the scenario were not available	Flight crew complied fully with ATC instructions and procedures in a timely and effective manner	Flight crew complied later than desirable or partially with ATC instructions and/or procedures	Flight crew did not comply with ATC instructions and/or procedures	
Flight Crew Situational Awareness	Specific situational awareness from either external or onboard systems was available	Only generic situational awareness was available to the Flight Crew	No systems were present to provide the Flight Crew with situational awareness relevant to the scenario	Flight Crew had appropriate awareness of specific aircraft and/or airspace in their vicinity	Flight Crew had awareness of general aircraft and/or airspace in their vicinity	Flight Crew were unaware of aircraft and/or airspace in their vicinity	
Onboard Warning/Collision Avoidance Equipment	Both aircraft were equipped with ACAS/TAS systems that were selected and serviceable	One aircraft was equipped with ACAS/TAS that was selected and serviceable and able to detect the other aircraft	One aircraft was equipped with ACAS/TAS that was selected and serviceable but unable to detect the other aircraft (e.g. other aircraft not transponding)	Equipment functioned correctly and at least one Flight Crew acted appropriately in a timely and effective manner	ACAS/TAS alerted late/ambiguously or Flight Crew delayed acting until closer than desirable	ACAS/TAS did not alert as expected, or Flight Crew did not act appropriately or at all	
See and Avoid	Both pilots were able to see the other aircraft (e.g. both clear of cloud)	One pilots visibility was uninhibited, one pilots visibility was impaired (e.g. one in cloud one clear of cloud)	Both aircraft were unable to see the other aircraft (e.g. both in cloud)	At least one pilot takes timely action/inaction	Both pilots or one pilot sees the other late and one or both are only able to take emergency avoiding action	Neither pilot sees each other in time to take action that materially affects the outcome (i.e. the non-sighting scenario)	