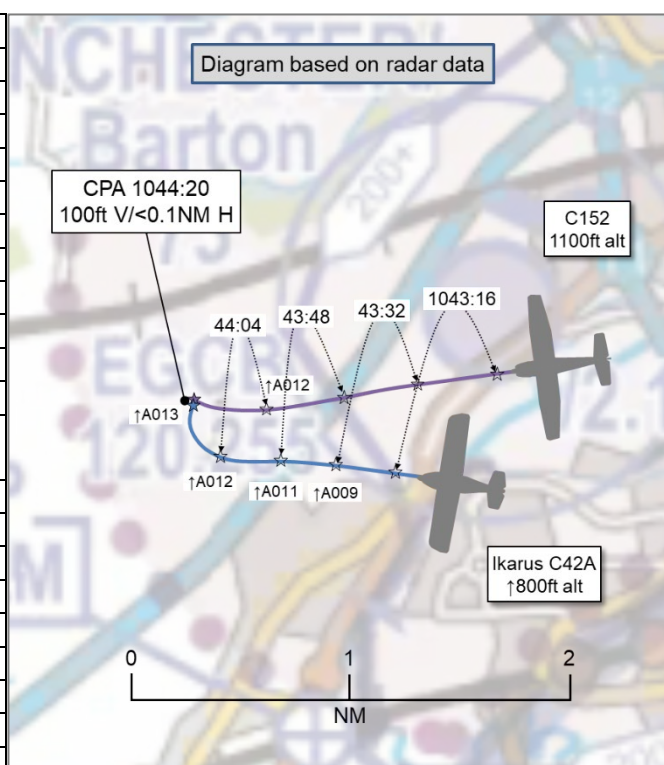


AIRPROX REPORT No 2020141

Date: 13 Sep 2020 Time: 1044Z Position: 5328N 00226W Location: Manchester/Barton circuit

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|-------------|--------------------|----------------------------|
| Aircraft | Ikarus C42 | C152 |
| Operator | Civ FW | Civ FW |
| Airspace | Barton ATZ | Barton ATZ |
| Class | G | G |
| Rules | VFR | VFR |
| Service | AFIS | AFIS |
| Provider | Barton Information | Barton Information |
| Altitude/FL | 1300ft | 1200ft |
| Transponder | A, C, S | A, C, S |
| Reported | | |
| Colours | White, red, silver | Red, white |
| Lighting | Landing light | Nav, strobe, landing light |
| Conditions | VMC | VMC |
| Visibility | 60km | >10km |
| Altitude/FL | 1000ft | 1000ft |
| Altimeter | NK | NK |
| Heading | 020° | 270° |
| Speed | 75kt | 90kt |
| ACAS/TAS | Not fitted | Not fitted |
| Separation | | |
| Reported | 30ft V/10m H | 30ft V/10m H |
| Recorded | 100ft V/<0.1NM H | |



THE IKARUS C42 PILOT reports conducting a circuit detail on RW20 at Barton airfield and had completed one touch-and-go. After levelling off at 1000ft on the crosswind leg and checking around for other traffic, the student – who was handling the aircraft – turned downwind. With the wings level, they both looked towards the crosswind leg for any aircraft joining the circuit when their student let out a cry and pushed the control column forward and to the left. At the same time as they did this, the instructor saw the underside and the right wing of a Cessna aircraft in their 2 o'clock pass from right-to-left about 30ft above them. They had sight of the aircraft for no more than a second. The instructor took control from the student and levelled the aircraft out. They then called Barton over the RT with the Airprox.

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

THE C152 PILOT reports that RW20 was in use and, following the take-off on that runway, there is a requirement to turn right early onto crosswind due to noise abatement. Prior to the Airprox, there was a Jodel that was on final underneath another aircraft that was also on final. The AFISO alerted the pilots that one aircraft was above the other and the aircraft that was higher elected to climb to the overhead. The aircraft that was lower on final continued to do a touch-and-go and remain in the circuit. When they were downwind, the aircraft that undertook the touch-and-go went very far downwind and exceeded the ATZ boundary, they thought. They contacted the AFISO and stated their intentions to climb to the overhead and re-join the circuit. On crosswind, following their descent on the dead-side, they spotted the C42 microlight on their left-hand side which was downwind, it was a late spot and they immediately climbed to take avoiding action. The microlight was in their blind spot and was masked by the student in the left hand seat.

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

THE MANCHESTER/BARTON AFISO reports that the airfield was operating on RW20 and, at the time of the Airprox, there were approximately five in the circuit including the two subject aircraft. Both aircraft

were carrying out circuit training. In the circuit was a Jodel aircraft which was observed making quite long downwind legs. The pilot of [the C152] advised that he thought “*an aircraft was outside of the ATZ*” so he would “*climb to the overhead*”. When [the C152 pilot] reported “*dead side descending*” they advised there were “*four in the circuit*” and requested they “*report downwind*”.

The pilot of [the Ikarus C42] reported “*we’ve just had an Airprox*” and the AFISO replied “*[Ikarus C/S] if able, pass details*”. The pilot advised they had “*just had a Cessna pass over the top of us*”. From what the AFISO recalls, there were only two Cessnas in the circuit at the time. One ([the Airprox Cessna]) had last reported descending dead-side and the other, they believed, was on final or climb-out. They looked at their ADSB Traffic Display and could see [the Ikarus] downwind but no other traffic near it on the display. They were then able to acquire [the C152] out of the VCR window downwind. The Airprox was not witnessed from the VCR by either the AFISO or the assistant. Both aircraft landed without further incident after completing their circuit session.

Factual Background

The weather at Manchester Airport was recorded as follows:

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METAR COR EGCC 131050Z AUTO 22010KT 9999 BKN022 20/15 Q1021 NOSIG=
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Analysis and Investigation

CAA ATSI

ATSI had access to reports from both pilots and the Barton AFISO. The Barton RTF and the Area Radar were reviewed for the period. There was a total of 4 aircraft in the visual circuit at the time of the event. In the interest of brevity, only the RTF from the two aircraft involved has been included in this report. Screenshots in this report have been taken from the Area Radar replay, all levels within the screenshots are displayed as Flight Levels, the QNH set within the radar display processor was 1024hPa (297ft difference).

At **1041:30** the C42 pilot reported final for a touch-and-go and the AFISO responded, “*callsign, runway two zero surface wind two two zero degrees at one five knots, touch-and-go at your discretion*”. The pilot acknowledged with their callsign. At **1041.50** the C152 pilot reported downwind. The AFISO responded, “*callsign, two ahead report final*”. The pilot acknowledged with their callsign (Figure 1). Note: there were 3 aircraft ahead of the C152 at this point. The 3rd aircraft was a Jodel which was not transponding and, as such, was not displayed on the radar replay. The pilot of the Jodel had reported downwind at time **1040:10**. If the Jodel pilot was following the pattern of traffic, they would have been number 3, and would be following the aircraft in the northeast corner of the screenshot below, which was number 2. The position of the Jodel aircraft in Figures 1 and 2 below are therefore approximate positions only.

At **1042:10** the C152 pilot advised the AFISO, “*callsign, we’re gonna climb to the overhead, er I think one aircraft is outside the ATZ*”. The AFISO responded, “*callsign, roger no problem, report descending deadside*”. The pilot acknowledged with wilco and their callsign (Figure 2). Note: the pilot of the aircraft in the 12 o’clock of the C152 in Figure 2 below had previously requested to extend downwind, and the aircraft was observed to have continued downwind to the 2NM ATZ boundary before turning onto a long final. The pilot of the non-transponding Jodel aircraft would have been following this aircraft, and is likely to have also extended downwind to the ATZ boundary.

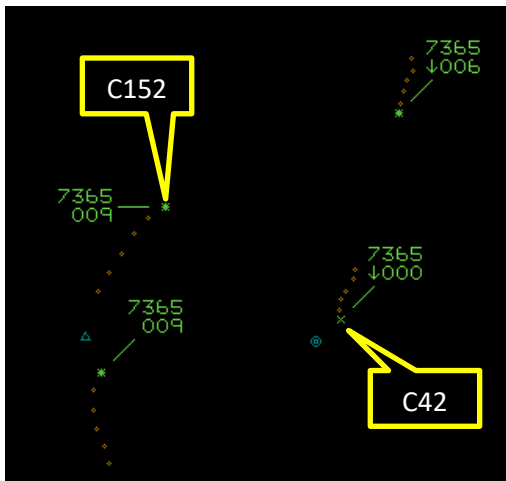


Figure 1 – 1041:50

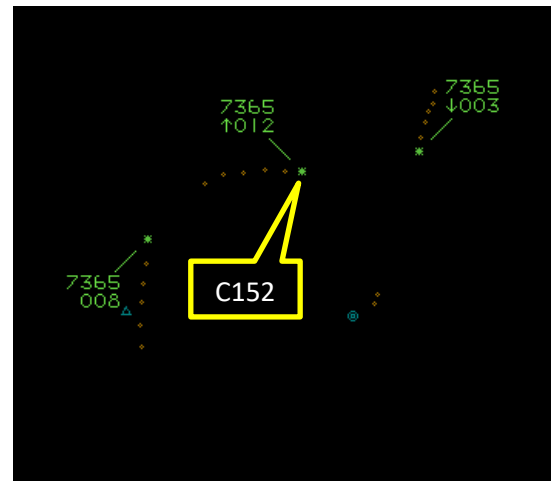


Figure 2 – 1042:10

At **1043:00** the C152 pilot reported. “*callsign, overhead the field, deadside descending*”. The AFISO responded, “*callsign, four in the circuit, report downwind*”. The pilot responded with their callsign and wilco (Figure 3). Figure 4 below displays the positions of the aircraft at **1043:35** (both aircraft are crosswind, with the C152 positioned inside of the C42).

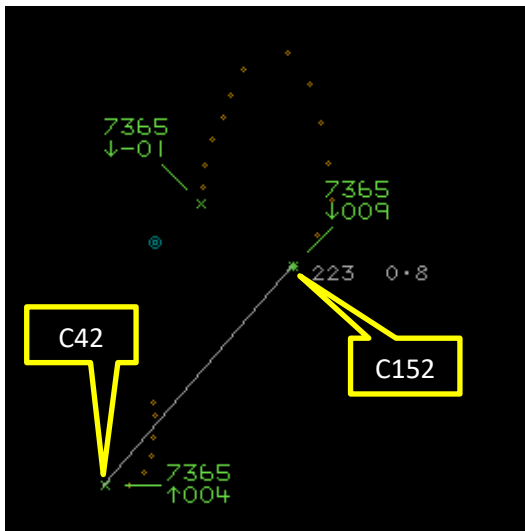


Figure 3 – 1043:00



Figure 4 – 1043:35

Figure 5 below displays the positions of the aircraft at **1044:00** (both still on the crosswind leg and gently converging). At **1044:20** CPA occurred, with the aircraft separated by less than 0.1NM laterally and 100ft vertically (Figure 6). The C42 pilot had initiated their turn downwind immediately prior to the C152 pilot initiating their turn downwind.

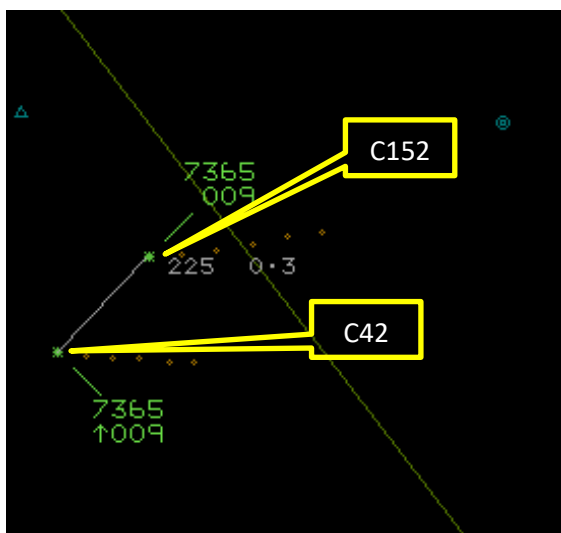


Figure 5 – 1044:00

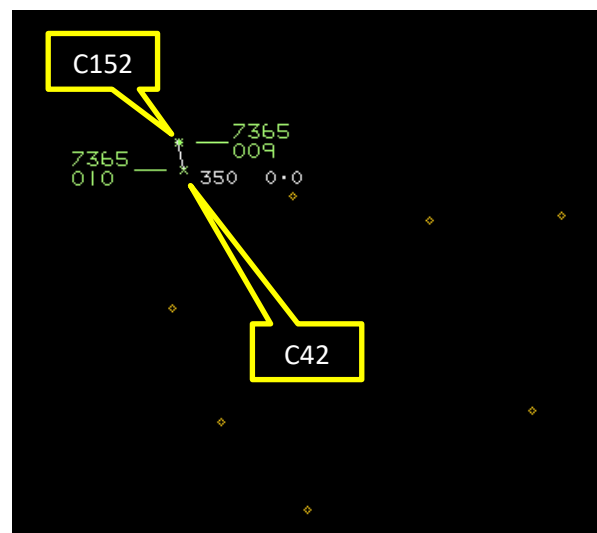


Figure 6 – 1044:20 – CPA

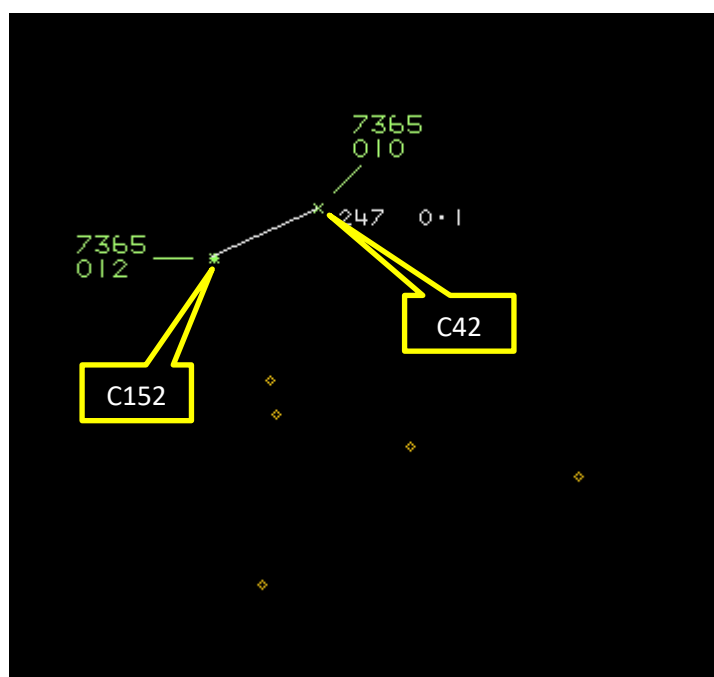


Figure 7 – 1044:24 (after crossover)

At **1045:00** the C42 pilot advised the AFISO, “*callsign, just had an airprox there*”. The AFISO responded, “*callsign, roger when able are you able to pass the details?*” The pilot responded, “*yeah sorry, it was a Cessna*”.

Relevant extracts from the CAP 797 Flight Information Service Officer Manual

Responsibility

1.12 FISOs may issue advice and shall issue information to aircraft in their area of responsibility, useful for the safe and efficient conduct of flights.

1.13 FISOs are not permitted to issue instructions, except for those circumstances in paragraph 1.14, or when relaying a clearance from an air traffic control unit. Pilots therefore are wholly responsible for collision avoidance in conformity with the Rules of the Air.

Note: The excepted circumstances referred to in paragraph 1.13 do not permit FISOs to issue instructions to aircraft in the air. At all times in the air, information only shall be passed.

Traffic Information

8.15 Whilst generic traffic information provided to a pilot may be useful to indicate how busy the aerodrome environment is, as the pilot gets closer to the aerodrome and is required to integrate with other traffic, specific traffic information is needed in order to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions.

8.18 Traffic information to traffic operating in the vicinity of an aerodrome, and specifically within the ATZ and to flights conducting Instrument Approach Procedures (IAP) shall be issued in a timely manner when, in the judgement of the AFISO, such information is necessary in the interests of safety, or when requested by the aircraft. When a pilot report indicates, or an AFISO considers, that there may be a collision risk, specific traffic information shall be passed to each pilot concerned.

Specific Traffic Information was not passed to the C152 pilot regarding the position of the C42 when the C152 pilot re-joined the circuit from the overhead.

Relevant extracts from the UK AIP

EGCB AD 2.21 NOISE ABATEMENT PROCEDURES

c. Climbing turns after take-off should not normally be commenced below a height of 500 FT AGL except as indicated at c(i). Should pilots wish to make an early turn below 500 FT AGL on take-off, this may be permitted for safety reasons only. In this case, the ATS must be informed prior to commencement of the take-off roll.

i. To minimise local noise disturbance when departing from Runway 20 and when safe to do so, upon reaching the Manchester Ship Canal aircraft should commence a right turn onto crosswind to avoid overflying the residential areas of Flixton and Irlam.

After the touch and go, and just prior to the Airprox, the C42 was observed to have turned crosswind in the vicinity of the Manchester Ship Canal.

2. FIXED WINGED

Fixed winged circuit height is 1000 FT (Barton QFE).

Orbits within the circuit are not permitted unless required for safety reasons.

The C152 pilot would not have been permitted to carry out a delaying orbit when they were ready to turn base leg and had realised that there was already an aircraft on long final that had extended downwind ahead of them (Figure 2). To resolve the situation, the pilot chose to climb into the overhead and descend on the deadside.

The C152 pilot was observed flying a standard pattern for the overhead join for RW20 and the C42 pilot was observed conducting their flight in accordance with the Barton noise abatement procedures for RW20. It was therefore concluded that the two procedures had the potential for this conflict to arise on occasion.

When the C152 pilot reported downwind, they were advised that there were two aircraft ahead of them when, in fact, there were three. The C152 pilot then elected to leave the visual circuit by climbing into the overhead. When re-joining the visual circuit by descent, the C152 pilot did not receive specific traffic information on the positions of other relevant circuit traffic, including the C42. Specific traffic information may have assisted the C152 pilot to safely integrate back into the circuit.

ATSI recommends that Barton ATM Management review the procedures, with a view to identifying any further safety barriers that might reduce the risk of recurrence, and consider including a warning in the UK AIP at EGCB AD 2.20, outlining that the noise abatement procedures for departures from RW20 require some pilots conducting a touch-and-go into the visual circuit, to climb on RW track to the Manchester Ship Canal before turning crosswind, and that aircraft conducting standard overhead joins for RW20 may encounter circuit traffic in this vicinity when integrating into the visual circuit.

UKAB Secretariat

The Ikarus C42 and C152 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 Ikarus C42 and a C152 flew into proximity in the Manchester/Barton circuit at 1044Z on Sunday 13th September 2020. Both pilots were operating under VFR in VMC and both pilots were in receipt of an Aerodrome Flight Information Service from Barton Information.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments.

The Board first considered the Manchester/Barton noise abatement procedures for RW20, whereby pilots are required to commence their turn onto crosswind at the Manchester Ship Canal. The Board felt that this clearly had the potential to place aircraft into conflict with others conducting a standard overhead join (**CF1**) and so supported the ATSI recommendation that the Barton ATM Management Team review these procedures. Members went on to discuss the actions of the AFISO; controller members wondered why the AFISO had not passed the positions of the aircraft in the circuit as the C152 pilot re-joined from the overhead (**CF2, CF5**), and the Board agreed that this had made it difficult for the C152 pilot to consider how their overhead join might have presented a conflict with the Ikarus C42 on the climb-out from a touch-and-go. Additionally, the Board considered it likely that the AFISO themselves had not realised that the flightpaths of the Ikarus C42 and the C152 might conflict (**CF3, CF4**) and this may also have been a reason why specific Traffic Information had not been passed to the pilots of both aircraft.

The Board then considered the actions of the Ikarus pilot, and heard from a GA pilot member that it is incumbent upon all pilots in the visual circuit to maintain awareness on traffic in the pattern. The Board felt that there had been an opportunity for the Ikarus pilot to assimilate the relative position of their aircraft and that of the C152 from the calls made by the C152 pilot, irrespective of the lack of specific Traffic Information from the AFISO. Nevertheless, it was clear to members that this assimilation had not taken place and, therefore, the Ikarus pilot had not had situational awareness on the position of the C152 (**CF8**). The Board also felt that there had been an opportunity for the Ikarus pilot to spot the C152 as they cleared their flightpath prior to turning from crosswind onto downwind, but recognised that the C152 had been over the right shoulder of the Ikarus pilot and that this is a particularly difficult area to clear when flying a high-wing aircraft. As it was, the Ikarus pilot had not sighted the C152 until it had been too late to materially increase the separation that had existed between the 2 aircraft (**CF13**).

Turning to the actions of the C152 pilot, the Board felt that their decision to climb to the overhead had been driven by the pilot recognising that the pattern was becoming complicated. The Board applauded this decision, but wondered why the pilot had then re-joined the circuit without full situational awareness (**CF7, CF8**). The Board again heard from a GA pilot member that, as the aircraft joining the circuit from the overhead, it had been for the C152 pilot to integrate with the other aircraft already established in it.

¹ SERA.3205 Proximity.

² SERA.3225 Operation on and in the Vicinity of an Aerodrome.

Members recognised that this had been hindered by the lack of Traffic Information, but also that the C152 pilot had not requested additional information on the positions of the circuit traffic as they re-joined from the overhead (**CF10**). The Board concluded that the C152 pilot had not assimilated the potential conflict with the Ikarus C42 (**CF9**) and had, therefore, been unable to sufficiently integrate their aircraft with the other circuit traffic (**CF6, CF11**). Members agreed that the only remaining barrier to mid-air collision had been the See and Avoid barrier and that this had also proved to be ineffective as, although the pilot reported instinctively climbing when they sighted the Ikarus at close range, this had been too late to materially increase separation (**CF13**).

Finally, the Board considered the risk involved in this encounter. Members took into account the fact that both pilots had assessed the risk of collision as 'High' and that neither pilot had seen the other aircraft until it had been too late to materially affect the separation that had already existed between the 2 aircraft. Additionally, the Board noted that, although the NATS radar replay showed 100ft of vertical separation, the Mode C resolution is such that vertical separation can only be displayed in increments of 100ft. Members therefore concluded that a serious risk of collision had existed (**CF12**) and that providence had played a major part in the 2 aircraft missing each other. Accordingly, the Board assigned a Risk Category A to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| | 2020141 | | |
|---|----------------|--|---|
| CF | Factor | Description | Amplification |
| Ground Elements | | | |
| • Regulations, Processes, Procedures and Compliance | | | |
| 1 | Organisational | • ATM Information Provision | Inadequate regulations or procedures |
| 2 | Human Factors | • ATM Regulatory Deviation | Regulations and/or procedures not complied with |
| • Situational Awareness and Action | | | |
| 3 | Contextual | • Situational Awareness and Sensory Events | The controller had only generic, late or no Situational Awareness |
| 4 | Human Factors | • Conflict Detection - Not Detected | |
| 5 | Human Factors | • ANS Traffic Information Provision | TI not provided, inaccurate, inadequate, or late |
| Flight Elements | | | |
| • Regulations, Processes, Procedures and Compliance | | | |
| 6 | Human Factors | • Flight Operations Documentation and Publications | Regulations and/or procedures not complied with |
| • Tactical Planning and Execution | | | |
| 7 | Human Factors | • Action Performed Incorrectly | Incorrect or ineffective execution |
| • Situational Awareness of the Conflicting Aircraft and Action | | | |
| 8 | Contextual | • Situational Awareness and Sensory Events | Pilot had no, late or only generic, Situational Awareness |
| 9 | Human Factors | • Understanding/Comprehension | Pilot did not assimilate conflict information |
| 10 | Human Factors | • Lack of Communication | Pilot did not request additional information |
| 11 | Human Factors | • Monitoring of Other Aircraft | Pilot did not sufficiently integrate with the other aircraft |
| • See and Avoid | | | |
| 12 | Contextual | • Near Airborne Collision with Aircraft, Balloon, Dirigible or Other Piloted Air Vehicle | Piloted air vehicle |
| 13 | Human Factors | • Monitoring of Other Aircraft | Non-sighting or effectively a non-sighting by one or both pilots |

Degree of Risk:

A

Safety Barrier Assessment³

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 there is the potential for the overhead join and noise abatement procedures on RW20 to conflict, and the Manchester/Barton AFISO did not pass specific Traffic Information on the Ikarus C42 to the pilot of the C152.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the Manchester/Barton AFISO had a flawed mental model of the relative positions of the C152 and Ikarus C42.

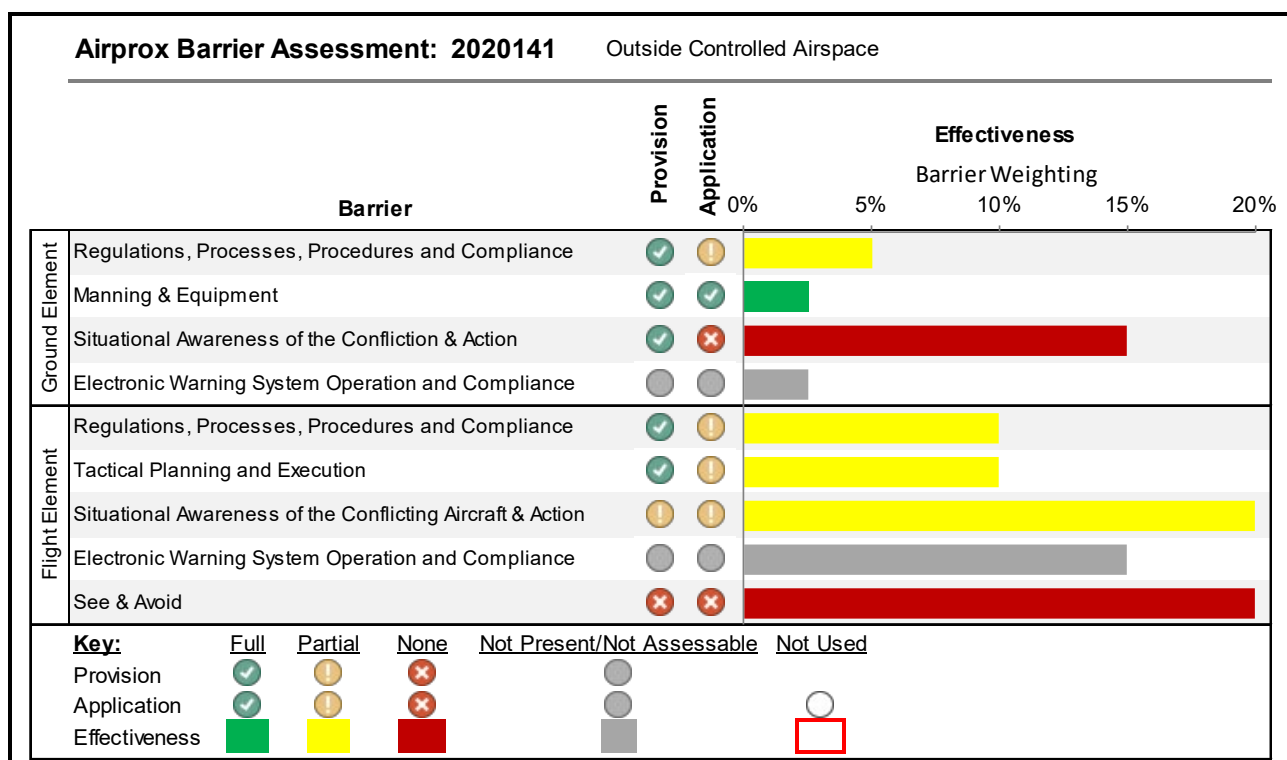
Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the C152 pilot did not integrate with the Ikarus C42 established in the circuit pattern.

Tactical Planning and Execution was assessed as **partially effective** because the C152 pilot left the overhead and descended into the circuit without situational awareness on all circuit pattern traffic.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because neither pilot had situational awareness of the relative position of the other aircraft.

See and Avoid were assessed as **ineffective** because neither pilot saw the other aircraft in time to materially affect the separation between the 2 aircraft.



³ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).