

AIRPROX REPORT No 2022116

Date: 26 Jun 2022 Time: 1535Z Position: 5104N 00059W Location: 3NM NW Liss, Hampshire

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Hurricane	PA28
Operator	HQ Air (Ops)	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Listening Out	Basic
Provider	Farnborough LARS West	Farnborough LARS West
Altitude/FL	2000ft	1900ft
Transponder	A, C, S	A, C, S+ ¹
Reported		
Colours	WWII camouflage	Red, white
Lighting	Nil	Beacon
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2000ft	2000ft
Altimeter	QNH (NR hPa)	QNH (1012hPa)
Heading	122°	275°
Speed	165kt	100kt
ACAS/TAS	PowerFLARM	Not fitted
Alert	None	N/A
Separation at CPA		
Reported	0ft V/300m H	NR V/NR H
Recorded	100ft V/<0.1NM H	



THE HURRICANE PILOT reports that they were in transit to [destination airfield] after having displayed at [air-display airfield]. Visibility was excellent but it was rather bumpy due to high winds. Approximately 2NM west of Liss, whilst conducting a fuel check, they looked up from the fuel gauge to see a light-aircraft (Piper Cherokee or similar low-wing aircraft with tricycle undercarriage) slightly left of their 12 o'clock, at a similar level and head-on, at what was estimated to be 300m. [The Hurricane pilot] immediately took avoiding action by breaking right (they couldn't 'bunt' as negative G must be avoided in a Hurricane). The other aircraft didn't appear to react. They were not in receipt of a Traffic Service at this particular time as the Farnborough LARS frequency seemed busy with other aircraft queuing for a service. However, they were monitoring various frequencies, including Farnborough LARS, to build an air-picture of what other aircraft were around. No collision alert was given by [the Hurricane EC device]. The Hurricane pilot considers that had they had a Traffic Service, the threat might have been highlighted and concluded that, although a very late pick-up, what did avert a collision was that a lookout was maintained between checking elements of the fuel system and this highlights the need to maintain lookout at all times and not spend extended periods 'heads-in'.

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

THE PA28 PILOT reports that they did not see nor know of any aircraft in close proximity. They had checked relevant NOTAMs for their path of flight and were aware of the time of formation flying and display flights planned for that region.

THE FARNBOROUGH LARS WEST CONTROLLER reports that they were working both LARS West and Zone [they recalled] and there were not many aircraft on, but they were busy with zone-crossers and the required co-ordination with Approach. They were scanning the traffic and spotted [the PA28]

¹ The PA28 pilot reported an SSR Transponder as 'not fitted'

(on a Basic Service) with opposite direction 7000 squawk, a couple of miles away and indicating 200ft apart. They continued their scan, interacting with other traffic, and came back to [the PA28]. The label was garbling with the 7000, so they moved them to enable seeing them more clearly. They noticed that they were merging and indicating similar levels, but [the controller's] attention was drawn elsewhere. They remember thinking that they would ordinarily have passed that traffic, but the [aircraft] had passed by that time and so they continued working. No Airprox was reported at that time.

Factual Background

The weather at Farnborough was recorded as follows:

EGLF 261520Z 21015G25KT 9999 FEW041 19/07 Q1013

Analysis and Investigation

NATS Farnborough Unit Investigation

LARS West was operating as a solo function. The LARS West frequency was moderately busy with seven aircraft on frequency according to the initial unit investigation. A handover of position had just taken place at 1531. [The PA28] was operating on a Basic Service, identified on a 0433 squawk. At 1534:11 [the PA28] could be seen indicating A019 Mode C with opposite direction traffic [the Hurricane] on a 7000 squawk (converted to a 'V') ahead of their track by approximately 2NM (see Figure 1).



Figure 1: 1534:11 - The Hurricane at 2200ft and the PA28 at 1900ft

At 1534:30, whilst taking a call from a different aircraft, the LARS West ATCO (Controller 1) could be seen moving the target labels of [the PA28] and [the Hurricane] as they were garbling, at this point the aircraft were opposite direction approximately 1NM apart, [the Hurricane] indicating A020 and [the PA28] indicating A019.

Controller 1's report stated: *"I was scanning the traffic and spotted [the PA28] (on a Basic Service) with opposite direction traffic a couple of miles away and indicating 200ft apart"*.

Having reviewed the radar replay, the controller determined that they did not assess the returns to be in conflict at this time and further reported *"I continued my scan, interacting with other traffic, when I came back to [the PA28]. The label was garbling with [the Hurricane], so I moved them to enable me to see more clearly. I noticed that they were merging and indicating similar levels, but my attention was drawn elsewhere. I remember thinking that ordinarily I'd have passed that traffic, but they had passed by that time and so I continued working"*.

From the radar replay at 1534:37 the 0433 squawk and the 7000 squawk could be seen operating 0.02NM from each other with A001 difference in altitudes as indicated on Mode C (7000 squawk unvalidated or verified) (see Figure 2).



Figure 2: CPA at 1534:37

At 1534:46 the aircraft could be seen on radar to have separated, Mode C indicating the same level A018 (see Figure 3).



Figure 3: 1534:46 - The aircraft had separated

No Airprox was reported on frequency.

The controller's reports have been reviewed and the radar and RT replays reviewed. The [controller report] was written having watched the radar review. The initial unit investigation was reviewed. CAP774 'UK Flight Information Services' was consulted.

This Airprox event occurred due to a conflict of aircraft outside controlled airspace. One of the aircraft was working Farnborough LARS West under a Basic Service. According to CAP774 the definition of a Basic service is:

A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility. Basic Service relies on the pilot avoiding other traffic, unaided by controllers/ FISOs. It is essential that a pilot receiving this ATS remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic service is not required to monitor the flight.

From the radar replay and the controller's report, there was some evidence the controller may have been aware of the confliction ahead of the event, however, at the time Traffic Information would have been pertinent to [the PA28] they were engaged in an RT call with a separate aircraft.

CAA ATSI

The Farnborough RTF and area radar replay were reviewed for the period 1525:00 until 1538:00; this was the total RTF available for the event. There were no RTF transmissions from or to the PA28 pilot during the period of the recording. The Farnborough unit investigation report confirmed that the PA28 pilot was in receipt of a Basic Service from the Farnborough LARS West controller and that the Hurricane was unknown traffic to the controller. A controller handover/takeover of the operational position took place part way through the RTF recording. Controller 1 was in position when the RTF recording started at 1525:00 and the first RTF transmission from Controller 2 took place at 1532:49.

In the lead-up to handover of the position, Controller 1 had been busy dealing with three VFR zone crossers, a VFR departure, a VFR transit, an airspace infringer, an Odiham MATZ crosser and a

Blackbushe inbound. There was one pilot in the queue waiting to pass their details when handover of the position commenced.

At time 1530:52, the PA28 and the Hurricane were 17.1NM apart and on reciprocal tracks (see Figure 4).

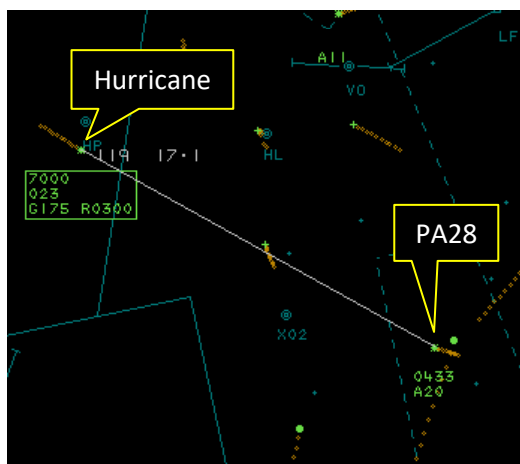


Figure 4 – 1530:52 (Controller 1 in position)

At 1532:49 the handover of the operational position was complete, and the pilot of an aircraft who had been waiting in the queue for a service entered into a lengthy RTF exchange with Controller 2 about potentially cancelling their request for a service because they could hear how busy the controller was. The controller explained that a handover of controller had been taking place, thanked the pilot for their patience and asked the pilot to pass their details, a Basic Service was subsequently agreed. The Hurricane and PA28 were in the positions in Figure 5 when this exchange took place.

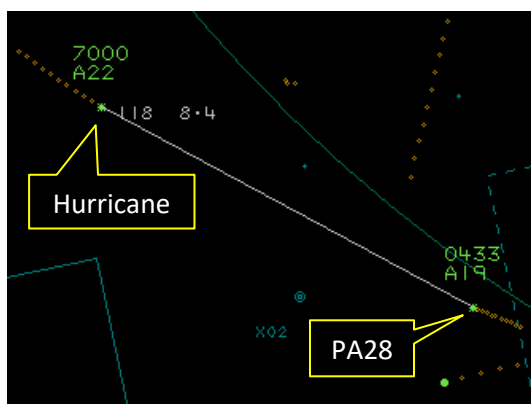


Figure 5 – 1532:49 (Controller 2 in position)

The controller then immediately turned their attention to the pilot of an aircraft that they believed wanted to transit Farnborough controlled airspace but there was no response from the pilot.

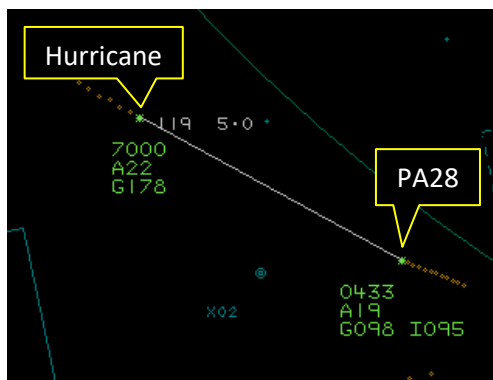


Figure 6 – 1533:31

Between 1533:32 and 1535:35 the RTF was almost continuous, with 5 pilots making initial contact with the controller, passing their details, and agreeing a Basic Service. The pilot of a helicopter requested a change of frequency, and the controller queried the altitude of an aircraft. The Airprox occurred during this period and while the controller was engaged in an initial contact call with one of the above-mentioned pilots.

At 1534:11 the Hurricane and the PA28 were still 2.0NM and 300ft apart. The controller reported that they didn't consider the situation to be a hazard at this point (Figure 7). The Hurricane pilot subsequently commenced a descent.

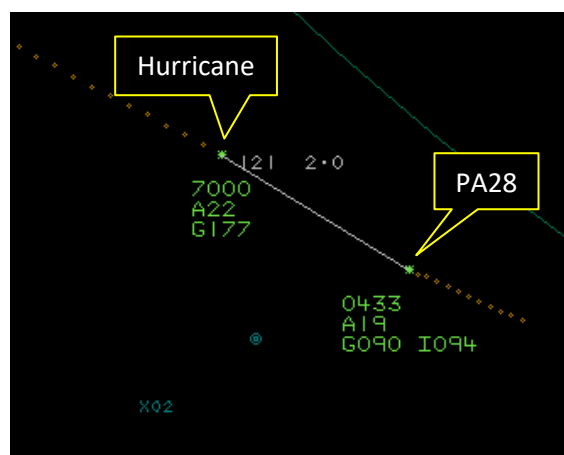


Figure 7 – 1534:11

Due to the timing of the radar updates, the CPA could only be measured as 0.3NM (see Figure 8), however it's clear from Figure 9 below that the actual CPA was likely to have been less than this.²

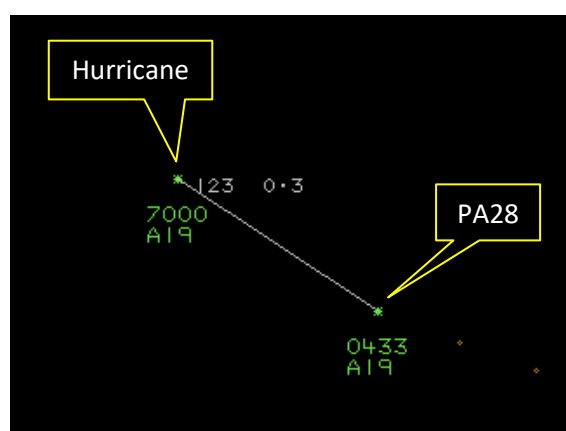


Figure 8 – 1534:35 Head-to-head CPA 0ft / 0.3NM

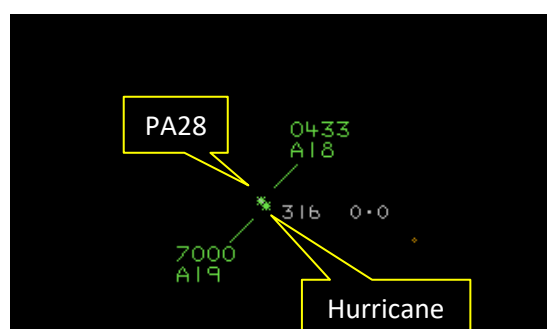


Figure 9 – 1534:37 the aircraft had passed each other

² UKAB Note: The head-to-head CPA was 0.3NM, however due to the periodicity of the radar sweep, the Airprox CPA has been assessed to be that depicted in Figure 9, albeit this is after the aircraft had crossed.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft were positively identified. The Hurricane 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.³ If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.⁴

Comments

HQ Air Command

This Airprox was subject to a Local Investigation. The occurrence happened in a notoriously busy piece of airspace, highlighted by the number of aircraft under the control of Farnborough LARS. Ultimately, it was the see-and-avoid barrier that prevented a MAC by the Hurricane pilot, with late and very positive avoiding action taken. It serves as a positive reminder to all aviation communities of the importance of breaking up routine checks with lookout and minimising the time the head is in the cockpit. There were a couple of barriers to MAC that could have prevented this situation from developing. Although the [Hurricane pilot] had a listening watch to build their air picture, it would have been more prudent to have had an Air Traffic Service, particularly knowing how busy the airspace was. Orders contained within 1 Group Air Staff Orders state: Pilots are to select an Air Traffic Service and use airspace that provides the maximum level of mid-air collision protection commensurate with the briefed task. The pilot of the PA28 should be commended for their perseverance with getting a Basic Service; it was unfortunate that distraction with the controller diverted their attention from a potential conflict. Noting that the provider of a Basic Service is not required to monitor the flight, in this instance they had noted a possible conflict and, if they had given an early heads-up to the PA28 pilot against the VFR squawk, it could have been useful for the safe conduct of the flight. It is also worth noting that the Hurricane had an operational [EC device] that did not provide a collision alert.

AOPA

This Airprox shows that an effective lookout is the main barrier to mid-air-collision avoidance. Aircraft lighting can assist and it is recommended to keep all lights on, aiding visibility, which in this situation was helpful.

Summary

An Airprox was reported when a Hurricane and a PA28 flew into proximity 3NM northwest of Liss at 1535Z on the 26th June 2022. Both pilots were operating under VFR in VMC, the Hurricane pilot was not in receipt of an ATS and the PA28 pilot was in receipt of a Basic Service from Farnborough LARS West.

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 Hurricane pilot and were heartened that they had maintained a good lookout and had broken up their in-cockpit checks. Members acknowledged that the pilot had maintained a listening watch on various frequencies but some members could not understand why the pilot had not requested a service as soon as they had entered the Farnborough LARS area of responsibility (**CF5**). One member with specific knowledge of No1 Group Air Staff Orders explained that '*Pilots are to select an Air Traffic Service and use airspace that provides the maximum level of mid-air*

³ (UK) SERA.3205 Proximity.

⁴ (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.

collision protection commensurate with the briefed task. Members agreed that the pilot had not complied with this order (CF4) and may have been better served operating under a Traffic Service. The Board noted that the EC device fitted to the Hurricane had not detected the presence of the PA28 when it would have been expected to have alerted the pilot, and considered this to have been contributory to the Airprox (CF7). The Board also agreed that the Hurricane pilot had not had any situational awareness of the PA28 (CF6). Notwithstanding the very late sighting of the PA28 (CF8), it was acknowledged that the Hurricane pilot had reacted quickly to prevent a collision. However, members were a little surprised that the Hurricane pilot had reported the risk of collision as 'Low'. The visual conspicuity of the Hurricane was considered and members agreed that the camouflage colour scheme would have rendered the aircraft very difficult to see from above but should not have made the Hurricane appreciably harder to see when head-on as in this case. The use of lighting may have provided visual cues for the benefit of other pilots to visually acquire the aircraft, and the Board encourages all pilots to fly with all external lights on for this very reason.

The Board then turned their attention to the actions of the PA28 pilot. Members praised the pilot's persistence to obtain an ATS from the Farnborough LARS West controller, who had been very busy at the time. The Board noted that no Traffic Information had been passed to the PA28 pilot under the terms of the Basic Service that had been requested, and members suggested that the PA28 pilot may have been better served under a Traffic Service. Members noted that the PA28 had not been fitted with any additional electronic conspicuity equipment, which on this occasion may have provided some additional information to aid visual acquisition. It is for pilots to decide on their own requirements for additional equipment according to their needs and the Board wished to highlight to pilots that additional funding has been made available for electronic conspicuity devices through the CAA's Electronic Conspicuity Rebate Scheme, which has been extended until 31st March 2023.⁵ The Board therefore agreed that the PA28 pilot had not had any situational awareness of the presence of the Hurricane (CF6) and had not sighted the Hurricane at any stage (CF9).

Turning their attention to the ground elements, members of the Board noted that this Airprox occurred outside the select frame of the STCA in use at the Farnborough LARS West position (CF3). In consideration of the actions of the Farnborough LARS West controller, the Board first noted there had been a recent handover of position, completed at 1532:49, when the aircraft had been separated by 8.4NM and 300ft. Given that the controller reported that they did not consider the situation to be hazardous at 1534:11, albeit with the aircraft on reciprocal headings and separated by 2NM and 300ft, the Board concluded that there had been a late detection of the conflict at approximately 1534:30 when the controller had been observed to move the aircraft labels (CF2). The aircraft had been separated by 0.6NM and 0ft.

Next, the Board acknowledged that the PA28 pilot had requested a Basic Service and that the controller had not been required to monitor the flight (CF1). However, the Board deliberated whether a duty-of-care to pass Traffic Information had been owed to the PA28 pilot in this instance. Members' attention turned to the wording of CAP774⁶ which was carefully considered, excerpts of which are reproduced in part below:

Ch.2. Basic Service

2.5 Given that the provider of a Basic Service is not required to monitor the flight, pilots should not expect any form of traffic information from a controller/FISO.

2.8 If a controller/ FISO considers that a definite risk of collision exists, a warning shall be issued to the pilot ((UK) SERA.9005(b)(2) and GM1 (UK) SERA.9005(b)(2)).

Appx. A. Establishing whether a duty of care is owed

A3 Controllers/FISOs clearly owe duty of care to flight crew, passengers, and the general public on the ground, in the delivery of an ATS. However, the depth and boundaries of this duty of care cannot be defined in advance for each specific scenario and situation, as they will vary

⁵ <https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/>

⁶ CAP774 UK Flight Information Services - Fourth Edition 15 December 2021

depending on the exact circumstances at the time, including: the type of airspace, type of ATS, dynamics of the situation (i.e. how 'foreseeable' was the event?). The only time that these factors will ultimately be decided upon is in court when examining the specifics of the situation under scrutiny.

Members noted that between 1533:32 and 1535:35, the controller had been engaged in almost continuous RT exchanges with other traffic. In consideration of the timings of RT exchanges and actions of the controller, it was assessed that the controller had become aware of a potential conflict between the Hurricane and PA28 during these exchanges with other traffic and had therefore not had an opportunity to pass Traffic Information on the Hurricane to the PA28 pilot. It was assessed to not be the case that the controller had become aware of the potential conflict and had then turned their attention to the RT exchanges with other traffic.

When determining the risk of collision, the Board concluded that safety had been much reduced (**CF10**), but that the last-minute avoiding action by the Hurricane pilot had increased the separation and reduced – but not removed entirely – the risk of collision. As such, the Board assigned a Risk Category B to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022116			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Ground Elements				
• Situational Awareness and Action				
1	Contextual	• ANS Flight Information Provision	Provision of ANS flight information	The ATCO/FISO was not required to monitor the flight under a Basic Service
2	Human Factors	• Conflict Detection - Detected Late	An event involving the late detection of a conflict between aircraft	
• Electronic Warning System Operation and Compliance				
3	Technical	• Conflict Alert System Failure	Conflict Alert System did not function as expected	The Conflict Alert system did not function or was not utilised in this situation
Flight Elements				
• Regulations, Processes, Procedures and Compliance				
4	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				
5	Human Factors	• Communications by Flight Crew with ANS	An event related to the communications between the flight crew and the air navigation service.	Pilot did not request appropriate ATS service or communicate with appropriate provider
• Situational Awareness of the Conflicting Aircraft and Action				
6	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
• Electronic Warning System Operation and Compliance				
7	Human Factors	• Response to Warning System	An event involving the incorrect response of flight crew following the operation of an aircraft warning system	CWS misinterpreted, not optimally actioned or CWS alert expected but none reported
• See and Avoid				
8	Human Factors	• Identification/Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots
9	Human Factors	• 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				

10	Contextual	<ul style="list-style-type: none"> Near Airborne Collision with Aircraft 	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	
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Degree of Risk: B

Safety Barrier Assessment⁷

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 **not used** because the Farnborough controller was not required to monitor the flight under the terms of a Basic Service although had some awareness of a potential conflict.

Electronic Warning System Operation and Compliance were assessed as **not used** because the Airprox took place outside the select frame of the STCA in use on the Farnborough LARS West position.

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the Hurricane pilot had not complied with their Orders pertaining to the selection of an ATS that provided the maximum level of mid-air collision protection commensurate with the briefed task.

Tactical Planning and Execution was assessed as **partially effective** because the Hurricane pilot was not in receipt of an ATS.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had any situational awareness of the other.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the EC device fitted to the Hurricane would be expected to provide an alert to the proximity of the PA28 but no alert was reported.

See and Avoid were assessed as **partially effective** because the PA28 pilot was not aware of any aircraft in close proximity. The Hurricane pilot became visual with the PA28 late but in time to take avoiding action.

⁷ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Airprox Barrier Assessment: 2022116

Outside Controlled Airspace

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