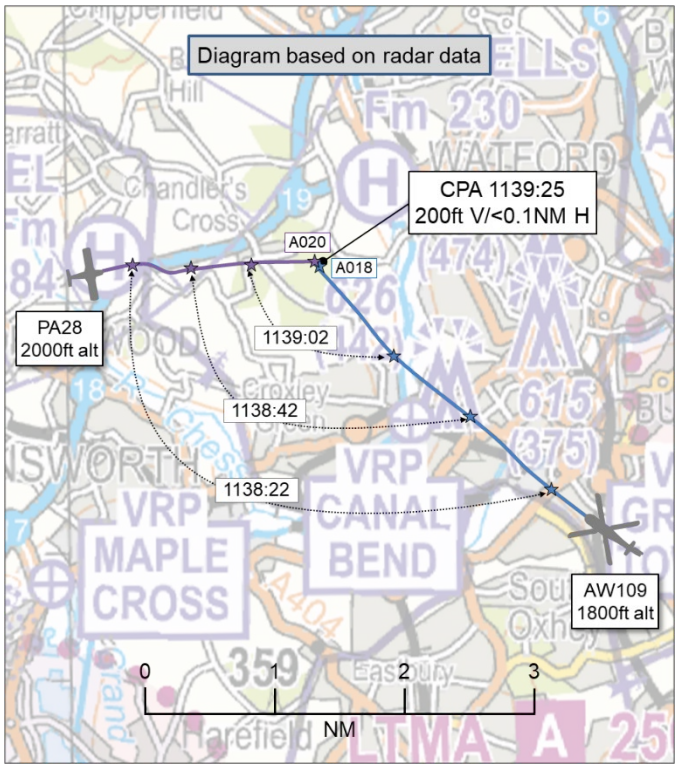
AIRPROX REPORT No 2024238

Date: 17 Sep 2024 Time: 1139Z Position: 5140N 00027W Location: 1NM SW of Watford

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	AW109	PA28
Operator	Civ Comm	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Unknown
Provider	Luton Radar	N/A[1]
Altitude/FL	1800ft	2000ft
Transponder	A, C, S	A, C, S+
Reported		
Colours	Navy blue & silver	White & red
Lighting	Nav, anti-col, ldg	Strobes, beacon
Conditions	VMC	VMC
Visibility	>10km	NR
Altitude/FL	1800ft	2000ft
Altimeter	QNH (1031hPa)	QNH (1029hPa)
Heading	320°	090°
Speed	150kt	100kt
ACAS/TAS	TAS	Not fitted
Alert	TA	N/A
Separation at CPA		
Reported	200ft V/0m H	Not seen
Recorded	200ft V/<0.1NM H	



THE AW109 PILOT reports that they came within 200ft of a light-aircraft. On leaving Heathrow zone via Brent routeing to Bovingdon (BNN), they called Luton for a Traffic Service and zone transit. They had recently seen a TAS contact on the traffic screen at similar altitude to them, in their 11 o'clock, which they informed Luton Radar they were already visual with whilst requesting the Traffic Service. Luton then confirmed they were under a reduced Traffic Service and gave them a zone clearance. During this exchange they had an audio "Traffic" alert from the TAS which appeared to be the same contact they were still visual with in their 10 o'clock. Having moved their head as part of their continued lookout, they then became visual with a second contact directly above their position at less than ¼NM (estimated). They elected to remain straight and level to pass underneath and the contact was clear overhead within a few seconds. Once clear, they noted that a second contact had appeared on the traffic screen and was showing as 200ft above, which they believed to have been the contact they had spotted. They informed ATC of their intention to file an Airprox report on landing.

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

THE PA28 PILOT reports that they were on a training flight which consisted of navigation training focusing on diversions. [A portion of] the diversion training over Bovingdon (BNN) concluded with a southerly heading towards Amersham. From Amersham they headed due east towards Elstree. They continued heading approximately 090°, maintaining 2000ft on QNH 1029hPa. They changed pressure setting to QFE 1018hPa and entered the Elstree ATZ to execute an overhead join. At no point whilst passing the area in question (Chandlers Cross) did they see the conflicting traffic nor were there any

[1] The pilot reported that they had contacted Farnborough North prior to changing to Elstree Information for a Basic Service to request an overhead join. At the time of Airprox they were not with Farnborough, and it is not known if they had yet communicated with Elstree Information prior to the Airprox, outside the Elstree ATZ.

R/T calls from the Elstree Tower. After being made aware of the Airprox report, they contacted their student to ask if they remembered any conflicting traffic. They also confirmed that they saw nothing.

They also noted that they were originally using a Basic Service with Farnborough North Radar prior to the time of the incident. They changed frequency to Elstree Information in order to join the circuit.

THE LUTON RADAR CONTROLLER reports they were working Luton Radar band-boxed. [The AW109 pilot] called for a crossing clearance and Traffic Service. They gave the clearance but gave a restricted Traffic Service as there were several aircraft in the BNN hold and aircraft were garbling. [The AW109 pilot] said they were visual with an aircraft in their 11 o clock but [the pilot] and themselves both failed to see another aircraft [about] which, they later said, they would be filing an Airprox.

Factual Background

The weather at Luton was recorded as follows:

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METAR EGGW 171120Z 05011KT 9999 SCT029 17/10 Q1032
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Analysis and Investigation

NATS Unit Investigation

The Luton Radar controller agreed to provide a reduced Traffic Service to the pilot of [the AW109], who had reported that they were visual with traffic in their 11 o'clock position. The pilot subsequently advised of their intention to file an Airprox after a light-aircraft passed 200ft above them, which was not the traffic that they had reported in sight. Clutter on the Luton Radar controller's display had prevented them from identifying a second contact operating outside controlled airspace in a similar location, which had been the aircraft initially sighted by the pilot.

The pilot of [the AW109 had their departure] released by the Heathrow Special VFR controller (LL SVFR) with an assigned squawk of 7045. When the pilot first contacted their frequency, the LL SVFR controller validated and verified the transponder data and issued a clearance to cross the London CTR. The LL SVFR controller later advised the pilot when they had left controlled airspace and informed them that they were now under a Basic Service, requesting that they report leaving the frequency.

At 1137:39 the pilot of [the AW109] reported that they were changing to the Luton frequency, and the LL SVFR instructed the pilot to retain the squawk and remain outside controlled airspace. The pilot's first call to Luton Radar was recorded at 1138:08. The Luton Radar controller instructed the pilot to squawk 4672 and advised them of the Luton QNH of 1032hPa. The pilot did not report their altitude, however, as [the AW109 pilot] was transferred on the LL SVFR squawk, the Mode C was deemed to have been verified and did not require to be further checked. Mode C indicated that they maintained an altitude of 1800ft throughout the event.

Having observed the squawk of [the AW109] change on the radar display, the Luton Radar controller informed the pilot that they were identified and advised they were under a Basic Service at 1138:37 and asked if they were requesting a transit of the Luton CTR. The pilot responded, *"Affirm, if possible, er, just, er, clipping the very far southwest corner, VFR, and, er, if possible upgrade to a Traffic Service, I do have the traffic just in my er, 11 o'clock, a couple of miles, visual"* completing this transmission at 1138:50. The controller acknowledged *"[AW109 c/s] Roger, it will be a reduced Traffic Service due radar cover, little or late warning of traffic from beneath"*.

Simultaneously the controller annotated the flight progress strip accordingly, on which the altitude information had been carried forward from when the pilot was in communication with the LL SVFR controller and was updated by the Luton Radar controller after issuing CTR crossing clearance. [The AW109] was within an area of the London TMA where the base was 2500ft.

The pilot read back, *"reduced Traffic Service, [c/s]"* at 1138:59. Radar recordings showed that two contacts, both squawking VFR conspicuity, were potentially present in the position of the traffic described by the pilot of the [AW109] (Figure 1).

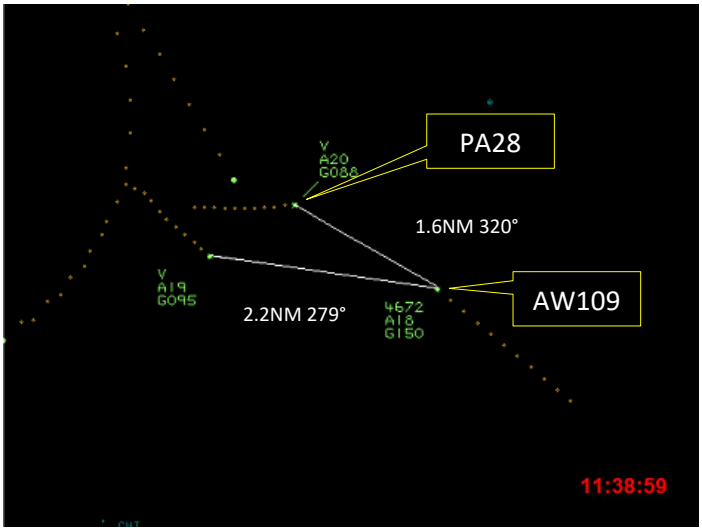

Figure 1 – Time 1138:59

The Luton Radar controller then transmitted *"[AW109 c/s], cleared to transit VFR not above altitude two thousand four hundred feet, remaining west of Dunstable Downs gliding site, who are active"*. The pilot completed read back of the clearance at 1139:18. All three aircraft continued on the trajectories as displayed in Figure 1, with the more westerly of the tracks passing down the left-hand side of [AW109] whilst the other, identified by Mode S, PA28 indicating 2000ft on Mode C, continued to cross the track of [the AW109] (Figure 2 and 3).

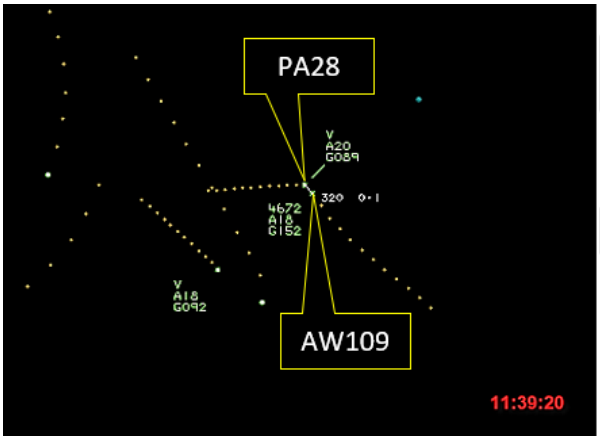

Figure 2 – Time 1139:20

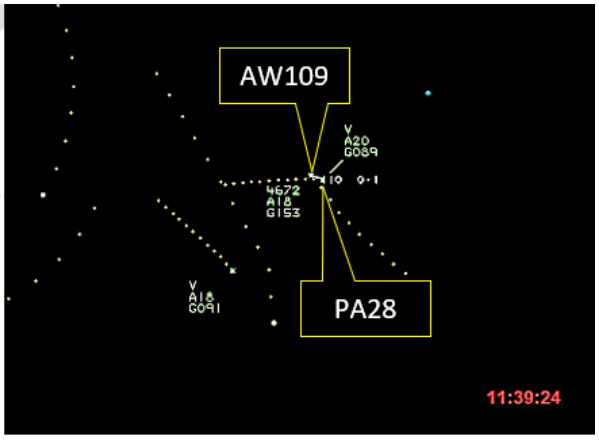

Figure 3 – Time 1139:24

The closest point of approach, measured at 0NM laterally and 200ft vertically, occurred as the aircraft tracks passed, between the two radar updates at approximately 1139:22.

There was no further communication between the Luton Radar controller and the pilot of [the AW109] until 1139:54, when the pilot contacted the Luton Radar controller to make a request. The controller instructed the pilot to pass their message, and the pilot stated *"[c/s], just um, ah, thought I was visual with the previously reporte… sorry, the traffic I could see, there were actually two contacts and I wasn't visual with the second, I think I should probably be filing an Airprox, I just wondered if you might be able to assist me with that?"* to which the controller responded *"[AW109 c/s], yeah, I can see the two aircraft now, umm, due to traffic holding at Bovingdon everything was garbling there, that's why I gave you a reduced [Traffic Service]".* The pilot continued *"no no, that's absolutely fine, I totally understand, I thought I was visual with it as well."*, Both the Luton Radar controller and the pilot of [AW109] subsequently submitted an Airprox report.

Information available to the investigation included reports from the Luton Radar controller and the pilot of [the AW109], an interview with the Luton Radar controller, the Initial Watch Management Investigation Report, CAP774 UK Flight Information Services, and AIC Y 064/2023 UK FIS.

The Luton Radar controller was highly experienced in their role and described that providing services to aircraft outside controlled airspace was a task they carried out multiple times a day. They were operating both Luton Intermediate and Final Director positions at the time of the event; traffic levels and workload on the sector were low, with their attention being given to establishing the positioning of aircraft expected on frequency to formulate a plan for sequencing. Visibility and weather conditions were good [see METAR above]. Outside the Luton sectors, a significant number of Heathrow arrivals were holding at the various stacks under the control of Heathrow Approach and other TC sectors. When the pilot of [the AW109] first contacted the Luton radar controller, the aircraft was 8NM southeast of Bovingdon (BNN) on a track towards the beacon, whilst four aircraft were established in the published BNN hold pattern. This area was in the bottom left-hand corner of the GW Radar controller's display (Figure 4), with the holding traffic causing significant radar clutter ahead of the track of [the AW109].

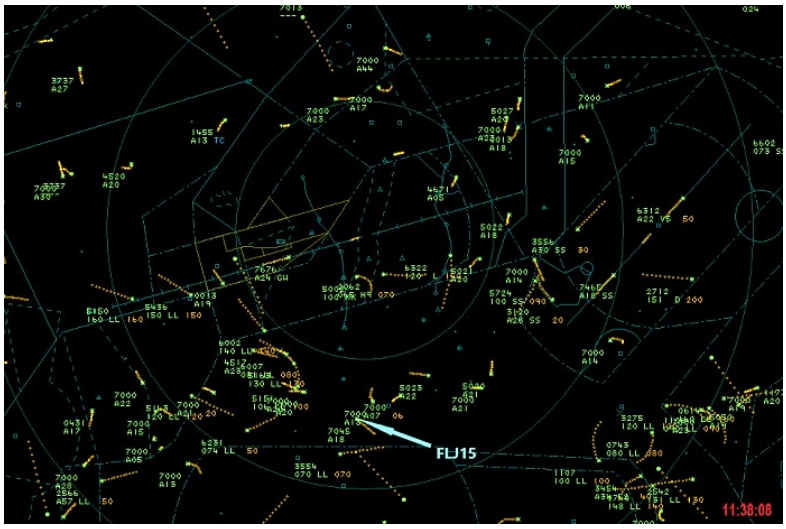

Figure 4 – Prior to the AW109 changing to Luton squawk

The controller explained that when the pilot of [the AW109] first contacted them, they had issued a Basic Service as this was the most appropriate level of service that they could offer at the time, particularly considering the clutter on their radar display. The pilot of [the AW109] subsequently requested a Traffic Service, and the Luton Radar controller agreed to offer a limited service in accordance with their responsibilities under CAP774 UK Flight Information Services Chapter 1 ATS Provision which stated:

> 'Controllers shall make all reasonable endeavours to provide the ATS that a pilot requests. However, due to finite ATS provider resources or controller workload, tactical priorities may influence ATS availability or its continued provision. Therefore, a reduction in traffic information and/or deconfliction advice may have to be applied, and in some circumstances an alternative ATS may have to be provided in order to balance overall ATS requirements.'

The Luton Radar controller informed the pilot that the service was limited *"due radar cover"*. When asked in interview to describe this further, they explained that there were usually multiple reasons for a Traffic Service to be limited. Particularly at low altitudes, there was always potential for traffic to appear at short notice having climbed into radar cover. Given the area in which [the AW109] was operating, traffic and label garbling was likely to impede their ability to detect aircraft operating below controlled airspace, and their workload could change very quickly, reducing their ability to advise of potential traffic. They considered that explaining multiple reasons was impracticable and providing too much information may detract from the most important message of ensuring the pilot understood that the service was limited.

AIC Y 064/2023 UK FIS highlighted key principles of the overall constraints of service provision to be considered by pilots at all times as follows:

> **2 Key Principles**
> 2.1 The following key principles are highlighted:
>
> a) Within Class G Airspace, regardless of the ATS being provided, pilots are ultimately responsible for collision avoidance and terrain clearance and should always consider ATS provision to be constrained by the unpredictable nature of the uncontrolled Class G environment. Such unpredictability and constraints include but are not limited to:
>
> - Conflicting aircraft not being displayed on ATS surveillance systems due to their slow speed, low radar cross-section (e.g. gliders and hot air balloons), not operating an electronic conspicuity device, or operating one that is not compatible with the ATS surveillance system in use (e.g. FLARM);
> - High performance aircraft manoeuvring in the lateral or vertical planes, and which may not be immediately evident to the controller due to radar update rates;
> - The inability of the controller to detect aircraft due to the vertical or lateral limits of radar cover, or radar clutter caused by effects such as weather and interference.

At the time of requesting a Traffic Service, the pilot of [the AW109], now displaying the Luton squawk of 4672, had reported that they were visual with traffic in their 11 o'clock position at a range of *"a couple of miles"*. The radar return, later identified as [PA28 registration] was visible in the location described by the pilot.

The Luton Radar controller reported that they had checked their radar at this time and observed the return. They described that, in the circumstances and considering that the pilot had confidently reported that they were visual with traffic in the observed location, they were hesitant to offer further information as the clutter from garbled labels on their display may have introduced confusion, particularly considering the historic nature of radar data.

SERA Article 2 Definitions defined traffic information as 'information issued by an air traffic services unit to alert a pilot to other known or observed air traffic which may be in proximity to the position or intended route of flight and to help the pilot avoid a collision'. Given that the visible contact of [the PA28] maintained trajectory after the pilot of [the AW109] had reported visual with traffic in that location, the provision of additional information by the controller, who had believed this to correspond with the sighted traffic, would not have been of further benefit to achieving this purpose.

Due to the garbled labels of the holding traffic, the Luton Radar controller was unable to observe a second contact operating beneath controlled airspace, immediately to the southwest of [the PA28]. Considering the details given by the pilot of [the AW109] in their Airprox report, it is probable that it was this second contact, and not [the PA28], which the pilot had visually acquired.

The pilot of [the AW109] completed readback of their clearance at 1139:18 [2sec before Figure 2 positions]. The track of [the PA28] had continued to correlate with the reportedly sighted traffic, whilst the other aircraft remained indistinguishable on the garbled display and the Luton Radar controller was unaware of its presence or the potential misidentification by the pilot of [the AW109]. The Airprox occurred 4sec later.

Having issued the clearance to the pilot of [the AW109], the Luton Radar controller turned their attention to other traffic within and approaching their sector. They then returned to [the AW109], describing that they could now see two contacts in the vicinity of the aircraft – one, which had crossed the track of [the AW109] and presumed to be the traffic with which the pilot had reported visual, and another which had passed down their left-hand side. They explained that they were in the process of assessing this situation at the time the pilot of [the AW109] contacted them at 1139:54 to report that they intended to file an Airprox. The Luton Radar controller advised the pilot that they

could also now see a second contact, explaining that the garbling from traffic in the hold at BNN had been the cause for them to be provided with a reduced Traffic Service. The pilot confirmed that they understood this and had thought that they were visual with the traffic.

[The pilot report was recorded (as above)].

The report concluded that there had been three aggravating factors, the label overlap on the ATS equipment, ATCO perception of visual information, and aircraft on radar not seen. They identified two causal factors, whereby the pilot had not seen the PA28 and had come into conflict with it.

There were no Safety Investigations recommendations as a result of this Investigation.

CAA ATSI

The Airprox occurred during the period of a (reduced) Traffic Service, which had just been agreed with the Luton controller, who immediately passed Traffic Information to the pilot of [the AW109] on conflicting traffic which was subsequently seen by the pilot. However, due to clutter from Heathrow holding traffic, the controller had not spotted the confliction with a second contact which was [the PA28].

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft were identified using Mode S data. The AW109 was heading approximately northwest at a steady altitude of 1800ft and the PA28 was identified flying three anticlockwise orbits before heading south, then east towards the AW109 at 2000ft. NATS radar altitudes are based on London QNH 1031hPa (Figures 5 and 6).

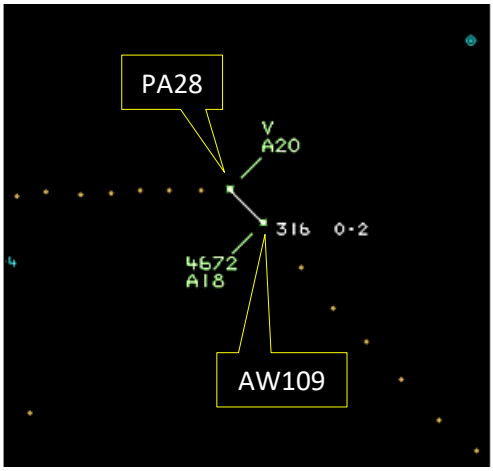

Figure 5 - Time 1139:22

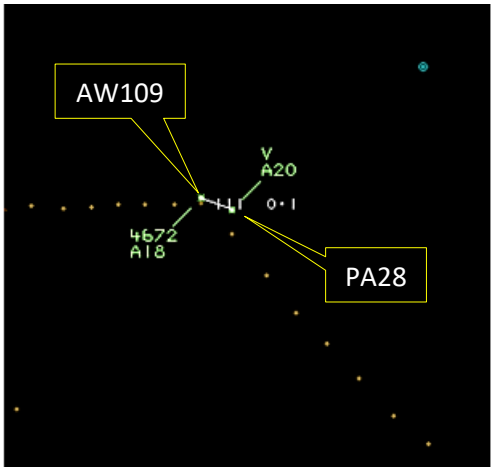

Figure 6 – Time 1139:26

Interpolation of the aircraft positions between 1139:22, where the aircraft were 0.2NM apart, and 1139:26, where the aircraft were 0.1NM apart having crossed tracks, indicated the CPA at 1139:25 with a lateral separation of less than 0.1NM and a vertical separation of 200ft.

The AW109 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.[2] If the incident geometry is considered as converging then the PA28 pilot was required to give way to the AW109.[3]

Summary

An Airprox was reported when an AW109 and a PA28 flew into proximity 1NM southwest of Watford at 1139Z on Tuesday 17th September 2024. Both pilots were operating under VFR in VMC, the AW109

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

pilot in receipt of a reduced Traffic Service from Luton Radar and the PA28 pilot likely in the process of contacting Elstree Information.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first discussed the actions of the AW109 pilot and agreed that the pilot had been fortunate to have sighted the PA28 when they had, albeit a late sighting (**CF9**) from which they had made the decision to stay steady as the PA28 had passed above them. Members noted that the AW109 had been operating in a very busy area, which had required the pilot to have been highly aware of local traffic operating from the nearby airfields and the Bovingdon (BNN) holding area, and that it had been most unfortunate that the Luton controller had been unable to provide a full Traffic Service. Nonetheless, the Board noted that the pilot had received a Traffic Alert (TA) from their TAS (**CF7**) which, unfortunately, they had misinterpreted as an aircraft identified from their TAS information earlier until they had seen the PA28 pass overhead. Some members wondered if the pilot's lookout had been more concentrated ahead and beneath them based on the controller stating that "*it will be a reduced Traffic Service due radar cover, little or late warning of traffic from beneath"* and the Board agreed that the circumstances were such that the AW109 pilot had had inaccurate situational awareness of the presence or position of the conflicting PA28 (**CF5**) and, on misidentifying the approaching aircraft as the conflict aircraft, had not correctly assimilated the conflict information (**CF6**).

Turning their attention to the actions of the PA28 pilot, the Board was dismayed that a training aircraft had not been equipped with additional electronic conspicuity equipment and agreed that, while the pilot had likely been correctly communicating with their required FIS provider, they had had no situational awareness of the presence or position of the AW109 (**CF5**). The Board also agreed, therefore, that the PA28 pilot had not sighted the AW109 (**CF10**) and had been unaware of the Airprox.

When considering the actions of the Luton Radar controller, the Board agreed that it had been a very busy session with a cluttered radar screen and that the controller had endeavoured to do their best to provide the agreed level of service. Members discussed why the controller had provided a reduced Traffic Service, and controller members agreed that the NATS report had reinforced the reasons whilst clarifying that a full explanation over the R/T would have been too verbose, and that the controller should state the most impactful reason. While the Board agreed that the controller had provided the best level of service that they could have under the circumstances, some controller members wondered why they had attempted to do so when they might have been justified in not providing a Traffic Service with so many reasons not to. Some members wondered if the controller had not given Traffic Information on the second contact, the PA28, because the AW109 pilot had called visual, albeit in error, and controller members were split on opinion as to whether they would have done so or not. During the conversation it was mentioned that if a pilot had not been given the level of service requested then they can report this via a form FCS1522.[4] The Board agreed that the Luton Radar controller had not provided Traffic Information because of the garbling at the BNN hold and they had not seen the PA28 due to label overlay (**CF1**). Members further agreed that this had led to the Airprox not being detected by the controller (**CF2**) due to the lack of situational awareness that the circumstances had afforded them (**CF3**). When referencing the Luton Radar Short Term Conflict Alert, the Board noted that it was not utilised because the PA28 had been squawking 7000 and had been outside the select frame for the controller (**CF4**).

On concluding their discussions and determining a risk category, the Board agreed that safety had been reduced and, while some members considered that safety had not been assured (Risk B), others thought that, although safety had been degraded, there had been no risk of collision as the AW109 pilot

[4] CAA UK Airspace Refusal and Form FCS1522

had not needed to take emergency avoiding action. The Chair put it to a vote and, by a majority of one, the Board assigned a risk category C to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024238			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Situational Awareness and Action			
1	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
2	Human Factors	• Conflict Detection - Not Detected	An event involving Air Navigation Services conflict not being detected.	
3	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
	• Electronic Warning System Operation and Compliance			
4	Technical	• Conflict Alert System Failure	Conflict Alert System did not function as expected	The Conflict Alert system did not function or was not utilised in this situation
	Flight Elements			
	• Situational Awareness of the Conflicting Aircraft and Action			
5	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
6	Human Factors	• Understanding/ Comprehension	Events involving flight crew that did not understand or comprehend a situation or instruction	Pilot did not assimilate conflict information
	• Electronic Warning System Operation and Compliance			
7	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
8	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
	• See and Avoid			
9	Human Factors	• Identification/ Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots
10	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: C

Safety Barrier Assessment[5]

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 **ineffective** because the Luton controller had no situational awareness of the PA28 traffic and therefore did not provide Traffic Information to the AW109 pilot.

[5] The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the UKAB Website.

Electronic Warning System Operation and Compliance were assessed as **not used** because the PA28 transponder code was outside the select frame of the Luton Short Term Conflict Alert (STCA).

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the PA28 pilot had no situational awareness of the presence or position of the AW109 and the AW109 pilot had inaccurate situational awareness of the PA28, having mis-correlated their TAS and visual information.

Electronic Warning System Operation and Compliance were assessed as **partially effective** because the AW109 pilot had received a Traffic Alert, but had identified the wrong aircraft.

See and Avoid were assessed as **partially effective** because AW109 pilot sighted the PA28 at a late stage and the PA28 pilot had not sighted the AW109.