## AIRPROX REPORT No 2021122

Date: 18 Jul 2021 Time: 0934Z Position: 5203N 00100W Location: Silverstone

## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|---|---|---|
| Aircraft | EC155 | A109 |
| Operator | Civ Helo | Civ Comm |
| Airspace | Silverstone ATZ | Silverstone ATZ |
| Class | G | G |
| Rules | VFR | VFR |
| Service | ACS | ACS |
| Provider | Silverstone | Silverstone |
| Altitude/FL | NK | NK |
| Transponder | A, C, S | A, C, S |
| **Reported** | | |
| Colours | White, Blue | Grey |
| Lighting | Position, Strobe | Landing, Nav, HISL, Strobe |
| Conditions | VMC | VMC |
| Visibility | >10km | NR |
| Altitude/FL | 100-200ft | 500ft |
| Altimeter | QNH (1023hPa) | QNH |
| Heading | 003° | 030° |
| Speed | 30-60kt | 40kt |
| ACAS/TAS | TAS | TAS |
| Alert | None | Information |
| **Separation** | | |
| Reported | 40-100ft V/ 10-20m H | Not Seen |
| Recorded | N/K | |


**THE EC155 PILOT** reports that they joined the Silverstone RAT on the Silverstone Tower frequency and was asked to take up the hold at South Point. The pilot identified one aircraft already in the hold, so followed their path in the hold at 80kt. On completion, the pilot reported 'hold complete' and was then given permission to join for finals and change to Silverstone Pad frequency. The pilot completed the hold by turning towards the final point. They then started to descend to 1000ft (requested height at Final point) and changed to Silverstone Pad. There was a small 5-10sec delay in changing frequency due to radio problems. The pilot was not aware of any other aircraft being on final. The pilot reported final on the Pad frequency and was given a gate to route to. At around 20-50m from the start of the FATO[1] the A109 flew straight over the top of the aircraft. At the time it seemed very close, in the range of 40-100ft. The Pad frequency was so busy there was no time to raise the Airprox issue at that time. The passengers were dropped at one of the gates, and then departed. One of the passengers in the EC155 was also the owner of the aircraft. They later spoke to the control tower who were aware of the closeness of the aircraft. The pilot got in touch with the other pilot of the A109 who stated that they were completely unaware that they had flown over the EC155 at such close proximity. Both pilots agreed an Airprox should be filed due to the nature of the situation. One of the passengers took a picture of the A109 several seconds after it flew over (Figure 1).

Figure 1

[1] Final Approach and Take-off

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

**THE A109 PILOT** reports that they were first aware of the EC155 in transit to the south east of Silverstone. They were first alerted to its presence on the TAS (although showing no altitude) in their 9 o'clock about a mile away. As they approached Silverstone they slowed and the EC155 looked to be routing directly towards Silverstone 'South Point'. They intended to take a route via the 'hold datum' anticipating to join the hold. On reaching, they were cleared to join and routed via South Point and then to 'Final Point', a point offset to the final approach track. At some point between the Hold Datum and South Point they saw the EC155 routing south having turned away from final point and believed that they were planning to come south again to enter the hold. They believed they heard the instruction that the EC155 was to go once round the hold and then join but they could be mixing this up with another flight the same day. They recalled following a dark Twin Squirrel onto final. They didn't remember hearing the EC155 pilot call final so their assumption was that they were the only other aircraft on final. They believed that they told ATC that they were behind the Squirrel. Final to the FATO was completely standard with a reasonably steep approach over the tented camp to the H, and from there to a stand. They noticed the EC155 land after them on the adjacent stand. They were subsequently contacted by the captain that afternoon by telephone, who expressed their concern that [the A109] had overflown their aircraft. They did not see the EC155 at the point of the Airprox so cannot say how close they came. Both pilots agreed that an Airprox report should be submitted.

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

**THE SILVERSTONE ATC MANAGER** reports that both aircraft were in communication with Silverstone Tower and Pad on the same frequency. Neither aircraft reported the incident on the RT and the Pad controller did not observe anything untoward. It should be noted that FATO 03 was in use and although the view from the control tower is good, there is a lack of perspective when looking up towards the final approach. Aircraft relative positions do not become obvious until very short final, especially when they vary in type/size. It should also be noted that this was a very busy period of operation for the heliport. There were approximately 30 air traffic movements in 15 minutes. The ATC Manager was made aware of the Airprox on Tuesday 20th July, they had no recollection of the incident and neither did the controller who was controlling the Pad at the time.

**A WITNESS ON THE GROUND** reports that, throughout the weekend, they had been watching a very organised procession of helicopters coming in and out of Silverstone. Up until the incident, all flights seemed to have good separation and followed a set path in and out of the circuit. At the time in question, they were making their way towards the circuit entrance (Stowe Corner) from the bottom of the Woodlands Campsite. They were aware that the darker of the two helicopters seemed to have taken a slightly 'wider' route but was now heading back in, towards the regular flight line. The lighter coloured helicopter, by taking a more direct approach had therefore shortened the gap between the two. They were suddenly aware that the two helicopters appeared to be on a direct path with each other. The darker helicopter passed directly underneath the other one - they could actually see the shadow of the higher helicopter cover the lower one. It felt like they were only 25-30ft apart. At this point they were convinced that the two were going to collide in mid-air, above the campsite, and they were about to witness something horrific. Obviously this didn't happen, but they were shocked at how close they had appeared to be, something that hasn't left them. They approached three police officers, who were nearby, to see whether they had seen the incident. They too seemed very surprised at how close the two helicopters had come.

## Factual Background

The weather at Oxford was recorded as follows:

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METAR EGTK 180920Z 06002KT CAVOK 26/17 Q1026=
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## Analysis and Investigation

### CAA ATSI

Both helicopters were inbound to Silverstone, for the British Grand Prix. There was a Restricted Airspace Temporary (RA(T)) in place for the event. A pictorial of the RA(T) airspace is included in this report. The RA(T) details were contained within AIC 2021 M053. For the purposes of Rule 11 of the Rules of the Air, a temporary 2NM radius Aerodrome Traffic Zone (ATZ) was established at Silverstone. The RA(T) and the ATZ were active at the time of the Airprox.

A document containing pilot joining instructions was issued and a pilot brief provided. The joining instructions document and pilot brief contained instructions on how to join the RA(T) and the holding pattern. Relevant extracts are included within this report. The inbound altitude to be flown was 1500ft, and pilots were required to maintain their own separation visually from other traffic. Clearance to enter the RA(T) was required to be obtained from Silverstone Tower, who may or may not require the pilot to take up the hold. Instructions stated that all holds were right hand and to be flown at a speed of 80kt. The 80kt speed limit was to be achieved prior to entering the hold and was to be maintained when flying between the joining datum and the final approach point. Both pilots had been instructed to enter the RA(T), take up the hold, and report approaching the South Point datum.

ATSI had access to initial occurrence reports pertaining to both aircraft. The Area Radar recordings and the Silverstone RTF were reviewed for the relevant period. Both the Tower and Pad RTF were constant throughout the period reviewed, with several pilots stepping on each other's, and on occasion the controller's, transmissions. In the interest of brevity only the RTF from the two helicopters involved has been included within this report. Screenshots have been taken from the Area Radar recordings.

At 0927.30 the A109 pilot made initial contact with the Tower controller, using just their callsign and registration. The controller responded, "*initially enter and take up the hold, report approaching South Point though, there are two others joining for the similar and I'll hopefully update you on that*." The pilot read back, "*join for South Point, take up the hold (unintelligible word)*."

At 0928.40 the EC155 pilot made initial contact with the Tower controller, using their callsign and registration, followed by a request to join at South Point, the controller responded, "*good morning, enter and take up the hold initially, there are 3 others doing similar, but report approaching South Point and I'll hopefully update you on that with a no delay*." The pilot read back, "*enter and take up the hold, report approaching South Point.*" (Figure 1).

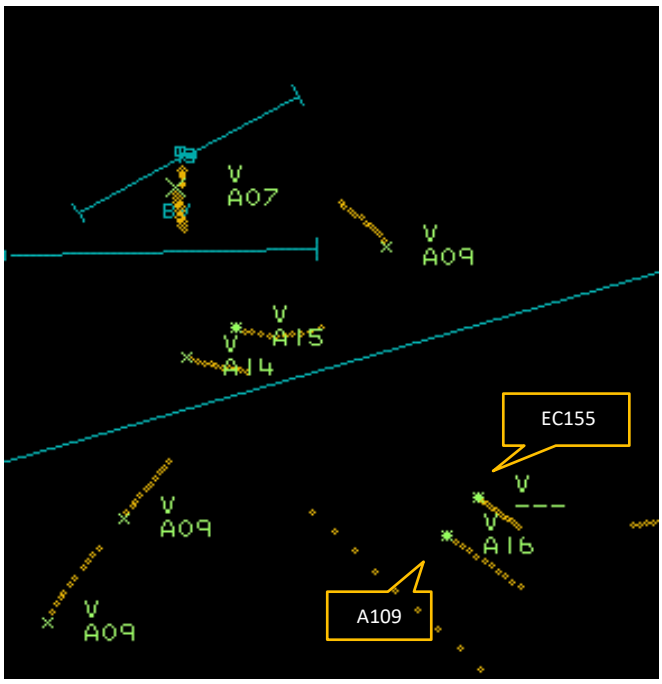


Figure 1 - 0928.40

At 0930.40 the EC155 pilot reported, "*joining at South Point*." The controller responded, "*once round, report approaching South Point*." The pilot read back, "*once round, report approaching South Point*." (Figure 2).

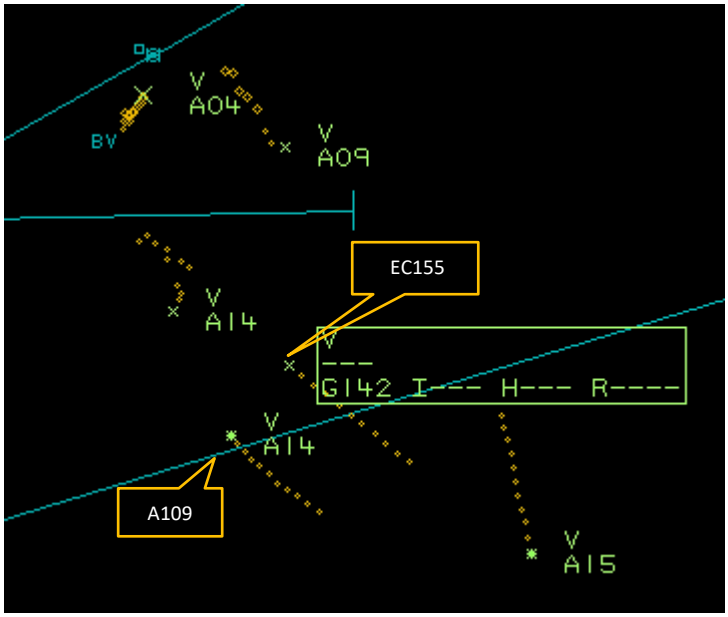


Figure 2 - 0930.40 (EC155 indicating a Ground Speed of 142 kts at South Point)

At 0931.10 the controller instructed the EC155 pilot, "*after your hold, join approved, report South Point*." The pilot read back, "*after the hold report South Point*."

At 0931.20 The A109 pilot reported, "*entering the hold*." The controller responded, "*once round, after the hold your join is approved, report South Point.*"

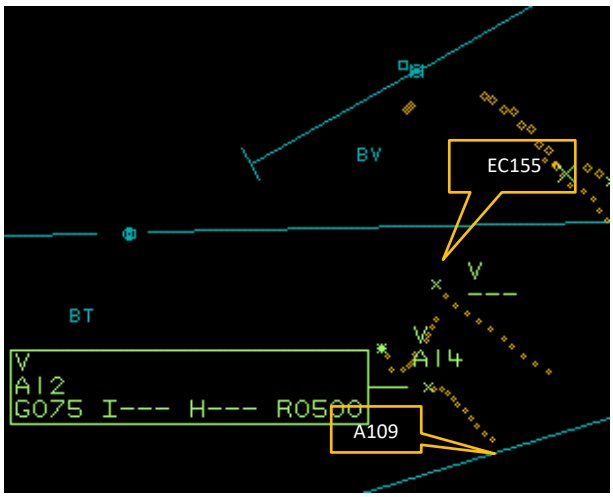


Figure 3 - 0931.20 (A109 indicating a Ground Speed of 75kt at the hold datum)

At 0931.50 the controller passed joining instructions to an unrelated aircraft and told them to report at South Point. Two transmissions were then received at the same time. The controller asked the unrelated joining pilot to confirm that they were passing South Point now, and the pilot reported not yet. It was not possible to determine who the other transmission was from or what they had said.

At 0932.20 the A109 pilot reported, "*South Point behind the Squirrel*." The controller responded, "*roger, join is now approved and contact Pad 130.280*." The pilot read back the frequency correctly (Figure 4).

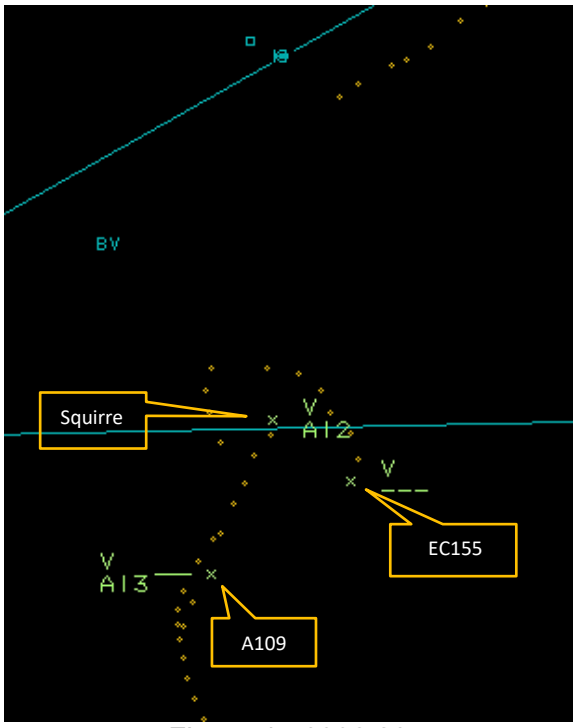


Figure 4 - 0932.20

At 0932.30 the EC155 pilot reported, "*hold complete, now reaching South Point*." The controller responded with the incorrect callsign but correct two-digit number from the EC155 callsign, "*roger South Point, join approved and report final, contact Pad 130.280*." The pilot read back, "*contact Pad 132.80*" and finished the transmission with their correct callsign. The controller picked up the incorrect readback and responded, "*130.280*." There was no response from the pilot (Figure 5).

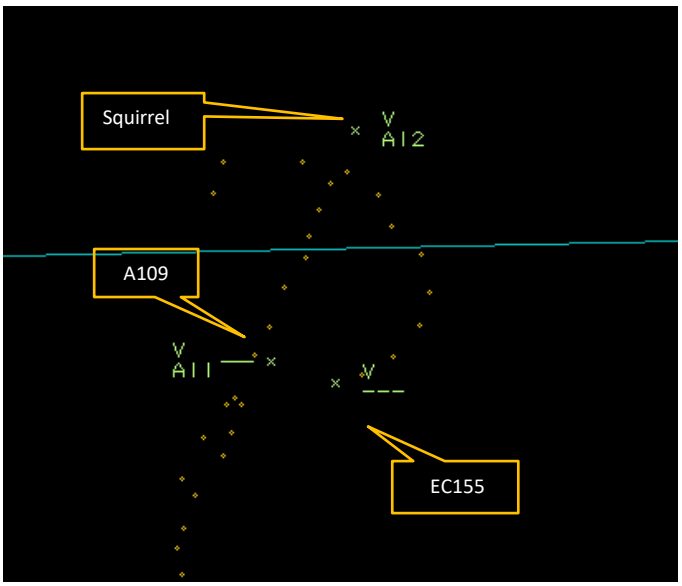


Figure 5 - 0932.30

At 0933.00 the A109 pilot reported on the Pad frequency, "*(callsign) is at South Point, er is at final*." The controller responded, "*report final*." The pilot responded, "*approaching final, behind the Squirrel*." There was then a call from an unrelated aircraft and the controller responded to them. The controller then instructed the A109 pilot, "*gate one*." The pilot read back, "*gate one*" (Figure 6).

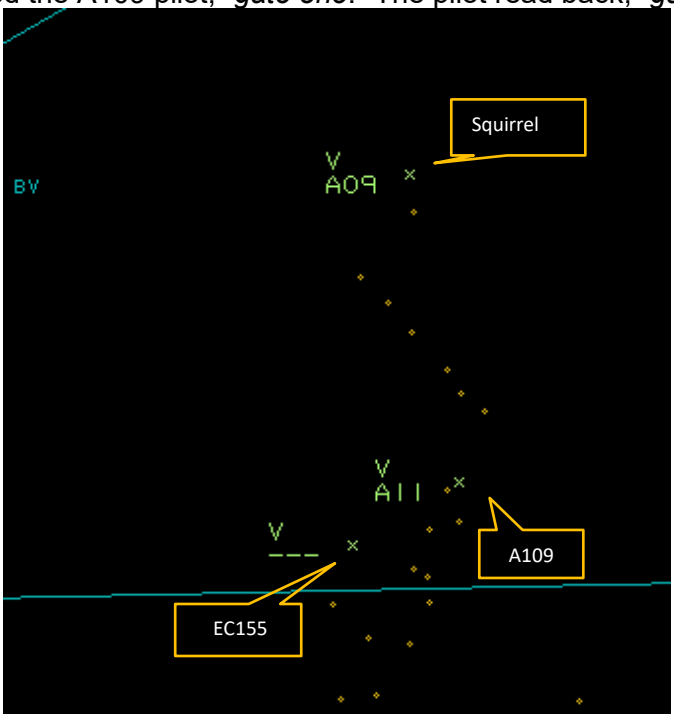


Figure 6 - 0933.00 (the EC155 pilot completing the final right turn in the hold, not yet on the Pad frequency and now west of the A109)

At 0933.30 a fourth helicopter pilot made initial contact with the Pad controller and reported final. The controller responded," *roger, continue, you're number 4, you've got an EC155 ahead of you*." The pilot responded, "*affirm (unintelligible word)"* (Figure 7).

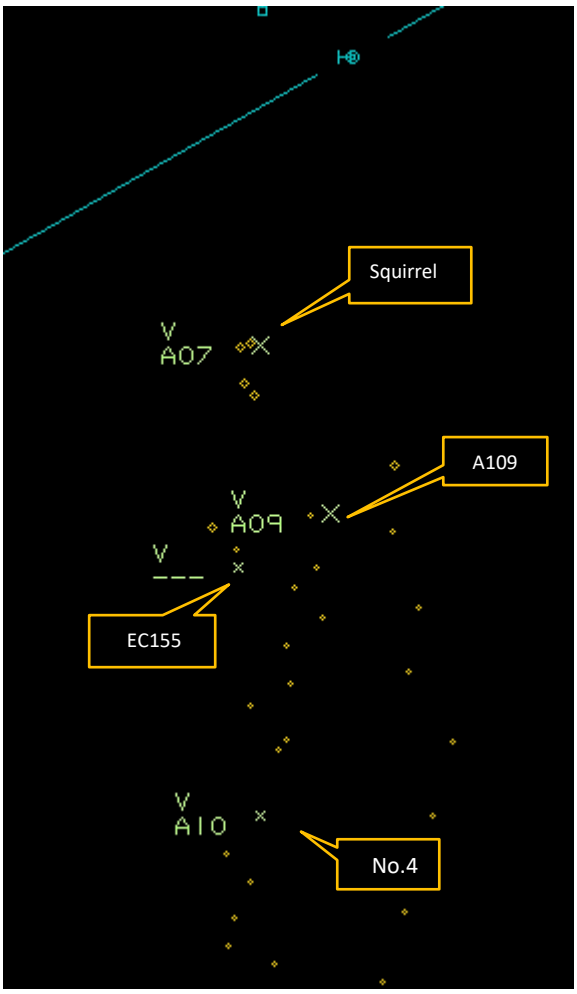


Figure 7 - 0933.30 (EC155 not yet on the Pad frequency)

At 0933.40 a joining aircraft incorrectly checked in on the Pad frequency and the Pad controller turned their attention to this aircraft.

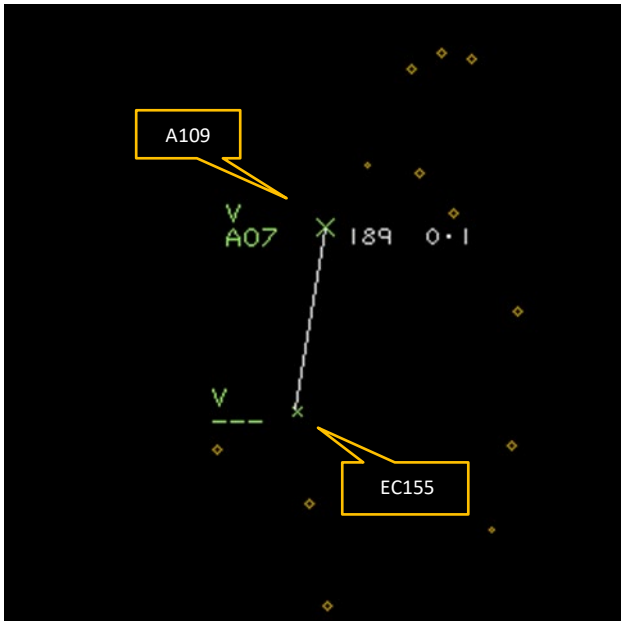


Figure 8 - 0933.55 (EC155 not yet on the Pad frequency)

At 09:34.00 the controller instructed the EC155 pilot, "*gate two*." The pilot did not respond initially and after a few seconds responded, "*apologies, we had problems with our radio there*." The controller responded, "*gate two*. which the pilot read back.

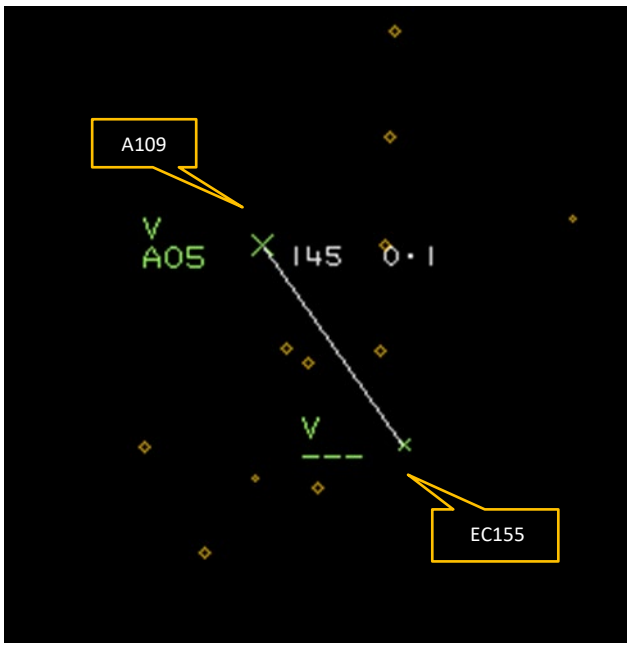


Figure 9 - 0934.06 (EC155 now on the Pad frequency)

At 09:34.10 radar CPA occurred, with the aircraft separated by an indicated <0.1NM. The EC155 pilot reported that they were at an altitude of between 100-200ft and the A109 indicated an altitude of 500ft. The EC155 pilot believed the vertical separation to be between 40 and 100ft as the A109 flew over the top of them (Figure 10).

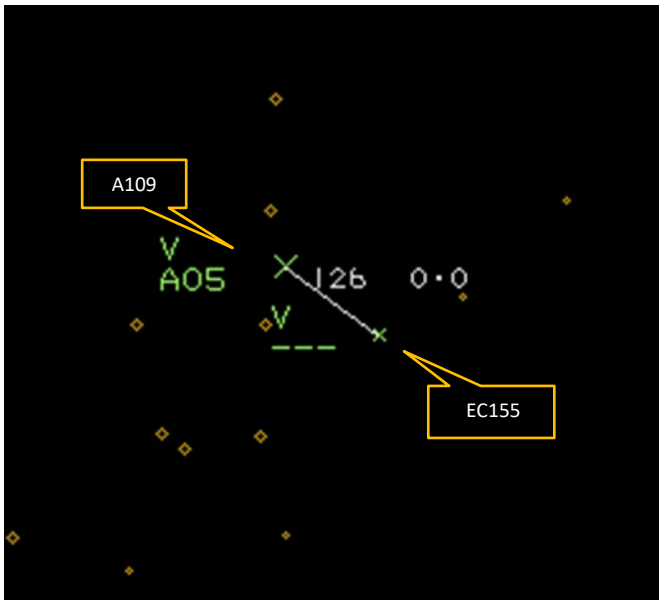


Figure 10 - 09:34.10 Radar CPA

The AIC stated the following:

> This AIC will cover the airspace arrangements by date and is to be read fully by pilots intending to operate in the vicinity of Silverstone Circuit and Turweston Aerodrome during the period stated.

And

> This AIC does not replace the need for participating traffic to be fully familiar with the briefing packs provided by the heliport operator Silverstone Helicopters Limited.

The AIC instructed that:

no pilot should fly below 2500 feet AMSL within the RA(T) and that this restriction did not apply to any pilot who:
a) immediately before entering the area specified informs the air traffic control unit at Silverstone Aerodrome on the radio frequency notified for the purposes of these Regulations of the position, level, and track of the aircraft; and
b) flies in accordance with instructions issued by the air traffic control unit at Silverstone Aerodrome; and
c) maintains a continuous radiotelephony watch on the published Silverstone aeronautical frequency.

The requirement outlined in sub paragraph a) above was not included within the pilot briefing and pilot joining instructions document. Position, level, and track were not included within the initial RTF exchanges with the Tower controller.

Relevant extracts from the Pilot Briefing Pack:

RADIO DISCIPLINE
• Obtain ATIS - 132.905
• Request to join < 10nm - Silverstone Tower - 123.330
• On first call of the day, confirm your registration and aircraft type
• Repeat the first part of Call Sign i.e., BLACK BLACK 10
• Avoid unnecessary transmissions
• Do not enter RA(T) until cleared by Silverstone ATC

HELIPORT ARRIVALS
• Obtain ATIS - 132.905
• Call Silverstone Tower - 123.330
• Only Sectors South OR East are available for entry into the RA(T), depending on FATO in use.
• Fly at 1500ft QNH / Landing Lights on
• Avoid hatched areas, Noise!
• A join must be from over the Joining Datum and pilot to report “Joining East/South Point” • If told to “Enter and take up the Hold”, fly at 80kts. All holds are Right Hand.
• Silverstone Pad - 130.280 only if instructed
• Having made the frequency change to Pad, no transmissions are required until FINAL.
** NO OVERTAKING **
• Be at 1000ft QNH by FINAL point.
• On receipt of a FINAL report from pilot, ATC will ordinarily issue a stand. This is your landing clearance!
• Wind checks available on request.
• Performance Class 1 or 2 profiles

Relevant extracts from the Pilot Joining Instructions:

If and when told to ‘ENTER AND TAKE UP THE HOLD’ the pattern may be joined at either the Joining Datum (solid triangle) on the map provided, or the Hold Datum (open triangle).

Pilots are advised to join at the datum nearest to their direction of approach and are to be alert in regard of other traffic already in the hold.

Having been given ‘JOIN APPROVED’ by ATC – whether direct or from the hold – a pilot must come overhead the Joining Datum and report before continuing on to Final.

If a pilot is in the hold when given ‘Join Approved’, the holding pattern MUST be completed – even if the Joining Datum has only just been overflown.

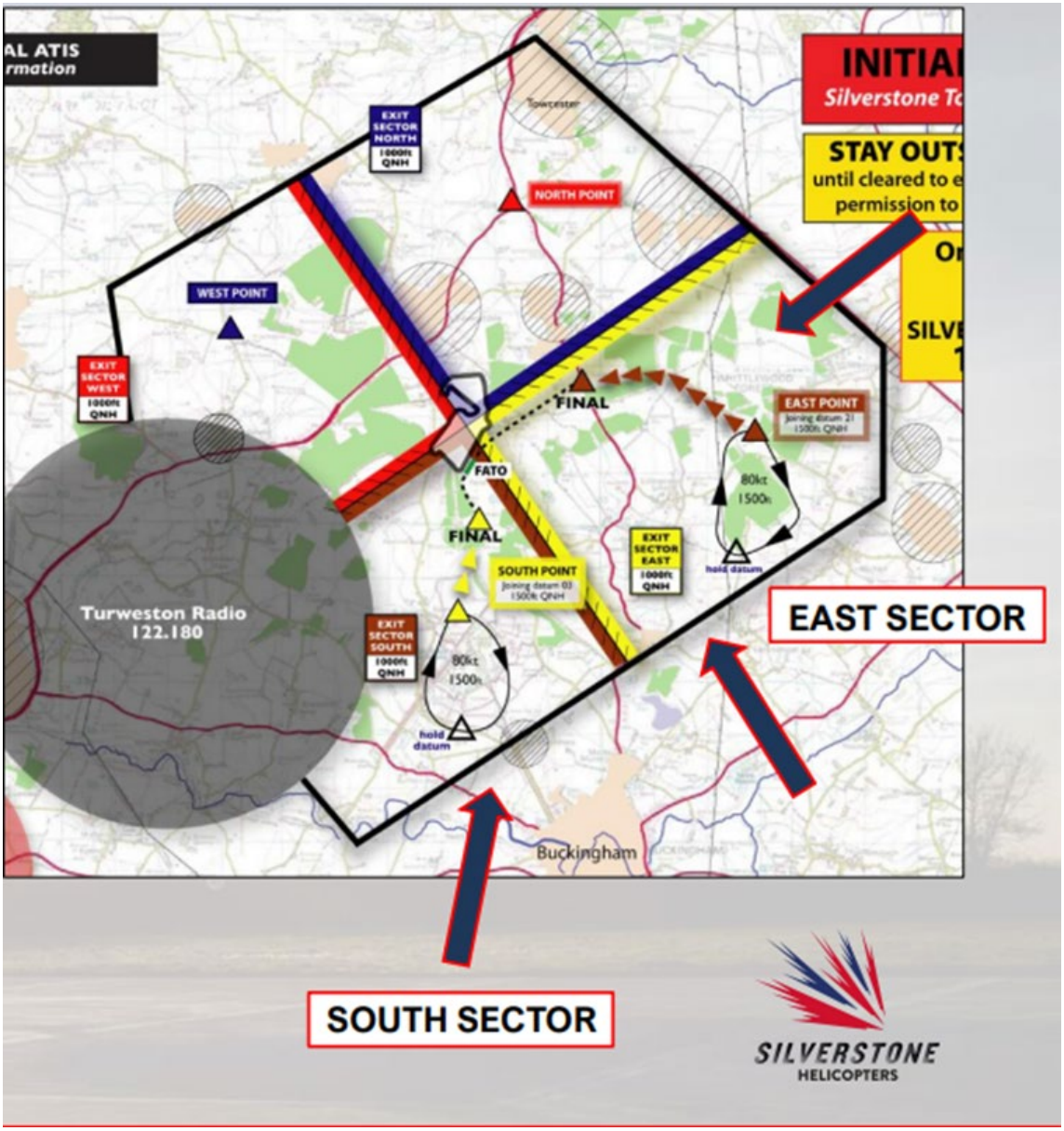


Figure 11 – Airspace (taken from the pilot briefing pack)

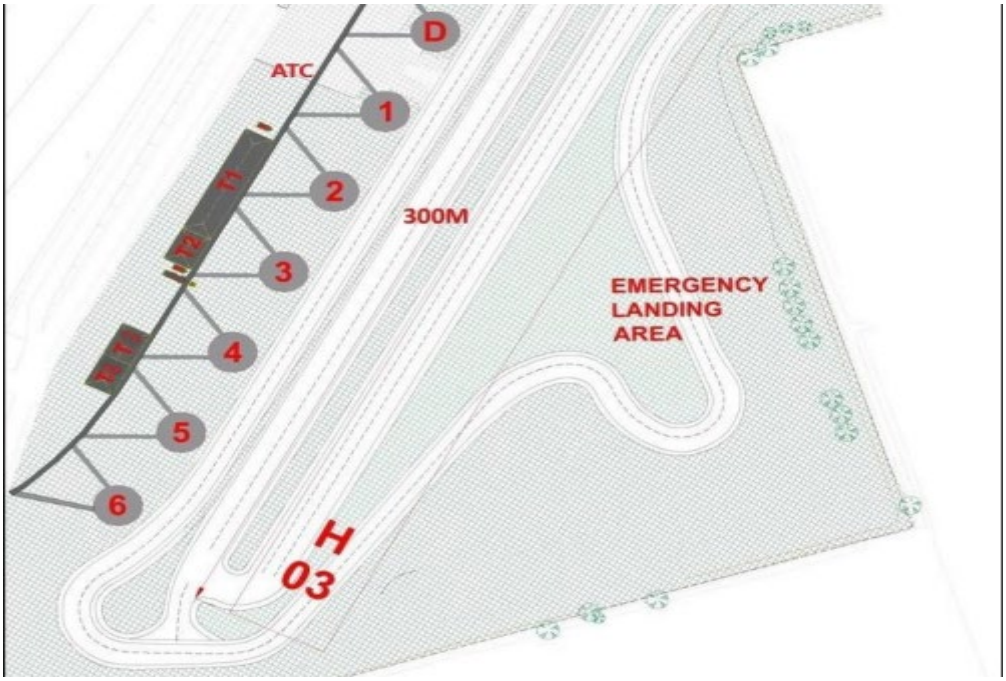


Figure 12 – Pad Layout

The requirement for pilots to report their position, level, and track on initial RTF contact with the Tower controller was not included within the pilot brief for the event. The Tower controller had no way of knowing whether the A109 and EC55 pilots had joined via South Point or via the Hold datum, or whether the 80kt speed limit was being exceeded. To enable the controllers to establish the order of approach for the helicopters, they would have been wholly reliant upon the timings of the pilot reports at South Point.

At 0927.30 when the A109 pilot made initial contact with the controller they were instructed to "*initially enter and take up the hold, report approaching South Point though, there are two others joining for the similar and I'll hopefully update you on that*." The pilot read back, "*join for South Point, take up the hold (unintelligible word*)."

At 0928.40 when the EC155 pilot made initial contact with the controller they were instructed to "*enter and take up the hold initially, there are 3 others doing similar, but report approaching South Point and I'll hopefully update you on that with a no delay*." The pilot read back, "*enter and take up the hold, report approaching South Point.*"

When the EC155 pilot reported at South Point at 0930.40 they were instructed to go once round the hold and report approaching South Point. Thirty seconds later (0931.10) the controller advised the pilot that on completion of the hold they were cleared for the approach. The ground speed of the EC155 as it entered at South Point was 142kt and it took some time for the speed to be reduced to the lowest indicated ground speed of 88kt, this was achieved just prior to the helicopter exiting the hold.

Ten seconds later (0931.20) the A109 pilot reported, "*entering the hold*." The pilot had not overflown South Point, on entry to the RA(T), they had joined the RA(T) directly from the south toward the hold datum. The pilot was then instructed, "*once round, after the hold your join is approved, report South Point*." When the pilot reported entering the hold, they were at the holding datum. One minute later (0932.20) the A109 pilot reported, "*South Point behind the Squirrel*." The pilot had not carried out a hold prior to this report, they were passing over South Point for the first time. The pilot was then instructed, "*join is now approved and contact Pad 130.280*." This series of events resulted in the pilot flying a direct track from the southern edge of the RA(T) to the hold datum, onwards through South Point and directly onto final approach.

The A109 pilot reported that they had intended to take a route via the hold datum, anticipating that they would be joining the hold, and that on reaching the hold datum they were cleared to join, and routed to South Point and then to final.

Ten seconds later (0932.30) and after the A109 pilot had left the Tower frequency, the EC155 pilot reported, "*hold complete, now reaching South Point*." The controller responded, "*roger South Point, join approved and report final, contact Pad 130.280*." The pilot readback of the Pad frequency was incorrect and the controller attempted to gain a correct readback, however the EC155 pilot had already left the Tower frequency. The A109 and EC155 were then both approaching final within 10sec of each other, with the EC155 slightly behind and to the east of the A109. However, when the EC155 pilot completed their final turn prior to leaving the hold, the helicopter passed behind the A109 and ended up in a position to the west of the A109 and very slightly behind it.

Thirty seconds later (0933.00) the A109 pilot made initial contact with the Pad controller and incorrectly reported their position as South Point. When instructed to report final, the pilot advised that they were approaching final, and they were allocated Gate 1 for landing. The pilot brief had stated that no transmissions were required after changing to the Pad frequency until the helicopter reached final.

The incorrect readback of the Pad frequency by the EC155 pilot resulted in a one minute 30 second delay in the pilot establishing communications with the Pad controller. At 0934.00 having not yet received a final call from the EC155 pilot, the Pad controller transmitted the EC155 callsign and Gate 2 for landing. After a short silence the pilot apologised and explained that they had radio problems and read back Gate 2.

When the A109 pilot was cleared to proceed to final and change to the Pad frequency, the EC155 pilot had not yet reported that their hold was complete (this transmission was made 10sec later). This, together with the subsequent delay in the EC155 pilot contacting the Pad controller after being instructed to do so, had the potential for the A109 pilot to be unaware of the proximity of the EC155 and the A109 pilot confirmed in their report that they were unaware of the presence of the EC155 on final. Likewise, the EC155 pilot would not have heard the final call from the A109, and they also reported that they were not aware of any other aircraft being on final approach.

The EC155 pilot reported that the A109 had overflown them on final approach. Unfortunately, the close proximity of radar contacts resulted in SSR label jump and it was not possible to determine exactly where or when this may have taken place.

Conclusion

The pilots of both helicopters were instructed to conduct one hold prior to joining final approach. The hold was to be flown at 80kt. The EC155 pilot joined the RA(T) and reported at South Point upon entry to the RA(T), flew the hold, and upon completion of the hold, reported approaching South Point. Much of the hold was flown at a speed in excess of 80kt. The A109 pilot joined the RA(T) via the hold datum, did not fly a hold and reported at South Point. When the South Point report was received and the instruction to proceed to final given.

The different tracks flown by the pilots resulted in both helicopters reaching final approach at the same time and on broadly parallel tracks. The RT call from the EC155 pilot when they reported that their hold was complete, came after the A109 pilot had left the Tower frequency and may potentially have contributed to the A109 pilot being unaware that the EC155 was just behind them. The lengthy delay in the EC155 pilot checking-in on the Pad frequency may have compounded this situation. The A109 pilot checked-in on the Pad frequency one minute and 30 seconds before the EC155 pilot. The timings of these RT calls could potentially have contributed to the EC155 pilot being unaware that the A109 was just ahead of them on final approach.

The lengthy interval between the A109 pilot and the EC155 pilot contacting the Pad controller, together with the controller having to split their attention between monitoring the final approach

sequence, the departing helicopters, the available gates for approaching helicopters, and dealing with the joining pilot reporting on the wrong frequency, is likely to have reduced the potential for the Pad controller to fully assimilate the proximity of the two helicopters on final approach.

**UKAB Secretariat**

The EC155 and AW109 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]

## Summary

An Airprox was reported when an EC155 and an A109 flew into proximity at Silverstone at around 0934Z on Sunday 18th July 2021. Both pilots were operating under VFR in VMC and both were in receipt of an ACS from Silverstone.

## 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 traffic manager. 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.

Prior to discussing the detail of the Airprox the Board was briefed by a member who flew into Silverstone on this day. They noted that the RT was incredibly busy (a point already noted in the CAA ATSI report) and thought that discipline in adhering to procedures was key. Pilots were encouraged to use as little RT as possible and the aim of the procedures was to allow as many helicopters as possible to land, drop their passengers and depart. Consequently, with time being of the essence, they opined that pilots generally were not adhering to the 80kt speed restriction in the hold and that RT discipline was somewhat lacking.

The Board first considered the actions of the EC155 pilot. They joined the hold as laid down in the procedures and then followed the ATC instructions issued. Some members wondered whether their increased speed in the hold meant that they caught up the A109 quicker than they would have done had they being doing the standard 80kt, mindful of the brief that this was common practise on the day, still they thought that for the procedures to work, they required everyone to be at the same speed (**CF7**). Having been cleared for the procedure, the EC155 pilot flew an incorrect profile, in that they flew the majority of the hold to the north of 'South Point' (**CF6**) meaning that they flew a truncated hold pattern. Then, on being told to switch to the Pad frequency they read back the frequency incorrectly and took some time to switch across (**CF7, CF9**). By not switching across to the Pad frequency in a timely fashion, they were denied the opportunity to hear the A109 and also denied the A109 pilot the situational awareness on their position and intentions (**CF10**). The EC155 was fitted with a TAS, although the pilot reported not getting any information about the A109 from it. Members with helicopter experience noted that when in a situation like the one at Silverstone, with multiple contacts in close proximity, the TAS can become so swamped with so many returns that it becomes impossible to use it in the manner intended; members agreed that this rendered the EWS barrier ineffective as the TAS failed to provide the pilot with any situational awareness on the A109 (**CF11**). Once on the final approach, the EC155 pilot did not see the A109 until it flew overhead, by which time it was too late to take any action that could materially change the separation, making this effectively a non-sighting (**CF12**, **CF13**).

Turning to the A109 pilot, they joined at the Hold Datum and flew around to South Point, where they were cleared for the procedure. The Pilot Briefing Pack and Joining Instructions both stated that once cleared, the rest of the hold must be flown, however, the A109 pilot believed that they had been cleared by ATC and therefore routed directly from South Point onto final (**CF4**, **CF6**). By not following around the hold before turning onto final, the A109 pilot did not integrate with other traffic that was following the procedure as published in the pilots' briefing pack (**CF7**, **CF8**). The A109 pilot was sent to the Pad frequency before the EC155 and so was not aware that it was also in the vicinity (**CF10**). Although the

[2] (UK) SERA.3205 Proximity.

pilot reported getting information on the EC155 from their TAS, this was thought to be early in the approach, prior to the Airprox and like the EC155 pilot, the A109 pilot did not seem to get any information from their TAS in the latter stages of the event (**CF11**). The A109 pilot appeared to have overflown the EC155 without any prior situational awareness that it was there, the final mitigation was see-and-avoid, however the pilot would have been unable to see the EC155 beneath their aircraft (**CF13**) and in fact reported not seeing it at all (**CF12**).

When looking at the role of the controller, members noted that they had reported not being able to see any perspective when looking at the helicopters on the approach. Without any radar, this meant that the controllers were unable to visually determine the order of the helicopters and were reliant upon the pilots following the procedures correctly and reporting accurately. The busy nature of the event with its almost continuous RT and constant procession of helicopters inbound meant that the controller had no way of knowing whether or not the pilots had adhered to the procedures. The controller had no situational awareness that the A109 and EC155 were likely to come into confliction and did not detect the conflict when it happened (**CF2**, **CF3**).

Members spent some time discussing the procedures and processes and noted that there were some discrepancies between the various documents. Firstly, they noted that the AIC required pilots to report their position, heading and level on entry to the RA(T), however, it was clear that not only was this not being actioned by the pilots, but also that the controllers did not want the extra RT calls. Furthermore, they thought that the instructions in the Briefing Pack about completing the hold were less clear than those in the Joining Instructions, they thought that this could lead to confusion and that some instructions could be interpreted in different ways. It was assumed that the Briefing Pack was delivered to some pilots in person and that this was then disseminated further; however members thought that the differences in the various documents could lead to confusion for those not familiar with such procedures (**CF5**). Additionally, members thought that the procedures as written did not mitigate for the controllers not being able to see the aircraft on the approach (**CF1**).

Finally, the Board determined the risk of collision. They considered the reports of both pilots and the controller. Unusually, they had a witness report from a member of the public on the ground and they wished to thank them for taking the time to report the incident. Unfortunately, the low altitudes of the helicopters meant that the NATS radar was not accurate enough to judge the final separation, but members were content that all the reports pointed to the same conclusion in that there had been the bare minimum of separation, and given that neither pilot had seen the other prior to the Airprox or had any situational awareness that the other was in the vicinity, any separation was down to providence. They therefore assessed that there had been a serious risk of collision; Risk Category A (**CF14**).

## PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| | **2021122** | | | |
|---|---|---|---|---|
| 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 |
| | **• Situational Awareness and Action** | | | |
| 2 | Human Factors | • Conflict Detection - Not Detected | An event involving Air Navigation Services conflict not being detected. | |
| 3 | Contextual | • Traffic Management Information Action | An event involving traffic management information actions | The ground element had only generic, late or no Situational Awareness |
| | **Flight Elements** | | | |
| | **• Regulations, Processes, Procedures and Compliance** | | | |

| | | | | |
|---|---|---|---|---|
| 4 | Human Factors | • Flight Crew ATC Clearance Deviation | An event involving a deviation from an air traffic control clearance. | |
| 5 | Organisational | • Flight Operations Documentation and Publications | Flight Operations Documentation and Publications | Inadequate regulations or procedures |
| 6 | 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** | | | |
| 7 | Human Factors | • Action Performed Incorrectly | Events involving flight crew performing the selected action incorrectly | Incorrect or ineffective execution |
| 8 | 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** | | | |
| 9 | Human Factors | • Readback Incorrect | An event involving incorrect readback | |
| 10 | Contextual | • Situational Awareness and Sensory Events | Events involving a flight crew's awareness and perception of situations | Pilot had no, late or only generic, Situational Awareness |
| | **• Electronic Warning System Operation and Compliance** | | | |
| 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 |
| 13 | Contextual | • Visual Impairment | Events involving impairment due to an inability to see properly | One or both aircraft were obscured from the other |
| | **• Outcome Events** | | | |
| 14 | 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: A.

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 procedures as written did not allow the controller to mitigate any deviations or inconsistency in pilots' position reports.

**Situational Awareness of the Confliction and Action** were assessed as **ineffective** because the controller was not aware of the confliction between the EC155 and the A109.

**Flight Elements:**

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

**Regulations, Processes, Procedures and Compliance** were assessed as **partially effective** because there were differences between the documents outlining the procedures. Furthermore, neither pilot fully complied with the hold procedures.

**Tactical Planning and Execution** was assessed as **partially effective** because neither pilot executed the hold procedures accurately.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because neither pilot had any situational awareness that the other was in close proximity.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because although both aircraft were fitted with a TAS, neither pilot reported that they received a warning on the other aircraft when on final.

**See and Avoid** were assessed as **ineffective** because neither pilot saw the other in time to take any avoiding action.