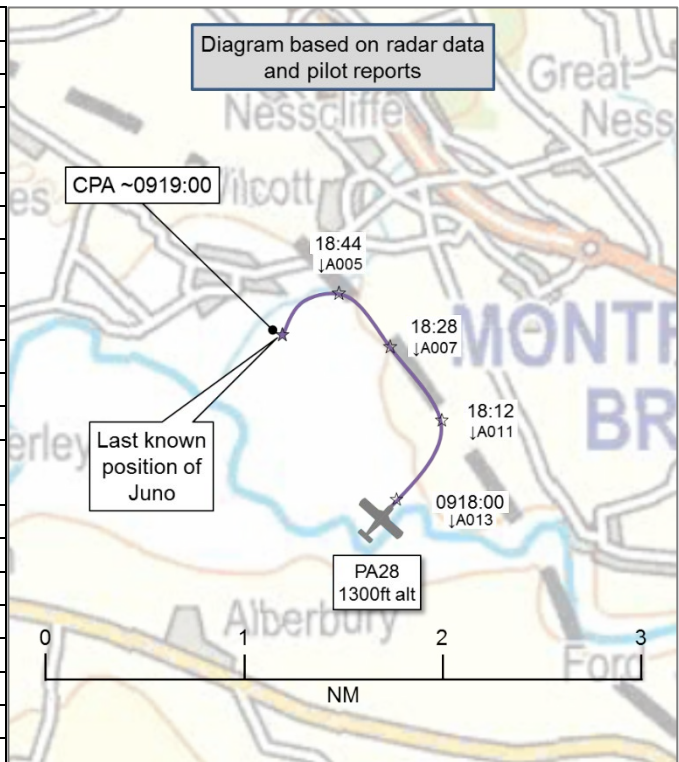


**AIRPROX REPORT No 2019243**

Date: 22 Aug 2019 Time: 0919Z Position: 5245N 00255W Location: Nesscliffe Training Area

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	Juno	PA28
Operator	HQ Air (Trg)	Civ FW
Airspace	Nesscliffe Training Area	Nesscliffe Training Area
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic
Provider	Shawbury LL	Shawbury Zone
Altitude/FL		FL002
Transponder	A, C, S	A, C, S
<b>Reported</b>		
Colours	Black/Yellow	White/Maroon
Lighting	Strobes, HISL, Landing Light	White strobes, Beacon
Conditions	VMC	VMC
Visibility	20km	
Altitude/FL	80ft	500ft
Altimeter	QNH (1012hPa)	QNH
Heading	300°	240°
Speed		75kt
ACAS/TAS	TCAS I	NR
Alert	TA	NR
<b>Separation</b>		
Reported	100ft V/0m H	Not Seen
Recorded	NK	



**THE JUNO PILOT** reports that the crew was operating in the Nesscliffe training area, conducting confined area training. During the vertical climb-out of the confined area, the crewman called “height is good” and, as the aircraft became level with the top of the trees, he saw a single-engine fixed-wing aircraft pass approximately 100ft directly overhead. Once the fixed-wing aircraft had cleared the area, the Juno departed from the confined area and advised ATC of the civilian aircraft operating at low-level above the Nesscliffe complex. The crew was informed that ATC was aware of the fixed-wing and it was conducting PFL training to the Nesscliffe training area and that this information was broadcast over the relevant frequencies. However, because the Juno was on the ground inside a confined area at the time of broadcast, the call was not received. Prior to lifting from the confined area, the ACAS was checked but had no indication of the fixed-wing traffic. An indication was only given after the crewman had visually spotted the other aircraft, and the ACAS indication was only on the screen with no audio warning because the Juno was at low-level. Due to the angle of approach of the fixed-wing aircraft (from the rear quadrant) it was impossible for the handling pilot to spot and, if operating without a crewman, the incident could have been much worse. The Juno pilot opined that it would have been difficult for the fixed-wing pilot to have seen the Juno in the final stages of the PFL and unlikely that the pilot was even aware of their presence.

The pilot assessed the risk of collision as ‘Medium’.

**THE PA28 PILOT** reports that he was conducting a SEP renewal test on an experienced PPL and glider pilot, and glider CFI and examiner. After the initial part of the test had been completed, he gave the candidate a gradually increasing practise engine failure, culminating in a practise seized engine; the candidate selected a field to the south-east of the Nesscliffe training area. They were already in two-way contact with Shawbury Zone, and he called “C/S commencing a PFL” as per the agreed procedure between Shropshire Aero Club and ATC at RAF Shawbury; this was acknowledged. At 800ft on the

QNH, he asked the candidate to go-around, which the candidate accomplished promptly and he believes that they did not descend below 500ft agl. During the PFL, both he and the candidate kept a visual lookout and, during the latter stages of the PFL, they were informed of a Tutor aircraft a mile to their west on a southerly heading. The examiner called “climbing away” from the PFL, and “contact” with the Tutor aircraft. The candidate then turned right onto a westerly heading, taking them behind and well clear of the Tutor. The crew does not recall being told about, or seeing, the Juno helicopter in question. The pilot states that Nesscliffe training camp is an area which he knows is used by the RAF Helicopter Training school at RAF Shawbury. His understanding was that the area used for ‘field landings’ was only to the north-west of the main camp. This area is visible from the air and looks like a military training area. Once the candidate had chosen his field, the examiner assessed that their flight path would not take them over that training area or any potential conflict, otherwise he would not have allowed the candidate to continue. Having since had a discussion with RAF Shawbury, Shropshire Aero Club is now aware that the training area extends over farmland SE of the camp, which is where the incident happened. This has been promulgated to the Shropshire Aero Club instructors and members.

The pilot did not provide an assessment of the risk of collision.

**THE SHAWBURY LARS CONTROLLER** reports that he was working a number of Basic Service (BS) tracks as well as one Tutor on a Traffic Service (TS) operating out to the west of Shawbury. He assessed the task difficulty as low and the workload as medium-low. An aircraft had climbed out of Sleaf requesting a BS and to general handle to the west of Sleaf in a block between 2000ft and 4000ft on the Shawbury QNH. The controller states that this is a common sortie profile for aircraft from Sleaf. During the sortie the pilot informed the controller that they were conducting a PFL in the vicinity of Nesscliffe. Under a duty-of-care to the pilot, he requested that he call climbing away. No conflicting traffic was observed on radar until later on in the PFL profile, when the controller called Traffic Information to the aircraft he believed to be conducting the PFL. The traffic to affect was a Tutor operating a couple of miles further to the west. Under the rules of a Traffic Service, the Tutor pilot had been given traffic information on the aircraft conducting the PFL. Knowing that the PFL profile would take the aircraft inside the LFA,<sup>1</sup> he informed the Shawbury Low-Level controller (which was the Approach Controller) and heard them broadcast that an aircraft was conducting a PFL in the vicinity of Nesscliffe. The Basic Service aircraft reported safely climbing away from their PFL; no other information was passed. The aircraft then continued its flight. It was not until later that day that the controller heard that an Airprox had been declared.

The controller perceived the severity of the incident as ‘Low’.

**THE SHAWBURY LOW-LEVEL CONTROLLER** assessed her task difficulty as low, with medium-to-low workload. She reports that as soon as the LARS controller informed her of the PA28 conducting PFLs in the Nesscliffe area, she immediately informed all stations on both Shawbury Low-Level frequencies. Approximately 3 mins later, a Juno called up within the Nesscliffe training area requesting details of the other aircraft. She informed them again that it was a PA28 conducting PFLs in the Nesscliffe area, whereupon the Juno pilot informed her that they hadn’t been advised of that aircraft. The controller responded that it had been passed on both Low-Level frequencies 3 mins previously. The Juno pilot then stated that the PA28 was about 200ft above them; no mention of an Airprox was made on the frequency.

The controller perceived the severity of the incident as ‘Low’.

**THE SHAWBURY SUPERVISOR** reports that the Low-Level controller broadcast on both the Shawbury Low-Level frequencies that a civil fixed-wing was operating in the vicinity of Nesscliffe because the parameters would put the aircraft well within the LFA. The pilot of the Juno operating at Nesscliffe then asked about the civil aircraft and it was pointed out that a broadcast had been made. The Supervisor later went to the record-and-replay position and confirmed a broadcast had been conducted. No mention of an Airprox was made on frequency, it was only later reported as such by phone.

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<sup>1</sup> Low Flying Area – the UK is divided into a number of Low Flying Areas for use by military aircraft. These areas are applicable to military aircraft only and do not affect the general use of the airspace within which they are found.

## **Factual Background**

The weather at RAF Shawbury was recorded as follows:

METAR EGOS 220920Z 22014KT 9999 BKN030 19/14 Q1021 NOSIG RMK BLU BLU=

## **Analysis and Investigation**

### **Military ATM**

The Juno crew was conducting Confined Area (CA) training at Nesscliffe Training Area and receiving a Basic Service from Shawbury Low-Level. The Low-Level task involves warnings to Shawbury-based aircraft about activity at numerous CA locations, as well as any non-station based military aircraft operating in Low Flying Area 9 (LFA 9). On climb-out from the CA, abeam the top of the trees, the Juno rear crewman became aware of a PA28 overflying them by a reported 100-200ft. The Juno pilot reported that they had checked their ACAS prior to lift and there had been no indication of the PA28 prior to the Airprox occurring.

The PA28 was conducting a navigation exercise to and from Sleaf airfield and was in receipt of a Basic Service from Shawbury Zone. During this sortie, the PA28 pilot reported that they intended to conduct a PFL in the vicinity of Nesscliffe. Although there were no observed radar conflicts in the area, the Zone controller informed the Low-Level Controller about the PFL in order to aid situational awareness of station-based aircraft operating in the LFA.

The incident occurred below radar cover, but analysis of the R/T recordings provided indicates that the PA28 declared his intention to conduct a PFL at 0916:56 and called climbing away from the PFL at 0918:56. The Shawbury Low-Level Controller issued an all-stations broadcast on the LFA frequencies at 0917:12 about the PA28 PFL and the Juno reported being overflown by the PA28 at 0919:55.

The Unit investigation identified that the broadcast made by the Low-Level controller was not received by the Juno crew due to their low altitude. It further identified that there was a misunderstanding by the PA28 pilot about where at Nesscliffe helicopter training took place. Following this incident, closer liaison has taken place between Shawbury and Sleaf to update the latter on helicopter training areas.

It was unfortunate that the Juno did not receive the warning issued by the Low Level controller and the event took place below radar cover, denying the Zone controller the opportunity to pass Traffic Information to the PA28. That said, the liaison between the controllers involved was correct, followed extant procedures and, therefore, their actions were appropriate during this incident.

### **UKAB Secretariat**

The NATS radar display clearly shows the presence of the Juno over the Nesscliffe Training Area around the reported time of the Airprox. The radar return shows the aircraft in the hover at 400ft [UKAB note: the Juno pilot reports a QNH setting of 1012hPa – the NATS radar was set to a QNH of 1023hPa] and then fades at 0912:04 – see Figure 1 below. It is likely that, from this time forward, the Juno crew was conducting confined area training as per the pilot's report.

During the time that the Juno is below the base of radar coverage, the PA28 tracks towards the last known position of the Juno – see Figure 2 below (the white cross denotes the last known position of the Juno).

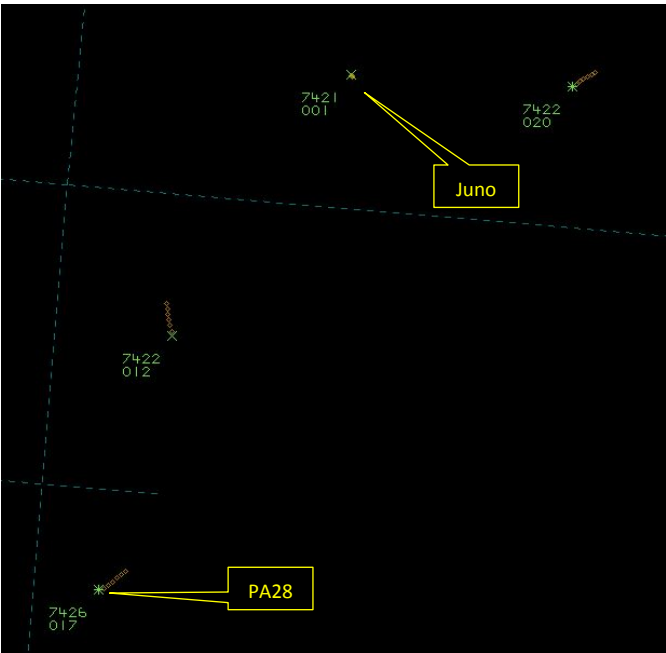


Figure 1  
Radar picture immediately prior to the Juno fading from radar

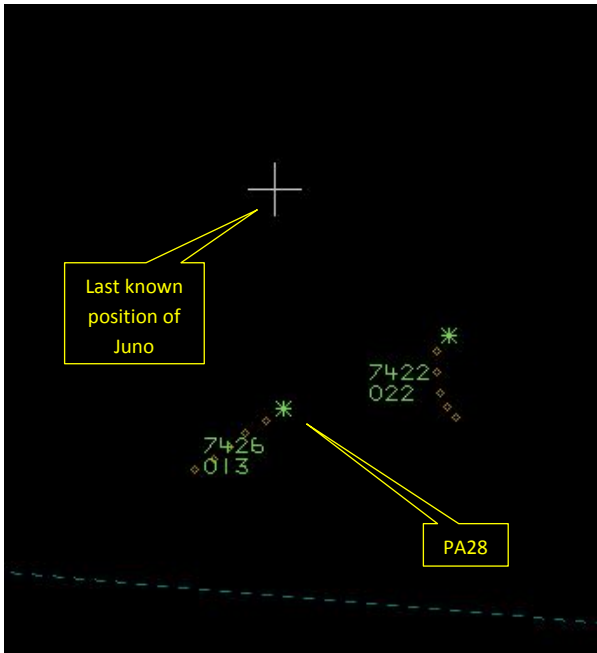


Figure 2  
Radar screenshot at 0917:40

In Figure 3 below, the PA28 has made a left turn towards the last known position of the Juno and is descending, in what appears to be preparation for the reported PFL in the area around Nescliffe Camp.

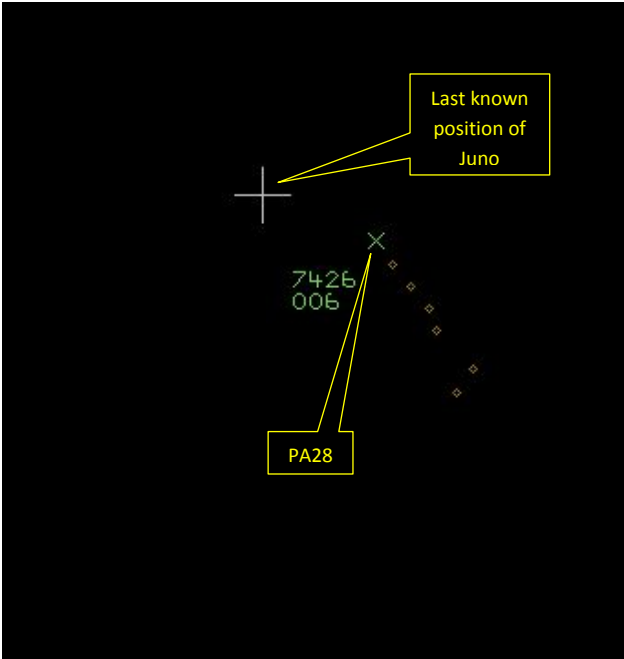


Figure 3  
Radar screenshot at 0918:31

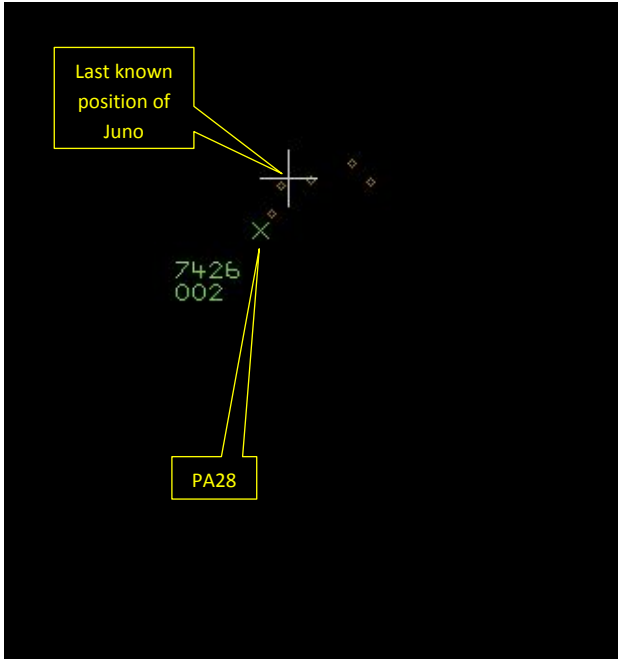


Figure 4  
Radar screenshot at 0919:00

The pilot of the PA28 continues the descent profile, overflying the last known position of the Juno, to a lowest recorded altitude of 500ft. The elevation of the ground at this point is 195ft, thus the PA28 reaches a lowest recorded height of about 305ft agl. The Juno is still below the base of radar coverage at this time – see Figure 4.

Radar contact on the Juno is regained at 0920:06 showing the aircraft at an altitude of 500ft (305ft agl), very close to its position immediately prior to the return fading. It is therefore not possible to measure a CPA from the data recorded.

A map of the Nesscliffe Training Area is at Figure 5 below.

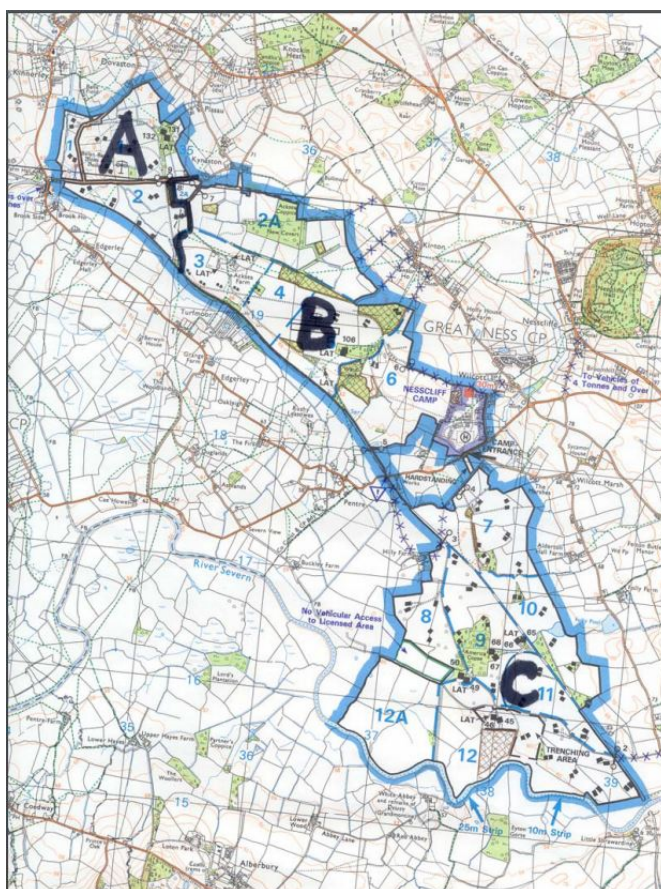


Figure 5 – Nesscliffe Training Area<sup>2</sup>

The Juno 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>3</sup> Practise Forced Landings conducted in UK airspace are subject to a derogation from SERA.5005(f)(2) ('The 500ft Rule') which states that an aircraft may fly at a height of less than 150m (500ft) when the pilot is practising approaches to forced landings other than at an aerodrome if it is not flown closer than 150m (500ft) to any person, vessel, vehicle or structure.<sup>4</sup>

## Comments

### HQ Air Command

Because Shawbury-based Juno helicopter crews only submit routes on CADS for missions outside Low Flying Area 9, and the PA28 pilots did not have access to CADS, there was no facility to plan to avoid. Although the process of notifying the Juno crew of the PA28's intentions using ATC was well utilised, it would appear that the nature of the Juno's flight profile shortly before the Airprox (operating in a clearing in a small wood and therefore with limited RT), defeated this barrier. The CWS barrier seems to have been defeated by the same circumstance, although it did eventually display the PA28 after the Juno had gained some height.

<sup>2</sup> Source: <https://www.raf.mod.uk/our-organisation/stations/raf-shawbury/documents/nesscliffe/>

<sup>3</sup> SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

<sup>4</sup> Official Record Series 4, No 1174, 3(b).

The PA28 pilot was unaware that DHFS activity could take place in the area where they had selected their PFL. Separation was reduced further by the PA28 descending to a recorded 305ft agl. Fortunately, the Juno crewman utilised an effective lookout, spotted the PA28 and instructed the Juno pilot to stop his vertical climb – highlighting the essential nature of this crew position and the CRM required during such an activity, especially given the fragility of the ATC and CWS barriers. Since this incident, liaison has taken place between RAF Shawbury, Shropshire Aero Club and Sleaf Airfield Manager to educate GA pilots on DHFS activity at Nesscliffe Training Area and distribute the Nesscliffe Training Area Chart to improve their SA.

## Summary

An Airprox was reported when a Juno and a PA28 flew into proximity over Nesscliffe Training Area at around 0919hrs on Thursday 22<sup>nd</sup> August 2019. Both pilots were operating under VFR in VMC, the Juno pilot in receipt of a Basic Service from Shawbury Low Level and the PA28 pilot in receipt of a Basic Service from Shawbury Zone.

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

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and a report from the appropriate ATC operating authority. 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 considered the actions of the PA28 pilot and agreed that he had taken reasonable precautions to separate the area of his Practise Forced Landing (PFL) from where he believed that military helicopters operate at low-level over the Nesscliffe Training Area. However, he had not been aware that the military training area extended further to the SE than he had initially thought (**CF3**). Members were heartened to hear that, in the wake of this incident, additional communication has taken place between the Defence Helicopter Flying School and the local flying club, and the latter has been provided with a map detailing the full extent of the Nesscliffe Training Area. With the Juno pilot conducting training into confined areas, members noted that the helicopter would probably have been hidden from the view of the PA28 pilot for a period of time, and vice-versa, thus inhibiting the effectiveness of the see-and-avoid barrier for both pilots (**CF5**). Indeed, the Board concluded that this contributed to the Airprox in that the PA28 pilot never saw the Juno (**CF7**).

Turning to the actions of the Juno pilot, members agreed that there was no way that he could have known of the presence of the PA28 beforehand as he had not received the broadcast from the Shawbury Low Level controller regarding the activity of the PA28 in the vicinity of the Nesscliffe Training Area (**CF4**). The Board noted that the Juno pilot had received a TCAS TA, but that this had been after CPA and thus was not a contributory factor in the Airprox. Members praised the actions of the Juno crewman in being able to spot the approaching PA28 as the Juno lifted from the confined area and informing the pilot of the presence of the other aircraft. Ultimately, it had been the actions of the Juno pilot, in arresting his climb from the confined area, that had resolved the conflict (**CF6**).

When discussing the actions of the Shawbury Low Level and LARS controllers, the Board felt that perhaps an opportunity to pass generic Traffic Information to the pilot of the PA28 had been lost. The PA28 pilot had informed the LARS controller of his intention to conduct a PFL in the vicinity of Nesscliffe Training Area and this information had, in turn, been passed to the Low-Level controller in order to permit a broadcast to be made on the Low-Level frequencies. Members considered that it would have been beneficial if the Low-Level controller had passed information – albeit generic – on helicopter activity back to the LARS controller so that the PA28 pilot could have been informed that there may have been helicopter activity beneath him (**CF1, CF2**).

Members discussed at length the possibility of a central repository – possibly web-based – of areas where military helicopters conduct similar types of training to that being conducted by the Juno crew involved in this Airprox. A military member briefed the Board that there were some 70-80 fields and

clearings used around Shawbury alone, and that this kind of training can be conducted almost anywhere, so a library of possible training sites around the UK would be almost impossible to populate and would certainly not provide information on the level of training activity expected at a certain site at any given time. The Board heard from a military member that busy training areas near military training airfields are marked on VFR charts as Areas of Intense Aerial Activity and was advised that dissemination of more localised detail this kind of activity would probably be best achieved through the Regional Airspace User Working Groups that are held across the UK.

Turning to the risk involved in this Airprox, members felt that there had been potential for the CPA to have been much closer had it not been for the actions of the Juno crewman in alerting the pilot to the presence of the PA28. However, military helicopter members stated that this is one of the reasons that a crewman is carried on this type of training mission and so it could have been expected that he would be carrying out the lookout task above and behind the helicopter as it climbed from the confined area. Consequently, the Board agreed that, whilst safety had been degraded, there had been no risk of collision and, accordingly, they assessed the risk as Category C.

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

### Contributory Factors:

	2019243		
CF	Factor	Description	Amplification
	<b>Ground Elements</b>		
	<b>• Situational Awareness and Action</b>		
1	Contextual	• Situational Awareness and Sensory Events	Generic, late, no or incorrect Situational Awareness
2	Human Factors	• Traffic Management Information Provision	Not provided, inaccurate, inadequate, or late
	<b>Flight Elements</b>		
	<b>• Tactical Planning and Execution</b>		
3	Organisational	• Flight Planning Information Sources	Inadequate planning material
	<b>• Situational Awareness of the Conflicting Aircraft and Action</b>		
4	Contextual	• Situational Awareness and Sensory Events	Generic, late, no or incorrect Situational Awareness
	<b>• See and Avoid</b>		
5	Contextual	• Poor Visibility Encounter	One or both aircraft were obscured from the other
6	Contextual	• Near Airborne Collision with Aircraft, Balloon, Dirigible or Other Piloted Air Vehicle	A conflict in the FIR
7	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: C

### Safety Barrier Assessment<sup>5</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 the Shawbury Low-Level controller broadcast the activity of the PA28 on the Low-Level

<sup>5</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

frequencies but the Shawbury Zone controller did not pass reciprocal generic Traffic Information on helicopter activity to the pilot of the PA28.

**Flight Elements:**

**Tactical Planning and Execution** was assessed as **partially effective** because the PA28 pilot was not fully aware of the all areas around Nescliffe Training Area in which Shawbury-based helicopters conduct their training.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because neither pilot had specific SA on the presence or location of the other aircraft and the Juno pilot did not hear the broadcast transmission regarding the presence of the PA28.

				Effectiveness				
		Provision	Application	Barrier Weighting				
Barrier				0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 5%]				
	Manning & Equipment	✓	✓	[Green bar to 3%]				
	Situational Awareness of the Confliction & Action	⚠	⚠	[Yellow bar to 15%]				
	Electronic Warning System Operation and Compliance	⊖	⊖	[Grey bar to 3%]				
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 10%]				
	Tactical Planning and Execution	⚠	✓	[Yellow bar to 10%]				
	Situational Awareness of the Conflicting Aircraft & Action	✗	✓	[Red bar to 20%]				
	Electronic Warning System Operation and Compliance	⚠	✓	[Green bar to 15%]				
	See & Avoid	✓	✓	[Green bar to 20%]				
<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	■	■	■	■			□	