AIRPROX REPORT No 2022270

Date: 05 Dec 2022 Time: ~1318Z Position: 5113N 00151W Location: Salisbury Plain

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	AV Wasp	A400
Operator	Mil UAS	HQ Air (Ops)
Airspace	Salisbury Plain	Salisbury Plain
Class	Danger Area	Danger Area
Rules	BVLOS	VFR
Service	None	Listening Out
Provider		SPTA Air Ops & DZ
Altitude/FL	NK	NK
Transponder	NK	A, C, S
Reported		
Colours	Grey	Grey
Lighting	Wing-tip Strobes	Strobes
Conditions	NK	VMC
Visibility	NR	NR
Altitude/FL	200ft	NK
Altimeter	agl	NK
Heading	NR	NK
Speed	NR	NK
ACAS/TAS	Not fitted	TCAS II
Alert	N/A	None
Separation at CPA		
Reported	NR	Not Seen
Recorded	NK	

THE WASP PILOT reports that their detachment was in Area 12, in the vicinity of Robin Hood Ball Clump, conducting LCR Mission 1 flying Wasp RPAS under their instruction. The tasking briefed was to get the aircraft into an orbit at Bustard Compound and conduct a soak of the position. The Wasp made its way to orbit 1 and at 1307 was on task. During this flight the operators were flying and answering questions in line with the syllabus. At around 1319 an A400M was spotted to their west, flying in a southeast direction. This looked to be directly toward where the Wasp was flying at roughly the same height. The Wasp was flying at a commanded altitude of 1001ft AMSL (roughly 600ft AGL). At this point, the instructor took the hand controller from the student, put it into Altitude Hold mode, commanded the altitude to roughly 200ft AGL, and turned the aircraft away to attempt to avoid potential impact with the A400M. From their location, the A400M appeared to be inside their airspace and they reported this to Salisbury Plain Air Ops (SPTA Air Ops) and to the Deployed Flying Supervisor (DFS). At 1322 they brought the WASP in to recover, using the E to L method. Once the Wasp had recovered they spoke to the DFS on the phone and after this, at 1328, the same A400M came into their airspace more clearly, this time from the north west, flying in a southerly direction. They also reported this to the DFS, at which point they heard the DFS close the airspace over the Airwaves radio to SPTA Air Ops.

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

THE A400 PILOT reports that the crew were informed, several days after the sortie, that a DASOR regarding an Airprox with an unmanned air system (UAS) had been submitted. The tasking was Extractor Parachute towing at Fox Covert DZ. Due to the nature of their activity they required extended runs on from Fox Covert and therefore entry into D123. They liaised closely with SPTA Air Ops and were cleared by telephone, and on the radio, to operate into D123 remaining south of the 47 grid line and west of the 10 grid line. SPTA Air Ops were informed that they could adhere to this but to be aware that they would need to manoeuvre right up against those limiting grid lines. They were made aware of

UAS activity to the north of their cleared area.[1] They operated within their cleared area throughout, were unaware of RPAS activity to the east and did not observe anything with regard to the Airprox.

THE SPTA AIR OPERATOR reports that the A400 crew had been briefed and booked in for the trial as per the brief on the 47 Northing and 09 Easting restrictions. On booking in [prior to the day of the sortie], the A400 crew stated it would be very hard for them to safely negotiate the Shrewton Stud Farm (a local horse racing/stud farm) avoid with the 09 Easting restriction and complete their trial profile, therefore requested the 10 Easting instead. The Operator cleared this with them, but overlooked the use of Area 12 by the UAS and the impact it would have on them if and when they flew. When the A400 finally arrived on task, it was very busy for both Operators, there were comms issues with the A400 and their ground/DZ party, and they both became distracted and failed to see the A400 alter their course and completely overfly Area 12, beyond the 10 Easting.

The Operator explained that SPTA (Salisbury Plain Training Areas) has the Air Danger Areas positioned over the top of the SPTA, these Ground Areas are then divided-up into several numbered areas for allocation to ground training troops, Area 12 is one of these. These areas can then be subdivided by use of “Northings” and “Eastings” for further deconfliction, primarily with air assets. The Operator briefed the pilot about the initial 09 Easting (and the 47 Northing), during this telephone briefing the pilot informed the Operator that the 09 was a little restrictive due to the sensitive area, outside MOD land but within the Air Danger area D125, Shrewton Stud Farm. The pilot requested the 10 Easting to ease this, the Operator agreed the change, the UAS Units had not booked in/on at this time, and it was believed that they were not due to be in Area 12 as per the Airspace Allocation sheet.

When the UAS unit was logged on, they had requested Area 12 to go HOT, no restriction was placed on them. This was an oversight on [the Operator’s] behalf, because they were not expecting the unit to be in Area 12, but did not put the two together, that the 10 Easting restriction would have needed to be extended or the UAS completely grounded during the trial period, due to the difficulties for the A400 pilot to remain on track for the trial.

Had things not been so hectic, and had they not become distracted by the comms issue, they could have deconflicted the UAS and A400 safely, by either placing an 11 Easting restriction, or by grounding the UAS until the trial was completed, especially as they were only airborne for approximately 15min at a time. It was human error and an oversight, due to the distractions at the crucial time of entry by the A400. Further to that, as soon as they realised the mistake/issues they of course acted to resolve them immediately.

Factual Background

Below, at Figure 1, is the chart provided by SPTA Air Ops indicating the 47 Northing and 09 and 10 Easting, used for deconfliction when briefing the A400 pilot. The red hatched area is Area 12, the area in which the UAS was operating. At Figure 2 is a further chart detailing the position of another UAS unit (not the Airprox unit) which was operating in Area 10 and 11, this chart was sent to the A400 pilot a few weeks prior to the day of the sortie.

[1] Not the Airprox UAS.

Figure 1 – Northings and Easting used by the A400m.

Figure 2 - Area 10 and 11 which also had UAS activity.

Figure 3 is a copy of another chart provided to SPTA Air Ops by the A400 crew prior to the sortie detailing the location of Shrewton Stud farm, which they needed to avoid. The crew had requested the airspace and the use of Fox Covert DZ a few weeks prior, using the standard monthly bid system.

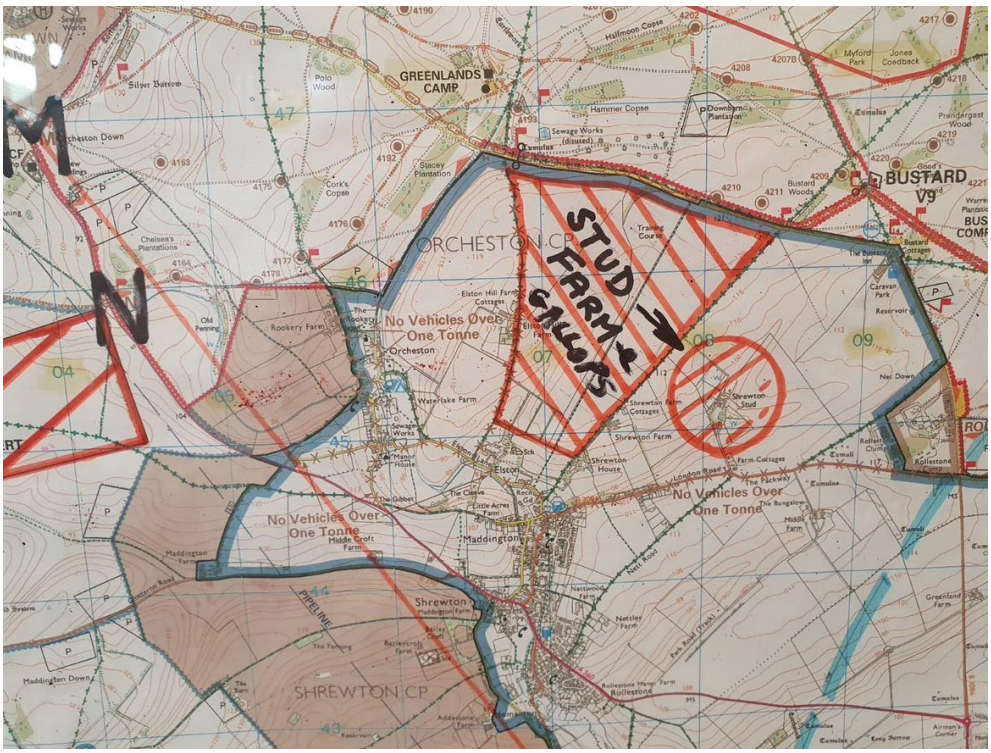


Figure 3 – Stud farm avoid.

The weather at Boscombe Down was recorded as follows:

METAR EGDM 051250Z 04008KT 9999 SCT011 OVC040 07/05 Q1022 TEMPO FEW011 RMK GRN TEMPO BLU=

Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. The A400 could be identified using Mode S and could be seen on the SPTA intermittently. At 1316:59, the A400 could been seen on a northeasterly heading, indicating FL006, Figure 4.

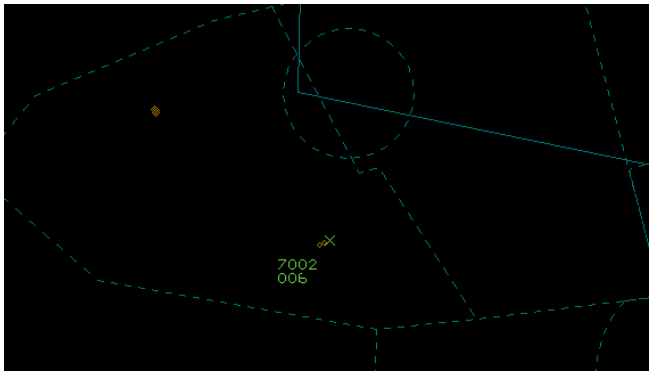


Figure 4 – A400 squawking 7002

The aircraft subsequently faded from radar and could not be seen again until heading northwest at 1323 (Figure 5). The diagram at the top of this report was therefore compiled using pilots' reports and grid references provided by the Wasp operator.

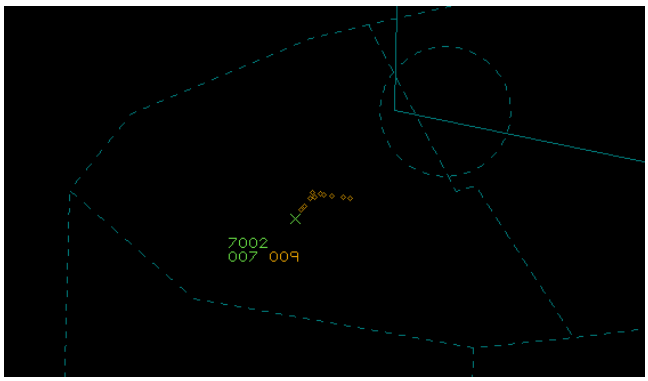


Figure 5

The Wasp and A400 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]. Rules for conducting military BVLOS operations require a layered safety approach which includes operating within segregated airspace.[3]

Brize Occurrence Investigation

Sequence of Events

The detachment had deployed onto SPTA to conduct flying in their pre-approved airspace.

Concurrently, the trials and development team from Brize Norton had identified that their pre-booked airspace was not suitable for their requirements. An airspace request and change was made; it was accepted and approved by SPTA.

In addition, SPTA was subject to ongoing substantial changes (terminology and procedures) within their organisation.

A second airspace change was requested by the A400 pilot on arrival and approved by SPTA. Moments later, SPTA realised that the airspace authorised for the A400 encroached into airspace that was authorised for Wasp RPAS. SPTA was experiencing an overload of outside pressures which contributed to the confusion.

SPTA Air Ops became fixated on trying to re-establish comms with the aircraft and ground team without success, without informing other air users of the change to airspace (Wasp RPAS). This allowed both the A400 and the Wasp RPAS to operate in the same airspace at the same time.

Summary

A collection of evidence had been pulled together to understand each party's involvement. The ground track of both Wasp RPAS and the A400 clearly display that both aircraft were operating in the same airspace at similar periods. When questioning SPTA Air Ops, the team from Brize Norton appeared to have not originally requested adequate airspace for their needs. Their requirement did not include the run-up and alignment of the A400 aircraft onto Fox Covert DZ. Subsequently, the A400 pilot requested permission to include the southern elements of D125. This was approved with the restriction of remaining south of the 47 Northing and west of the 09 Easting. Upon checking, the pilot highlighted this was restrictive and the aircraft mission was unachievable. They were then given an additional 1km east (remaining west of the 10 Easting). However, at this period, the SPTA Ops room was experiencing additional pressures and they believe they may not have informed all other airspace users. During this busy period, the A400 started its run-ups (alignment of the DZ), SPTA Air Ops suddenly noted the A400 was extremely close to the approved boundaries and communication was attempted to ensure the airspace would not be breached. This failed, including

[2] (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.
[3] RA 2320 – Role Specific Remotely Piloted Air Systems.

trying the black airwaves comms which was also being staffed by the observers on the DZ. This resulted in the fixation of SPTA Air Ops trying to re-establish comms and without providing any warnings to any other airspace user, including the Wasp RPAS detachment who, if they had been informed on this second round of communication, could have altered their action to avoid close proximity.

Comments

HQ Air Command

This incident was subject to a Local Investigation. At the time of this Airprox, UAS would be deconflicted from crewed aviation by either time, space, or height, controlled by SPTA Air Ops for basic flying activities (such as in this instance). For complex exercises, SPTA Air Ops will give the JTAC[4] or OC-TACP[5] areas that they will then own, so they are in control of the air and be responsible for all deconfliction. The SPTA-controlled deconfliction system did not work in this instance and the two air systems were inadvertently allowed to operate in the same airspace at the same time. Distractions contributed to this oversight by the SPTA Ops staff and, on realising the mistake, further confusion prevented effective and timely communication of the issue to the A400 crew or 32 RA Wasp unit. Due to the change in SPTA Air Ops manning and SPTA booking system, currently any flying of crewed aviation means UAS are grounded and hence deconflicted by time. 32 RA is also investigating equipping its UAS units with air-ground radios, an extra safety barrier to prevent recurrence. As the use of UAS by military units increases, especially on SPTA, deconfliction plans need to be robust. Small RPAS are notoriously difficult to spot from the air, even with prior knowledge of their presence. Crewed aviation is somewhat reliant on UAS operators to take action and descend/land their UAS on becoming aware of any approaching aircraft. The Army unit should be commended for their quick response on spotting the A400 on an apparent closing course and descending their drone to remain clear, despite believing they were operating in a sanitised area.

JHC

This incident was avoided due to the good lookout and quick reactions by the Wasp instructor. That response managed to avoid a potentially serious collision. There are many contributing factors which have led to this incident. Principally, the airspace management at SPTA where, following a series of changes at SPTA Air Ops, the operation has changed significantly. Although not perfect, it will help to mitigate against this happening again. 32 Royal Artillery, which operates the Wasp RPAS, is investing in an Air-Ground radio which will add another layer of mitigation were this situation to happen again.

Summary

An Airprox was reported when a Wasp RPAS and an A400 flew into proximity when operating on Salisbury Plain Training Area at around 1318Z on Monday 5th December 2022. The A400 pilot was operating under VFR in VMC, and was listening out on the SPTA frequency. The Wasp RPAS was being operated BVLOS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilot and drone operator, radar photographs/video recordings, reports from SPTA Air Ops and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

The Board first looked at the actions of the Wasp operator. They had been conducting training on the operation of the Wasp and had, correctly, believed that the airspace that they had been operating in should have been theirs alone. They had not been informed about the A400 operating in the adjacent

[4] Joint Terminal Arrack Controller.
[5] Officer Commanding-Tactical Air Control Party.

airspace and were subsequently not informed that the A400 pilot intended to extend their circuit and would become a confliction (**CF5**). Fortunately, the instructor had seen the A400 approaching from the west of their position and, concerned that the A400 appeared to be operating at a similar height to the Wasp (**CF8**), had been able to descend the UAS and return it to its landing position and out of the way of the A400.

Turning to the actions of the A400 pilot, their Operations personnel had booked the airspace for the sortie some weeks before the event and at the flight planning stage it had been realised that their sortie profile would be difficult to achieve whilst avoiding the stud farm. The pilot had subsequently telephoned SPTA Ops to amend their booking, which had been approved. Although the pilot had been told about other UAS operating in the locality (that would not have affected their sortie), they had not been told about the Wasp's operation, and so had no prior knowledge that it would be operating in their immediate vicinity (**CF5**). The TCAS on the A400 had not been able to detect the UAS and so could not have given any prior warning to the pilot (**CF6**). Members were told that the Wasp had a wingspan of approximately 72cm and so, not surprisingly, the A400 pilot had not seen the UAS at all during the sortie (**CF7**) and had not had any knowledge the Airprox had occurred until some time after the event.

The Board then turned their attention to the SPTA Operators. They thanked the Operator for their frank and honest report and were informed by military members that SPTA Ops had undergone a number of changes recently, both at the time of this incident and subsequently. One such change had been that only one aircraft was allowed within each area of the range at any one time, and therefore the A400 and the Wasp should have been deconflicted by time (**CF1**). As noted in the SPTA Operator's report, they had not assimilated that the UAS had been operating in the area requested by the extension of the A400 circuit into D125 (**CF4**, **CF9**) and had therefore approved the request that the A400 pilot could extend their circuit (**CF3**), without realising that this would place it in direct confliction with the UAS (**CF2**). The Board was heartened to hear that further changes have been made to ensure that a repeat of this incident should not occur, and welcomed the addition of air-to-ground radios for the UAS operators which, had it been available in this incident, would have allowed the SPTA Ops to forewarn the UAS operator about the A400.

When determining the risk of the Airprox, members considered the reports from the A400 pilot and the UAS operator, together with that of the SPTA Operator. They noted that the radar screenshots had not shown enough detail to accurately determine the height of the A400 as it flew over the area occupied by the UAS and were disappointed that the Brize Norton investigation had not drawn this information out. However, the Wasp operator had described a situation whereby they had taken action to remain clear of the A400. Members praised the Wasp operator's quick avoiding action, commenting that it had been entirely down to their actions that the risk of collision had been averted. Some members thought that this effective avoiding action had meant that normal safety standards had pertained (Risk Category E). However, this was quickly countered by those who noted that the two aircraft should have been deconflicted by SPTA Ops and so, whilst there had been no risk of collision, safety had been degraded. The Board agreed with this latter view; Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022270			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Regulations, Processes, Procedures and Compliance			
1	Human Factors	• ATM Regulatory Deviation	An event involving a deviation from an Air Traffic Management Regulation.	Regulations and/or procedures not fully complied with
	• Situational Awareness and Action			
2	Human Factors	• Conflict Detection - Not Detected	An event involving Air Navigation Services conflict not being detected.	
3	Human Factors	• Inappropriate Clearance	An event involving the provision of an inappropriate clearance that led to an unsafe situation	

4	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
	Flight Elements			
	• Situational Awareness of the Conflicting Aircraft and Action			
5	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
	• Electronic Warning System Operation and Compliance			
6	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			
7	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
8	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
	• Any other events			
9	Human Factors	• Any other event	Any other event not listed elsewhere within the event types list.	The Ground element did not assimilate the conflict information

Degree of Risk: C.

Safety Barrier Assessment[6]

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

Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because SPTA Air Ops did not deconflict the two air systems.

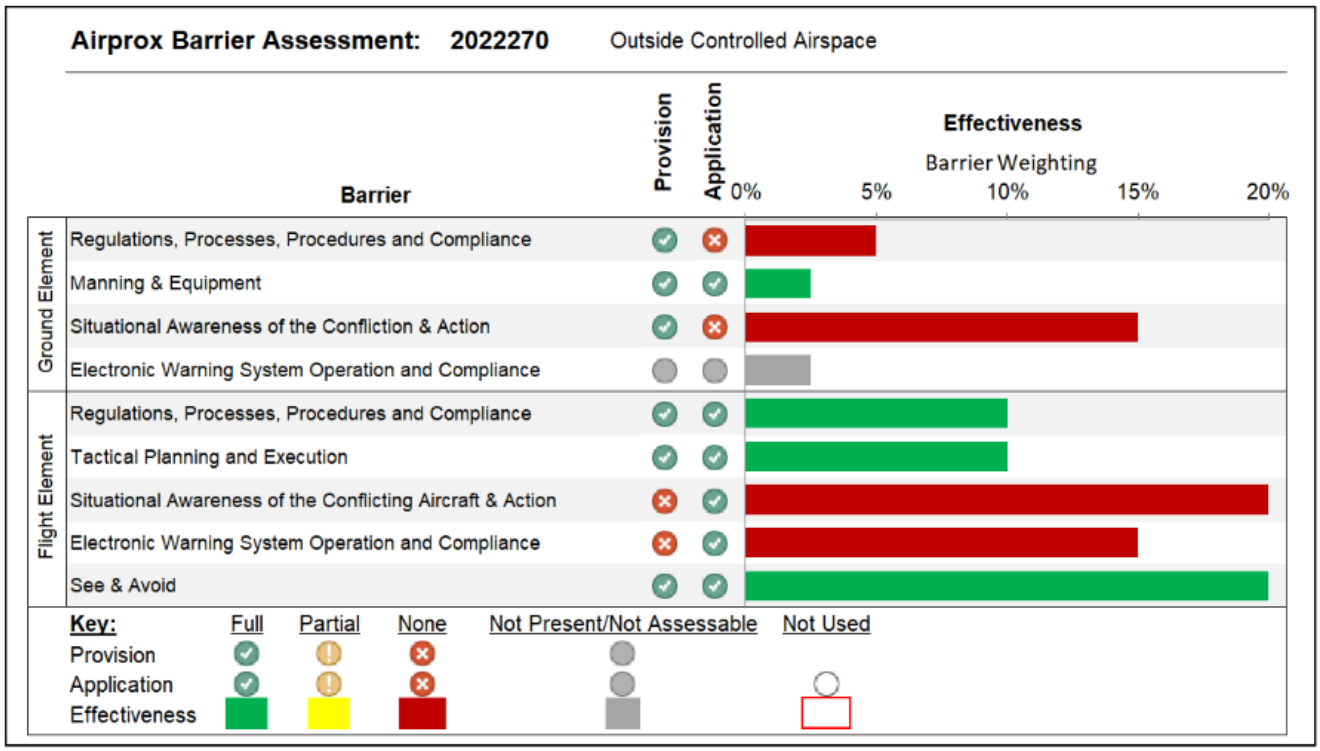
Situational Awareness of the Confliction and Action were assessed as **ineffective** because SPTA Air Ops overlooked the fact that the extended profile of the A400 would conflict with the UAS operation, and cleared the pilot to operate in D125.

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither the A400 pilot, nor the UAS operator, knew the other was going to be operating in the same area.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TCAS on the A400 could not detect the UAS.

[6] 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: 2022270
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