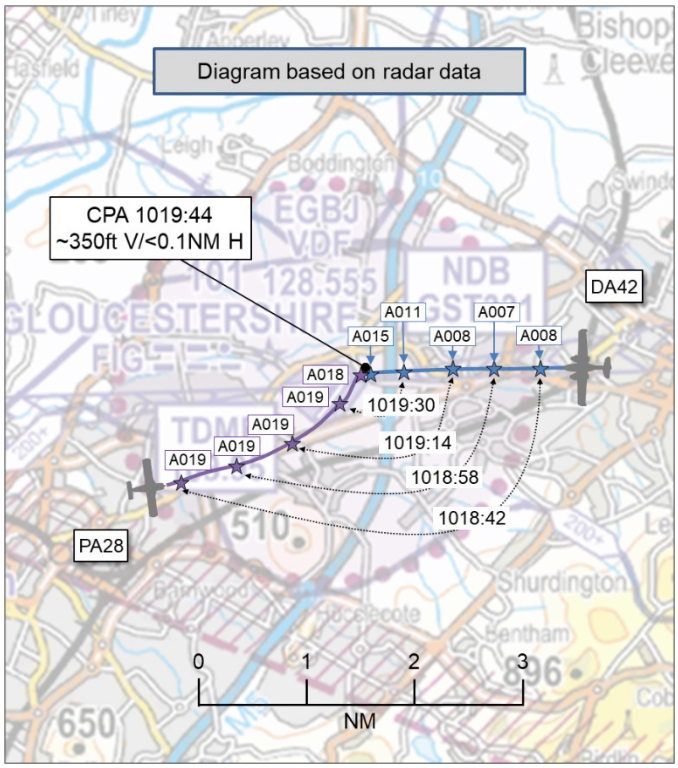
AIRPROX REPORT No 2024112

Date: 04 Jun 2024 Time: 1020Z Position: 5154N 00210W Location: Gloucestershire Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	PA28
Operator	Civ FW	Civ FW
Airspace	Gloucester ATZ	Gloucester ATZ
Class	G	G
Rules	IFR	VFR
Service	ACS	ACS
Provider	Gloster Tower	Gloster Tower
Altitude/FL	1500ft	1800ft
Transponder	A, C, S	A, C, S
Reported		
Colours	White	White
Lighting	Strobe lights	Taxi, nav & HISL
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1400ft	1000ft
Altimeter	QNH	QFE (1018hPa)
Heading	264°	NR
Speed	85kt	NR
ACAS/TAS	Not fitted	Not fitted
Separation at CPA		
Reported	100ft V/60m H	100ft V/500m H
Recorded	~350ft V/<0.1NM H	



THE DA42 PILOT reports that during the go-around from an RNP approach for RW27 from 600ft they climbed heading 264° and, on passing 1000ft on the QNH, they did an 'engine failure after take-off' (EFATO) practise. With the aircraft nose high, doing 82kt, the student carried out the touch drill and, halfway through the drill, they looked out to see the PA28 in a slight descending turn which was going to pass down their left-hand side. At some point after that, the student had paused for them to give zero thrust, they called a near miss and advanced the throttle. Tower asked if they wanted to pass the details but they said that they would call when they were on the ground, which they did.

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

THE PA28 PILOT reports that they were not aware of the Airprox until they were informed at the end of the day's flying. They had studied the airport plates and read all of the 'Pilot Info' on the website and that this was only their second time flying there. They had arrived [on a previous occasion] with no issues and fuelled the aircraft up ready for the following day's planned flying, [noting that] the circuit was empty both on this occasion and their previous departure from Gloucestershire Airport 2 weeks before.

At exactly 0916 they phoned the Tower for PPR. They explained that they had 3 flights planned, which [the person] on the phone approved and asked them to contact the Tower on the radio before departure. They [understood] that they were content with all 3 flights to proceed for the day.

They checked the TAFs and METARs one last time before departure that all gave VFR conditions and they proceeded to contact the Tower on the radio at approximately 0950. There was a delay at the hold for RW27 as traffic in the circuit and on the ground had significantly increased. At exactly 1003 they lined up on RW27 and departed the runway, proceeding southwest as planned.

They remained on a Basic Service with Gloster Radar throughout the whole flight, reporting to them 10NM from the airfield for joining instructions. At this point it was evident that the circuit was busy and

they asked their passengers to minimise chat as the radio was busy. They were instructed to join overhead and report descending deadside. The cloudbase from their flight was showing 2500ft with some scattered cloud at 2000ft, above the airfield was clear so they accepted the request and proceeded to climb to 2000ft above the airfield. Upon reaching the overhead of the airfield they reported their position and intention to descend to the deadside. They were instructed to report crosswind which they confirmed they would do. At this point they noted, as did their passengers, that the radios begun to experience high levels of static, making it almost impossible to hear the Tower [controller]. They attempted to recover comms with the squelch and then attempted to use the second [radio] set but had the same issue on there.

While in the circuit, a light drizzle had begun but the visibility remained suitable for VFR, the greatest difficulty with visibility was the greyness of the day caused by the overcast conditions. They noted that the reduced light level did make spotting aircraft more difficult than usual. Added to this, the volume of traffic that suddenly hit the circuit all at once, it was definitely a very testing situation to fly in, especially for a pilot only on their third ever landing at the airfield, which they admitted was unlike any other airfield they had ever flown in to. They also noted that the radio static happened a few times when in close proximity to Gloucestershire Airfield when the traffic levels were significantly high.

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

THE GLOSTER TOWER CONTROLLER reports that at 1019, after completing a missed approach following an instrument approach for RW27, the DA42 [pilot] stated that they would be filing a report due to the proximity of another aircraft. They asked whether the pilot would like to pass the details on the RT, but they stated they would file the report after landing. The pilot did not state the type or registration of the other aircraft involved, but it is believed to be [a PA28] which was carrying out a standard overhead join[1] at the time from the southwest.

[The DA42 pilot] was advised of a PA28 making a standard overhead join from the southwest on, or shortly following, first contact with the Tower [controller] at approximately 1017. On transfer to the Tower [frequency], also around time 1017, [the PA28 pilot] was advised of the DA42 carrying out a missed-approach to climb straight ahead at a range of approximately 4NM on the final approach track. This Traffic Information was reported at ranges of approximately 2.5NM and at the time of the go-around. Both aircraft were overhead the Tower building when the incident is believed to have taken place so they were not visual at the time of closest approach. It was at this time that [that DA42 pilot] reported their intent to file a report. No comment was made by [the PA28 pilot] regarding the incident.

Factual Background

The weather at Gloucestershire Airport was recorded as follows:

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METAR EGBJ 041020Z 20007KT 9999 -RA FEW012 SCT018 16/13 Q1011
METAR EGBJ 040950Z 21008KT 9999 -SHRA FEW012 SCT018 16/12 Q1011
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Gloucestershire ATC MATS 2, Section 3, Chapter 2, 2.2 Circuit Joining states:

> 2.2.2. Due to the high volume of IFR and VFR traffic that requires integration into the circuit, in addition to passing routine traffic information, controllers should employ defensive controlling techniques to minimise the likelihood of a confliction. Particular attention must be paid to instrument traffic executing a missed approach and aircraft carrying out a standard overhead join. Depending on the runway configuration examples of these techniques can include, but are not limited to, *"report before turning crosswind/downwind/base", "report before descending on the dead side", "report before turning towards the live side", "orbit", "extend downwind"* etc.

Gloucestershire ATC MATS Pt 2 Chapter 2 states,

> Fanstops,

[1] Standard Overhead Join procedures are available as a CAA publication download.

4.1. EFATO exercises are a mandatory element of the PPL syllabus. Due to the proximity of residential development around the aerodrome, however, they are not permitted on Runway 22.

Fanstops from Runways 04 and 09 are permitted only after crossing the M5 motorway, and from Runway 27, once west of Imjin (Barracks).

4.2. Pilots should request permission before carrying out a fanstop and will be asked to report *"climbing away"* on completion of the procedure. Aircraft are not to descend below 400ft QFE during the procedure.

Analysis and Investigation

Gloucestershire Airport Investigation

Interviews with both pilots and the ATCO involved, and a review of RT recordings and METARs were made.

The Approach ATCO issued the clearance for [the DA42 pilot] to carry out the instrument approach and for [the PA28 pilot] to carry out the standard overhead join as per MATS 2 procedures (see above).

The following is a partial transcript during the Airprox event. Transmissions between other aircraft and the Tower are not included. The ATCO described workload as medium at the time and approximately 5 or 6 aircraft were on the same frequency during the period.

DA42: *Gloster Tower*, [DA42 callsign] *4 miles to run*.

Tower: [DA42 callsign], *Gloster Tower, continue approach RW27, you're number 1 with one on departure*.

PA28: *Gloster Tower*, [PA28 callsign] *inbound from the south*.

Tower: [PA28 callsign] *report descending on the deadside.*

PA28: *Report descending on the deadside*, [PA28 callsign].

Tower: [PA28 callsign], *traffic on a 2 and half mile final to go around is a Twin Star* ([DA42]).

(There is no acknowledgement of that Traffic Information.)

Tower: [DA42 callsign], *traffic 2 miles west-southwest of the field routeing to the overhead for an overhead join is a Cherokee* [(PA28)] *and traffic upwind is a Cherokee* ([PA28] *in the fixed-wing circuit, RW27 cleared low approach. wind two one zero five* [(210°/5kt)].

DA42: *Cleared low approach* [DA42 callsign] (no acknowledgement of Traffic Information).

Tower: [PA28 callsign] *traffic on a 1 and half mile final RW27 instrument approach to go-around straight ahead is a Twin Star* [(DA42)].

PA28: *Thank you,* [PA28 callsign].

DA42: [DA42 callsign] *going around*.

Tower: [DA42 callsign], *roger*.

PA28: [PA28 callsign] *descending deadside*.

(Two crossed transmissions.)

Tower: [PA28 callsign] *Roger traffic in the go-around is a Twin Star climbing straight ahead and traffic to depart RW27 left turn out south is a Bulldog, report downwind*.

PA28: *Roger the traffic, report downwind* [PA28 callsign].

DA42: *And* [DA42 callsign] *we'd like to report a near miss on the go-around*.

Tower: [DA42 callsign] *roger would you like to pass the details now*?

DA42: *We will do it on the ground* [DA42 callsign].

Upon telephone interview on the 4th June 2024, the pilot of [the DA42] advised they remembered going around from an instrument approach RW27 and then climbing straight ahead. The pilot remembered seeing a PA28 approximately 100ft above them and approximately 500ft to 600ft laterally from them and on the left-hand side ahead. The PA28 was in a banked turn to the right. At the time the pilot believed they were climbing through approximately 1200ft to 1300ft altitude. The pilot believed the PA28 was white but could not see the registration. They described the PA28 as being close enough to fill a large portion of the cockpit window. The pilot of [the DA42] did not recall being passed any Traffic Information about the PA28 (they had been passed Traffic Information but had not acknowledged it). Although the pilot had said on the RTF that a "near miss" would be filed, upon interview, the pilot said that they would not be filing an Airprox.

Upon telephone interview, the pilot of [the PA28] reported not seeing another aircraft during the Airprox event. The pilot did not remember being passed any Traffic Information (Traffic Information was passed on 3 occasions and was acknowledged on one of these occasions).

The pilot described the conditions as *"very misty"* with *"quite a lot of rain"* which they thought would have made it difficult to see another aircraft.

Upon interview, the ATCO involved described the traffic scenario accurately i.e. [the DA42] going around from an instrument approach and [the PA28] making an overhead join from the southwest. The ATCO said that they lost sight of both aircraft due them being positioned out of eye line from the Tower.

They remembered passing at least 2 pieces of Traffic Information to [the PA28 pilot] and one to [the DA42 pilot]. They had been in the ADI position for approximately 110min at the time of the Airprox.

Investigation Actions: Gloucestershire Airport to send out a Safety Notice about not allowing overhead joins when Instrument Approach Procedure (IAP) go-arounds are taking place and send it to the CAA ATC Inspector.

CAA ATSI

ATSI has reviewed all the reports and note that the Gloucestershire ATC investigation report has highlighted most of the points they would have made, which is the lack of acknowledgement of Traffic Information, and lack of challenge of this by the controller.

Appropriate and timely Traffic Information was passed on more than one occasion by the Tower controller which should have enabled [the PA28 pilot] to integrate correctly into the circuit although they did not acknowledge the first transmission of this. The pilot of [the DA42] did not acknowledge the only Traffic Information on [the PA28] that was passed to them.

The pilot of [the DA42] reported carrying out a practise EFATO. Although the manoeuvre itself did not appear to contribute directly to the Airprox other than perhaps increasing cockpit workload, and indeed might have actually slowed their rate of climb, it was noted that no reference to the EFATO was made by the pilot of [the DA42], nor permission requested of ATC on the RTF (see Gloucestershire procedures above).

The radar replay appeared to indicate that [the DA42] carried out the go-around at 1NM from touchdown, with [the PA28] approaching from the southwest and passing behind [the DA42], 400ft above, just to the east of the RW27 threshold.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. The DA42 was identified displaying a 2000 squawk, used when operating in UK airspace in accordance with IFR and either is not receiving an ATS or has not received specific instruction from ATS concerning the setting of the transponder, and the PA28 was identified displaying the Gloucestershire Airport conspicuity code, for use within 25NM and 10,000ft of the airfield and monitoring the Gloucestershire Airport Frequency.

The DA42 pilot was performing an instrument approach with a go-around and practise EFATO on RW27, while the PA28 pilot approached from the southwest towards the RW27 threshold (Figure 1).

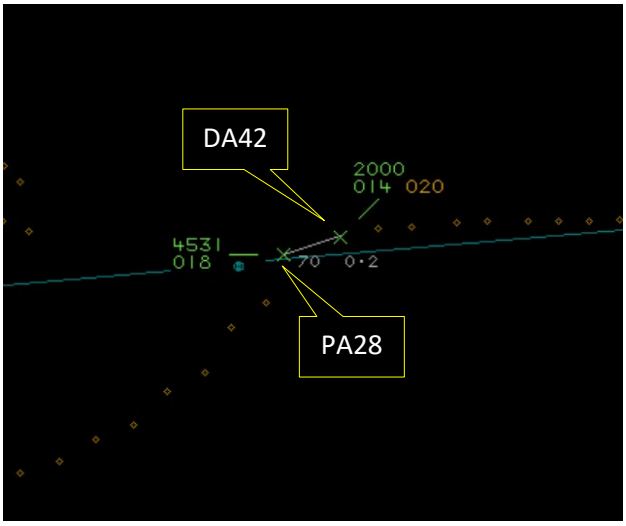


Figure 1 - Time 1019:42 separation 400ft and 0.2NM

The next radar sweep was at 1019:46 after the PA28 had passed the DA42, diverging, with 300ft vertical and 0.1NM horizontal separation (Figure 2).

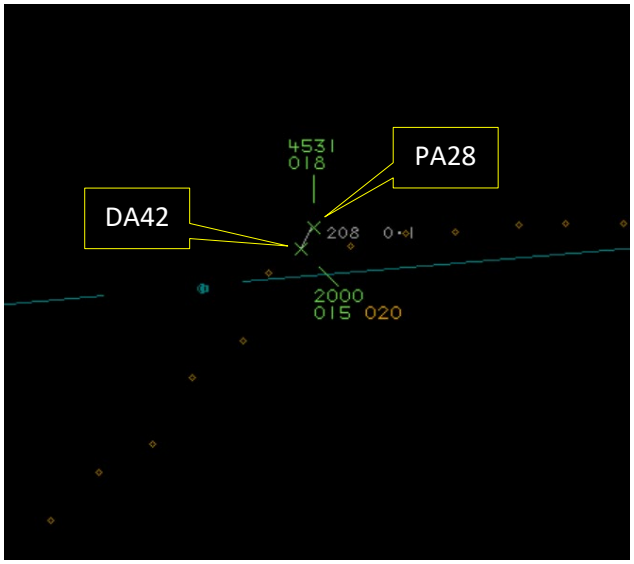


Figure 2 - Time 1019:46 separation 300ft and 0.1NM

CPA was assessed to have been at 1019:44 with approximately 350ft vertical and less than 0.1NM horizontal separation, after which the PA28 commenced a right-hand turn to the deadside for a standard overhead join for RW27 right-hand (Figure 3).

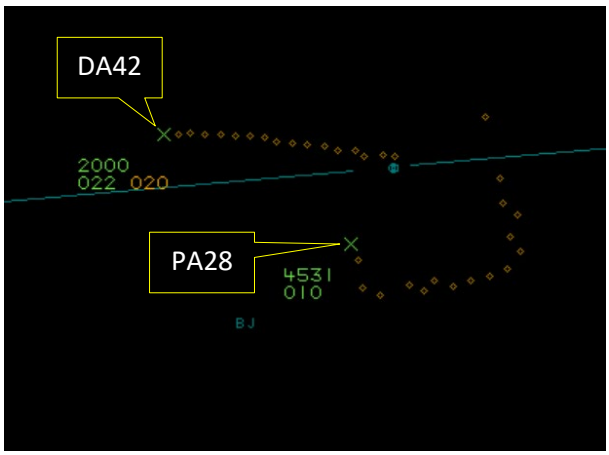


Figure 3 – Time 1020:58 PA28 in right-hand orbit deadside.

The DA42 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] 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.[3]

Summary

An Airprox was reported when a DA42 and a PA28 flew into proximity at Gloucestershire Airport at 1020Z on Tuesday 4th June 2024. The pilot of the DA42 was operating under IFR in VMC and the pilot of the PA28 was operating under VFR in VMC; both pilots were in receipt of an ACS from Gloster Tower.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, a report from the air traffic controller 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 DA42 pilot, and noted that they had been working within a controlled environment operating IFR. Members explored the question of whether the pilot had correctly followed procedures for an EFATO practise due to an earlier reference to Gloucester's 'Fanstop' procedures, but established that these do not apply to multi-engine aircraft[4] and were not, therefore, considered to be relevant to this Airprox. The Board also contemplated the DA42 pilot's perception of the PA28's position based on the previous radio calls and lack of response to Traffic Information passed to both the PA28 and DA42 pilots on the other's position and intentions, and it was agreed that the DA42 pilot had probably not assimilated the Traffic Information (**CF8**). Members further agreed that the DA42 pilot had only sighted the PA28 at or around CPA and that this had effectively constituted a non-sighting of the PA28 (**CF9**).

Turning their attention to the actions of the PA28 pilot, the Board determined that there had been, seemingly, a number of issues for them to cope with and members were reminded of an aviation adage that 'if three or more things go wrong, it's time to land or get away (take evasive action)'. The Board acknowledged that the pilot had potentially been distracted and had been unable to hear some of the radio transmissions while approaching the airfield overhead, had not initially acknowledged the Traffic Information passed to them on the DA42 and, therefore, had had no situational awareness of the DA42 pilot's intentions (**CF7**). Members noted that the PA28 pilot had been issued a standard overhead join by the controller and wondered if they had fully complied with that instruction. After some discussion

[2] (UK) SERA.3205 Proximity..
[3] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome..
[4] CAP 413 Radiotelephony Manual p10 states: FANSTOP meaning, 'I am initiating a practice engine failure after take-off.' (Used only by pilots of single engine aircraft.) for which the response should be, "REPORT CLIMBING AWAY".

about height maintenance and positioning during the join, members agreed that the standard procedures for an overhead join had not been fully complied with (**CF4**), thereby not meeting the expectations of other air traffic or the controller. The Board also agreed that the PA28 pilot's joining procedure had put them in a position that had not avoided or conformed with the pattern of traffic already formed in the circuit (**CF6**) and that their join had been poorly executed (**CF5**). The Board further noted that at the time of the Airprox the PA28 pilot had been executing a right turn in the vicinity of the active runway threshold and had not sighted the DA42 performing a missed approach (**CF9**). Overall, members thought that the PA28 pilot could have moved away from the circuit to take more time to consider the join, the prevailing conditions, and to sort out any other issues that would otherwise have created a distraction.

The Board then debated the actions of the Gloster Tower controller and felt that they could have asked the PA28 pilot to make an orbit for spacing rather than clear them for a direct overhead join and potentially putting the PA28 into conflict with the DA42 performing Instrument Approach Procedures (IAPs), with the controller's instructions thereby contributing to the Airprox (**CF2**). Members were heartened to learn that Gloucester Airport has since agreed to issue a Safety Notice, instructing controllers to not allow overhead joins when Instrument Approach Procedure (IAP) go-arounds are taking place, which addresses the Board's concern that procedures that had been followed at the time of the Airprox had been inadequate (**CF3**), although it was mentioned that this new instruction to controllers should also be incorporated into the Gloster Mats Part 2. Further taking into account how the situation could have been improved upon, members spent some time discussing the lack of Traffic Information read-back from both the DA42 and PA28 pilots, and why this had not been corrected by the controller (**CF1**). The discussion also covered RT terminology and the rationale behind using 'roger' as a response to having been passed Traffic Information as an acknowledgement to having heard the information, but not necessarily having seen the aircraft in question.[5] Members mentioned that this would have assisted the controller by not creating a pause between the passing of Traffic Information and waiting for the pilot to look for Traffic and then respond with either 'Traffic in Sight' or 'Traffic not sighted'. Therefore, those responses of 'Roger' by both pilots had been acceptable, but the lack of response had not been helpful.

Concluding their discussion, members reflected that, although they had identified areas that could be improved upon, there had been sufficient vertical separation at CPA for the Board to determine that, whilst safety margins had been reduced, there had not been a risk of collision; as such the Board assigned Risk Category C to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024112			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Situational Awareness and Action			
1	Human Factors	• ATM Personnel Hear back	An event involving the hearback (listening) of ATM personnel to communications	
2	Human Factors	• Traffic Management Information Provision	An event involving traffic management information provision	The ANS instructions contributed to the Airprox
	Flight Elements			
	• Regulations, Processes, Procedures and Compliance			
3	Organisational	• Flight Operations Documentation and Publications	Flight Operations Documentation and Publications	Inadequate regulations or procedures
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] CAP 413 Chapter 4, page 20 paragraph 4.46 gives an example of 'Roger' as a response to traffic information being passed, which is confirmed within the SKYWAY CODE CAP 1535 pages 83 & 99.

5	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
6	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			
7	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
8	Human Factors	• Understanding/ Comprehension	Events involving flight crew that did not understand or comprehend a situation or instruction	Pilot did not assimilate conflict information
	• See and Avoid			
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

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:

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the Gloster Tower controller had not verified that pilots were receiving the Traffic Information passed to them, and had instructed the PA28 pilot to conduct an overhead join whilst the DA42 was due to carry out a missed approach.

Flight Elements:

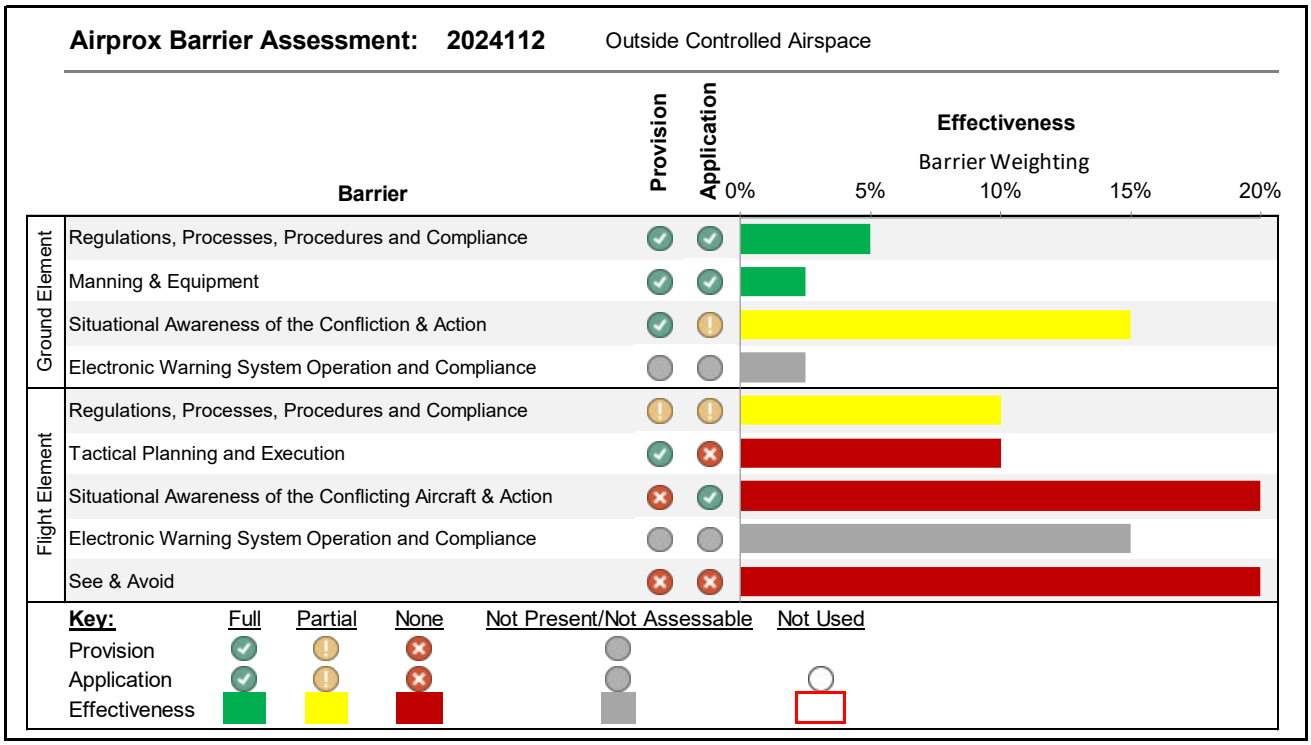
Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the PA28 pilot had not conducted their overhead join as expected, and the Gloucestershire Airport procedures allowed overhead joins to take place during IFR missed approach procedures.

Tactical Planning and Execution was assessed as **ineffective** because the PA28 pilot did not execute their overhead join correctly and thus did not conform with or avoid the pattern of traffic formed by the DA42.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the PA28 pilot had no situational awareness of the DA42, as they had been unable to hear the radio transmissions, and the DA42 pilot had not assimilated the relative position of the PA28.

See and Avoid were assessed as **ineffective** because the PA28 pilot had not sighted the DA42, and the DA42 pilot had had an effective non-sighting of the PA28.

[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: 2024112
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