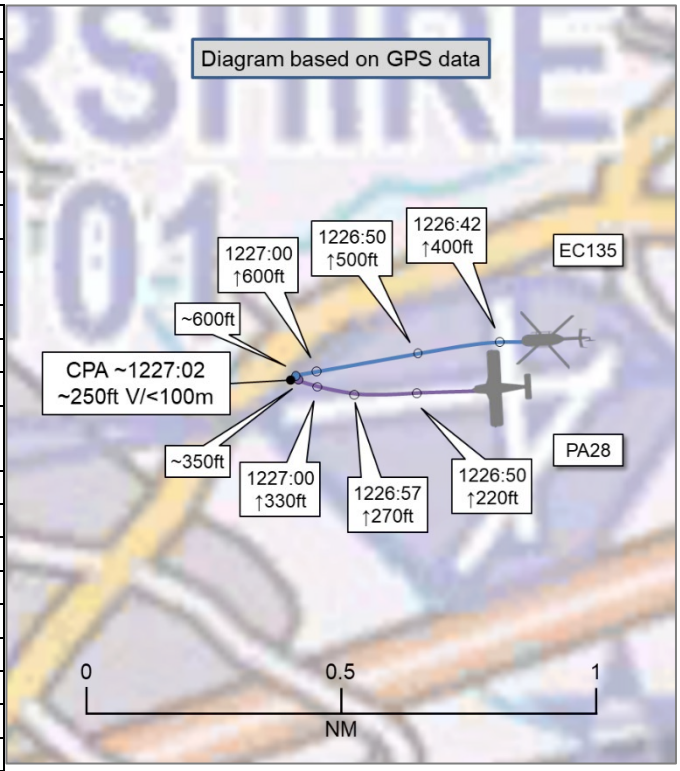
## AIRPROX REPORT No 2022274

Date: 09 Dec 2022 Time: 1227Z Position: 5154N 00211W Location: Gloucestershire Airport

## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|---|---|---|
| Aircraft | EC135 | PA28 |
| Operator | Civ Comm | Civ FW |
| Airspace | Gloucestershire ATZ | Gloucestershire ATZ |
| Class | G | G |
| Rules | VFR | VFR |
| Service | ACS | ACS |
| Provider | Gloster Tower | Gloster Tower |
| Altitude/FL | ~600ft | ~350ft |
| Transponder | A, C, S | A, C, S |
| **Reported** | | |
| Colours | Red | White, Blue |
| Lighting | Nav, HISL, Landing | Strobe |
| Conditions | VMC | VMC |
| Visibility | >10km | >10km |
| Altitude/FL | 450ft | 'Climbing' |
| Altimeter | QNH (1009hPa) | QNH (NK hPa) |
| Heading | 270° | 285° |
| Speed | 65kt | 80kt |
| ACAS/TAS | TAS | PilotAware |
| Alert | TA | Unknown |
| **Separation at CPA** | | |
| Reported | 80ft V/0m H | Not seen |
| Recorded | ~250ft V/<100m H | |




**THE EC135 PILOT** reports that, after being given clearance for a standard helicopter departure to the north, from Heli North, a CAT A, PC1 VTOL2 profile was flown (vertical to 120ft) followed by a transition to forward flight. At approximately 400ft, and as the aircraft was about to be turned right to the north, a fixed-wing aircraft passed directly underneath their aircraft outbound to the north in the climb. Given the direction of travel and rate of climb, it was considered by them unlikely that the fixed-wing pilot had visually identified the helicopter. The fixed-wing continued in the climb, through their level, whilst routing to the north-west.

The EC135 pilot also reported that ATC had been busy at the time.

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

**THE PA28 PILOT** reports that they departed Gloucester airfield on a VFR flight to [destination to the north]. The weather was CAVOK. After take-off from RW27 (RH circuit), they made the normal 10° right turn for noise abatement, climbing to their planned altitude of 2500ft on a northerly heading. Listening to the Tower frequency during their initial climb within the circuit, they were aware that there was a helicopter operating somewhere in the vicinity but its exact position was unknown to them. The R/T they overheard was between the helicopter pilot and the Gloster Tower controller. Therefore, they initiated a very strenuous lookout to locate the aircraft but were not successful - the helicopter was not seen. They didn't relax their lookout until some distance from the ATZ. The first indication of a reported Airprox came via an email.

**THE GLOSTER TOWER CONTROLLER** reports that at time 1225 [the EC135 pilot] was given RW27 crossing clearance and take-off clearance: "*standard helicopter departure to the north cleared for take-off*". [The EC135] was observed crossing RW27 and vacated RW27 to Heli North East. [The PA28 pilot] was issued take-off clearance from RW27 with a right turn to the north after departure. [The PA28] was

airborne at 1227. They continued controlling other traffic and when they turned back to the northwest they observed that [the PA28] was now on the north side of [the EC135], both aircraft at around 500ft and still slowly climbing. Therefore, they believe the paths of the aircraft may have crossed on departure. They have not reviewed any media prior to submitting this report.

## Factual Background

The weather at Gloucester was recorded as follows:

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METAR EGBJ 091220Z 00000KT CAVOK 03/00 Q1009
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## Analysis and Investigation

### Gloucestershire Airport ATSU Investigation Summary

As part of the investigation the R/T recordings were reviewed. RW27 was in use, wind calm and QNH 1009hPa. The helicopter circuit was based on RW27 in use. Traffic levels were assessed as medium throughout.

At 1218, [the PA28 pilot], with ATIS information 'K', QNH1009 requested taxy and was given taxy to holding point A2.

At 1219, [the EC135 pilot] with ATIS information 'K' requested taxy for Heli North, and was given QNH1009 and taxy holding point 'X', wind calm.

At 1221 [the pilot of an unrelated PA28] called ready for departure and was told to hold position. [This PA28 had a similar c/s to the Airprox PA28, however] there was no mention of similar callsign on frequency.

At 1224 Traffic Information was passed to the EC135 pilot on an R44 at Heli North and an A109 in the helicopter circuit.

At 1225, [the PA28 pilot was told] "*behind the landing P28A, line up and wait runway 27 behind."*

At 1226, after confirming a right turn-out with the pilot of the PA28, the controller passed "*Heli circuit active and fixed wing circuit active with a P28A on climb-out. Right turn-out, runway 27 cleared for take-off wind calm, traffic departed from Heli North to the north is a Eurocopter*". [The PA28 pilot read back] "*cleared take off with a right turn-out*". (No Traffic Information was passed to the Eurocopter pilot).

At 1230 the EC135 pilot contacted Gloster Approach and reported the Airprox to them.

Procedures - Fixed wing AIP:

> *Departures Runway 27 - All departing aircraft are to execute a 30° right turn when passing the upwind end of the runway. Tracking 294° MAG, climb through 600 FT QFE and not before passing the upwind end of the runway before turning left. Avoid overflight of the village and church on the right. Jet aircraft are to climb through 1400 FT QNH before executing any turn. Aircraft unable to comply with 30° turn after take-off should advise ATC and climb straight ahead through 1400 FT QNH.*

Procedures - Helicopters AIP:

> *Standard Helicopter Departure': Departure into wind or as required, remaining clear of fixed-wing runway in use, turning to depart circuit at right angles to runway in use (i.e. beneath 'downwind' leg), not above 750 FT QFE, before departing ATZ on required track.*

The ATM was also reviewed using pictures reviewed from Channel 1 of the radar display - the ATM was serviceable and picture attached at 30sec intervals from 1225:30 to 1228:30. It is the

investigator's view that passing traffic based on the ATM on climb-out would have proved difficult due to the poor quality of the picture.

Relevant CCTV was reviewed. The helicopter was observed to cross RW27 but not depart from Heli North East. A minute later, the helicopter lifted vertically and also backward before setting course. This is not as per any procedures that are in the MATS Part 2. The helicopter then departed less than 20sec from the fixed-wing aircraft. The fixed-wing aircraft may have turned a little early but there was nothing definitive on CCTV and it was observed to fly underneath the helicopter. The controller could not have seen this on the ATM and, out the window, could have only observed this if looking at the correct time. The helicopter was already at 500ft at Heli North East, [according to the pilot report] before setting course.

Findings and observations:

- Similar callsigns were not picked up.
- The controller may have elected to pass Traffic Information and clear [the EC135 pilot] for take-off in two separate transmissions. The controller, however, did pass pertinent Traffic Information to [the PA28 pilot] on the Eurocopter.
- Specific Traffic Information was given to the pilot of [the PA28] but not [the EC135 pilot].
- The Airprox was declared on the Approach frequency and not Tower, where the incident occurred.
- [The EC135 pilot], after crossing RW27, stayed at Heli North for a period before departing. They did not depart in a standard helicopter departure to the north as they went west over the golf course before setting course.
- [The PA28 pilot] did a 30° degree noise abatement turn from RW27 as per the procedures when passing the upwind end of the runway.
- There was a non-standard lift before departure of the helicopter.

**CAA ATSI**

ATSI has reviewed the Gloucestershire RTF and reports and is satisfied that, in the investigation report, all the points have been captured. ATSI has the following points:

- The RTF loading was nearly constant with helicopter and fixed-wing circuits, training aircraft on approach and ground runs, helicopter and fixed-wing departures and a runway inspection, all of which appeared to have been handled well.
- The Traffic Information passed by the ATCO was consistent and comprehensive, however they did not always get acknowledgements from pilots, and the lack of acknowledgement was not being challenged.
- There were similar callsigns on frequency which were not picked up, one of which was the Airprox PA28.
- Appropriate generic and specific Traffic Information was passed to the departing PA28 pilot but it was not acknowledged by the pilot, nor challenged by the ATCO.
- The Gloucestershire Investigation's information from the CCTV indicates that the EC135 did not depart immediately, and so, had they seen it, it would have been appropriate for the controller to have passed updated Traffic Information to the PA28 pilot.
- Due to the intensity of the operation, it is likely that the ATCO's attention might have been elsewhere at the time of the Airprox.

**UKAB Secretariat**

An analysis of the NATS radar replay was undertaken and, due to restrictions on radar coverage in that locality, did not detect the aircraft involved until after the Airprox. However, the PA28 pilot kindly supplied a GPS data file detailing their flight and the UKAB Secretariat was also able to obtain GPS data relating to the flight of the EC135. These files have been combined to produce the diagram and to measure the separation, however, as the timings of the data points did not align exactly,

some interpolation was required and, as such, the separation at CPA and the time has been recorded as an approximation.

After lifting from the north side of RW27, the EC135 pilot initially routed approximately parallel to the runway centreline, with a slight drift toward the runway observed immediately prior to CPA. The PA28 pilot became airborne and, although they turned to their right in accordance with the noise abatement procedures, their GPS track shows that this was initiated before reaching the upwind end of the runway.

At CPA, the tracks of the aircraft crossed, with the EC135 crossing above the PA28, putting the EC135 to the south of the PA28, following which, due to the higher groundspeed of the PA28, lateral spacing between the aircraft increased.

The Gloucestershire Airport AIP entry contains guidance for departure routings for both helicopter and fixed-wing aircraft:

AD 2.20 LOCAL AERODROME REGULATIONS, section 5. Helicopter Operations Para d, states:

*i.* ***Standard Helicopter Departure****: Departure into wind or as required, remaining clear of fixed-wing runway in use, turning to depart circuit at right angles to runway in use (i.e. beneath 'downwind' leg), not above 750 FT QFE, before departing ATZ on required track.*

AD 2.21 NOISE ABATEMENT PROCEDURES, para c, states :

*c.* ***Departures Runway 27*** *- All departing aircraft are to execute a 30° right turn when passing the upwind end of the runway. [continues…]*

The EC135 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.[1] An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.[2]

## Summary

An Airprox was reported when an EC135 and a PA28 flew into proximity at Gloucestershire Airport at 1227Z on Friday 9th December 2022. Both pilots were operating under VFR in VMC, both in receipt of an Aerodrome Control Service from Gloster Tower.

## PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, GPS track data, 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.

Members first considered the actions of the pilot of the EC135 and noted that they had received a clearance to cross the active runway and a further clearance for a standard helicopter departure to the north. Members pondered the meaning of a 'standard helicopter departure', a question to which they would return later.

The Board noted that the EC135 had been fitted with a TAS and the pilot had reported that they had received a 'Traffic Alert' (**CF10**). A member with particular knowledge of the EC135 explained that the TAS may produce many alerts to nearby aircraft when operating at an airfield and that that can have the effect of 'de-sensitising' the pilot to a potential risk. Although not suggesting that that had necessarily been the case in this instance, members agreed the alert had not brought the proximity of the PA28 to

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

the attention of the pilot and, consequently, the pilot of the EC135 had not taken any action to ascertain the precise location of the PA28 (**CF11**). Members also agreed that the pilot of the EC135 had not visually acquired the PA28 (**CF12**).

Turning their attention to the actions of the pilot of the PA28, members considered the procedure for a departure from RW27. It was noted that a 30° turn to the right was to be conducted when passing the upwind end of the runway. Members were in agreement that, in this case, the turn had been commenced earlier than prescribed. Whilst it was felt that there had not been a transgression of the procedure, members agreed that the turn had been incorrectly executed (**CF7**). The Gloster controller had warned the pilot of the PA28 that the helicopter circuit to the north of the runway had been active. As such, it was further agreed by members that an early turn to the north had been conducted despite generic situational awareness of a potential confliction (**CF8**).

Members acknowledged that the pilot of the PA28 had also had generic situational awareness, rather than specific awareness, of the presence of the EC135. The Gloster controller had advised them that the helicopter that had departed was a Eurocopter, and members agreed that there had been an implication that the EC135 had no longer been in a position to have presented a direct confliction (**CF9**). The pilot of the PA28 reported that they had conducted 'a very strenuous lookout' but had not visually acquired the EC135 (**CF12**).

Members next considered the actions of the Gloster controller and noted that they had been very busy co-ordinating several aircraft types. The Gloster controller had cleared the pilot of the EC135 to depart on a 'standard helicopter departure'. It was clear to members that there had been a difference in the expectations of the Gloster controller and the pilot of the EC135 as to how the departure would be conducted. On one hand, the Gloster controller had expected that the pilot of the EC135 would depart more expeditiously than had actually been the case, and that there would have been either a turn to the north sooner or perhaps a departure directly to the north given that there had been no reported wind. On the other hand, the pilot of the EC135 had been issued two clearances, firstly to cross the active runway, and secondly to take-off. Their departure from the airfield would have been accomplished in two distinct stages; having crossed the runway, they had paused to prepare for a Performance Class 1 take-off profile.

Member's attention turned to the entry for Gloucestershire Airport in the AIP and, in particular, the description of the 'Standard Helicopter Departure' for which the takeoff clearance had been issued. It was agreed that it could very easily be argued that both preceding points of view would be congruent with the wording of the procedure. Consequently, members considered that the difference in expectations, based upon the vagueness of the wording of the 'standard helicopter departure' had been a contributory factor in this case (**CF1**). Whilst it was not for members to dictate solutions, they agreed that the procedure required further understanding and resolved to make a recommendation that '*The Gloucestershire aerodrome operator reviews and clarifies the published standard helicopter departure*'.

A member with particular knowledge of commercial helicopter operations explained that Gloucestershire Airport has become very busy with several organisations conducting training at the airfield, and added that there is a broad mix of fixed-wing operators based at the airport too. It was explained further that, given the extensive use of the Heli-north area for training, several different take-off profiles would be regularly undertaken. It would not be expected that a 'clear-area' departure (where a pilot would accelerate close to the ground before 'rotating' to a climb) would have been the only take-off profile practised. However, members were in agreement that the Gloster controller had assumed that the EC135 had already departed when the clearance to take-off had been issued to the pilot of the PA28. Members also agreed that that assumption, and the resulting inaccurate situational awareness of the traffic situation (**CF6**), may have led the Gloster controller to have considered that it had been unnecessary to have passed Traffic Information on the departing PA28 to the pilot of the EC135. Notwithstanding, it was agreed that such Traffic Information would have been of importance to the pilot of the EC135 to support their situational awareness whether the controller had known that that they had still been at Heli-north or in the belief that they had recently departed to the north of the airfield (**CF3**). Similarly, members were in agreement that there had been insufficient Traffic Information passed to the

pilot of the PA28 (**CF2**), which members surmised had been a consequence of the incorrect assumption that the position of the EC135 would not have conflicted with a departure from the runway (**CF5**).

Concluding their deliberations, and in determination of risk, members were in agreement that safety margins had been much reduced below the norm as neither pilot had visually acquired the other. The Gloster controller had not detected the conflict (**CF4**) in the mistaken belief that the pilot of the EC135 had already departed to the north when they issued a clearance to the pilot of the PA28 to take-off. There had been a risk of collision and it had been through chance that the separation between the aircraft had not been less (**CF13**). As such, the Board assigned Risk Category B to this Airprox.

## PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| | **2022274** | | | |
|---|---|---|---|---|
| CF | **Factor** | **Description** | **ECCAIRS Amplification** | **UKAB Amplification** |
| | **Ground Elements** | | | |
| | **• Regulations, Processes, Procedures and Compliance** | | | |
| 1 | Organisational | • Aeronautical Information Services | An event involving the provision of Aeronautical Information | The Ground entity's regulations or procedures were inadequate |
| 2 | 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** | | | |
| 3 | Human Factors | • ANS Traffic Information Provision | Provision of ANS traffic information | TI not provided, inaccurate, inadequate, or late |
| 4 | Human Factors | • Conflict Detection - Not Detected | An event involving Air Navigation Services conflict not being detected. | |
| 5 | Human Factors | • Expectation/ Assumption | Events involving an individual or a crew/ team acting on the basis of expectation or assumptions of a situation that is different from the reality | |
| 6 | 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** | | | |
| | **• Tactical Planning and Execution** | | | |
| 7 | Human Factors | • Action Performed Incorrectly | Events involving flight crew performing the selected action incorrectly | Incorrect or ineffective execution |
| | **• Situational Awareness of the Conflicting Aircraft and Action** | | | |
| 8 | 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 |
| 9 | 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** | | | |
| 10 | Contextual | • Other warning system operation | An event involving a genuine warning from an airborne system other than TCAS. | |
| 11 | 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** | | | |
| 12 | 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** | | | |
| 13 | 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.

Recommendation: Gloucestershire aerodrome operator reviews and clarifies the published standard helicopter departure.

Safety Barrier Assessment[3]

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

**Ground Elements:**

**Regulations, Processes, Procedures and Compliance** were assessed as **partially effective** because the Gloster Tower controller had not passed pertinent Traffic Information to the pilots of the EC135 and PA28.

**Situational Awareness of the Confliction and Action** were assessed as **ineffective** because there had been an assumption on the part of the Gloster Tower controller that the pilot of the EC135 would have departed immediately after having received a clearance to have done so.

**Flight Elements:**

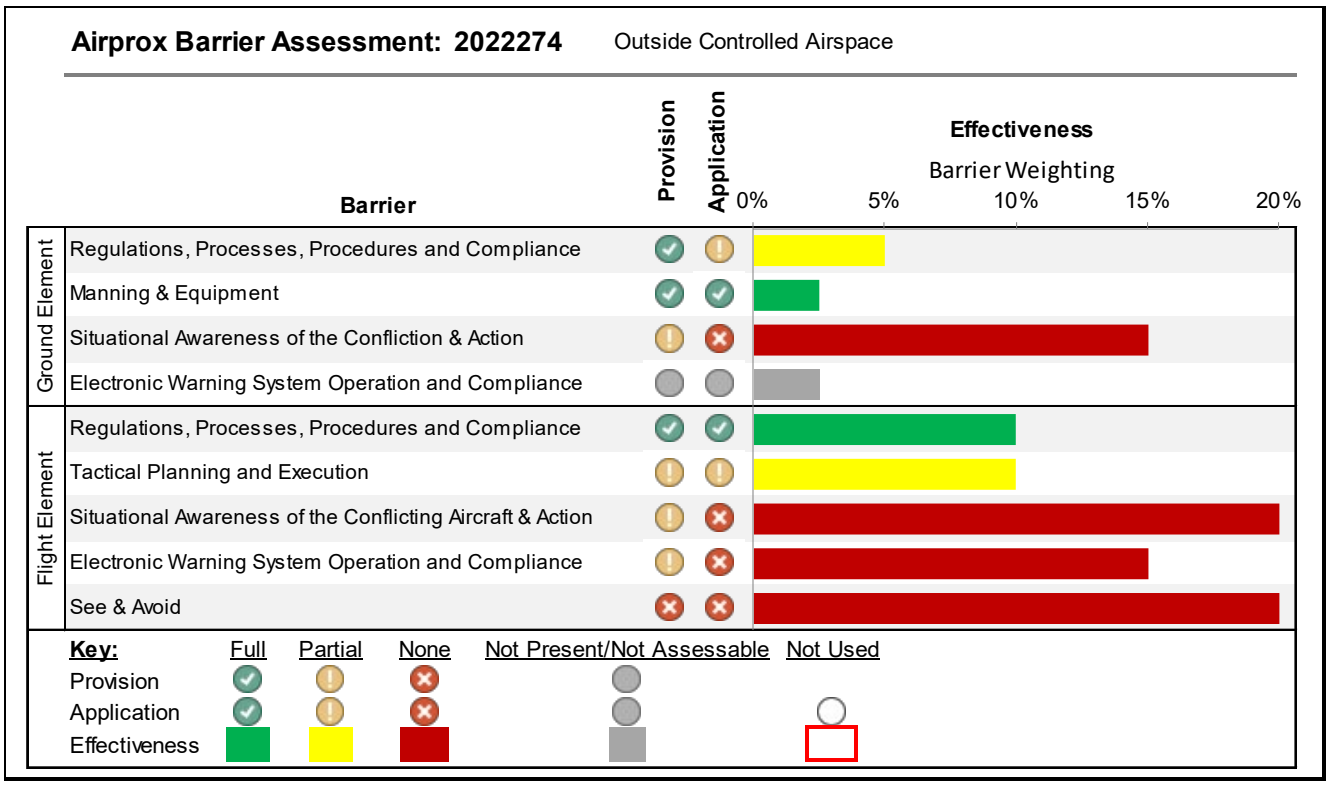
**Tactical Planning and Execution** was assessed as **partially effective** because the pilot of the PA28 had commenced a turn for noise abatement purposes before passing the upwind end of the runway, as prescribed.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because both pilots had only had generic situational awareness of the presence of the other.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because the pilot of the EC135 had received a Traffic Alert from their TAS but had not reacted accordingly.

**See and Avoid** were assessed as **ineffective** because neither pilot had visually acquired the other.

[3] 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: 2022274
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