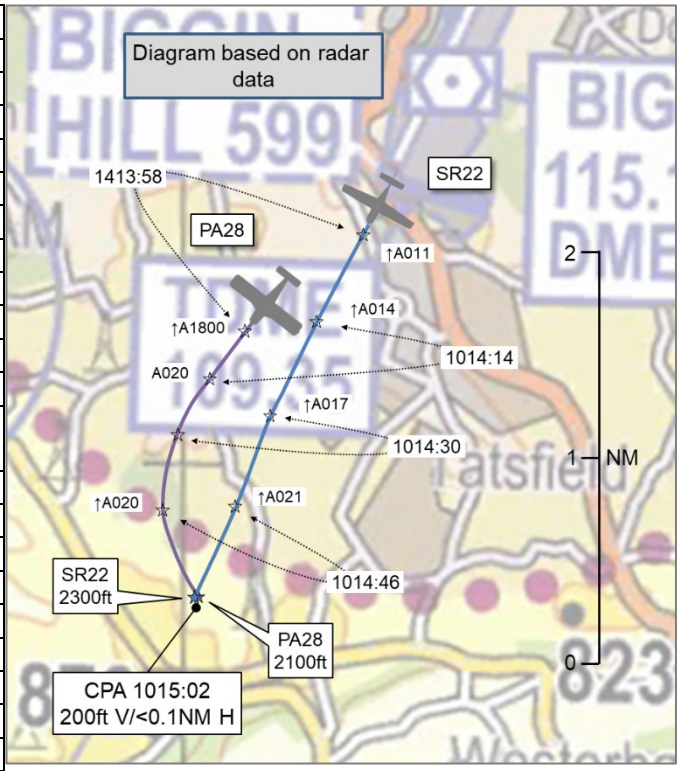
AIRPROX REPORT No 2022119

Date: 01 Jul 2022 Time: 1015Z Position: 5117N 00000E Location: 3NM SSW Biggin Hill

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	SR22	PA28
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None[1]	Basic
Provider	Biggin Approach	Biggin Approach
Altitude/FL	2100ft	2300ft
Transponder	A, C, S	A, C, S+
Reported		
Colours	White	White, Blue
Lighting	Strobe	Beacon, Strobes, Nav, Landing
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2300ft	2000ft
Altimeter	QNH (1016hPa)	QNH (NK hPa)
Heading	180°	230°
Speed	130kt	80kt
ACAS/TAS	TAS	Not fitted
Alert	Information	N/A
Separation at CPA		
Reported	300ft V/0m H	500ft V/1NM H
Recorded	200ft V/<0.1NM H	



THE SR22 PILOT reports that they were given a conditional line-up clearance behind a Piper Archer. Shortly after the Archer had lifted-off they were given take-off clearance with an instruction to turn left at 2NM. They noticed that, as the Archer climbed, it was tracking well right of the extended runway track so they delayed their take-off for separation, as the SR22 vastly out-performs the Archer and they were aware that both were departing to the east. After take-off, they were hand flying and looking out for the Archer with the intent to climb to altitude 2300ft (G1000 ALTS selected to 2300), and left turn at 2NM, however they lost contact with the Archer. As they got to 2NM they were concerned about the whereabouts of the Archer and afraid of turning just in case they turned into them, and were actively looking for them. They turned on to approximately 180° then caught a glimpse of the Archer coming in from the right and below, [the Archer] crossed underneath. They temporarily lost contact again as [the Archer] went underneath, but once they saw it again behind, left, and below, they conducted a turn onto approximately 030° to the left as they were now aware of their proximity to the Gatwick CTA (4NM mile south of the airport). They now recall that during the climb out ATC asked both pilots what altitude they were climbing to - hence they believe ATC's concern for their separation. When clear of the traffic, they tracked toward the QE2 Bridge and selected the autopilot in HDG and ALT mode.

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

THE PA28 PILOT reports they took-off from RW21 at Biggin for an instructional flight. Conditions were clear, good visibility and no cloud to affect. Soon after take-off they heard the SR22 pilot also being given take-off clearance behind them. [The SR22 pilot] was given Traffic Information by Biggin, as were they. Both pilots were told of each other. Looking behind on their left side (as an instructor they were sat on the right), perhaps 1.5NM after take-off, they had visual with the Cirrus, which was below and behind. Even though they were sat on the right they had visual on their left due to the 10° offset angle

[1] The SR22 pilot had not yet made contact with Biggin Approach.

due to the noise abatement procedure. At this point they were fully expecting [the SR22] to overtake them at some point, as is often the case with faster aircraft departing behind a PA28 at Biggin. They briefed the student, who was flying, to fly a 'textbook' standard departure, with the noise abatement procedure of tracking 220° (230° HDG to achieve this) until 2NM, then turning left to avoid Gatwick CTA and not re-entering the Biggin ATZ while looking out at all times. They used the Garmin GPS track read-out to fly this precisely. They also told the student to level off at 2000ft which they did, and to fly the altitude as precisely as possible. They told the Biggin controller that they were at 2000ft. They specifically decided 2000ft because it gave the pilot behind the opportunity to fly either above or below them when overtaking (LTMA at 2500ft above). They also wanted their flightpath to be as predictable as possible for the aircraft following behind, presuming they could stay visual with them as they were in front, therefore allowing them to anticipate their flightpath. After their initial visual contact with the SR22, when they were about a mile behind and below to their left, neither they nor their student became visual with them again until they were quite a distance past to the right. Their very low hours student, at this point, was levelling off, turning, looking out, and trying to be aware of ground features. This meant a typically high workload for [the instructor]. The student was flying the aircraft accurately and they were both looking out so they didn't feel the need to take control. Also, by allowing the student to fly, they could focus more on looking out. They believe this is why they saw the aircraft when it was a mile behind, then passed on the right. The biggest difficulty was trying to look for an aircraft behind, in their blind spot. Looking at the Biggin noise and track monitor website, the Cirrus [pilot] appears to not have flown the published noise abatement procedure. They can only attribute this to [the pilot] expecting to overtake on the 'inside', their left side, due to the speed differential. This was slightly unexpected as Biggin do indeed sanction pilots that do not follow this procedure. Whilst they were looking to the left, their emphasis was also on looking toward, and expecting to be overtaken on, the right, due to this reason. In the debrief with the student they discussed what they could do if in the same situation as the SR22 pilot, i.e. taking off with a slower aircraft in front. They noted that they could mitigate the situation by delaying the take-off, requesting an overhead departure, requesting to go slightly west before turning on track, or slowing down on climb-out, if safe to do so. They also debriefed that lookout can always be improved and to never underestimate the speed differential when a faster aircraft takes-off behind.

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

THE BIGGIN HILL SATCO reports that the Tower controller departed the PA28 followed by the SR22. The SR22 was passed Traffic Information on the PA28 before the Tower controller issued the take-off clearance and subsequently handed over to Approach control. When the SR22 was airborne the pilot reported they had the PA28 in sight. At no time was an Airprox reported on either frequency and Traffic Information was passed by the ATCO and an acknowledgement read back by the pilot. Only a Basic Service is provided for VFR traffic in Class G airspace by Biggin Hill Approach.

Factual Background

The weather at Biggin Hill was recorded as follows:

```
METAR EGKB 011020Z 22012KT 9999 FEW025 SCT038 18/09 Q1017
```

Analysis and Investigation

Biggin Hill Unit Investigation

The investigation carried out by Biggin Hill is summarised below.

[The SR22 pilot] was advised on slower traffic ahead, which was climbing to 2000ft. Traffic Information was passed to both pilots. [The SR22 pilot] advised that they were visual and climbing to 2300ft. There was no other conflicting traffic showing on the ATM.

At no time was an Airprox reported on either frequency and Traffic Information was passed by the ATCO and acknowledgement read back by the pilot. Only a basic ATC service is provided for VFR traffic in Class G airspace by Biggin Hill Approach.

CAA ATSI

The Airprox occurred at a time when Biggin Hill ATC was very busy with a stream of outbound and inbound IFR and VFR aircraft.

At 0953:20, the PA28 pilot called the Tower controller and advised that they were ready for taxy instructions for a local flight to the southeast and requested a Basic Service after departure. The pilot was instructed to taxy to Alpha 1 for RW21 via Foxtrot and Alpha 4.

At 0956:50, the PA28 pilot was instructed to complete their power checks at the Alpha 1 hold.

At 0957:10, the SR22 pilot called the Tower controller and requested taxy instructions. The pilot was instructed to taxy holding point Alpha 1 for RW21 via Lima 2 and Alpha 4. The pilot was instructed to complete their power checks there.

At 1008:10, the PA28 pilot reported ready for departure and was instructed to squawk 7047 and hold at Alpha 1.

At 1008:40, the SR22 pilot reported ready for departure and was instructed to squawk 7047 and hold at Alpha 1.

At 1010:10, the PA28 pilot was instructed to line up after a landing [aircraft].

At 1010:20, the SR22 pilot was instructed to line up behind the PA28 and wait.

At 1011:40, the PA28 pilot was instructed, "*left turn at 2 miles, RW21, wind 230 at 12 knots, cleared for take-off."*

At 1012:30 the SR22 pilot was passed Traffic Information on the PA28, "*the departing Cherokee is also turning left towards Sevenoaks, with a left turn at 2 miles, RW21, 230 at 12 knots, cleared for take-off*." The pilot read back, "*turn at 2 miles, cleared for take-off*".

At 1014:20 the PA28 pilot was asked to confirm what altitude they were climbing to, and the pilot responded with 2000ft. The controller immediately turned their attention to the SR22 pilot, advised them that the traffic ahead was climbing to altitude 2000ft and asked the pilot to confirm what altitude they were climbing to, the pilot responded with, "*2300 feet, we've got him visual*." The controller then turned their attention back to the PA28 pilot and advised them that the SR22 traffic departing behind them was climbing to altitude 2300ft, in the same direction and the pilot was instructed to contact Biggin Hill Approach. The PA28 pilot responded with "*roger*" and a readback of the frequency. The SR22 pilot was then also instructed to contact Biggin Hill Approach, and the pilot responded with a readback of the frequency.

At 1014:30 the PA28 pilot checked in with the Approach controller and a Basic Service was agreed. (Figure 1)

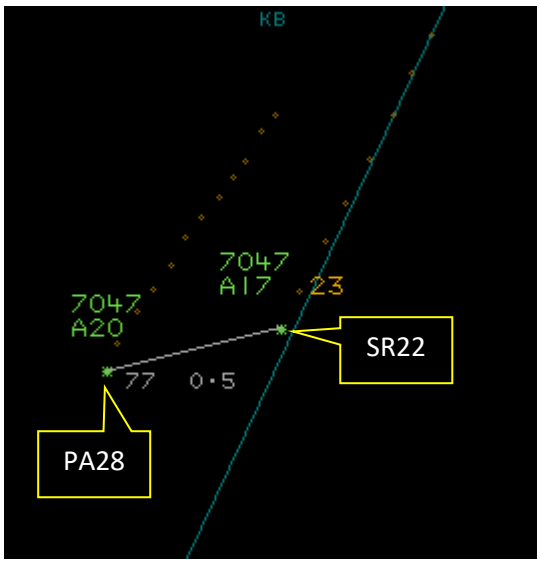


Figure 1 - 10:14.30

At 1014:58 measured CPA was 0.1NM laterally and 200ft vertically - Figure 2. However, it's clear from Figure 4 that actual CPA would have been closer than 0.1NM.

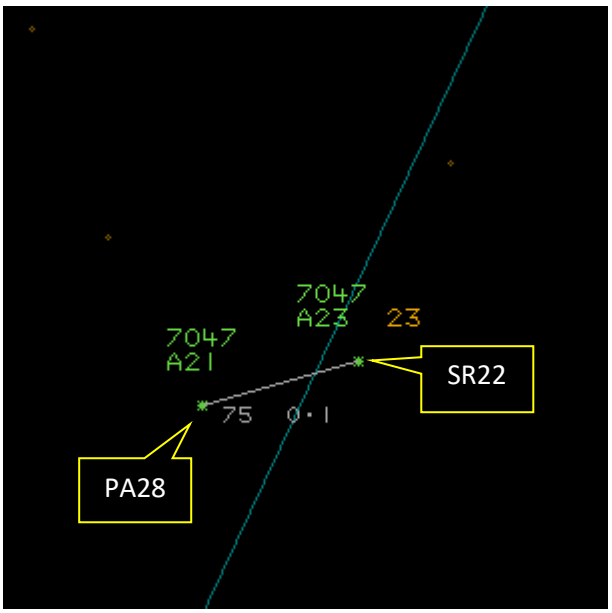


Figure 2 - 1014:58 measured CPA

Figure 3 below, timed at 1015:01, depicts the location of the Airprox in relation to Gatwick controlled airspace. At 1015:02 the PA28 had passed underneath the SR22 after commencing their left turn at 2NM, Figure 4.

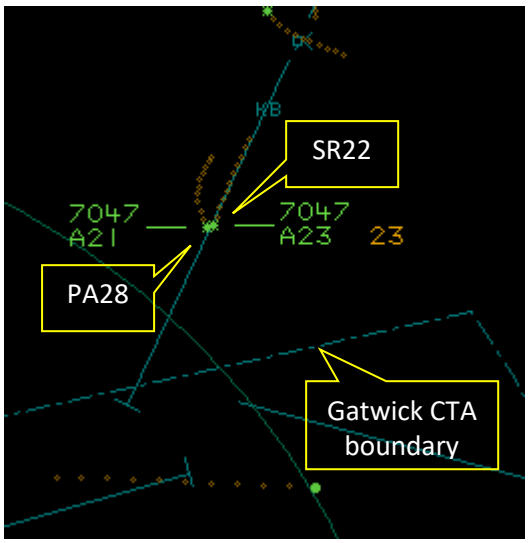


Figure 3 - 10:15.01

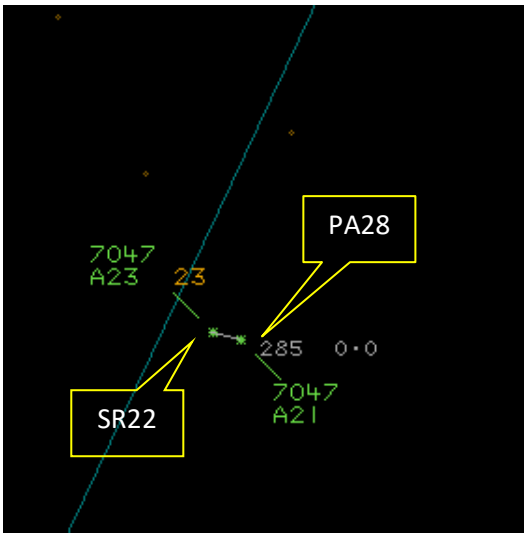


Figure 4 - 10:15.02

At 1016:20 the SR22 pilot checked-in with the Approach controller and advised that they were, "*2300 feet in the left turn towards Sevenoaks*", a Basic Service was agreed, and the pilot was instructed to report passing abeam Sevenoaks. The pilot was advised, "*if you just keep the left turn to route north of the motorway, caution Gatwick to the south, er 4 miles south of the field*", there was no response from the pilot. The controller tried again another 4 times to contact the SR22 pilot, who responded on the 5th attempt.

Analysis

The SR22 was lined-up on the runway immediately behind the PA28. Just prior to issuing take-off clearance to the SR22 pilot, the controller advised the pilot that the PA28 was also routeing via Sevenoaks. The pilot was then cleared for take-off and instructed to turn at 2NM. The pilot read back the turn instruction; they did not acknowledge the Traffic Information.

When both aircraft were airborne the controller ascertained the altitude to which the PA28 pilot was climbing (2000ft) and passed this information to the SR22 pilot, the SR22 pilot reported having the PA28 in sight at this point. The controller then ascertained what altitude the SR22 pilot was climbing to (2300ft) and passed this information to the PA28 pilot. With the SR22 pilot having reported visual with the PA28 ahead, the controller could reasonably assume that the SR22 pilot would deconflict their flightpath, and both aircraft were transferred to the Approach controller.

The PA28 pilot checked-in with the Approach controller a few seconds after the transfer instruction.

There was a delay of 2 minutes before the SR22 pilot checked-in with the Approach controller, and the Airprox had occurred in the interim period.

Conclusion

The Tower controller provided accurate and timely Traffic Information to assist the pilots in meeting their collision avoidance responsibilities.

The Approach controller was not able to pass any further Traffic Information due to the delay in the SR22 pilot contacting them on transfer from the Tower controller.

UKAB Secretariat

The Biggin Hill RW21 noise abatement procedure for VFR departures is contained in the UK IAIP Part3 – Aerodromes, AD2 EGKB AD2.21 Noise Abatement procedures, and the relevant section has been reproduced below:

Runway 21 Departures.

i.All aircraft departing Runway 21 VFR are required to turn right, after passing the aerodrome boundary, to make good a track of 220° M:

1.aircraft departing to the west via Kenley should continue to 1 NM, before turning right and setting course, avoiding the villages of Woldingham and Warlingham;

2.aircraft departing to the east or northeast via Sevenoaks or Swanley should continue to 2 NM before turning left and tracking to the southeast, remaining south and east of Tatsfield Village. A useful visual reference for the turn is to remain south of the Tatsfield golf course;

3.once an aircraft has left the ATZ, it should not re-enter the ATZ without the appropriate ATC clearance. Aircraft intending to route to via Swanley should ensure that they arrange their flight in order to avoid the eastern limits of the ATZ whilst tracking northeast. ***CAUTION*** *– there may be numerous aircraft joining from the east.*

The SR22 and PA28 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[2] If the incident geometry is considered as overtaking then the PA28 pilot had right of way and the SR22 pilot was required to keep out of the way of the other aircraft by altering course to the right.[3] 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.[4]

Summary

An Airprox was reported when an SR22 and a PA28 flew into proximity 3NM south-southwest of Biggin Hill at 1015Z on Friday 1st July 2022. Both pilots were operating under VFR in VMC, the PA28 pilot in receipt of a Basic Service from Biggin Approach and the SR22 pilot in the process of changing frequency from Biggin Tower to Biggin Approach.

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 considered the actions of the SR22 pilot and a GA pilot member stated that, as the pilot of the following aircraft, they had been best placed to mitigate the situation. Members agreed that they had attempted to mitigate the situation, as they had delayed their departure creating additional spacing between the aircraft; however, the Board agreed that the spacing created had been insufficient (**CF3**). As the SR22 pilot had maintained runway track after departure, members discussed whether the ATC instruction to turn at 2NM had led the pilot to believe that the noise abatement procedure had been cancelled when in fact it had not (**CF1, CF2**). The Board examined the geometry of the Airprox and concluded that, by not following the noise abatement routing, the SR22 pilot had effectively taken a short-cut and had reduced the track miles between their aircraft and the PA28. The Board noted that in the climb-out the SR22 pilot lost visual contact with the PA28 and did not visually reacquire it until after CPA (**CF8**), and members agreed that information regarding the location of the PA28 location could have been sought via the RT (**CF5**). Although no longer visual, the SR22 pilot had received information

[2] (UK) SERA.3205 Proximity.
[3] (UK) SERA.3210 Right-of-way (c)(3) Overtaking.
[4] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

from their TAS regarding the presence of the PA28 (**CF6**), and members agreed that the SR22 pilot had not optimally responded to the alert and maintained their flightpath (**CF4**, **CF7**).

Next, members considered the actions of the PA28 pilot and were encouraged by the awareness shown of the differing levels of aircraft performance and how that might have impacted on their separation. The Board agreed that the PA28 pilot could also have sought information via the RT regarding the location of the SR22 once they had lost visual contact with it (**CF5**), and a GA pilot member added that even if ATC had been unable to help, the pilot of the SR22 may have heard the transmission, which might have proven beneficial. Members went on to agree that the PA28 pilot had not regained visual contact with the SR22 until after the aircraft had passed, after CPA (**CF8**).

The Board then examined the involvement of the ground elements and agreed that the controller had passed appropriate Traffic Information to the pilots of both aircraft and that once the SR22 pilot had called visual with the PA28 it had been appropriate to hand both pilots over to the Approach controller.

Finally, in assessing the risk of collision, the Board agreed that although the pilots of both aircraft had been visual with the other aircraft prior to the Airprox, neither had sought additional information when visual contact had been lost and neither had been visual at CPA. Members agreed that the EC equipment that the SR22 pilot carried had made them aware of the continuing threat from the PA28 however, they had not adjusted their routing to avoid it. Members agreed that, in this case, safety had not been assured and that there had been a risk of collision (**CF9**). Accordingly, the Board assigned a Risk Category B to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022119			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Flight Elements			
	• Regulations, Processes, Procedures and Compliance			
1	Human Factors	• Use of policy/Procedures	Events involving the use of the relevant policy or procedures by flight crew	Regulations and/or procedures not complied with
	• Tactical Planning and Execution			
2	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
3	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
	• Situational Awareness of the Conflicting Aircraft and Action			
4	Human Factors	• Lack of Action	Events involving flight crew not taking any action at all when they should have done so	Pilot flew close enough to cause concern despite Situational Awareness
5	Human Factors	• Lack of Communication	Events involving flight crew that did not communicate enough - not enough communication	Pilot did not request additional information
	• 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	• 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
	• Outcome Events			
9	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: B

Safety Barrier Assessment[5]

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

Flight Elements:

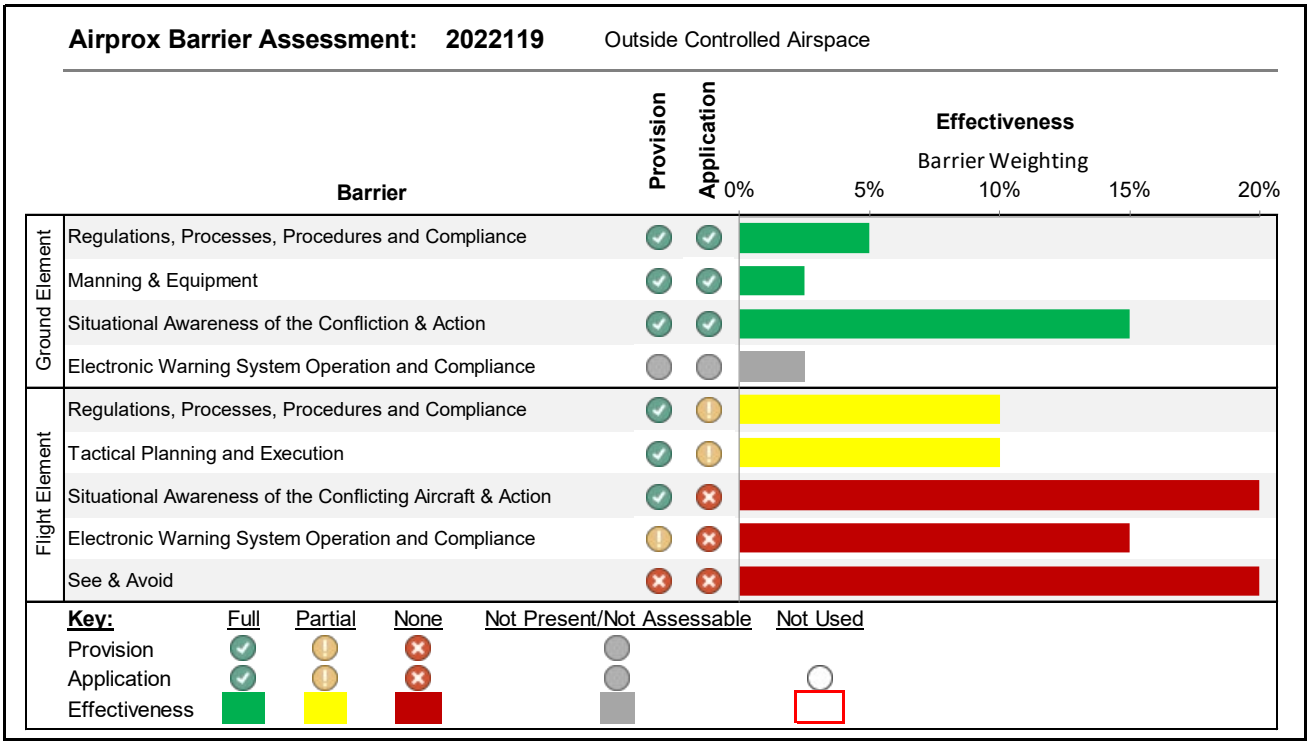
Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the SR22 pilot had not precisely followed the noise abatement procedure during their departure which had effectively reduced their track mileage to, and hence separation from, the PA28.

Tactical Planning and Execution was assessed as **partially effective** because, although the SR22 pilot had adapted their plan and delayed their departure, the separation that had been created between the aircraft had been insufficient.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because, although the SR22 pilot had been aware of the presence of the PA28, they continued toward it, and when both pilots lost visual contact with the other aircraft, neither had requested additional information relating to the position of the other aircraft.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the information that had been provided to the SR22 pilot had not been optimally actioned.

See and Avoid were assessed as **ineffective** because, at the point of the Airprox, neither pilot had had visual contact with the other aircraft.



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