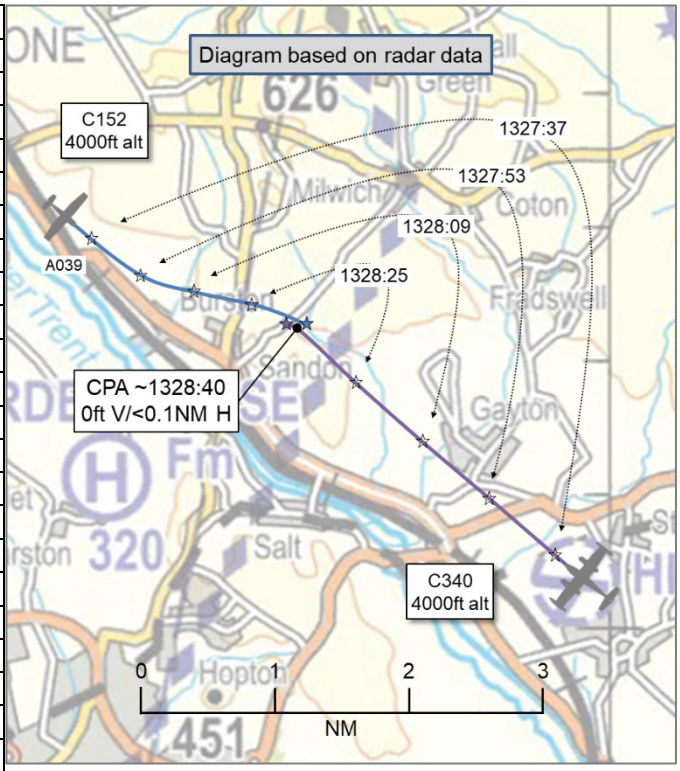
AIRPROX REPORT No 2023006

Date: 20 Jan 2023 Time: 1329Z Position: 5252N 00204W Location: 4NM NE Stafford

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	C152	C340
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic
Provider	Shawbury LARS	Liverpool Radar
Altitude/FL	4000ft	4000ft
Transponder	A, C, S	A, C, S
Reported		
Colours	White, Red, Blue	White, Red, Black
Lighting	Nav, Anti-Col	Strobe, Anti-col
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	4000ft	4000ft
Altimeter	QNH (1021hPa)	QNH (NK hPa)
Heading	~112°	310°
Speed	95kt	175kt
ACAS/TAS	PilotAware	TAS
Alert	None	Information
Separation at CPA		
Reported	50ft V/150m H	0ft V/0.5NM H
Recorded	0ft V/<0.1NM H	



THE C152 PILOT reports the event occurred on leg 2 of a 3-leg cross-country flight. They had established in the cruise at 4000ft toward their next waypoint. They had requested a Traffic Service on initial contact with Shawbury, however, were advised this was not possible due to controller workload. Approaching Stone, they confirmed their position with time on leg, and DME from WAL, being aware that this was an area that they had not flown in before. They also conducted a FREDA check, in particular ensuring their fuel management was as planned given the approximately 2hrs airtime since fully fuelling. They believe this extra consideration may have resulted in a more intermittent [visual] scan during those few minutes than they would otherwise do, although they were certainly conscious not to be 'head-down' for more than a few seconds at any time. As they looked up to begin a scan, they were instantly visual with a twin-engine aircraft on an opposing heading, almost co-altitude but slightly higher, and appearing to head to their right side. The closing speed was significant, and from contact to abeam was no more than 3-5sec. Given this, they decided on a left turn, as a right turn would have closed the distance further. The other aircraft was a low-wing twin, similar to a Beechcraft Baron or Cessna 340, [they recalled it being] white with green stripes, and they believe it had tip-tanks (although they were not 100% certain if they recalled that correctly). They did not see any avoiding action from the other aircraft. After confirming well clear, they contacted Shawbury to report this. On returning to [departure airfield], they attempted to call Shawbury, but were not able to get through (at the time of writing). They tried to locate the incident on FlightRadar24, however even on detailed inspection, the other aircraft did not appear.

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

THE C340 PILOT reports that they had been on a flight from [departure airfield] to [destination airfield] in good visibility at altitude 4000ft. They had made an initial call to Liverpool Radar for a Basic Service and were awaiting reply. They picked up another aircraft both visually and on their TAS at a range of approximately 1NM, level at 4000ft and in their 12 o'clock. They assessed that the aircraft would

probably go down their right-hand side but turned left to increase separation. Shortly after starting the turn, the other aircraft turned left, away. They had the other aircraft visual at all times after initial contact.

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

THE SHAWBURY LARS CONTROLLER reports that at 1328, towards the end of a high-intensity session, they had an under training (UT) controller sat behind them as they were due to take over at 1330. They were discussing different scenarios and pointing out what traffic they were going to expect. They got to [the C152] and noticed that they were at the same level (038) and roughly the same position as [the C340] (not on their frequency). Before they could transmit anything, [the C152 pilot] notified them that they had had a "near-miss". They then asked if they were going to file anything and they informed them they weren't sure. At the time of the incident, they had 3 units on frequency but earlier in the session, when [the C152 pilot] called up, it was a high-intensity session and they requested a Traffic Service and [the controller] informed them that this was unavailable due to controller workload, at which [the C152 pilot] accepted a Basic Service. At 1331, they handed over the position to the UT and Trainer and proceeded to inform the Supervisor about the incident.

The controller perceived the severity of the incident as 'Medium'.

THE SHAWBURY SUPERVISOR reports that they were informed of the occurrence shortly afterwards. As stated by the controller, workload and RT loading had been at a very high level when the [C152 pilot] initially called for a Traffic Service. In accordance with the UK Civil AIP ENR1-6, the controller used their discretion and informed the pilot that a Radar Service wasn't available and provided a Basic Service. Afterwards [the Supervisor] contacted [the C152 pilot's destination airfield] to try and confirm whether the pilot wanted to file an Airprox, no information was forthcoming on the day of occurrence.

THE LIVERPOOL CONTROLLER reports that no details were passed to them on the frequency, and no telephone calls were received from the pilots. The pilot of the aircraft in question was on a Basic Service and was on the edge of the radar display. They were not aware of any Airprox.

Factual Background

The weather at Shawbury was recorded as follows:

```
METAR EGOS 201320Z 33006KT 9999 FEW020 06/02 Q1020 NOSIG RMK BLU BLU
METAR EGOS 201350Z 34006KT 9999 FEW018 06/02 Q1020 NOSIG RMK BLU BLU
```

Analysis and Investigation

Shawbury ATSU investigation summary

Whilst the controller references an [under training controller] sat with them in their narrative, it was felt that this did not cause a distraction and was not a contributory factor to the Airprox. It was considered whether the controller could have upgraded the type of service [provided to the C152 pilot] to a Traffic Service, as originally requested by the pilot, although this was also dismissed due to the controller's continued high workload.

Without having contact from the pilot of the other aircraft [C340], it was not possible to confirm if they were visual with the aircraft controlled by Shawbury LARS [C152] at any stage. The aircraft's track or altitude did not deviate at any stage. Likewise, it was not possible to confirm if Traffic Information was passed to the pilot of the other aircraft by East Midlands before they free-called en-route, 5NM before the incident took place, or by Liverpool, who [provided a service to the C340 pilot from] 2NM before the incident took place, and had placed it on a conspicuity squawk (5050), suggesting application of a Basic Service.

Findings and outcomes.

- Neither pilot was visual with the other [using their available information] until such time that safe separation had been lost.
- The LARS controller did not identify the confliction until such time that the Airprox had already occurred.
- The [C152] pilot's initial request, when arriving on frequency, was for a Traffic Service. The LARS controller recognised that a Traffic Service could not be provided due to workload. This was highlighted to the pilot and a Basic Service was requested/applied. The pilot then remained on a Basic Service for the duration of their time with Shawbury LARS.
- Duty of Care Traffic Information was passed to another aircraft approximately 30sec prior to the Airprox event. This observation of confliction and subsequent passing of Traffic Information was the focus of the controller's attention immediately prior to the Airprox event. In accordance with CAP 774, whether Traffic Information has been passed or not, the pilot remains responsible for collision avoidance without assistance from the controller.

Liverpool ATSU

Liverpool ATSU conducted an investigation into this event which is summarised below:

[The C340 pilot] called Liverpool Radar at 1327:50 requesting a Basic Service. A squawk of 5050 was assigned by the ATCO and the pilot was told to standby, this was acknowledged by [the pilot]. The ATCO then focussed attention on inbound traffic.

Approximately 1min later, [the C340] (SSR contact only) appeared at the lower edge of the radar display (approximately 35NM southeast of the airport), however, the conspicuity squawk of 5050 was not yet visible. The contact could be seen converging with another contact right on the edge of the radar display. The alternate contact then continued out of the radar display to the southeast and the [C340's] squawk could be seen continuing northbound. There was no further communication with [the C340 pilot] until 1339:18.

At no point did the pilot of [the C340] mention a confliction with another aircraft or an Airprox. The incident occurred in Class G airspace and the ATCO did not have visibility of the event at the time it occurred, nor was there any requirement for the ATCO to provide separation due to the unknown environment of Class G airspace in this traffic environment 35NM southeast of the field and on the edge of the display.

CAA ATSI

At 1304:00 the pilot of the C340 called East Midlands Radar and advised the controller of their routeing, position 7NM east of Corby, passing altitude 3400ft climbing altitude 4000ft and requested a Basic Service. The pilot was allocated a squawk of 4571, a Basic Service was agreed and the QNH of 1019hPa was passed. There were no further RTF exchanges between the pilot and the controller until the pilot went off frequency at 1327:41.

At 1327:41 the pilot advised the controller*, "I'd like to change to Liverpool on 119.855 please."* The controller responded with *"roger, squawk conspicuity and free-call en-route."*

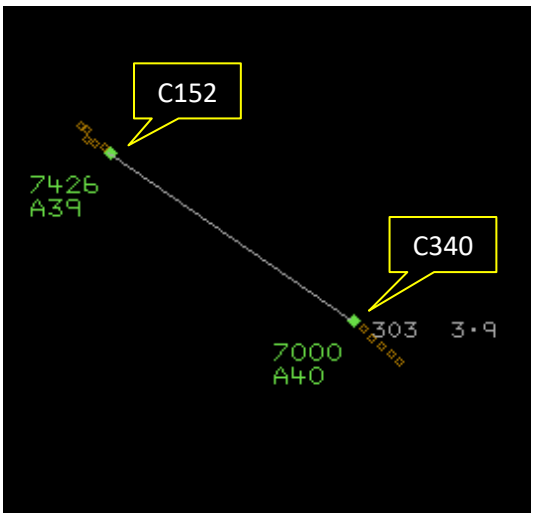


Figure 1 – 1327:41 squawk changes to 7000

At 1327:50, when the pilot made initial contact with the Liverpool radar controller, they were told to squawk 5050 and standby while the ATCO focused on inbound traffic. When the ATCO went back to the pilot, the primary radar contact of the C340 was displaying at the extremity of the controller display, 35NM from Liverpool, with the SSR code not yet displayed. The primary contact was seen converging with another contact which was right on the edge of the display, this conflicting contact was tracking off the edge of the display to the southeast. The squawk of 5050 eventually appeared (at 1328:21) and the C340 continued north-bound towards Liverpool controlled airspace.

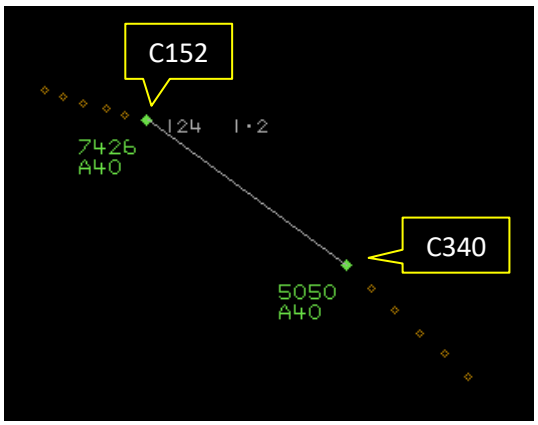


Figure 2 – 1328:21 the C340 7000 Squawk changes to 5050 (Liverpool).

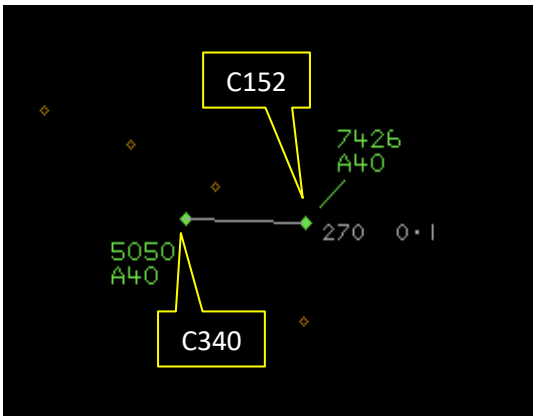


Figure 3 – 1328:40 CPA.

The C340 pilot had left the East Midlands frequency in direct confliction with the C152, with the SSR data indicating that the aircraft were 3.9NM and 100ft apart. The C340 was 25NM from East Midlands at the time, and the C152 would have been approximately 30NM from East Midlands and on the extremity of the controller display. Under the terms of a Basic Service, the East Midlands controller was not required to monitor the flight of the C340; they had been vectoring IFR inbounds and dealing with local VFR flights and controlled airspace transit flights in the lead-up to the pilot requesting to change frequency to Liverpool. The pilot had left the East Midlands frequency and was not yet in receipt of a service from the Liverpool controller when the Airprox occurred.

Military ATM

The Shawbury Zone controller was nearing the end of a high intensity one hour session providing a Lower Airspace Radar Service in the Shawbury area of responsibility. A trainee controller was sat behind, in anticipation of the expected position handover, with the Shawbury Zone controller discussing expected scenarios to the trainee. The C152 pilot was in receipt of a Basic Service having previously been denied a Traffic Service due to controller workload. The Shawbury Zone controller

observed the close proximity of the C152 and C340 although no Traffic Information was passed, as the C152 reported the near-miss first.

The Shawbury Zone Supervisor was positioned within the Approach Control Room throughout. They did not witness the Airprox, however were aware of the very high workload experienced by the Shawbury Zone controller preceding the Airprox.

Figures 4-6 show the positions of the C152, C340, and 2 other significant Lower Airspace Radar Service aircraft at relevant times during the Airprox. The screenshots were taken from a combination of replays using both Unit radars (Figures 4 and 6) and NATS radars (Figure 5). As NATS radars are not available to the Shawbury controllers they may not be entirely representative of the picture available, however the Unit radars provide the exact radar view seen by the controller.

Figure 4 (1328:05): Traffic information provided to LARS #1.

36sec prior to the Airprox CPA at 1328:05, the Shawbury Zone controller provided Traffic Information to the LARS #1 pilot regarding a Shawbury-based helicopter, "*traffic believed to be you has got traffic overhead erm indicating three hundred feet above, Shawbury rotary conducting PFLs*". Following acknowledgment of the Traffic Information and reporting visual, LARS #1 then requested an en-route change to [their next frequency].

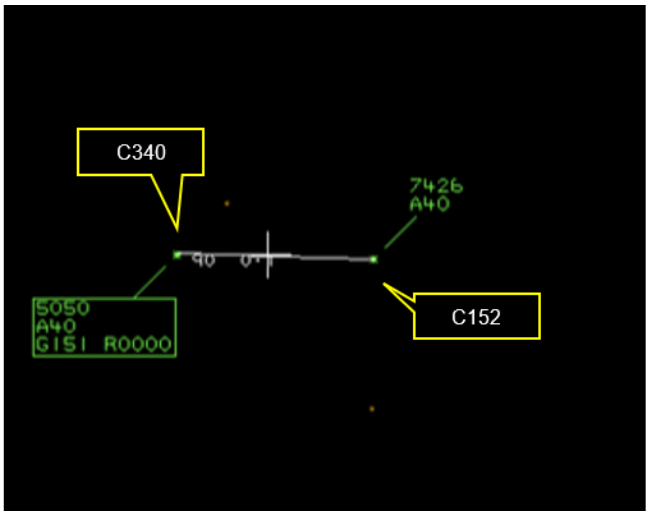


Figure 5 (13:28:41): CPA.

CPA was measured at 0.1NM and 0ft separation. No Traffic Information was provided to the C152 pilot regarding the C340.

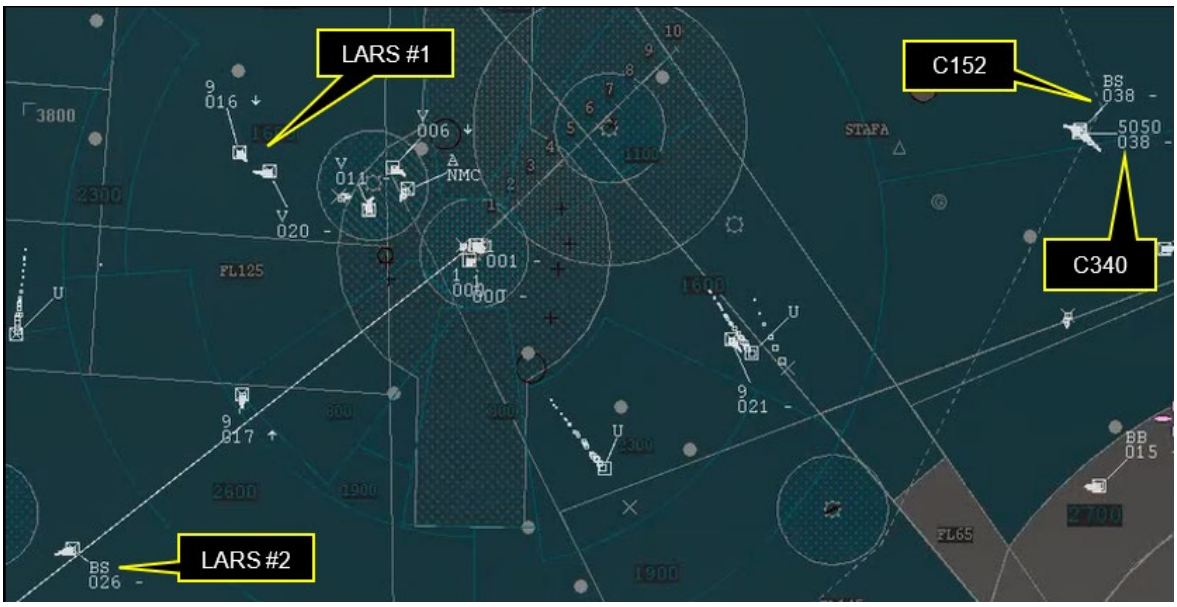


Figure 6 (13:28:42): Response to routing update from LARS #2.

Coincidental with the Airprox was a transmission from, and to, the LARS #2 pilot. Prior to the CPA, at 1328:39 the LARS #2 pilot updated their routing to which the Shawbury Zone controller responded at 1328:42.

When considering the high workload being experienced, the Shawbury Zone controller correctly refused the initial Traffic Service request by the C152 pilot. There was subsequently no further request from the C152 pilot or offer of a Traffic Service from the Shawbury Zone controller as workload decreased.

Prior to the Airprox, the Shawbury Zone controller was providing Traffic Information to LARS #1 regarding a Shawbury-based helicopter. As the practice forced landing profile of the helicopter resulted in it descending through the level of LARS #1, provision of Traffic Information was required to ensure separation could be effectively maintained. This Traffic Information drew the attention of the Shawbury Zone controller to the northwest of Shawbury.

In the period between Traffic Information to LARS #1 and the Airprox there is evidence, through the rotation of labels, of the Shawbury Zone controller scanning to the west of Shawbury. During this period the Shawbury Zone controller was also discussing with the trainee scenarios that they were likely to expect in their upcoming session. When combined with the movement of the cursor and rotation of labels it can be assumed that the scan was limited to the east where the C152 was transiting. The C152 pilot subsequently received no Traffic Information regarding the C340.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft were detected and identified using Mode S data. At 1328:37, the aircraft were separated by 0.2NM horizontally and were at the same altitude, Figure 7.

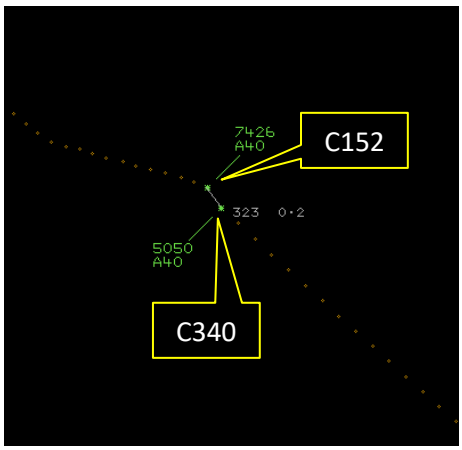


Figure 7 – 1328:37

On the next radar sweep, at 1328:41, the aircraft had passed and the recorded separation was 0.1NM horizontally and 0ft vertically, Figure 8. However, following their respective tracks, in the time between the radar sweeps, the aircraft would have passed closer than 0.1NM and so the separation at CPA has been recorded as <0.1NM which would have occurred at approximately 1328:40.

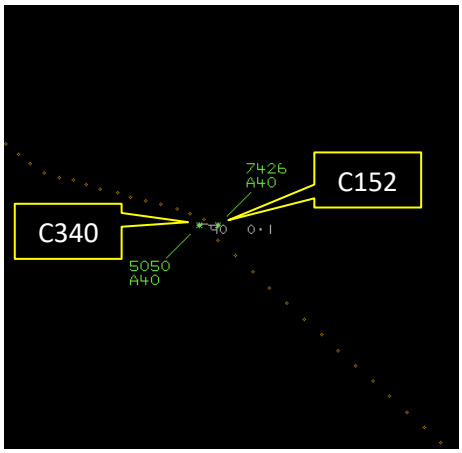


Figure 8 – 1328:41

The C152 and C340 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[1] If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.[2] Nothing in (UK) SERA regulation shall relieve the pilot-in-command of an aircraft from the responsibility of taking such action, including collision avoidance manoeuvres based on resolution advisories provided by ACAS equipment, as will best avert collision.[3]

Summary

An Airprox was reported when a C152 and a C340 flew into proximity 4NM northeast of Stafford at 1329Z on Friday 20th January 2023. Both pilots were operating under VFR in VMC, the C152 pilot in receipt of a Basic Service from Shawbury LARS and the C340 pilot in receipt of a Basic Service from Liverpool Radar.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. Relevant

[1] (UK) SERA.3205 Proximity.
[2] (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.
[3] (UK) SERA.3201 General.

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 considered the role of air traffic service selection and provision for both aircraft; they noted that the C152 pilot had, rightly in their opinion, asked for a radar-based Traffic Service from Shawbury LARS but accepted that controller workload (**CF3**) had meant that a Basic Service had been offered instead. However, members considered whether the pilot could well have re-stated their request for an upgrade to a Traffic Service as time moved on (**CF1**, **CF2**). The Board wished to remind pilots that the CAA operates a reporting mechanism for denial of service (via Form FCS 1522) and it was important that airspace users continued to ask for whichever service was most suited to their situation and, if not available, should complete and submit a report to the CAA.

The Board wondered why the C340 pilot had taken the decision to switch from East Midlands Radar directly to Liverpool Radar, where Shawbury LARS appeared to have been a more obvious choice, and that their request had been for a Basic Service, whereas a Traffic service might well have been more useful. The Board accepted that there had been little more that Liverpool Radar could have done on this occasion. The Board opined that the differing radio selection strategies between the 2 aircraft had contributed to reduced situational awareness of both pilots and, therefore, had contributed to the Airprox (**CF5**).

The Board noted that the C152 had been carrying additional Electronic Conspicuity (EC) equipment, and that it should have been able to interact with that equipment carried by the C340, but that no warning had been reported as having been received by the C152 pilot; members could not ascertain why this had been the case and agreed that this lack of alert had been contributory to the Airprox (**CF4**). The Board noted that, at the time of visually acquiring the C340, the only option open to C152 pilot had been a left turn and that they had not seen any avoiding action from the other aircraft (C340). However, the C340 pilot reported that they had acquired the opposing aircraft both visually and on TAS at a range of about 1NM; they assessed that the aircraft would probably have passed down their right hand side but had nonetheless turned left to increase separation. The Board noted the Closest Point of Approach (CPA) (as measured on radar) of 0ft vertically and <0.1NM horizontally and felt that the C340 pilot may have been better served by taking more determined action to increase separation between the 2 aircraft when they had first become aware (through TAS and/or visual sighting) of the presence of the C152 (**CF6**, **CF7**).

When assessing the risk involved in this Airprox, members considered the reports from both pilots and the radar replay and controlling authorities' reports. They noted that the separation between the two aircraft had been minimal, with a late sighting from the pilot of the C152 and a slightly earlier sighting from the pilot of the C340 (**CF8**, **CF9**). Although members felt that the C340 pilot could perhaps have taken more positive action to ensure adequate separation, they agreed that any collision risk had been removed by the actions of both pilots. Consequently, the Board assigned a Risk Category C to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2023006			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Situational Awareness and Action			
1	Contextual	• ANS Flight Information Provision	Provision of ANS flight information	The ATCO/FISO was not required to monitor the flight under a Basic Service
2	Contextual	• ATM Service Effects	An event affecting Air Traffic Management operations.	Controller not able to provide requested ATS

3	Human Factors	• Task Monitoring	Events involving an individual or a crew/ team not appropriately monitoring their performance of a task	Controller engaged in other tasks
	• 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
	• Electronic Warning System Operation and Compliance			
6	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
7	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			
8	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
9	Human Factors	• Lack of Individual Risk Perception	Events involving flight crew not fully appreciating the risk of a particular course of action	Pilot flew close enough to cause concern

Degree of Risk: C.

Safety Barrier Assessment[4]

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 both pilots were in receipt of a Basic Service, which does not require controller monitoring, and the Shawbury controller's attention was directed to the west of Shawbury, discussing scenarios with the U/T controller.

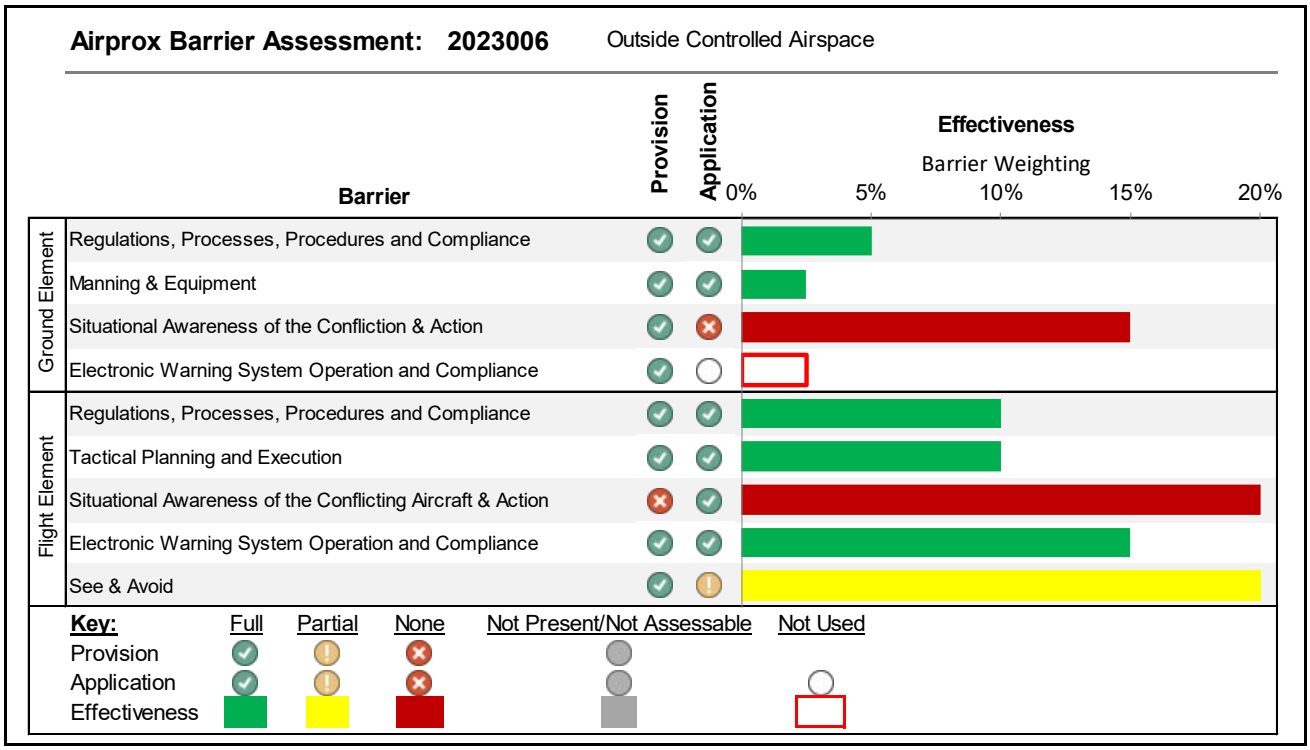
Electronic Warning System Operation and Compliance were assessed as **not used** because the C152 squawk was not in the Shawbury select frame for STCA.

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the C152 pilot had no situational awareness on the C340 and the C340 pilot's situational awareness occurred at a late stage, at about the time they acquired the C152 visually.

See and Avoid were assessed as **partially effective** because the C152 saw the C340 at a late stage and the C340 pilot flew close enough to the C152 to cause its pilot concern.

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


Airprox Barrier Assessment: 2023006
Outside Controlled Airspace
Barrier
Provision
Application
Effectiveness
Barrier Weighting
0%
5%
10%
15%
20%
Ground Element
Regulations, Processes, Procedures and Compliance
Manning & Equipment
Situational Awareness of the Confliction & Action
Electronic Warning System Operation and Compliance
Flight Element
Regulations, Processes, Procedures and Compliance
Tactical Planning and Execution
Situational Awareness of the Conflicting Aircraft & Action
Electronic Warning System Operation and Compliance
See & Avoid
Key:
Full
Partial
None
Not Present/Not Assessable
Not Used
Provision
Application
Effectiveness