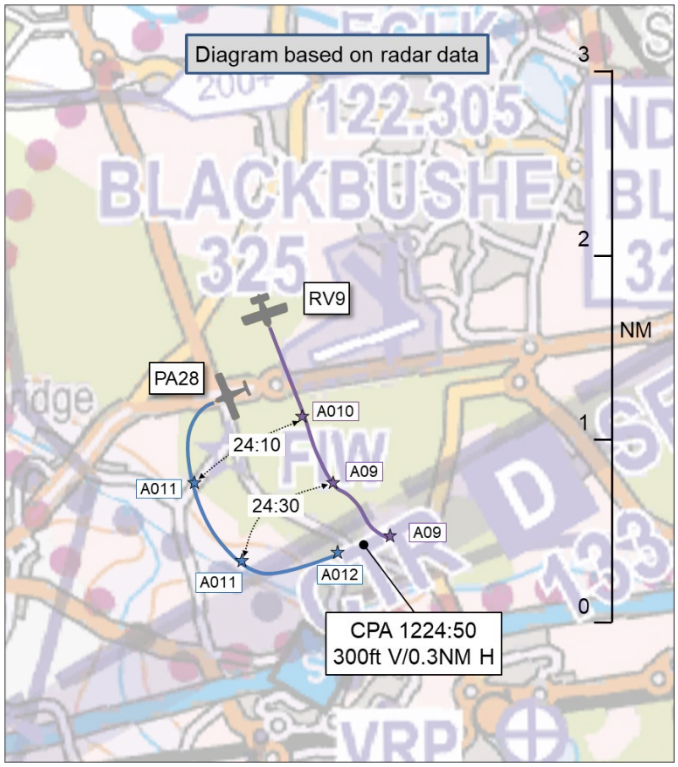
AIRPROX REPORT No 2024247

Date: 28 Sep 2024 Time: 1225Z Position: 5118N 00051W Location: Blackbushe circuit

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA28	RV9
Operator	Civ FW	Civ FW
Airspace	Blackbushe ATZ	Blackbushe ATZ
Class	D (LFA)	D (LFA)
Rules	VFR	VFR
Service	AFIS	AFIS
Provider	Blackbushe Info.	Blackbushe Info.
Altitude/FL	1200ft	900ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Silver	Off white/green
Lighting	Nav, anti-collision & strobes.	Nav, strobes to rear & wingtips
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	900ft	800ft
Altimeter	QFE (1013hPa)	QFE
Heading	070°	165°
Speed	90kt	80kt
ACAS/TAS	SkyEcho	Not fitted
Alert	None	N/A
Separation at CPA		
Reported	100ft V/200m H	Not seen
Recorded	300ft V/0.3NM H	



THE PA28 PILOT reports that their student had conducted a 'touch and go' on RW25, climbing to downwind in a left-hand circuit. As [the student] rolled the wings level downwind, they spotted the RV joining crosswind and could see that [the RV pilot was] putting themselves directly in their path. The RV pilot did not appear to register their presence and proceeded to turn downwind directly in front of them. Fortunately, the student had levelled 100ft high, putting them 100ft above the RV. The student spotted the RV a few seconds later as they were making their downwind call, then made the sensible decision to turn left to the deadside and rejoin the circuit.

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

THE RV9 PILOT reports they were approaching from the north. They entered the Blackbushe ATZ and joined the standard published crosswind pattern for RW25 left-hand. They made their 'entering the ATZ and joining crosswind' call to ATC slightly late due to a lengthy transmission between the FISO and an aircraft that had just landed. The FISO reported an aircraft taking off on RW25 and they observed this aircraft climbing and passing the end of the runway. It disappeared underneath, well below them, and they assumed it had continued to climb on the runway heading. As they made their left turn on to the downwind leg and reported 'downwind' they then heard a call from, what turned out to be [that aircraft pilot], reporting that they were now downwind. ATC called to report another aircraft ahead and [the PA28 pilot] called that they were returning to the deadside, and that they would be reporting an Airprox. They did not see the aircraft at all and therefore took no further action. They continued downwind and landed. They rang the tower to confirm that another aircraft had come close enough to report an Airprox in the circuit and they stated that, although they had not seen the aircraft they would be filing an Airprox report themselves. Looking at their GPS log and replays on ADS-B data software, they estimated that the other aircraft was at least 300m away at its closest.

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

THE BLACKBUSHE AFISO reports that on the afternoon of 28th September, they recalled the event. [The PA28] was in the circuit and on final approach for a touch and go as [an RV9] was joining. [The RV9 pilot] called entering the ATZ and was [requested to] report downwind and the Traffic Information was a PA28 on the runway for a 'touch and go'. [The RV9 pilot] acknowledged and reported they were visual with the 'touch and go' traffic. At this point they did not give reciprocal Traffic [Information] to the PA28 [pilot] as [they were] in a critical phase of flight on the climbout. [The PA28 pilot] reported downwind and [the FISO] was visual with the RV9 also turning downwind. They reported to [the PA28 pilot] that the RV9 had joined downwind ahead. [The PA28 pilot] then reported they were repositioning to the deadside. It was busy at the time, but [the RV9 pilot] had reported visual with traffic on the climbout and, at that point, they had not anticipated there would be any conflict.

Factual Background

The weather at Farnborough was recorded as follows:

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METAR EGLF 281220Z 32007KT 280V350 9999 SCT039 13/04 Q1025
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Analysis and Investigation

Blackbushe Airport

Blackbushe Tower was notified by the pilot in command of [the PA28] that they intended to file an Airprox that occurred within the Blackbushe ATZ on the 28th September 2024 at 1225. The Airprox was reported between [a PA28 pilot] operating in the circuit and [an RV9 pilot] who was joining the circuit to land (from the north). The Airprox was reported via R/T, and was noted within the Blackbushe Airport internal occurrence reporting system. Blackbushe Airport has conducted a unit investigation as below, including reviewing recordings of the Blackbushe frequency at the time.

The review included the FISO's report (above) and R/T recordings.

The following is a timeline of pertinent R/T, based on the transcript from Blackbushe Airport.

At 1220:22 the pilot of the RV9 made their first call to Blackbushe to which the response was *'[RV9 c/s] Blackbushe Information, good afternoon runway in use is 25 with a left-hand circuit and the QFE 1013 Basic Service'.* The RV9 pilot read back the information and declared that they were *'6 miles to the north',* and were asked to report entering the ATZ.

There followed a clearance to land for an unrelated aircraft and Traffic Information on the arriving RV9 to another unrelated aircraft which then changed to an enroute frequency, after which there was a changeover of AFISO.

At 1222:16 the pilot of the PA28 called *'final touch and go runway 25',* they were given the wind direction and told to 'touch and go' at their discretion, which was acknowledged.

The AFISO then went on to provide parking instructions to an unrelated aircraft after it had landed. Shortly after 1222:35 the RV9 pilot called *'entering the ATZ squawking 7010'.* The FISO responded *'[RV9 c/s] squawk 7010 report downwind, traffic is a PA28 on the climbout into the circuit.'* To which the RV9 pilot replied *'Visual with that traffic thank you, and squawking 7010, will report downwind [c/s]'.*

The AFISO continued to be occupied with the previous parking instructions while at 1224:23 a previously announced aircraft confirmed entering the zone. They were informed *'[c/s] roger report downwind there are 2 aircraft downwind'.* This was acknowledged. The PA28 pilot then called '*[c/s] is downwind touch and…'* The FISO called back '[PA28 c/s] *roger there's one ahead of you uhh just joined, an RV9'* and the PA28 pilot responded *'[c/s] we're heading to the deadside'.* The FISO then stated that there was another aircraft joining from the deadside, to which the PA28 pilot confirmed they were visual. The RV9 pilot then called downwind, followed by their final call.

At 1225:05 the PA28 pilot confirmed that they would be reporting an Airprox.

Blackbushe reviewed ADS-B data traces of the two aircraft and noted that the reported occurrence occurred inside the Blackbushe ATZ. By their assessment, the aircraft were in a similar location within the ATZ separated by approximately 300ft vertically. Although the data could not be verified.

Due to the location of the report, there was no based CCTV that captured the incident.

In reviewing their 'Aerodrome Rules and Procedures' (V8a) it was noted that it listed two standard VFR joins. One from outside controlled airspace to the north and west and the other from within controlled airspace to the south and east. In this instance the [pilot of the] joining [RV9] had descended to circuit height on the deadside avoiding noise abatement areas to join crosswind for RW25 in compliance with the aerodrome Rules & Procedures.

[The PA28] was operating in the Blackbushe circuit at the time of incident [they recalled] and was observed by the [AFISO] to be flying reasonably tight circuits on the crosswind end, turning crosswind quite early after take-off. The pilot of [the RV9] may not have anticipated the climbout [PA28] to fly a tight circuit, therefore causing a potential conflict in the downwind leg. This may have been a contributory factor.

On reviewing the published circuit diagrams, it was observed that the crosswind leg for a RW25 circuit was shown quite tight. These diagrams had been published in 2018 and were not intended to be to scale, rather to indicate the direction of travel. The circuit usually established by long-time resident pilots is usually quite a bit wider. It may be considered that the operator of [the PA28], who has been resident at the aerodrome only for the last couple of years, may have considered the published circuit diagram to be to scale, and followed it accordingly. In light of this, Blackbushe Airport has updated its Rules & Procedures, effective 6th November 2024 to version 8b. The 8a (left) and 8b (right) diagrams are shown below (Figure 1).

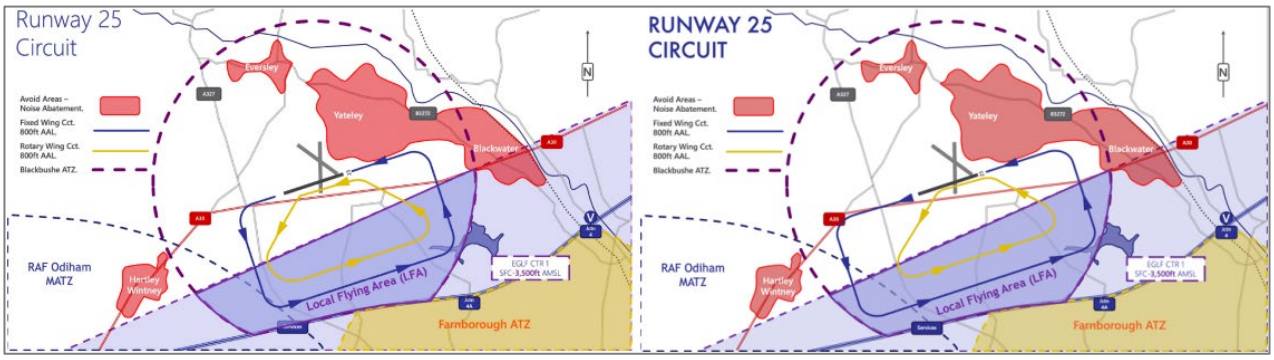


Figure 1 – Blackbushe circuit pattern at time of Airprox (V8a) and revised version (V8b)

Turning their attention to the published rules of the air, SERA.3225 notes that,

An aircraft operated on or in the vicinity of an aerodrome shall;

- Observe other aerodrome traffic for the purpose of avoiding a collision;
- Conform with or avoid the pattern of traffic formed by other aircraft in operation.

It may be argued that after reporting visual with established circuit traffic, [the PA28], the pilot of [RV9 c/s] did not integrate or observe other aerodrome traffic for the purpose of avoiding a collision. During the time of the incident, the radio recordings indicate a period of high workload for the AFISO, giving ground instructions to an unfamiliar aircraft on arrival whilst also dealing with circuit activity, arrivals and departures. Specific Traffic Information was provided to the pilot of [the RV9] who reported visual with the climbout traffic. A contributory factor to the Airprox that may be considered is that no specific Traffic Information was provided to [the PA28 pilot] operating in the Blackbushe circuit until they reported downwind.

Root causes were considered to be, the pilot of [the RV9] did not integrate with established circuit traffic as required by SERA.3225. This resulted in an Airprox report from the pilot of [the PA28]. The pilot of [the PA28] operated tight circuits, leaving less opportunity for joining aircraft to integrate. The AFISO on duty provided Traffic information on [the PA28] to [the RV9 pilot] but did not provide reciprocal information to [the PA28 pilot] and, finally, the published aerodrome diagrams may have contributed to the operation of tighter circuits by the pilot of [the PA28].

The occurrence was discussed amongst the AAM, Technical Officer, Tower Manager and duty AFISO. It was agreed that it would be beneficial to produce updated circuit diagrams (distributed on the website, and navigation devices) to indicate a slightly larger circuit (laterally). This may aid the integration of traffic joining from the north/west and provide more time for those aircraft to observe established circuit aircraft whilst on the climbout. At the time of completing this report, these diagrams have been published effective 6th November 2024.

With the benefit of hindsight, it would have been beneficial for the Blackbushe AFISO to have established communication with the climbout traffic [the PA28] and provide specific Traffic Information on [the RV9] joining from the north. If this information had been provided to the climbout traffic, it may have enabled both aircraft to avoid operating in close proximity to one another. Whether the passing of such information would have avoided the Airprox incident could not be determined.

Blackbushe Airport will undertake to provide a copy of this report to AFISOs and Air Ground operators to mitigate against any future reoccurrence. The Blackbushe winter update newsletter provides an opportunity to disseminate new circuit diagrams to resident pilots. Similarly, a safety action group meeting in December 2024 allowed an opportunity to discuss circuit dimensions with based flying schools. Pilot resources such as [electronic flight bags/navigation data] will be updated on the next cycle.

In conclusion, it was felt the Blackbushe published procedures worked as intended. From the perspective of the AAM and Tower Manager, the safety of any of the aircraft within this report was reduced by the operation as observed.

CAA ATSI

[The PA28] was in the circuit with [the RV9] joining from the north. No Traffic Information was passed to the pilot of [the PA28 on the RV9], and the pilot of [RV9] did not subsequently integrate correctly with the existing circuit pattern.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft were identified using Mode S data. The PA28 was in the circuit at Blackbushe and became visible on radar during its climbout from a ‘touch and go’ at 1223:50 while the RV9 joined the circuit from the deadside (Figure 2).

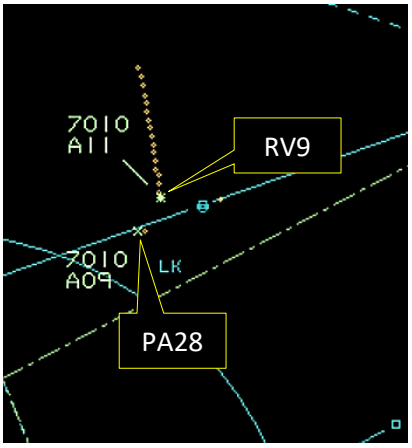


Figure2 – Time 1223:50 the PA28 climbing out and the RV9 joining.

The RV9 was seen joining ahead of the PA28 as they both turned downwind at 1224:46, and CPA was at 1224:50 (Figure 3). Altitudes are based on the London QNH 1025hPa.

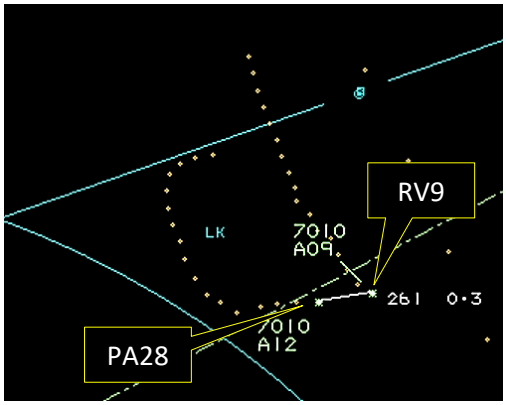


Figure 3 – Time 1224:50 CPA 300ft vertical and 0.3NM lateral separation

CPA was assessed to have occurred at 1224:50 with 300ft vertical and 0.3NM lateral separation just prior to the PA28 making a left turn towards the deadside and the lateral space increasing.

The GPS data provided by the RV9 pilot aligned with that of the radar replay.

The PA28 and RV9 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] An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.[2]

Summary

An Airprox was reported when a PA28 and an RV9 flew into proximity at Blackbushe at 1225Z on Saturday 28th September 2024. Both pilots were operating under VFR in VMC and in receipt of an AFIS from Blackbushe Information.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, GPS track data for the RV9, a report from the AFISO involved and a report from the appropriate 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 looked at the actions of the PA28 pilot and noted that the instructor had been working under a high workload in the circuit but, nevertheless, would be expected to have the capacity to manage that workload. The Board discussed the circuit pattern that the pilot had flown and wondered if it had been a standard or a tight circuit, and felt that it had not appeared unusual in any way that should have affected the joining RV9 pilot's judgement or expectations of the PA28's predicted flightpath. The Board was satisfied that the depiction of the circuit pattern provided in the Blackbushe Rules & Procedures had been indicative and not prescriptive, and did not consider that this had been a factor in this Airprox. Members noted that the PA28 pilot had been aware of the joining RV9 and that their student had manoeuvred away from it to the deadside on sighting the RV9 turning beneath and ahead of them. The Board agreed, therefore, that the PA28 pilot had been concerned by the proximity of the RV9 (**CF7**). Members agreed that the PA28's electronic conspicuity equipment would not have been expected to have detected any emissions from the RV9 (**CF5**) and therefore it had consequently not alerted the PA28 pilot to the proximity of the RV9.

[1] (UK) SERA.3205 Proximity.
[2] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

Turning their attention to the actions of the RV9 pilot, the Board agreed that it had been their responsibility, as the joining pilot, to fit in with the pattern of traffic as formed by the PA28. The Board agreed that, although they had been passed Traffic information, the RV9 pilot had not adapted their plan to avoid that traffic (**CF2**) and that, by turning downwind ahead of the PA28, they had not conformed with the pattern of traffic already formed (**CF3**). The Board agreed that although the pilot had had situational awareness of the PA28, they had not integrated with it as would have been expected (**CF4**). Members remarked the pilot had thought that the PA28 had still been on the climbout heading and agreed that this had been an incorrect assumption, particularly given that the AFISO had passed Traffic Information on the PA28 to the RV9 pilot stating that '*…traffic is a PA28 on the climbout into the circuit'*. The Board agreed that the RV9 pilot had not sighted the PA28 on its downwind leg (**CF6**).

The Board then discussed the actions of the Blackbushe AFISO, noting the they had passed Traffic Information to the RV9 pilot, but had passed late Traffic Information to the PA28 pilot (**CF1**). As part of their discussion, controller members reviewed the comments of the AFISO regarding their rationale for not passing the Traffic Information sooner, and while they thought that these were commendable, the Board considered that the AFISO could have passed the Traffic Information in a more timely manner than they had, for example on the crosswind sector, to provide a greater warning to the PA28 pilot.

In concluding their discussions the Board agreed the PA28 pilot had been concerned by the proximity of the RV9. Members agreed that, although safety had been degraded, the PA28 pilot had taken timely and effective avoiding action to prevent the aircraft from coming into close proximity by manoeuvring to the deadside. As such the Board assigned a risk category C to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024247			
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
	Flight Elements			
	• Tactical Planning and Execution			
2	Human Factors	• Insufficient Decision/Plan	Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation	Inadequate plan adaption
3	Human Factors	• Monitoring of Environment	Events involving flight crew not to appropriately monitoring the environment	Did not avoid/conform with the pattern of traffic already formed
	• Situational Awareness of the Conflicting Aircraft and Action			
4	Human Factors	• Incomplete Action	Events involving flight crew performing a task but then not fully completing that task or action that they were intending to carry out	Pilot did not sufficiently integrate with the other aircraft despite Situational Awareness
	• Electronic Warning System Operation and Compliance			
5	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
	• See and Avoid			
6	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
7	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: C.

Safety Barrier Assessment[3]

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

Ground Elements:

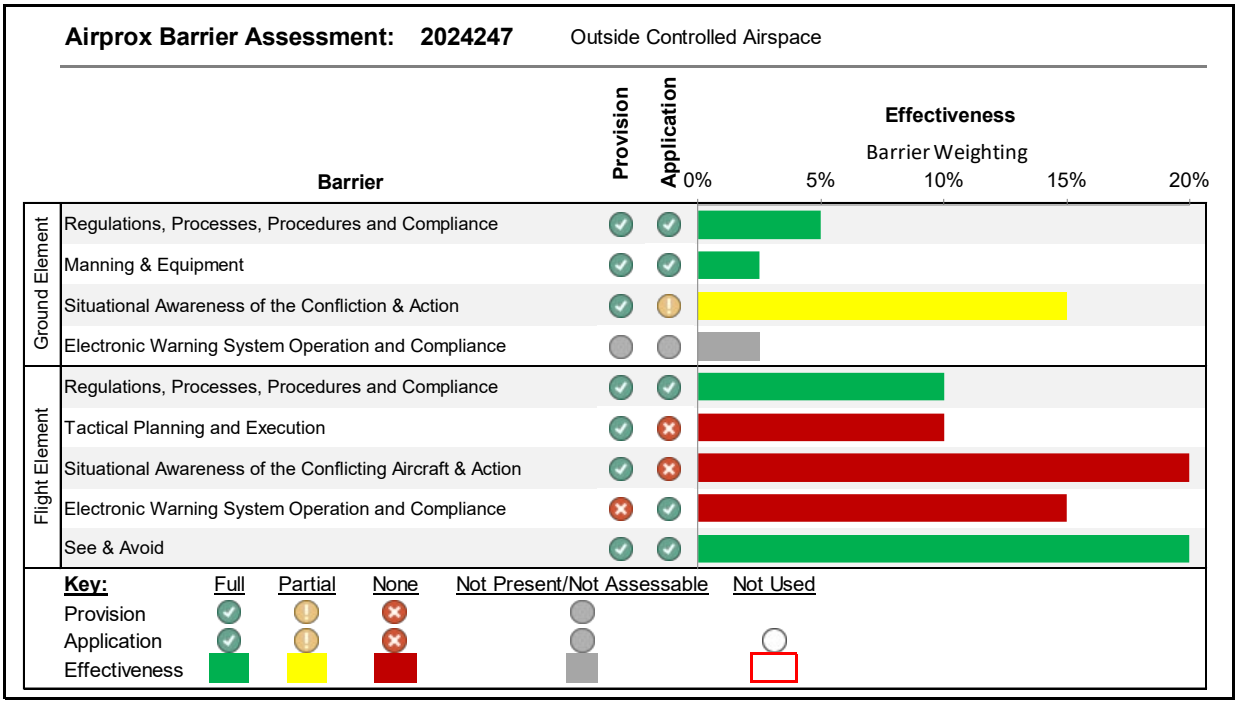
Situational Awareness of the Confliction and Action was assessed as **partially effective** because Traffic Information was provided to the PA28 pilot too late for them to adapt their plan more efficiently.

Flight Elements:

Tactical Planning and Execution was assessed as **ineffective** because the RV9 pilot did not conform with the pattern of traffic already formed by the PA28, nor adapt their plan in accordance with the information provided by the Blackbushe AFISO.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the RV9 pilot did not sufficiently integrate with the PA28 despite having situational awareness of the presence of the aircraft and sighting it on climbout.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the PA28's electronic conspicuity equipment was unable to detect any emissions from the RV9.



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