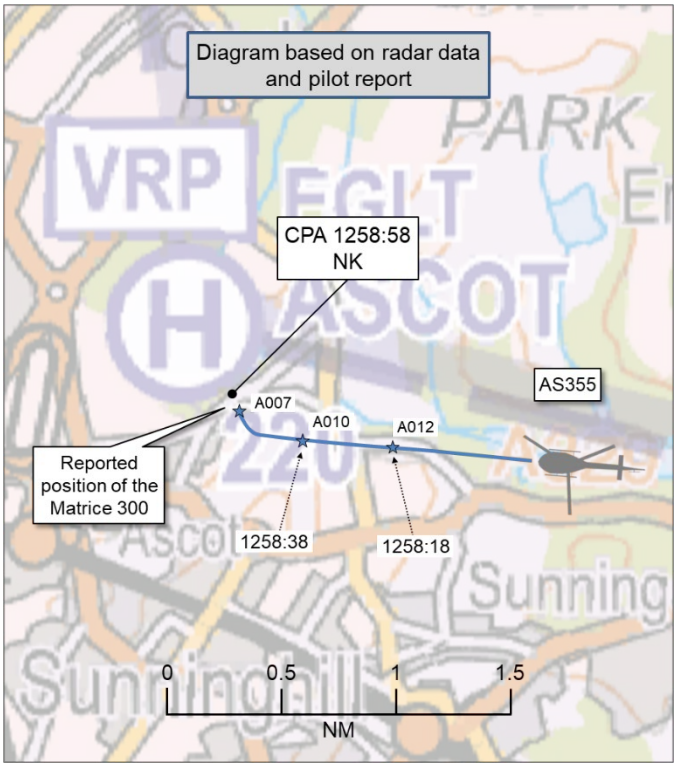
AIRPROX REPORT No 2024140

Date: 22 Jun 2024 Time: 1259Z Position: 5125N 00039W Location: Ascot

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	AS355	Matrice 300
Operator	Civ Comm	Civ UAS
Airspace	RA(T)	RA(T)
Class	D	D
Rules	VFR	VLOS
Service	ACS	None
Provider	Ascot Tower	N/A
Altitude/FL	700ft	NK
Transponder	A, C, S	Not fitted
Reported		
Colours	Grey, black	Grey
Lighting	Anti-col, nav, landing	NR
Conditions	VMC	VMC
Visibility	>10km	NR
Altitude/FL	700ft	NR
Altimeter	QNH (1013hPa)	NR
Heading	330°	NR
Speed	NK	NR
ACAS/TAS	TAS	NR
Alert	None	NR
Separation at CPA		
Reported	0ft V/15m H	>200m
Recorded	NK	



THE AS355 PILOT reports that, having permission to land, they rolled level, directly in-line on short final for H33 at Ascot. Whilst descending on short final, they noticed a rather large drone pass down the right-hand side of their aircraft, level with them (altitude 700ft) approximately 15m away. By the time they saw it go by the window, it was too late to perform any avoidance manoeuvre. As it was then clear behind, they elected to continue their landing. They notified Ascot Tower (127.110MHz) of the close encounter so that they could pass on the information to any other inbounds. They were not aware of any drone operations happening at the time. No Traffic Information had been passed to them.

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

THE MATRICE 300 OPERATOR reports that, for Royal Ascot 2024, they were working as Air Bronze for the event over the dates Tuesday 18th to Saturday 22nd June 2024. Each year at Royal Ascot there is a police security presence due to the VIPs in attendance. Again, for 2024, they monitored the [VIP]'s arrival and departure from the air. This year, they were in the control room with one of their PCs acting as Team Leader on the ground. That day, and since, they have investigated this incident with the Team Leader and the [Matrice 300] pilot to confirm there were no safety concerns from their actions.

Royal Ascot is an event which is within controlled airspace of the Ascot Temporary heliport [and] a RA(T) for the location. Knowing this, they had meetings with the ATC Manager to make certain they knew where they could and could not operate with drones. They planned which routes to take and their hover-points for the sole reason to avoid all proximity concerns with piloted aviation. They jointly supplied maps showing where they would be operating, the altitudes required to complete their tasks and the timings for such tasks. Their operational parameters were approved with the Ascot ATC Manager. They undertook strict SOPs that, prior to any drone flight, they must ring the ATC and explain what they would like to do, seek permission and, only once gained, would a drone take-off. This would

then allow for all piloted aviation to be informed that they would be, or were, operating if they came near to the heliport.

Post event, they can confirm that a drone had only taken-off once this permission was granted for the entirety of the 5 days. Again, once each drone flight was complete, they informed the ATC Manager of this as well. The operational site being discussed is adjacent to the final approach track but a minimum of 100m away. They were required to be there as this is also the approach path of the [VIPs] and were required to be nearby to maintain Visual Line of Sight (VLOS) for all deployments and thereby couldn't be far away. They only operate in pairs (as a minimum) to make certain VLOS is maintained.

The drone operator was always operating within VLOS procedures and was aware of the helicopter traffic. The [pilot of any] helicopter traffic would always be informed of the presence of the drone by the ATC Manager. Additionally, the drone was equipped with an anti-collision system to ensure separation from aircraft.

Their standard operating procedure is to fly to avoid all [crewed] aviation should they ever have the slightest safety concerns. Such is the security presence for this event, there are numerous police officers all around the approach track to the heliport; none of which had raised to them any aviation safety concerns.

On the 22nd June, the drone pilot was in continuous sight of the helicopter in question at all times during the incident and has estimated the minimum distance from the helicopter to be at least 200+ metres away. Flight data from the drone indicated that the drone was following the set procedures at all times, hovering where agreed and was more than 100m from the final approach track of the heliport. Flight data also confirmed the maximum altitude for the flight to be 111m/364ft. With no further information passed [regarding the Airprox], they cannot comment [further] but are confident that no Airprox incident took place. As a police-drone [operations team], they followed each direction strictly as requested by the ATC Manager and, as mentioned, only flew once approved.

THE ASCOT TOWER CONTROLLER reports that the pilot of [the AS355] reported a drone on final to FATO33 at 700ft. [The Ascot controller] had not been informed of a drone operating. However, they passed information based on the fact that they had had a police drone operating not above 400ft at the football club [approximately 0.3NM to the southwest] on previous days.

Factual Background

A NOTAM for the activation of a RA(T) in the vicinity of Ascot:

> J0616/24: Temporary restricted area activated
> Q) EGTT/QRTCA/IV/BO/AW/000/020/5125N00040W003
> RESTRICTED AREA (TEMPORARY) ACTIVE (ASCOT RACECOURSE) WI 2NM RADIUS OF PSN 512515N 0003934W APPLIES TO ALL ACFT INCLUDING ANY SMALL BALLOON, ANY KITE, ANY UAS AND ANY PARACHUTE INCLUDING A PARASCENDING PARACHUTE OR PARAMOTOR. DOES NOT APPLY TO ANY ACFT FLYING IN ACCORDANCE WITH EXCEPTIONS STATED IN THE AIC. AIC M 042/2024 WITH CHART, WILL REFER. FURTHER DETAILS WWW.NATS.AERO/AIS.
> RESTRICTION OF FLYING REGULATIONS MADE UNDER ARTICLE 239 OF THE AIR NAV ORDER 2016. AR-2024-902/AO1.
> LOWER: Surface, UPPER: 2,000 Feet AMSL
> FROM: 18 Jun 2024 09:00 GMT (09:00 UTC) TO: 22 Jun 2024 19:00 GMT (19:00 UTC)
> SCHEDULE: 0900-1900

An AIC for the Restriction of Flying Regulations: Ascot Racecourse, published 4th April 2024:

1. The Royal Ascot 2024 horse racing event will take place at Ascot Racecourse, Berkshire, on the five days from 18 to 22 June 2024 inclusive. The Secretary of State for Transport has decided that it is necessary, on the grounds of safety and security, to introduce Restriction of Flying Regulations under Article 239 of the Air Navigation Order 2016.

2. Subject to paragraph 3, between 0900 hours and 1900 hours on each day beginning on 18 June 2024 and ending on 22 June 2024, no aircraft is to fly below 2000 FT AMSL within the area bounded by a circle having a radius of 2 NM whose centre is at 512515N 0003934W [see Figure 1].
3. Paragraph 2 does not apply to any aircraft flying in accordance with a clearance issued by the air traffic control unit at Ascot Heliport who may be contacted via frequency 127.110 MHz (Ascot Tower), frequency 134.555 MHz (Ascot Pad), or via telephone 07980-012362.
4. For access to airspace within the Restricted Area (Temporary) above 1400 FT AMSL contact London SVFR on Frequency 125.625MHz (Heathrow Radar).
5. During the same times an Aerodrome Traffic Zone (ATZ) of the same dimensions will be established under Rule 11 of The Rules of The Air Regulations 2015.
6. The times mentioned in this notice are Universal Co-ordinated Time (UTC), which is one hour behind British Summer Time (BST).
7. In relation to this document, the term 'aircraft' includes any small balloon, any kite weighing not more than 2Kg, any unmanned aircraft and any parachute including a parascending parachute or paramotor.

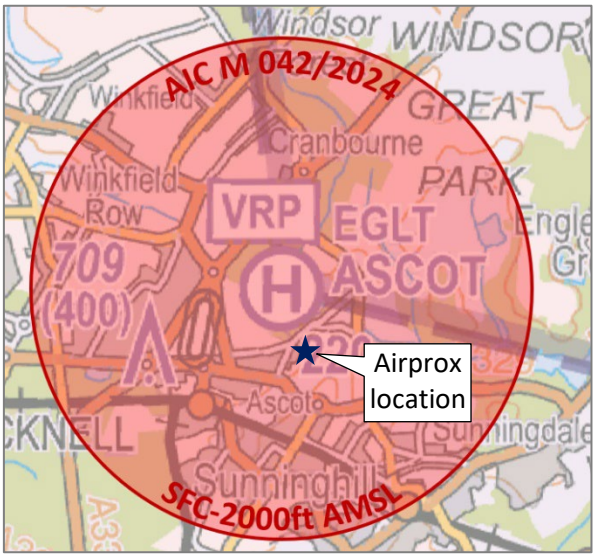


Figure 1 - Restricted Area (Temporary)

The weather at Heathrow was recorded as follows:

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METAR COR EGLL 221250Z AUTO 28011KT 9999 BKN034 OVC047 19/11 Q1013 NOSIG
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Analysis and Investigation

Ascot ATC Manager

The drone operation had been planned and approved by the ATC Manager in consultation with the Police Drone Operations team. The details were published in a Temporary Operating Instruction which was on display in the ATC Unit. The procedure was that the Police would notify ATC when commencing operations and the controller-on-duty would pass Traffic Information to helicopter pilots approaching final.

At the time of the incident, the ATC Manager was notified of the drone operation becoming active […]. The information was passed to a non-operational ATCO with the expectation that the information would be passed immediately to the Ascot Tower controller at the time. The ATCO was not in the ATC unit at the time and chose to wait until they returned to share the information. As they entered the ATC unit they heard the pilot of the helicopter report the drone sighting. The Tower ATCO replied to the pilot that they were aware of the drone operation but not that it was active at that time.

The pilot later informed them that they would be filing an MOR. The Tower ATCO had also filed an MOR.

The incident has been investigated by talking to both ATCOs and the drone operator. The ATCOs confirmed the details above. The drone operator provided an exact track for the drone and commented that the helicopter was in sight the entire time and that the distance between the helicopter and the drone was at least 100m at all times. The drone was operating under VLOS rules and the track data confirms that the drone position was at least 100m from the final approach track.

There was no risk of collision. Although the pilot of the helicopter was not warned about the drone, they were operating under VFR and had sighted the drone. The drone operator had both aircraft in sight and remained clear of the helicopter. The ATCO has been briefed on the need to convey operational information to other controllers in a timely manner.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and the AS355 could be positively identified from Mode S data (Figure 2). The Matrice 300 was not observed. The pilot of the Matrice 300 kindly supplied a picture showing the extent of the Matrice 300 flight from GPS data (Figure 3). The diagram was constructed by combining the various sources. The moment of CPA was determined to have been as the AS355 had descended to 700ft as per the AS355 pilot's narrative report.

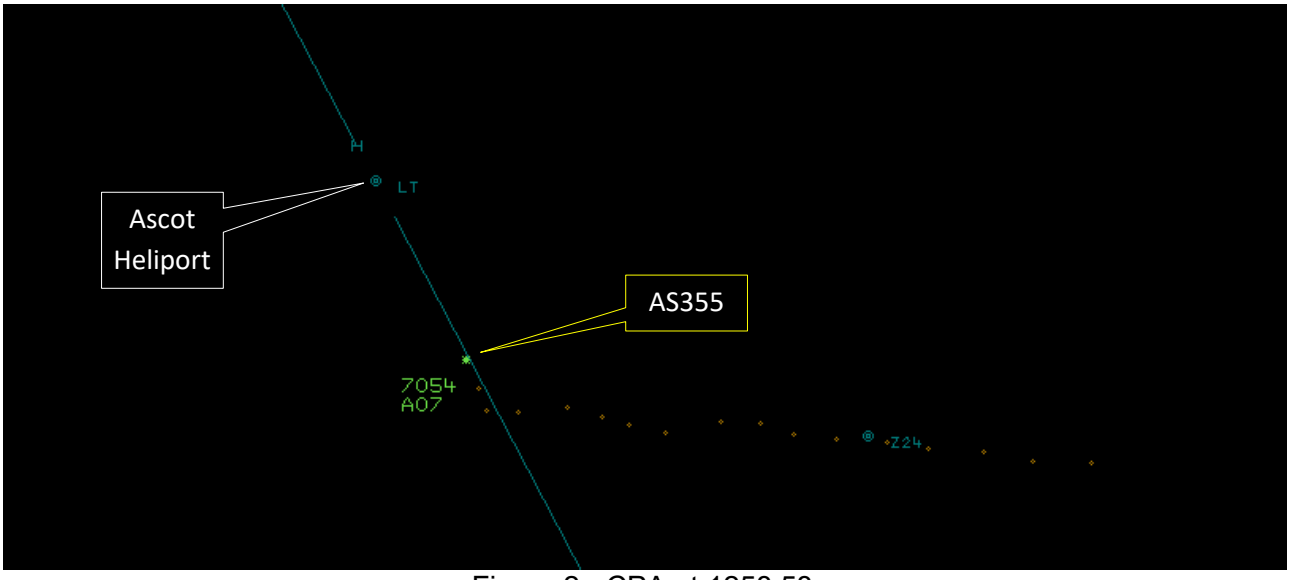

Figure 2 - CPA at 1258:58

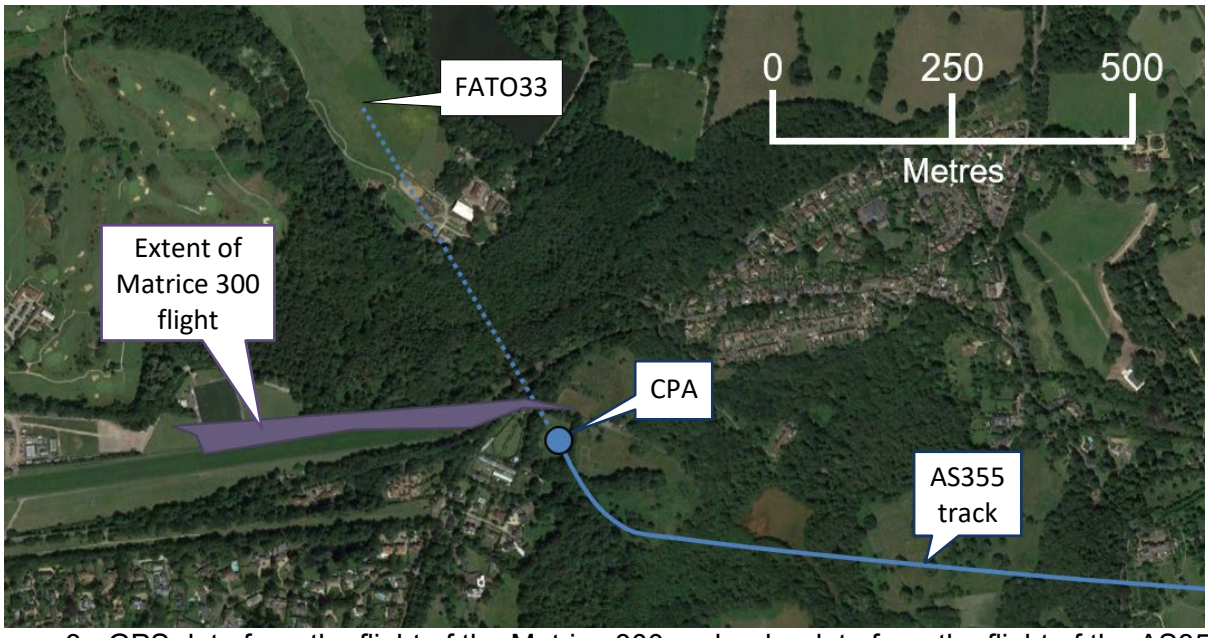

Figure 3 - GPS data from the flight of the Matrice 300 and radar data from the flight of the AS355.

The AS355 and Matrice 300 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] During the flight, the remote pilot shall keep the unmanned aircraft in VLOS and maintain a thorough visual scan of the airspace surrounding the unmanned aircraft in order to avoid any risk of collision with any manned aircraft. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property.[3]

Summary

An Airprox was reported when an AS355 and a Matrice 300 flew into proximity at Ascot at 1259Z on Saturday 22nd June 2024. The AS355 pilot had been operating under VFR in VMC and in receipt of an ACS from Ascot Tower. The Matrice 300 pilot had been operating under VLOS in VMC and not in receipt of a FIS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, a depiction of the GPS track of the flight of the Matrice 300, a report from the air traffic controller involved and a report from the appropriate operating authority. 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 pilot of the AS355. Members noted that they had been in receipt of an Aerodrome Control Service from the Ascot Tower controller and, as such, would have expected to have been passed pertinent Traffic Information although they reported that they had not been passed information regarding the Matrice 300. Members agreed that the TAS fitted to the AS355 would not have been expected to have detected the Matrice 300 (**CF7**). It was further agreed that the pilot of the AS355 had not had situational awareness of the presence of the Matrice 300 until it had been visually acquired (**CF6**). Further, noting that the Matrice 300 had been sighted at the moment of CPA, and that there had not been any time for the pilot of the AS355 to have taken any avoiding action, members agreed that it had been, effectively, a non-sighting (**CF9**).

Turning their attention to the actions of the pilot of the Matrice 300, members pondered the apparent incongruence between their contention that they had remained "*100 metres from the approach track*" and "*200+ metres*" from the helicopter, with the image that they had supplied depicting the extent of the flight of the Matrice 300 from GPS data. When the image had been overlayed on the radar recording of the track of the AS355, it showed that the Matrice 300 had crossed the approach path taken by the AS355 (Figure 3). Members wondered whether the AS355 had been on a typical and expected approach track. A member with particular knowledge of helicopter operations at Ascot commented that the track of the AS355 on the day in question had been the expected track. Other members pointed out that the Matrice 300 may have remained 200m from the helipad itself but had not remained 200m from the path taken by an approaching helicopter. Members noted that the Matrice 300 had been sighted by the pilot of the AS355 on their right (east) as they had been "*descending on short final*" and, consequently, had clearly crossed the approach track from its origin at the Matrice 300 pilot's base which was to the left (west) of the final approach. One member suggested that this indicated that the pilot of the Matrice 300 had not complied with the agreed operating procedures. Other members wished to examine that point further later in the discussion. Notwithstanding, members were in agreement that it had been the responsibility of the Matrice 300 pilot to not have operated in such proximity to other aircraft as to have created a collision hazard and that their flight ought to have been discontinued if the Matrice 300 had posed a risk to the AS355 pilot. Accordingly, members agreed that the pilot of the Matrice 300 had not maintained an adequate separation from the AS355 (**CF5**). Further, members noted that the pilot of the Matrice 300 had reported that they had been "..*operating within VLOS procedures and was aware of the helicopter traffic*", and concluded that the Matrice 300 pilot had,

[1] (UK) SERA.3205 Proximity.
[2] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.
[3] Assimilated Regulation (EU) 2019/947- UAS.OPEN.060 Responsibilities of the remote pilot (2)(b).

essentially, flown into conflict with the AS355 (**CF8**). One member wondered if VLOS had been continuously maintained given that the AS355 had flown between the Matrice 300 and its pilot.

Members noted that the operator of the Matrice 300 had described that the UAS had been fitted with "*an anti-collision system*". A member with particular knowledge of UAS technology explained that the nature of the anti-collision system would have been extremely unlikely to have provided any separation from the AS355 as it had been designed to provide a degree of protection from buildings and trees rather than from a moving aircraft. Another member pointed out that, even if the Matrice 300 had been fitted with an 'anti-collision' system based upon ADS-B-in, it could not have detected the presence of the AS355 given that the transponder fitted to the AS355 had not had an ADS-B-out signal.

Members next turned their attention to the actions of the Ascot Tower controller and noted that, from their narrative report of the event, they appeared to have had no knowledge of the Matrice 300 operation having been active that day. As such, members agreed that they had not had situational awareness of the Matrice 300 in the area (**CF4**) and, consequently, had not been able to have passed Traffic Information on the Matrice 300 to the pilot of the AS355 (**CF3**).

Members next considered the actions of the ATC Manager. Acknowledging that they had not had sight of the Temporary Operating Instruction which had been "*on display in the ATC Unit*", members noted that the ATC Manager had described the process thus: "*The procedure was that the Police would notify ATC when commencing operations and the controller-on-duty would pass Traffic Information to helicopter pilots approaching final. At the time of the incident, the ATC Manager was notified of the drone operation becoming active..*" and that "*The information was passed to a non-operational ATCO with the expectation that the information would be passed immediately to the Ascot Tower controller at the time*". Although it was not clear to members where the 'non-operational ATCO' had been located in relation to the on-duty Ascot Tower controller, members felt that it had, perhaps, been an unreasonable assumption that the information would have been passed-on immediately and suggested that it may have been perfectly feasible for the ATC Manager to have passed the information to the on-duty Ascot Tower controller directly. Further, some members wondered whether it may have been prudent for the agreed procedure to have included the facility for a representative from the Matrice 300 operation to have made a call directly to the on duty controller. Members concluded that the ATC Manager had not complied with the procedure (**CF1**) and that the supervision of the on-duty Ascot Tower controller had been inadequate (**CF2**).

Members returned to their previous thoughts on the procedures for the helicopter and UAS operations and highlighted several safety barriers that had been ineffective during this encounter. Some members suggested that the overall plan to have integrated a security tasking (as undertaken by the Matrice 300 operator) and the crewed aviation operation to the helipad had, perhaps, not been sufficiently robust and that the location and physical space required for each operation had not been fully appreciated.

Members concluded their discussion and summarised their thoughts. It was agreed that a breakdown in the passage of information had meant that the Ascot Tower controller had not been aware of the presence of the Matrice 300. It was also agreed that the pilot of the Matrice 300 had flown through the approach track of the AS355 and that, upon visual acquisition of the Matrice 300, the pilot of the AS355 had not had time to have taken avoiding action. Members were in agreement that safety margins had been reduced much below the norm and that it had been largely through happenstance that the separation had been such that the AS355 pilot had been able to have continued their approach to the landing area. The Board agreed that there had been a risk of collision and assigned Risk Category B to this event (**CF10**).

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024140			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Regulations, Processes, Procedures and Compliance			

1	Human Factors	• ATM Regulatory Deviation	An event involving a deviation from an Air Traffic Management Regulation.	Regulations and/or procedures not fully complied with
	• Manning and Equipment			
2	Human Factors	• ATM Leadership and Supervision	An event related to the leadership and supervision of ATM activities.	
	• Situational Awareness and Action			
3	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
4	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			
5	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			
6	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			
7	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
	• See and Avoid			
8	Contextual	• Loss of Separation	An event involving a loss of separation between aircraft	Pilot flew into conflict
9	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots
	• Outcome Events			
10	Contextual	• Near Airborne Collision with RPAS	An event involving a near collision with a remotely piloted air vehicle	

Degree of Risk: B.

Safety Barrier Assessment[4]

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, having been notified of the Matrice 300 operation becoming active, the ATC Manager did not relay the information to the on-duty Ascot controller.

Manning and Equipment were assessed as **ineffective** because the actions of the ATC manager, as Supervisor, had not adequately managed the passage of information to the Ascot Tower controller.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the Ascot controller had not had situational awareness of the Matrice 300 operation becoming active.

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

Flight Elements:

Tactical Planning and Execution was assessed as **ineffective** because the Matrice 300 had flown through the helicopter approach track.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the pilot of the AS355 had not had situational awareness of the presence of the Matrice 300.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TAS equipment fitted to the AS355 would not have been expected to have detected the presence of the Matrice 300.

See and Avoid were assessed as **ineffective** because the pilot of the AS355 had not visually acquired the Matrice 300 until the moment of CPA.