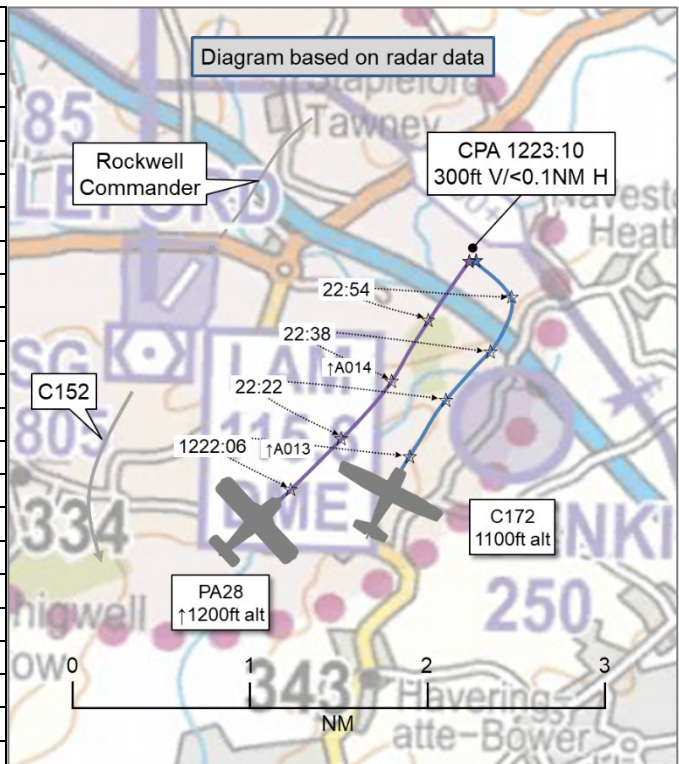


**AIRPROX REPORT No 2021234**

Date: 13 Nov 2021 Time: 1223Z Position: 5139N 00012E Location: Stapleford visual circuit

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

| Recorded                 | Aircraft 1        | Aircraft 2       |
|--------------------------|-------------------|------------------|
| Aircraft                 | C172              | PA28             |
| Operator                 | Civ FW            | Civ FW           |
| Airspace                 | Stapleford ATZ    | Stapleford ATZ   |
| Class                    | G                 | G                |
| Rules                    | VFR               | VFR              |
| Service                  | AGCS              | AGCS             |
| Provider                 | Stapleford Radio  | Stapleford Radio |
| Altitude/FL              | 1100ft            | 1400ft           |
| Transponder              | A, C, S           | A, C, S          |
| <b>Reported</b>          |                   |                  |
| Colours                  | White, red        | White            |
| Lighting                 | Nav, bcn, strobes | Landing light    |
| Conditions               | VMC               | VMC              |
| Visibility               | >10km             | >10km            |
| Altitude/FL              | 1200ft            | 1200ft           |
| Altimeter                | QNH (1015 hPa)    | QNH (NK hPa)     |
| Heading                  | ~030°             | ~030°            |
| Speed                    | 90kt              | 90kt             |
| ACAS/TAS                 | Not fitted        | Not fitted       |
| <b>Separation at CPA</b> |                   |                  |
| Reported                 | 50ft V/0m H       | 150ft V/0m H     |
| Recorded                 | 300ft V/<0.1NM H  |                  |



**THE C172 PILOT** reports that they departed [their departure aerodrome] and climbed to circuit height at the downwind position, then called to say that they were leaving the circuit to the north. On leaving the circuit they immediately called Stapleford Radio on 122.805MHz and asked for the airfield information and joining instructions (they had called 15min prior to the flight for information and PPR). In both instances they were given the same information - RW in use 21L QNH 1015hPa with a LH circuit at 1200ft AMSL.

On entering the ATZ from the SE, they called to announce that they were entering the ATZ to join downwind for RW21L LH. As they joined the downwind leg of the circuit, they noted a PA28 just getting airborne on RW21L and a Cessna on base leg. They called to announce that they were now on downwind. They maintained 90kts at 1200ft amsl. The PA28 [pilot] called to say they were downwind. As the Cessna was on short final, they turned base and immediately called to say “[c/s] Base”. They then looked down to check that they were within VFE. At this point, their passenger shouted “watch out” and pointed to the pilot’s 10 o’clock position. Their vision was obscured from what their passenger was pointing at, so they leant forward and saw the PA28 on a direct collision course; this put the other aircraft undertaking on the inside of their downwind/base turn at a much faster speed than their aircraft (they were at VFE so not exactly going slow). Because they had already called base and were already preparing to descend with the power off and No.1 in the circuit, they decided to rapidly lower the nose whilst deploying full flap (40°) in order to keep within VFE. They passed directly under the PA28 with a separation of less than 50ft – they were close enough to identify it as an Arrow and the registration on the underside of the port wing [registration redacted]. On passing under [the PA28] they called saying “[PA28 c/s], I have passed underneath you”. The reply was “[PA28 c/s] OK”. At no point did the pilot of [the PA28] appear to alter heading, speed or altitude and just carried on flying downwind well beyond what the C172 pilot would consider a ‘regular’ circuit pattern. The C172 pilot continued their base/final turn, making appropriate calls, and landed on the tarmac of RW21L and exited right as advised by the A/G operator.

After their post flight checks, they proceeded to the A/G operator's station. The radio operator stated that they did not witness the incident. The C172 pilot asked if there was a possibility that [the PA28] was being flown by a student, and the radio operator stated that it was being flown by a licensed pilot who is based at the aerodrome and that they were doing circuit practice and would be landing shortly. The C172 pilot asked the radio operator if they would let the [PA28] pilot know that they would be available to discuss the incident with them in the hope that they could both learn from the incident. However, on landing, the pilot of [the PA28] taxied to a hangar at the western edge of the airfield and made no attempt to contact the C172 pilot.

The C172 pilot does not understand why the pilot of [the PA28] did not either slow down to conform with circuit traffic or indeed make a pass to the C172's starboard and extend their downwind leg so as not to cut in front of the C172's turn in a LH circuit.

The pilot did not make an assessment of the risk of collision.

**THE PA28 PILOT** reports that they were flying circuits on RW21. On their 4<sup>th</sup> circuit, near the end of the downwind leg, they glimpsed a high-wing aircraft below and in front of their right-hand wingtip, heading towards them about 100-150ft below them on the other aircraft's base leg. There was no time for evasive action, but they were able to assess that the other aircraft was not going to collide with them. They continued their downwind leg for a further ¼ mile until just past the line of pylons they use as a base-leg marker. As they turned final, they saw the other aircraft ahead and so they called "[c/s] Final, contact 1 ahead". The pilot of the other aircraft announced their intention to full stop, so they initiated a go-around with the radio call "[c/s] going around". They completed another circuit, touch and go, then left the circuit for general handling in the vicinity of Writtle/Chelmsford. They did not hear any calls from the pilot of the other aircraft and the first that they knew of its presence was when they saw the C172 pass below and in front of their right wing.

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

**THE STAPLEFORD AIR GROUND OPERATOR** reports that, as an A/G operation airfield, no instructions are given but the advice given was RW in use and QNH. When PPR is given, pilots are informed that only overhead joins are permitted at weekends. This is reiterated on Sky Demon and other electronic sites.

The pilot called-up and was given the above information but shortly afterwards called downwind. Referencing FlightRadar24, it seems that the C172 pilot joined on a very wide downwind but at 1000ft rather than the published 1200ft. The pilot then turned onto a very close base-leg before turning into conflict with [the PA28], whose pilot appears to have followed the normal circuit pattern at the correct altitude.

## Factual Background

The weather at London City and Stansted Airports was recorded as follows:

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METAR EGLC 131220Z AUTO 29008KT 9999 OVC026 13/08 Q1016=
METAR EGSS 131220Z AUTO 32007KT 9999 BKN018 OVC030 12/09 Q1016=
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## Analysis and Investigation

### UKAB Secretariat

The UKAB Secretariat contacted the C172 pilot to establish their understanding regarding the use of overhead joins only at Stapleford at the weekend. The pilot stated that, to the best of their recollection, they were not advised to conduct an overhead join when telephoning Stapleford prior to departure to obtain PPR, and also that the Air Ground Operator acknowledged their downwind join on initial radio contact. There is no facility to record RTF at Stapleford and so it was not possible to verify any of the radio transmissions. However, the entry for Stapleford within the UK AIP Part 3 Aerodromes (AD) makes no mention of overhead joins at weekends and neither does the Stapleford

Flight Centre website; the only reference to types of join for the visual circuit that could be found was within the Stapleford Flight Centre Flying Order Book,<sup>1</sup> paragraph 6.13 (reproduced below):

### 6.13 Circuit re-joining and lookout

6.13.1 Pilots are to maintain a LOOKOUT at all times. When flying with passengers they should be encouraged to assist with this lookout. Pilots shall brief passengers to report other aircraft, using the clock code to identify their position.

6.13.2 When joining overhead, overflight should be at 1800 feet QNH. The descent is to be on the Dead Side down to 1200 feet QNH east of the motorway intersection to avoid penetrating Stansted Controlled Airspace. Then fly at 1200 feet to cross the upwind end of the runway. The track to downwind join must avoid being over the crosswind climb path and the downwind call should be made when abeam the upwind end of the runway. See Safety Sense Leaflets and relevant AICs.

6.13.3 Due to extensive circuit traffic, joins onto base or final approach are not permitted at weekends and at other times must be advised to the A/G Radio or Stapleford Traffic with a very good lookout maintained - circuit traffic must always have right of way. Remember that Helicopters could be joining for a different runway on a low level joining route.

6.13.4 At all times when the Aerodrome Radio is not manned, circuit calls will be made. Not hearing calls at any time does not absolve a pilot from maintaining a good lookout, there could be a radio failure, or someone may forget to call.

Analysis of the NATS radar replay showed that both aircraft were detected by the NATS radars throughout the period of the Airprox. The PA28 first appeared on radar at 1221:12, on climb-out from the previous circuit; the C172 was seen to be tracking north-west at an altitude of 900ft and the aircraft were separated by 2.4NM at this time (see Figure 1). The PA28 continued to climb on the crosswind leg and the C172 passed in front of the PA28 at 1221:38 at a range of 1.4NM and co-altitude (see Figure 2).

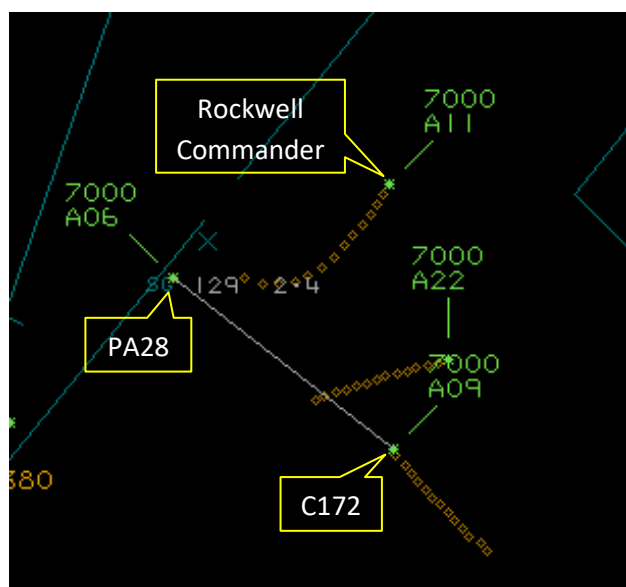


Figure 1 – 1221:12

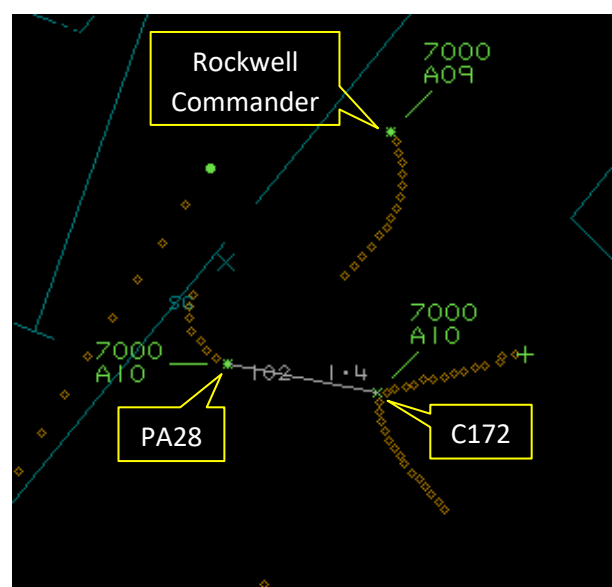


Figure 2 – 1221:38

At 1222:18, both aircraft were established on parallel downwind tracks approximately 0.3NM (~500m) apart. The separation between the 2 aircraft at this point was 0.6NM and 200ft, the higher aircraft being the PA28 (see Figure 3). At 1222:50 the C172 pilot, flying a wider downwind leg than the PA28 pilot, commenced their turn onto base leg (see Figure 4). CPA occurred at 1222:10; radar separation was measured at <0.1NM horizontally and 300ft vertically (see Figure 5).

<sup>1</sup> <https://flysfc.com/pdfs/sfc-flying-order-book.pdf>

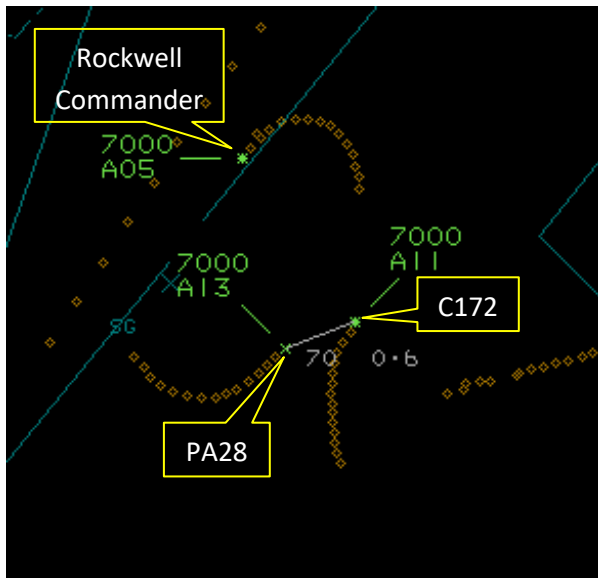


Figure 3 – 1222:18

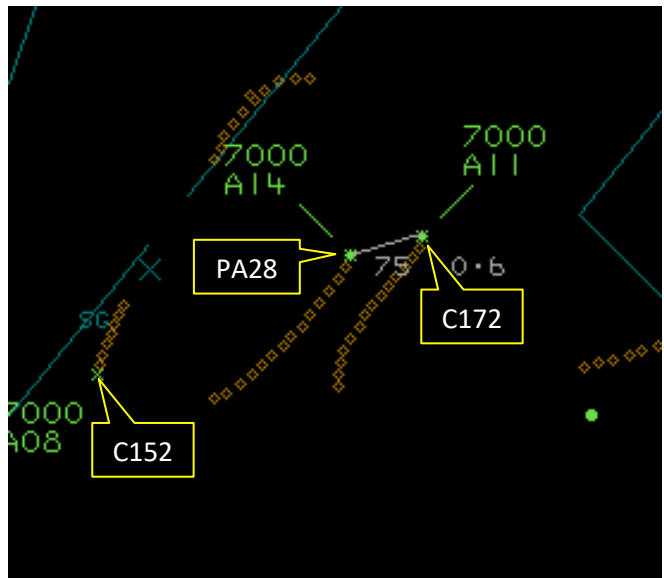


Figure 4 – 1222:50

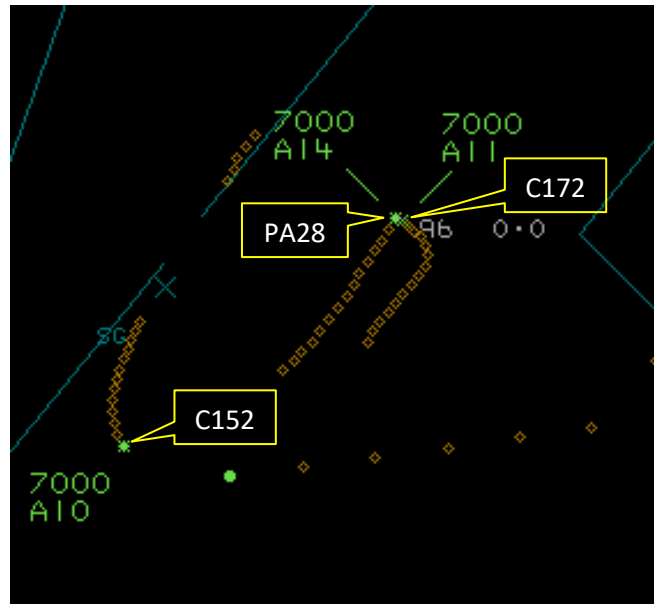


Figure 5 – 1223:10 - CPA

The C172 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.<sup>2</sup> 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.<sup>3</sup>

## Summary

An Airprox was reported when a C172 and a PA28 flew into proximity in the Stapleford visual circuit at 1223Z on Saturday 13<sup>th</sup> November 2021. Both pilots were operating under VFR in VMC and both pilots were in receipt of an Air Ground Communications Service from Stapleford Radio.

<sup>2</sup> (UK) SERA.3205 Proximity.

<sup>3</sup> (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

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

Information available consisted of reports from both pilots, radar photographs/video recordings and a report from the air ground operator involved. 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 C172 pilot and agreed that this Airprox hinged on the C172 pilot's integration into the visual circuit. Members agreed that the C172 pilot had sighted the C152 ahead and the PA28 climbing-out from a touch-and-go and had decided to integrate themselves between the 2 aircraft. However, in the Board's view, the C172 pilot had misjudged the time it would take for the PA28 to arrive on the downwind leg and also the time it would take them to achieve the same. The Board concluded that the C172 pilot had not correctly integrated with the pattern of traffic already formed (**CF1, CF3**) because they had aimed to join at the start of the downwind leg, rather than towards the end, and therefore the geometry of their join had led to the 2 aircraft being in approximately the same part of the circuit at the same time (**CF2**). The Board agreed that the PA28 had then been obscured from the C172 pilot's view as they progressed downwind and turned onto their base-leg (**CF8**), and that this had therefore led to the C172 pilot sighting the PA28 at a late stage (**CF6**).

Turning to the actions of the PA28 pilot, the Board noted that they had not had any situational awareness of the presence of the C172 (**CF4**) until they saw it passing underneath their aircraft as they were at the end of their downwind leg. Members noted that the PA28 pilot reported that they had not heard any of the transmissions made by the C172 pilot and, although it could not be verified because the RTF is not recorded at Stapleford, the Board considered it probable that the C172 pilot had made the appropriate joining and circuit calls because this had been confirmed by the Air Ground Operator. Therefore, the Board agreed that the PA28 pilot's not hearing the radio calls of the C172 pilot had been contributory to the Airprox (**CF5**). This had left the PA28 pilot relying on their lookout to detect the C172, which had been flying a wider circuit than that flown by the PA28 pilot. A GA pilot member noted that lookout is a vital part of circuit flying, and that this Airprox is a useful reminder that there can be a variation from pilot to pilot in ground tracks flown in the circuit. The Board agreed that, in this case, the PA28 pilot had not seen the C172 until after it had turned on to base-leg and that this had been at a point where the PA28 pilot had been unable to alter their circuit to increase separation from the C172 (**CF7**).

The Board then considered the actions of the Stapleford Air Ground Operator and quickly agreed that there was little that they could have done to prevent the Airprox. Air Ground Operators are not permitted to issue instructions to pilots and so they had been unable to interject to resolve the situation. However, the Board did note that the Air Ground Operator had been under the impression that only overhead joins are permitted at Stapleford at the weekends, which is not reflected in the entry for Stapleford in the UK AIP nor in the Stapleford Flight Centre Flying Order Book.

Finally, the Board considered the risk involved in this Airprox. Members took into account the separation recorded on the NATS radars and the fact that both pilots had estimated there to be very little horizontal separation and minimal vertical separation. The Board also noted that the PA28 pilot had not had any awareness that the C172 was turning onto base-leg in front of them and that the C172 pilot was already committed to their descent on the base-leg when they noticed the PA28, and so agreed that safety had not been assured and a risk of collision had existed (**CF9**). Members discussed whether or not either pilot had had enough time to increase the separation, and concluded that the C172 pilot's actions of increasing their rate of descent had averted a likely collision. Therefore, the Board assigned a Risk Category B to this event.

**PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK****Contributory Factors:**

| 2021234   |               |  |   |   |
|---|---------------|--|---|---|
| CF  | Factor        | Description                                | ECCAIRS Amplification   | UKAB Amplification  |
| <b>Flight Elements</b>  |               |  |   |   |
| <b>• Regulations, Processes, Procedures and Compliance</b>            |               |  |   |   |
| 1   | Human Factors | • Use of policy/Procedures                 | Events involving the use of the relevant policy or procedures by flight crew  | Regulations and/or procedures not complied with                       |
| <b>• Tactical Planning and Execution</b>                              |               |  |   |   |
| 2   | Human Factors | • Action Performed Incorrectly             | Events involving flight crew performing the selected action incorrectly   | Incorrect or ineffective execution                                    |
| 3   | 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      |
| <b>• Situational Awareness of the Conflicting Aircraft and Action</b> |               |  |   |   |
| 4   | Human Factors | • Monitoring of Communications             | Events involving flight crew that did not appropriately monitor communications  |   |
| 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 |
| <b>• See and Avoid</b>  |               |  |   |   |
| 6   | 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                                   |
| 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   | Contextual    | • Visual Impairment                        | Events involving impairment due to an inability to see properly   | One or both aircraft were obscured from the other                     |
| <b>• Outcome Events</b>   |               |  |   |   |
| 9   | Contextual    | • Near Airborne Collision with Aircraft    | An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles |   |

**Degree of Risk:** B

**Safety Barrier Assessment<sup>4</sup>**

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 both pilots were operating with an Air Ground Communications Service and, as such, the Air Ground Operator can only pass information to pilots.

**Flight Elements:**

**Regulations, Processes, Procedures and Compliance** were assessed as **ineffective** because the C172 pilot did not conform with the pattern of traffic already formed in the visual circuit.

**Tactical Planning and Execution** was assessed as **partially effective** because the C172 pilot did not integrate into the circuit in front of the PA28 with sufficient separation from the PA28.

<sup>4</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because the PA28 pilot did not hear the C172 pilot’s joining call and therefore did not have any situational awareness of the presence of the C172.

**See and Avoid** were assessed as **partially effective** because the PA28 pilot did not see the C172 until it crossed underneath their aircraft, and the C172 pilot only saw the PA28 at a late stage.

| <b>Airprox Barrier Assessment: 2021234</b> |  | 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  | ⚠                           | ⚠                 |                            |          |     |     |  |
| <b>Key:</b>                                |  |                             |                   |                            |          |     |     |  |
|  | Full   | Partial                     | None              | Not Present/Not Assessable | Not Used |     |     |  |
| Provision                                  | ✓  | ⚠                           | ✗                 | ⊘                          |          |     |     |  |
| Application                                | ✓  | ⚠                           | ✗                 | ⊘                          | ○        |     |     |  |
| Effectiveness                              |  |                             |                   |                            |          |     |     |  |