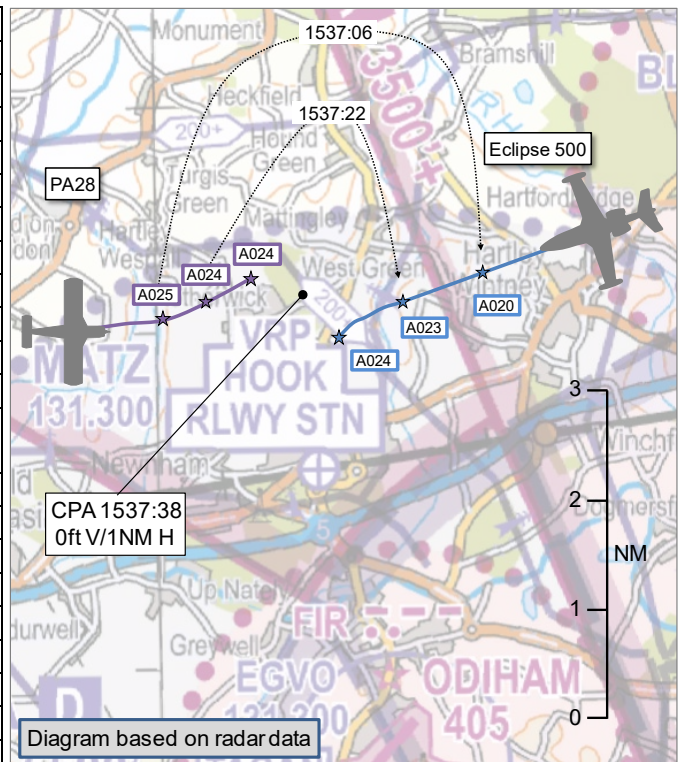


**AIRPROX REPORT No 2024150**

Date: 26 Jun 2024 Time: 1538Z Position: 5118N 00058W Location: IVO Blackbushe

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	Eclipse 500	PA28
Operator	Civ Comm	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Establishing	None
Provider	Farnborough	N/A
Altitude/FL	2400ft	2400ft
Transponder	A, C, S+	A, C, S
Reported		
Colours	White	Silver
Lighting	Nav, Strobe, Taxi	Nav, Anti-cols, Strobe, Landing
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2200ft	2500ft
Altimeter	QNH (1011hPa)	QNH (1011hPa)
Heading	260°	080°
Speed	180kt	100kt
ACAS/TAS	TCAS I	SkyEcho
Alert	TA	None
Separation at CPA		
Reported	200ft V/1NM H	Not Seen
Recorded	0ft V/1NM H	



**THE ECLIPSE 500 PILOT** reports that during the climb, passing 2000ft climbing to 3000ft as cleared on first contact with Farnborough Radar, traffic was noted on TCAS and an avoiding turn left, heading 180°, was issued by the Radar controller. The pilot self-levelled at 2300ft. The traffic was showing as 2500ft, 1 o'clock, 3NM. They were VMC into sun. They continued with the heading and further climb under a Deconfliction Service from Farnborough Radar.

The pilot assessed the risk of collision as 'Medium'.

**THE PA28 PILOT** reports that their recollection on this event was hazy - this was the sixth training flight in the local area over two days. Had they not received an email requesting further information they would have been unaware of the Airprox. They were on a training flight with a very low-hours student. At the time and location stated on the email, they were in a descent through the northern edge of the Odiham MATZ and they would have been in the process of transferring from Farnborough to Blackbushe. They believed that they were receiving a Basic Service from Farnborough but could not be certain, they may have been on a listening squawk.

**THE FARNBOROUGH CONTROLLER** reports that they had been retrospectively informed of an Airprox involving a Blackbushe IFR departure and an unknown aircraft. They had no recollection of the incident due to the time elapsed and the Airprox not being reported on the frequency at the time.

**THE BLACKBUSHE AFISO** reports that they were not made aware of the Airprox at the time of the event.

## Factual Background

The weather at Farnborough was recorded as follows:

METAR EGLF 261520Z AUTO VRB05KT 9999 NCD 28/12 Q1010=

## Analysis and Investigation

### Blackbushe Occurrence Investigation<sup>1</sup>

On Friday 5<sup>th</sup> July Blackbushe Airport was notified by the UKAB of the Airprox. Blackbushe Airport was not made aware of the occurrence at the time, but has conducted a brief unit investigation as below, including reviewing recordings of the Blackbushe frequency 122.305MHz, as well as ADS-B traces of the two aircraft.

The operator [of the ECLIPSE 500] was contacted to understand their concerns. In a telephone discussion with the operator's Safety Officer, they informed Blackbushe that whilst they did not feel the distance between aircraft in either occurrence was particularly close, they did record the occurrences with a concern of "What if?". They had consulted informally with the AAIB and were recommended to file an Airprox report.

The FISO on duty at the time was not aware of an Airprox. The departure of [Eclipse 500 C/S] from Blackbushe was dealt with in accordance with usual procedures and relayed a clearance from Farnborough to the west not above altitude 3000ft. [The pilot of the Eclipse 500] was passed all Traffic Information on relevant traffic when they departed, and was then handed to Farnborough.

On departure, no information was given to [the pilot of the Eclipse 500], as [the PA28 pilot] did not contact Blackbushe until a few minutes after [Eclipse 500 C/S] had left the frequency. Likewise no information was given to [PA28 C/S] as [Eclipse 500 C/S] had departed some time earlier, was under the control of Farnborough, and [the PA28] was too far out to be provided with a Traffic Service.

IFR departures from Blackbushe are relayed a clearance from TC/Farnborough. These will follow a standard structure when departing from each runway. For Runway 25, this clearance is:

Farnborough instructs "callsign" to depart on track to the West remaining outside Controlled Airspace, climb to altitude 3000ft, squawk xxxx, QNH yyyy. Next frequency Farnborough Radar 134.355.

[The pilot of the Eclipse 500] was provided with this clearance, along with relevant Traffic Information on a Sonaca S200 which had departed ahead and was to remain in the circuit, and on [another aircraft] descending on the deadside. They were not provided information on [PA28 C/S] as this aircraft was not known to Blackbushe at the time.

Following Airprox 2024023, one issue which was raised was regarding the service provision to aircraft outside the Blackbushe ATZ. We subsequently issued BAOP093 to our FISOs which ensured pilots were made aware that we are only able to provide a Basic Service to aircraft outside the ATZ. We are pleased to see that this is being properly communicated from the airband recording transcript above.

In our assessment [this] occurrence [did not] result in a compromise in aircraft safety. Without seeing the pilot account or receiving their perspective, we are unable to make a complete assessment of the root cause. When considering the actions of the AFIS unit, the FISO was not in a position to provide [the Eclipse 500 pilot] with Traffic Information on [the PA28], and [the PA28 pilot] first established contact at or just after the time filed in the Airprox report.

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<sup>1</sup> The Blackbushe investigation covered two incidents, therefore only the portions which cover this Airprox are reproduced here.

## NATS Investigation

The UK Airprox Board notified Safety Investigations of a pilot-reported Airprox from the pilot of [Eclipse 500 C/S] whilst receiving a service from Farnborough ATC. [Eclipse 500 C/S] was an IFR Blackbushe departure that was correctly released by Farnborough. On initial contact the controller under training applied a Traffic Service and immediately provided Traffic Information on an unknown aircraft, outside controlled airspace, on an opposite direction track to [Eclipse 500 C/S]. Avoiding Action instructions were then issued to deconflict the two aircraft. The pilot of [Eclipse 500 C/S] did not report an Airprox on the frequency.

### Description of the event

A release for [Eclipse 500 C/S] was requested by Blackbushe Tower at 1534:14 (all times UTC) and approved as per procedure. [Eclipse 500 C/S] departed Blackbushe at approximately 1536. The pilot of [Eclipse 500 C/S] subsequently contacted the Farnborough Approach controller under training (LF APP U/T) at 1536:33, reporting climbing to 3000ft and was initially told to standby whilst the LF APP U/T controller co-ordinated unrelated traffic with London Control. Farnborough Radar displayed Short-term Conflict Alert (STCA) activated at 1536:59 between [Eclipse 500 C/S] and a 7000 squawk ([PA28 C/S]) on opposite direction tracks.

The LF APP U/T controller responded to the pilot of [Eclipse 500 C/S] at 1537:01 and agreed a Traffic Service outside controlled airspace (oCAS) and immediately provided Traffic Information on [PA28 C/S] (Figure 1, 2): *“Traffic service, traffic in your right, one o’clock, two miles indicating altitude two thousand five hundred feet, opposite direction.”* The pilot of [Eclipse 500 C/S] responded *“looking for traffic.”* The LF APP U/T then immediately issued at 1537:21, *“avoiding action turn left heading one eight zero degrees”*, which was acknowledged.

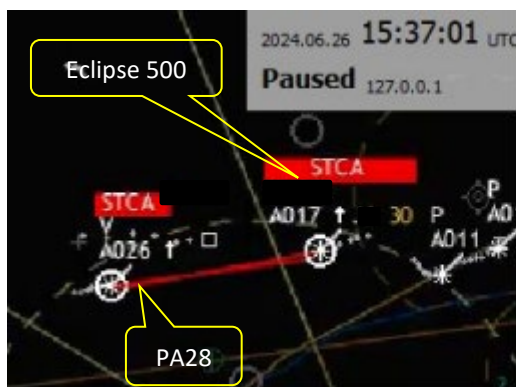


Figure 1 - Farnborough Radar

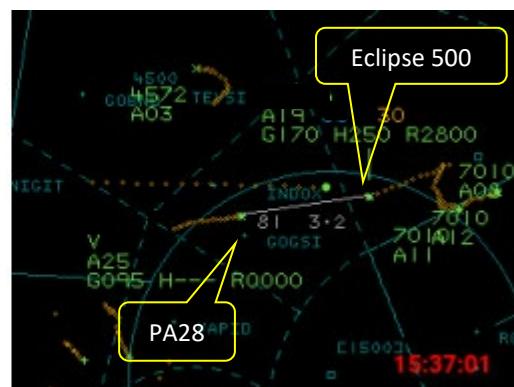


Figure 2 - Node Radar

[PA28 C/S] was inbound to Blackbushe and displayed Mode A squawk 7000, previously displaying Mode A 4572 and not in receipt of an Air Traffic Service from Farnborough. At approximately 1537:15, Node Radar displayed [PA28 C/S] enact a left turn, potentially to avoid [Eclipse 500 C/S] on the opposite direction track climbing through their level to 3000ft.

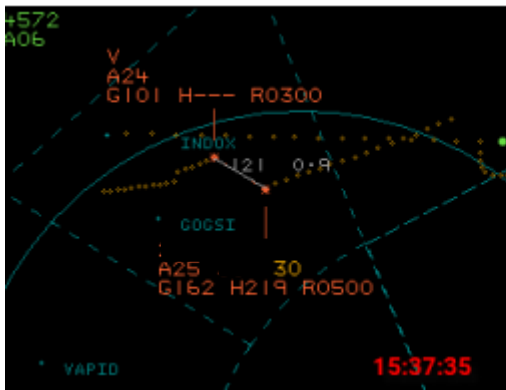


Figure 3 - Node Radar

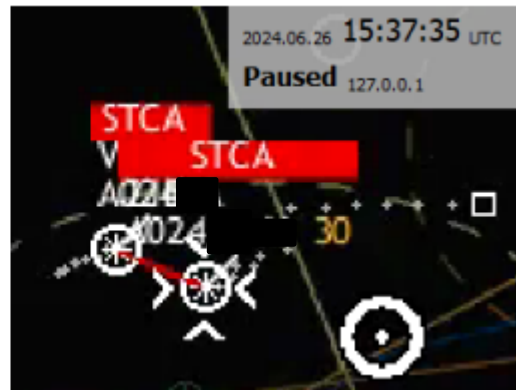


Figure 4 - Farnborough Radar

STCA deactivated at 1537:47, followed by the LF APP U/T controller providing the pilot of [Eclipse 500 C/S] with their joining clearance and information that they were “clear of traffic.” The pilot of [Eclipse 500 C/S] did not report an Airprox on the frequency. [PA28 C/S] subsequently entered the Blackbushe LFA at 1539:31.

### Investigation

Farnborough Approach was operating standalone with a controller under training (LF APP U/T) and an Instructor (LF APP OJTI). The NATS 4118 stated visibility was 10km or greater with no cloud detected. The runway in use at Blackbushe was RW25. [Eclipse 500 C/S] was outbound from Blackbushe, inbound to [destination]. [PA28 C/S] was inbound to Blackbushe. [Eclipse 500 C/S] was released for departure by the LF APP U/T Controller, with the NATS 4118 detailing ‘*At this point on the radar there has been no traffic passed to LK on the eventual conflicting traffic, this was approx. 11NM WSW of LK at the time and had been general handling in that area and there was no indication that it was returning towards LK. It was wearing a 4572 squawk which means that the aircraft was listening out on the Farnborough LARS west frequency but not in receipt of a service.*’

The NATS4118 further stated it was ‘*deemed that the release was safe and there was no indication that the traffic was ever going to be a confliction.*’ On initial contact with the LF APP U/T controller, the pilot of [Eclipse 500 C/S] was informed they were receiving a Traffic Service, and immediately issued Traffic Information followed by an avoiding action instruction due to the cognisance of the now impending confliction.



Figure 5 – Effect of [Eclipse 500 C/S] avoidance manoeuvre.

CAP774 3.1 stipulated that:

A Traffic Service is a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the pilot remains responsible for collision avoidance.

The LF APP U/T controller provided avoiding action instructions outside the Traffic Service provision, although it was assessed these instructions mitigated the conflict. The NATS 4118 commented that the pilot of [Eclipse 500 C/S] 'was not informed they were identified.' However, from recognition of the potential conflict, the LF APP U/T controller potentially prioritised the requirement for issuing Traffic Information over this requirement.

**Conclusions**

The LF APP U/T released [Eclipse 500 C/S] in accordance with procedures. On initial contact with the Farnborough frequency, the pilot of [Eclipse 500 C/S] was told to standby due to an unrelated co-ordination occurring with London Control. Once 2-way communication was established and a Traffic Service agreed with the pilot of [Eclipse 500 C/S], immediate Traffic Information was passed to the pilot on a potential conflict with [PA28 C/S] on an opposite direction track oCAS. This was then immediately followed by an avoiding action instruction due to the proximity of the conflict, despite only a Traffic Service being provided. The pilot of [PA28 C/S] appeared to turn left in order to avoid [Eclipse 500 C/S] ahead followed by the pilot of [Eclipse 500 C/S] enacting the avoiding action turn, resolving the conflict.

**CAA ATSI**

The Airprox occurred one minute and 14 seconds after the Eclipse 500 pilot had left the Blackbushe frequency and was in the process of securing an ATC service from Farnborough Radar. The other aircraft was an inbound PA28. The PA28 pilot had not yet made their initial RT call to Blackbushe.

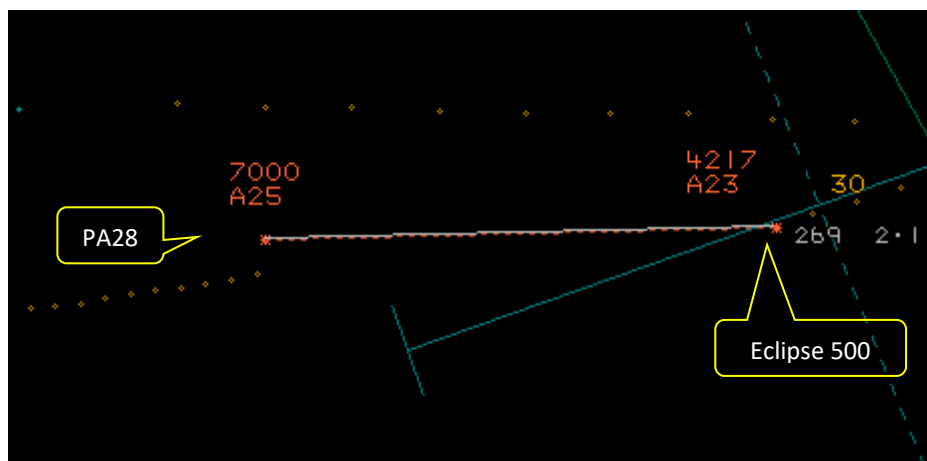


Figure 6 - The positions of both aircraft at 1537:17

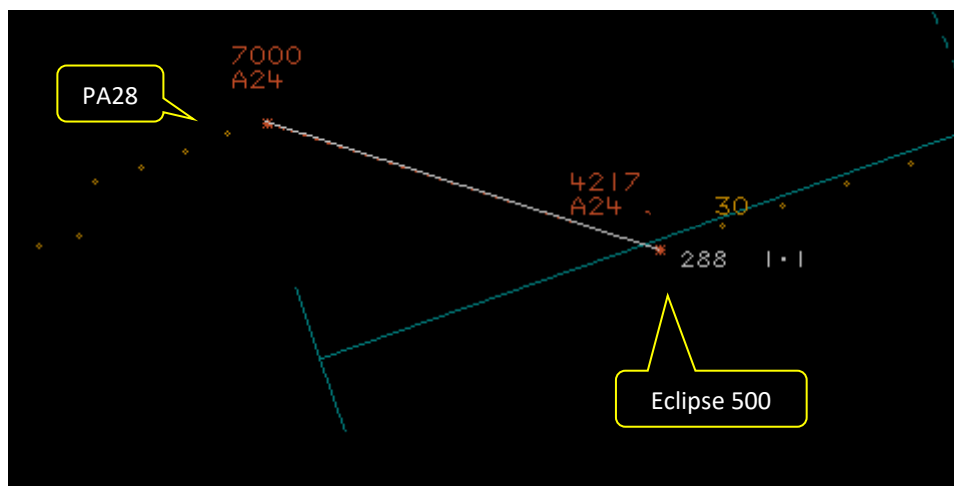


Figure 7 – 1537:34 CPA, co altitude and 1.1NM lateral separation

At 1537:41 the PA28 pilot made initial RT contact with Blackbushe, advising the FISO that they were 4 miles west. They were passed the airfield details and instructed to report entering the ATZ.

At 1535:36 the PA28 displayed a change of transponder code (observed on the radar replay) from 4572 to 7000. Transponder code 4572 is listed in the UK AIP SSR code allocation plan as the frequency monitoring code for Farnborough LARS West.

At 1536:39 the Eclipse 500 pilot made RT contact with Farnborough Radar and advised that they were climbing to altitude 3000ft, the pilot was initially instructed to standby. At 1537:20 the controller asked the pilot to squawk ident and report their level, the pilot responded with 2000ft. A Traffic Service was agreed, and Traffic Information passed, "*right one o' clock 2 miles, indicating altitude 2500 feet, opposite direction.*" The pilot responded that they were looking for the traffic. At 1537:29 the pilot was issued with an avoiding action left turn heading 180°.

At 1537:41 (seven seconds after CPA had occurred, and 1min and 55sec after their transponder code change) the PA28 pilot made initial RT contact with Blackbushe, advising the FISO that they were 4 miles west. They were passed the airfield details and instructed to report entering the ATZ.

### Analysis

The Blackbushe FISO was not aware of the position of the PA28 pilot until after the Eclipse 500 pilot had left their frequency. As such there was no opportunity for them to issue Traffic Information before the Airprox occurred.

The PA28 pilot reported that their recollection was hazy. They reported that they did not see the Eclipse 500 and believed that they may have been engaged in a frequency change from Farnborough West to Blackbushe at the time of the Airprox, having possibly been in receipt of a Basic Service from Farnborough West, but they could not be certain.

A review of the radar recording established that the PA28 was displaying the 4572 frequency monitoring code until time 1535:36. Whilst displaying a frequency monitoring code does not preclude pilots from requesting an ATC service, it should be noted that the Eclipse 500 did not display on the radar replay system until time 1536:11. Normal controller practice is to terminate any ATC service being provided at the same time as instructing the code change. If the PA28 had been in receipt of an ATC service until time 1535:36, the Farnborough West controller would not have been aware of the departure of the Eclipse 500. As such there would have been no opportunity for them to issue Traffic Information before the Airprox occurred.

### UKAB Secretariat

An analysis of the NATS radar was undertaken and both aircraft could be detected and identified using Mode S data. By allowing the radar to run on for one further sweep to that in the CAA ATSI report the radar horizontal separation had reduced to 1NM, although by this stage the Eclipse 500 had clearly begun their avoiding action turn away from the PA28.



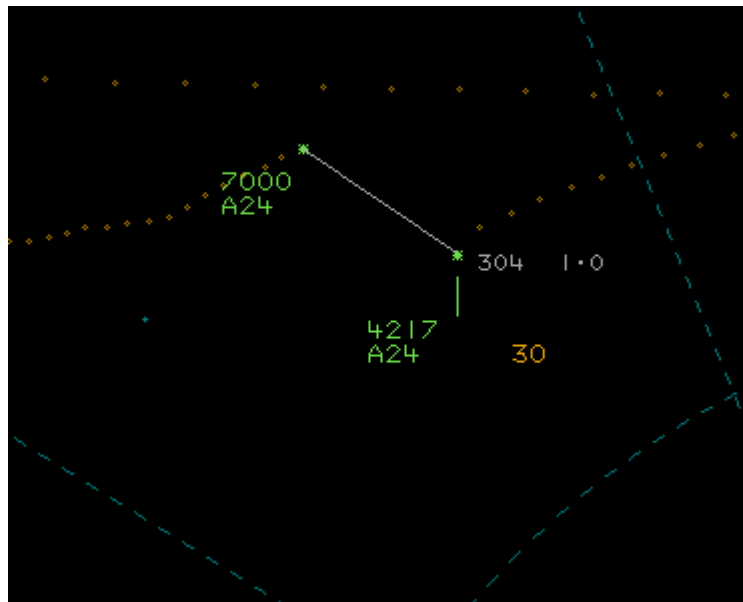


Figure 8 - CPA 1537:38

The Eclipse 500 and PA28 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 head-on or nearly so then both pilots were required to turn to the right.<sup>3</sup>

## Summary

An Airprox was reported when an Eclipse 500 and a PA28 flew into proximity in the vicinity of Blackbushe airfield at 1538Z on Wednesday 26<sup>th</sup> June 2024. The Eclipse 500 pilot was operating under IFR in VMC and establishing a service from Farnborough Radar; the PA28 pilot was operating under VFR in VMC, not in receipt of a FIS.

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

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the AFISO and the air traffic controller involved and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are listed below, with the numbers referring to the Contributory Factors table displayed in Part C.

The Board first discussed the actions of the Eclipse pilot. They noted that on departure, the Eclipse pilot had not been given any Traffic Information on the PA28 by Blackbushe, because the AFISO had not been aware of the PA28 at that point, but wondered whether the pilot had become concerned by the information received from their TCAS I on this unknown aircraft as they had climbed out. The frequency change to Farnborough and delay in establishing contact had meant that the Traffic Information from Farnborough had been provided late, and that had been quickly followed by avoiding action, all of which probably compounded the pilot's perception of how close the PA28 had been.

For their part, the PA28 pilot had reported not being aware of the Airprox. They had not been receiving an ATS and their CWS had not alerted to the Eclipse 500, although an alert might have been expected because the Mode S on the Eclipse 500 had been transmitting ADS-B data. As a consequence, the PA28 pilot had not received any situational awareness on the Eclipse 500. Members opined that although the PA28 pilot had reported that they had no recollection of the Airprox, the CPA between the two aircraft as they had joined the visual circuit and the Eclipse 500 had departed had been such that the pilot may well have considered the geometry to have been normal operations anyway.

<sup>2</sup> (UK) SERA.3205 Proximity.

<sup>3</sup> (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.

Briefly looking at the actions of the ATSUs, the Board noted that the AFISO at Blackbushe had been unable to provide any information to the Eclipse 500 pilot because they had been unaware of the inbound PA28. The Farnborough controller had initially told the Eclipse 500 pilot to ‘stand by’ whilst they conducted co-ordination with another unit. However, on returning to the Eclipse 500 pilot to establish an ATS, and possibly prompted by the STCA, they had immediately provided Traffic Information. The PA28 had been 2NM away from the Eclipse 500 at this point, and whilst this could have been considered late, members agreed that the controller could not have provided information any earlier. This information had been quickly followed up with an avoiding action turn, despite the pilot having been in receipt of a Traffic Service, under which avoiding action would not normally be provided.

Concluding their discussion, members agreed that, although the PA28 pilot had not received any situational awareness, the Eclipse 500 pilot had received a TCAS alert and avoiding action from the Farnborough controller and that the separation between the two aircraft had been such that no risk of collision had existed. Members were satisfied that normal safety margins had pertained, assigned Risk Category E to this event and agreed on the following contributory factors and outcomes:

- CF1.** Due to workload, Traffic Information to the Eclipse 500 pilot had been provided late.
- CF2.** The STCA at Farnborough had alerted.
- CF3.** The PA28 pilot had received no situational awareness on the Eclipse 500.
- CF4.** The Eclipse pilot had been concerned by the TCAS I information.
- CF5.** The TCAS I in the Eclipse had provided information on the PA28.
- CF6.** The CWS in the PA28 had been reported as not alerting when one would have been expected.

**PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

Contributory Factors:

2024150				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Ground Elements</b>				
<b>• Situational Awareness and Action</b>				
1	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
<b>• Electronic Warning System Operation and Compliance</b>				
2	Technical	• STCA Warning	An event involving the triggering of a Short Term Conflict Alert (STCA) Warning	
<b>Flight Elements</b>				
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
3	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
4	Human Factors	• Unnecessary Action	Events involving flight crew performing an action that was not required	Pilot was concerned by the proximity of the other aircraft
<b>• Electronic Warning System Operation and Compliance</b>				
5	Contextual	• ACAS/TCAS TA	An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system traffic advisory warning triggered	
6	Human Factors	• Response to Warning System	An event involving the incorrect response of flight crew following the operation of an aircraft warning system	CWS misinterpreted, not optimally actioned or CWS alert expected but none reported

Degree of Risk: E.



**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:

**Ground Elements:**

**Situational Awareness of the Confliction and Action** were assessed as **partially effective** because Traffic Information had been provided late to the Eclipse 500 pilot, albeit as soon as the controller had been able to do so.

**Flight Elements:**

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because the PA28 pilot had received no prior situational awareness on the Eclipse 500 and the Eclipse 500 pilot had been concerned by the presence of the PA28 on their TCAS I.

<b>Airprox Barrier Assessment: 2024150</b>		Outside Controlled Airspace						
<b>Barrier</b>	<b>Provision</b>	<b>Application</b>	<b>Effectiveness</b>					
			<b>Barrier Weighting</b>					
			0%	5%	10%	15%	20%	
<b>Ground Element</b>	Regulations, Processes, Procedures and Compliance	✓	✓					
	Manning & Equipment	✓	✓					
	Situational Awareness of the Confliction & Action	✓	⚠					
	Electronic Warning System Operation and Compliance	✓	✓					
<b>Flight Element</b>	Regulations, Processes, Procedures and Compliance	✓	✓					
	Tactical Planning and Execution	✓	✓					
	Situational Awareness of the Conflicting Aircraft & Action	✗	✓					
	Electronic Warning System Operation and Compliance	✓	✓					
	See & Avoid	✓	✓					
<b>Key:</b>								
	<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>			
Provision	✓	⚠	✗	●	□			
Application	✓	⚠	✗	●	○			
Effectiveness								

<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](#).