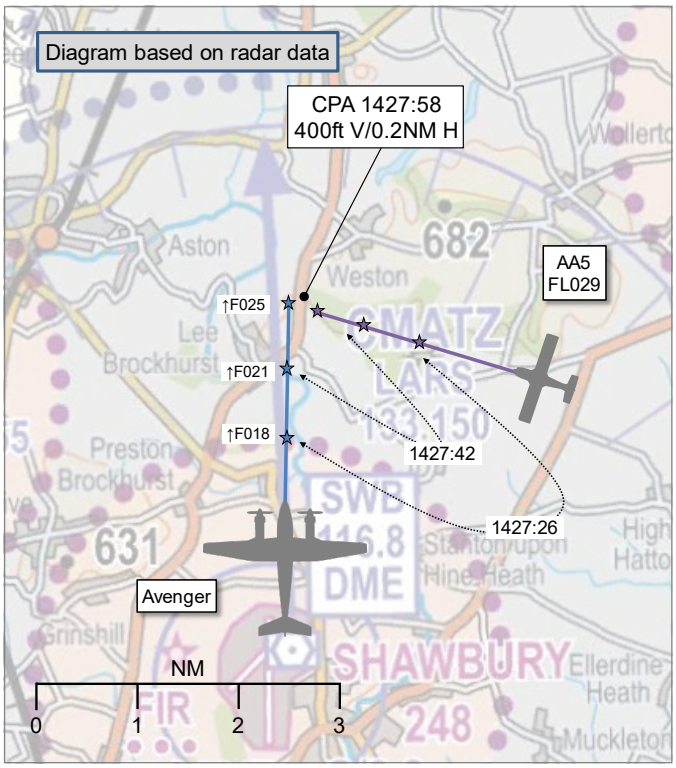
AIRPROX REPORT No 2023144

Date: 29 Jun 2023 Time: 1428Z Position: 5250N 00239W Location: 3NM N Shawbury

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Avenger	AA5
Operator	RN	Civ FW
Airspace	Shawbury CMATZ	Shawbury CMATZ
Class	G	G
Rules	VFR	VFR
Service	Traffic	Basic
Provider	Shawbury	Shawbury
Altitude/FL	FL025	FL029
Transponder	A, C, S+	A, C
Reported		
Colours	White, Blue	White
Lighting	NR	Strobe, Nav
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2000ft	3100ft
Altimeter	QFE (1008hPa)	QNH
Heading	359°	280°
Speed	150kt	110kt
ACAS/TAS	TCAS II	Not fitted
Alert	RA	N/A
Separation at CPA		
Reported	300ft V/0m H	500ft V/150m H
Recorded	400ft V/0.2NM H	



THE AVENGER PILOT reports that during departure from RAF Shawbury, a TCAS RA occurred at approximately 2200ft. Shortly after departing RW36, they had been cleared RW track to FL60. During the handover to Shawbury Approach, the handling pilot became aware of proximate TCAS traffic ahead of the aircraft, and started to reduce the rate of climb whilst trying to get visual with the other aircraft. Shortly afterwards, a TCAS RA declared 'level off, level off' followed by 'descend, descend'. The instructions were followed and the aircraft was descended back down to 2000ft. The TCAS symbology displayed +03, meaning that the other aircraft was approximately 300ft above. TCAS RA was called on the radio to Shawbury Approach at the time. The crew had not spotted the other aircraft until after the event.

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

THE AA5 PILOT reports that during their flight to [destination] it was necessary to transit through the Shawbury MATZ. Prior to the MATZ boundary, a call was made to Shawbury Radar on 133.150MHz to obtain permission. The relevant aircraft information was passed to the controller and permission was granted, and acknowledged, to enter the MATZ not below 2400ft. During the MATZ transit, radio messages could be heard that Shawbury was shortly to allow an aircraft to depart, as another aircraft ahead also bound for [destination airfield] was requesting to change frequency, however Shawbury Radar requested that they stay on frequency as Shawbury had the departing aircraft. As they continued across the MATZ, they received a radio message advising traffic to the left. The aircraft was quickly spotted by both the pilot and passenger, and a radio message was made to Shawbury that they were visual with the traffic. The aircraft was assumed to be the one departing Shawbury, and it appeared to be climbing very fast, however, there was good separation and they were visual with it at all times. The other aircraft then turned left and the separation distance increased.

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

THE SHAWBURY APPROACH CONTROLLER reports that they were the Approach controller for the departure of all three Navy Avenger visiting aircraft. After release, the first aircraft climbed out slowly, was identified and controlled for their transit to the southwest. When the Tower controller called for release of the second aircraft, there was a MATZ crossing aircraft, but it was judged to be far enough away not to cause too much drama. The Zone controller stated that the MATZ crossing pilot was visual with the Avenger. The Avenger pilot came to the Approach frequency requesting a Traffic Service. They gave the pilot the service and called traffic to them, which was the MATZ crossing aircraft. The pilot paused and stated 'TCAS RA'. They were working at least two Avengers, plus a free-calling Juno to the southwest, as well as monitoring Stud 4 and 5.

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

THE SHAWBURY ZONE CONTROLLER reports that it was a medium intensity session with multiple LARS transits, although they could not remember the total number of aircraft that they were working at the time of the incident. They were working multiple aircraft requiring MATZ crossings and, as such, a blanket climb-out restriction of 1600ft QFE was in place. The aircraft that was involved in the incident was a Basic Service aircraft, transiting to [destination] from the east. The pilot was given a MATZ crossing, not below 2400ft on Shawbury QNH (equating to not below 2100ft QFE). An Approach squawk departed from RW36 which they knew, from general awareness within the Approach Control Room (ACR), was a Navy Avenger departing. They did not recall whether the Approach controller specifically told them that the track would be climbing through the climb-out restriction, but remembered being told of at least one departure that would be doing so. As the Approach track climbed towards their Basic Service traffic, they called the traffic under duty of care, to which the pilot reported visual. The pilot did not indicate on the radio any safety concerns, and was released to Sleap as they reached the lateral limits of the Sleap ATZ.

THE SHAWBURY SUPERVISOR reports that while they were in the ACR and sat next to the RA controller, they did not witness the incident itself. Earlier in the morning, the pilot of one of the [Avengers] called and they discussed their departure profiles, which was briefed as VFR to the southwest requesting FL80. The Supervisor explained that, if they remained on RW36, the pilots could expect RW track to height 2000ft and then own navigation to the southwest. As the transit level was FL80, the Supervisor did not expect, and it was not requested, that the 3 aircraft would work Swanwick Mil. When the first Avenger departed, they had to react to the request, on departure, to work Swanwick Mil and, to support the Approach ATCO, they completed the prenote and handover of the first aircraft. They were aware there was a blanket climb-out restriction of 1600ft in place, but were unsure if any specific aircraft had been pointed out to the Approach ATCO by the Zone ATCO; they did recall the Approach ATCO telling the Zone ATCO they were climbing through the climb-out restriction, but were unsure as to which aircraft this referred to. At the time of the TCAS RA, they were on the phone to Swanwick Mil, as Swanwick were checking whether they should expect more aircraft; they prenoted the other 2. Hence, they were not monitoring frequencies or radar screens. They heard the Approach ATCO speak to the [pilot of the] second Avenger departing, and call traffic, and also heard that there was a TCAS RA reported.

Factual Background

The weather at Shawbury was recorded as follows:

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METAR EGOS 291450Z 29009KT 9999 SCT049 20/08 Q1017 NOSIG RMK BLU BLU=
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Analysis and Investigation

Military ATM

An Airprox occurred on 29 Jun 23 at approximately 1515 UTC, on departure from RAF Shawbury RW36. The Avenger was departing Shawbury on runway track, climbing to FL60, in receipt of a Traffic Service from the Shawbury Approach controller. The AA5 was conducting a VFR westbound MATZ crossing of the Shawbury northern stub, in receipt of a Basic Service, but from the Shawbury Zone controller.

Utilising occurrence reports and information from the local investigation, outlined below are the key events that preceded the Airprox. Where available, they are supported by screenshots to indicate the positions of the relevant aircraft at each stage. The screenshots are taken from a combination of replays using both Unit and NATS radars. As NATS radars are not available to the controllers, they may not be entirely representative of the picture available, however, the Unit radars provide the exact radar view as seen by the controllers.

The Shawbury Approach controller was conducting band-boxed operations, with responsibility for Shawbury Director and Shawbury Low Level. The band-box was conducted iaw local orders, with traffic levels being low and consisting of 2 Juno aircraft, one on recovery from the south, and one for departure.

The Avenger was one of the 3 such aircraft departing RAF Shawbury, all with pre-briefed departure profiles of VFR to the south, en-route [destination].

Sequence of Events

At 1425:40, the Shawbury Tower controller requested release for the departure of the Avenger, from the Shawbury Approach controller. All runway departures are subject to call for release at RAF Shawbury, iaw local orders and as such climb-out restrictions are not routinely passed to Shawbury Tower. The Shawbury Approach controller approved the release of the Avenger iaw the pre-briefed departure profile of runway track, climbing FL60 initially. The climb-out restriction was not passed to the Shawbury Tower controller by the Shawbury Approach controller.

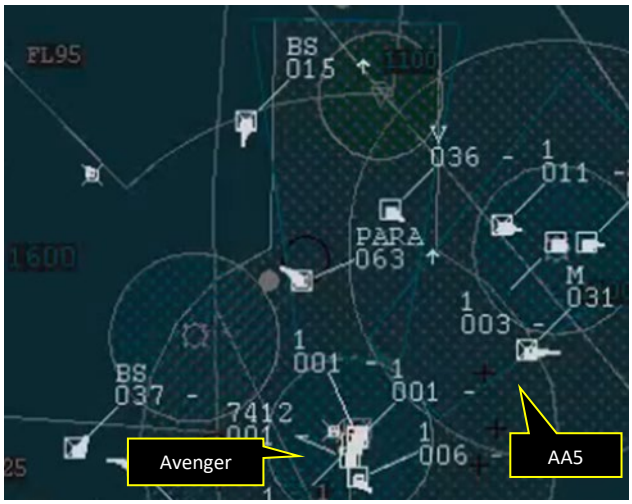


Figure 1 - (1425:40): Avenger release approved by the Shawbury Approach controller.

At 1427:24, the Shawbury Zone controller passed Traffic Information to the AA5 [pilot] on the Avenger. "*Traffic believed to be you has traffic left two o'clock, one and a half miles, crossing left right ahead, fast-moving Beech two hundred climbing out of Shawbury, indicating nine hundred feet below, climbing*". The AA5 pilot reported visual with the traffic. At no point had the Shawbury Zone controller been informed that the Avenger had been cleared to climb through the climb-out restriction and the controller therefore assumed the Avenger would climb not above 1600ft QFE iaw the climb-out restriction.

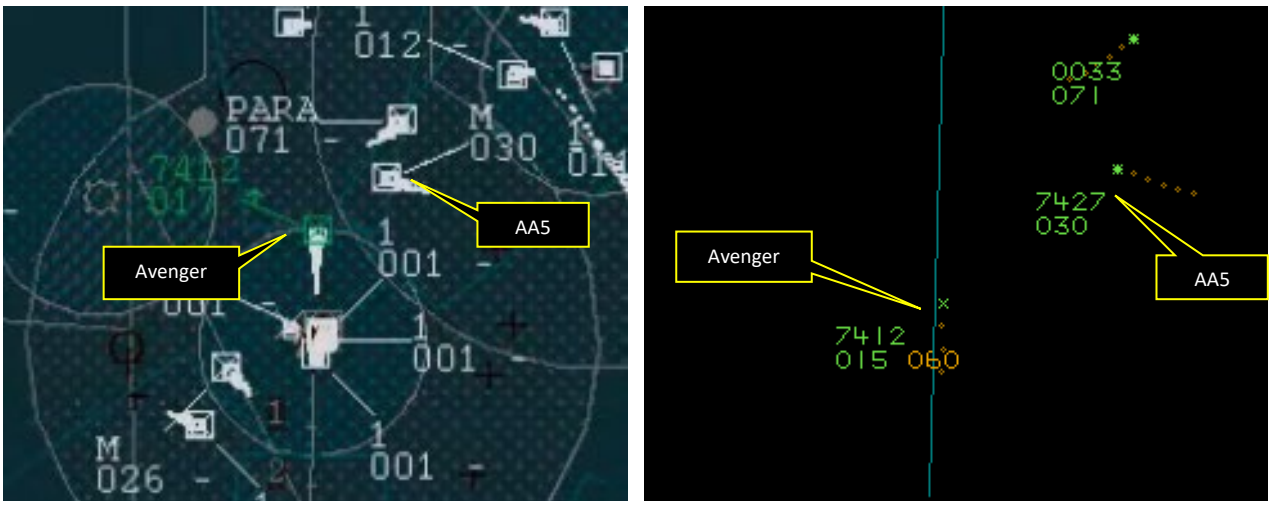


Figure 2 - (1427:24): Traffic Information passed to the AA5 pilot on the Avenger.
(Separation: 1.6NM)

At 1427:34, the Avenger [pilot] contacted the Shawbury Approach controller on climb-out and requested a Traffic Service, in the climb to FL60. At 1427:39, a Short-Term Conflict Alert was received by both the Shawbury Approach and Shawbury Zone controllers.

At 1427:44, the Shawbury Approach controller responded by providing a Traffic Service and issuing Traffic Information to the Avenger [pilot] on the AA5, "*Traffic right, half a mile, crossing right to left, indicating five hundred feet above*". The Avenger pilot responded with "*looking for the traffic*". At 1427:58, the Avenger pilot reported a TCAS RA.

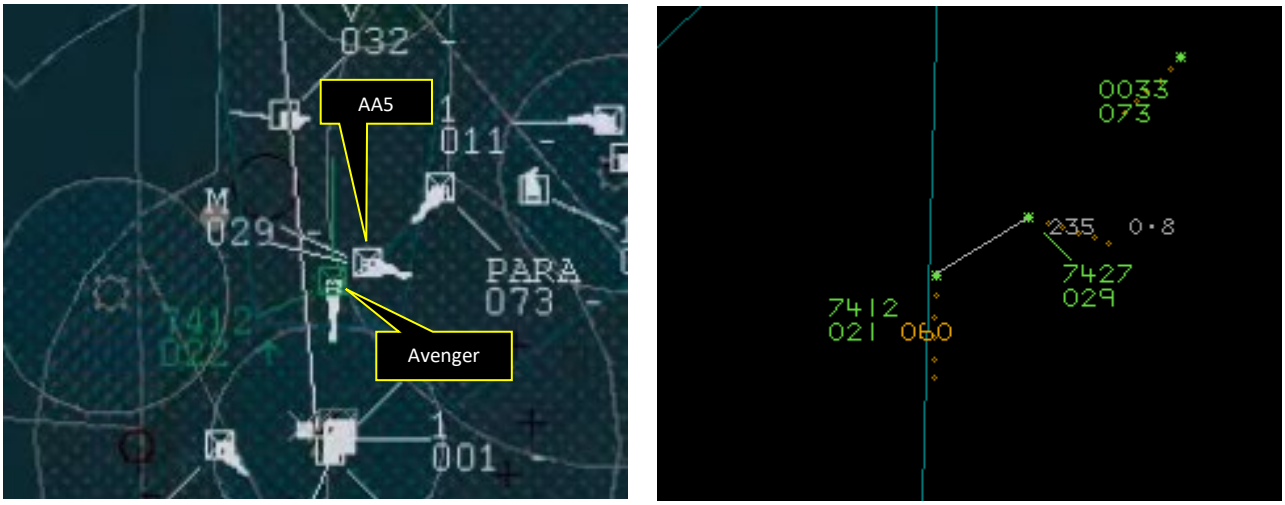


Figure 3 - (1427:44): Traffic Information passed to the Avenger pilot on the AA5.
(Separation: 0.8NM)

CPA was measured at 0.2NM and 400ft separation.

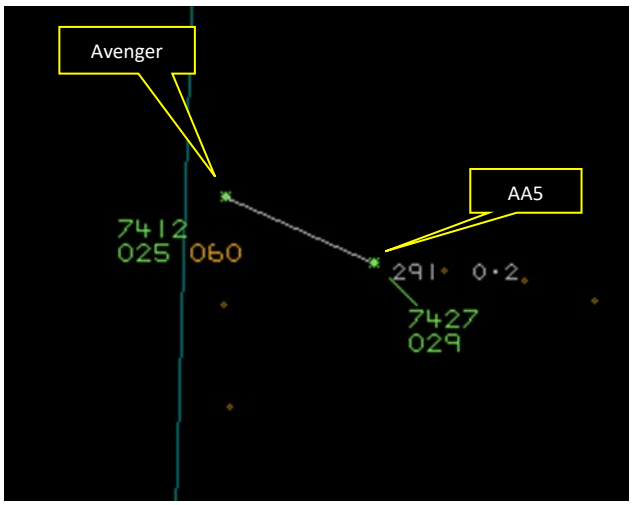


Figure 4 - (1427:58): CPA.

Local BM Investigation

The RAF Shawbury investigation identified the cause of the Airprox as a loss of safe separation between co-operating aircraft, following the incorrect release of the Avenger and subsequent climb into confliction with the AA5. Several BM-related causal/aggravating factors were identified that were believed to have contributed to the Airprox:

a. Whilst the climb-out restriction was issued, and the Shawbury Approach controller was aware of it, other controllers within the Approach Control Room, including the Shawbury Supervisor, were not. A review of the climb-out restriction notification procedure was recommended.

b. The Shawbury Approach controller did not correctly assess the potential confliction between the Avenger's departure profile and the AA5's MATZ crossing routing. The band-boxed nature of the operation at the time may have presented a distraction, and hence a review of Shawbury local procedures regarding band-boxed operations was recommended.

2 Gp BM Analysis

As outlined in the local investigation, the climb-out restriction not being issued to the Avenger pilot prevented separation being achieved in a timely manner. The Shawbury Zone controller was operating under the understandable assumption that, as a climb-out restriction was in place, all departures would be sufficiently height separated below the AA5. Regardless, the Shawbury Zone controller still provided Traffic Information in excess of their Basic Service responsibilities, which aided the AA5 pilot in becoming visual with the Avenger. The Shawbury Approach controller both did not apply the climb-out restriction, and did not assess the potential confliction between the Avenger and the AA5. Whilst Traffic Information was passed, it was delayed through the Avenger pilot changing frequency from Shawbury Tower to Shawbury Approach, consequently, it was then late and did not enable the Avenger pilot to become visual with the AA5.

UKAB Secretariat

The Avenger and AA5 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 converging then the Avenger pilot was required to give way to the AA5.[2]

[1] (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.
[2] (UK) SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

Comments

Navy HQ

From a NCHQ perspective the Local BM, and 2 Gp BM investigations seem to have been conducted thoroughly, and both highlighted all of the relevant learning points correctly. 750 NAS has no issues or comments to add other than to thank Shawbury and their higher organisations for a thorough investigation.

AOPA

As this Airprox demonstrates, if clearances change it is advantageous for the changes to be communicated. Furthermore, the use of a transponder allows for TCAS to be an effective barrier to mid-air collision avoidance.

Summary

An Airprox was reported when an Avenger and an AA5 flew into proximity 3NM north of Shawbury at 1428Z on Thursday 29th June 2023. Both pilots were operating under VFR in VMC, the Avenger pilot in receipt of a Traffic Service from Shawbury Approach and the AA5 pilot in receipt of a Basic Service from Shawbury Zone.

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 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 looked at the actions of the controllers. The Zone controller had been providing a Basic Service to the AA5 pilot and, because the aircraft routing had been to cross the departure lane, they had correctly applied a climb-out restriction to restrict any departing aircraft. The Board agreed, therefore, that they would not have been expecting that the Avenger would climb into their traffic. Nevertheless, on seeing that it had been climbing above the expected restriction, the Zone controller had provided timely Traffic Information to the AA5 pilot which had enabled the pilot to become visual with the departing Avenger. The Approach controller reported that they had been aware that a climb-out restriction had been in place, but had thought that the Avenger would not have affected the AA5, and had tried to be expeditious by allowing the Avenger a continuous climb (**CF1**, **CF3**). Some members expressed surprise that the controller had ignored the climb-out restriction, but were told by an RAF advisor that the previous Avenger had turned much earlier onto a south-westerly heading and consequently, the Approach controller had expected this pilot to do the same. Nevertheless, controller members pointed out that it was always better to revert to 'fail safe' and thought that the controller should have exercised caution and applied the climb-out restriction, which could have been lifted once the Avenger had been safely on frequency. In the event, by the time the Avenger pilot had reported on frequency, the first opportunity that the controller had had to pass Traffic Information had already been too late to provide timely information to the pilot (**CF2**). The Board noted that both controllers had received an STCA (**CF4**), although given that the Zone controller had already passed Traffic Information, and the Avenger pilot had called the Approach controller almost at the same time as the alert, it had probably made little difference on this occasion.

Some members wondered whether the Supervisor could have had the opportunity to intervene and remind the Approach controller about the climb-out restriction, but it was noted that the Supervisor reported that they had been speaking to Swanwick Mil at the time of the Airprox, liaising over the unexpected Avenger handovers. Members agreed that this had been an appropriate use of the Supervisor's time, because it had spared the Approach controller the liaison with Swanwick. Members also noted that the initial warn-out by the Avenger crews had not included the requirement for a service with Swanwick Mil and that, although this may have seemed like a small omission, it had subsequently

become a distraction to the controlling team and added to the admin burden within the Tower, highlighting the importance of accurate warn-out requests.

Turning to the actions of the pilots, the AA5 pilot had been given timely Traffic Information by the Zone controller and had been visual with the Avenger. Members thought that the AA5 pilot had acted appropriately in calling Shawbury ATC for a MATZ crossing, and had agreed to remain on the frequency until clear of the departure lane, and could have done little more in the circumstances. However, members noted that under the terms of a Basic Service the controller had not been required to provide Traffic Information to the AA5 pilot and, further noting that the AA5 had not been fitted with any form of EC equipment, therefore wished to urge pilots to take advantage of the CAA rebate scheme for EC devices.[3] By way of contrast, the Avenger pilot had not received any Traffic Information on the AA5 until they had called on the Approach frequency moments before the Airprox (**CF5**), by which point they had concurrently received the TCAS RA (**CF7**), which had only added to the uncertainty surrounding the situation (**CF6**). It had not been until after the Avenger pilot had followed the TCAS RA that they had become visual with the AA5 (**CF8**). Again, members thought that, without any prior knowledge of the presence of the AA5, there had been little more the Avenger pilot could have done.

When determining the risk of the Airprox, the Board considered the reports from both pilots and those of the controllers, together with the radar screenshots. They noted that both pilots had assessed the risk of collision as 'low' and that the AA5 pilot had been provided with timely Traffic Information that had enabled them to become visual with the Avenger. Members therefore agreed that, although safety had been degraded, there had been no risk of collision; Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2023144			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Regulations, Processes, Procedures and Compliance			
1	Human Factors	• ATM Regulatory Deviation	An event involving a deviation from an Air Traffic Management Regulation.	Regulations and/or procedures not fully complied with
	• Situational Awareness and Action			
2	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
3	Human Factors	• Inappropriate Clearance	An event involving the provision of an inappropriate clearance that led to an unsafe situation	
	• Electronic Warning System Operation and Compliance			
4	Technical	• STCA Warning	An event involving the triggering of a Short Term Conflict Alert (STCA) Warning	
	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	~~• Unnecessary Action~~	~~Events involving flight crew performing an action that was not required~~	Pilot was concerned by the proximity of the other aircraft
	• Electronic Warning System Operation and Compliance			
7	Contextual	• ACAS/TCAS RA	An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system resolution advisory warning triggered	
	• See and Avoid			

[3] Details of the CAA rebate can be found at https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/

8	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[4]

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

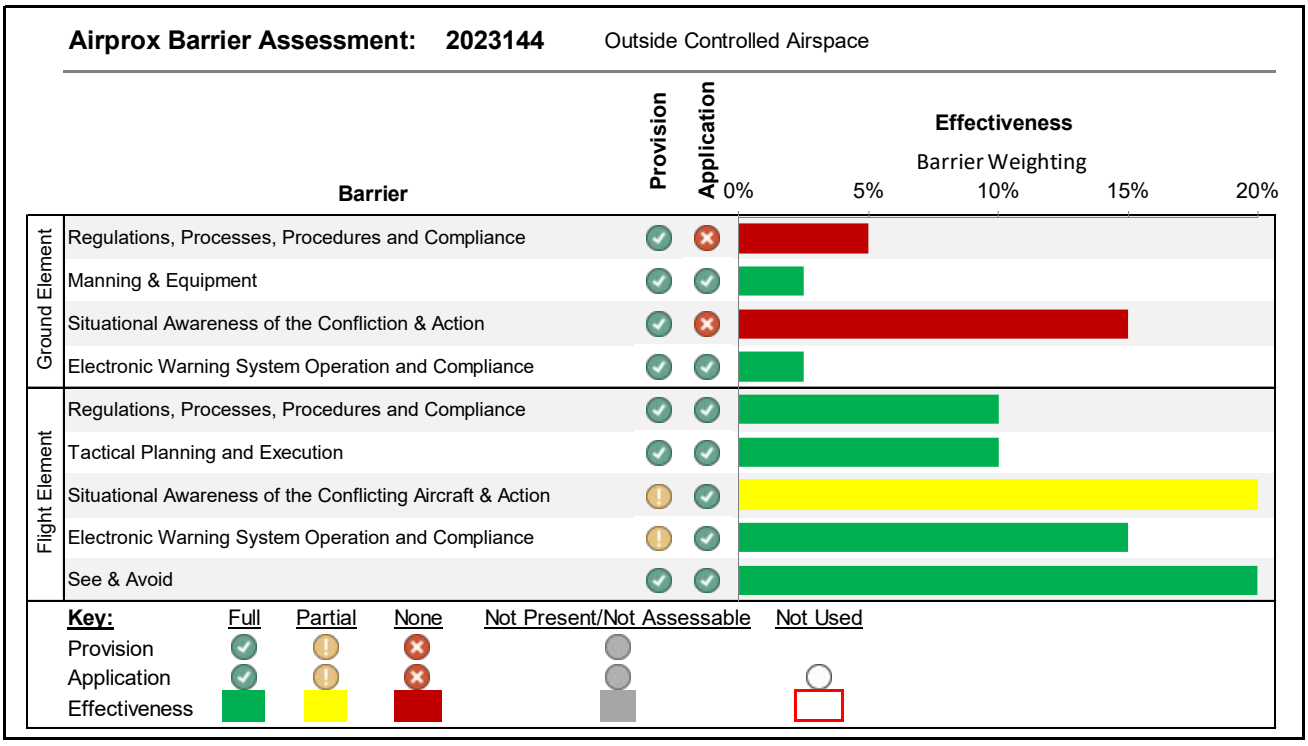
Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the Approach controller had not adhered to the climb-out restriction.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the Approach controller had allowed the Avenger to depart without applying the climb-out restriction and had been unable to pass timely Traffic Information on the AA5.

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the Avenger pilot had not been aware that the AA5 had been crossing the climb-out lane until they called the Approach controller after departure.



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