

## Consolidated Drone/Balloon/Model/Unknown Object Summary Sheet for UKAB Meeting on 12<sup>th</sup> October 2022

Total	Risk A	Risk B	Risk C	Risk D	Risk E
13	2	6	4	1	0

Airprox Number	Date Time (UTC)	Aircraft (Operator)	Object	Location <sup>1</sup> Description Altitude	Airspace (Class)	Pilot/Controller Report Reported Separation Reported Risk	Comments/Risk Statement	ICAO Risk
2022177	12 Aug 22 1902	EMB190 (CAT)	Drone	5130N 00000W Poplar 1300ft	London/City CTR (D)	<p><b>The EMB190 pilot</b> reports on ILS approach to LCY RW09 when, at approximately 2NM from the runway, the First Officer saw a drone to the right side of the aircraft and slightly above. The Captain looked out the right window and upwards and also saw it, in the 2 o'clock position as it passed down the right-hand side. The drone appeared to be of a triangular/delta shape, was black/dark coloured and silhouetted against the background of the sky. It also had a number of yellowish/white coloured lights underneath. It was estimated to be about 1m wide. It was hard to tell if it was stationary or possibly moving westwards because they were flying eastwards at approximately 130KIAS. ATC were immediately informed of the sighting, with the drone at an altitude of 1300ft, and reported as an Airprox after landing. Airfield Ops requested details of the event and a statement was also give to LHR/LCY police.</p> <p><b>Reported Separation:</b> 100ft V/50m H <b>Reported Risk of Collision:</b> High</p> <p><b>The London/City controller</b> reports [EMB190 C/S] checked in on frequency and was cleared to land. At approximately 2 miles, the pilot reported seeing a drone on their right-hand side at about 1300ft. This was reported to airfield operations and then to the next landing aircraft. The [EMB190] pilot heard this and added some detail about the shape and appearance of the drone and said that they were discussing filing an Airprox. The information was put on the ATIS; the following aircraft did not report seeing the drone.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 5.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C

<sup>1</sup> Latitude and Longitude are usually only estimates that are based on the reported time of occurrence mapped against any available radar data for the aircraft's position at that time. Because such reported times may be inaccurate, the associated latitudes and longitudes should therefore not be relied upon as precise locations of the event.

Airprox Number	Date Time (UTC)	Aircraft (Operator)	Object	Location <sup>1</sup> Description Altitude	Airspace (Class)	Pilot/Controller Report Reported Separation Reported Risk	Comments/Risk Statement	ICAO Risk
2022180	13 Aug 22 1654	EC135 (HEMS)	Drone	5657N 00212W Stonehaven 400ft	Scottish FIR (G)	<p><b>The EC135 pilot</b> reports that they were tasked to Stonehaven, Aberdeenshire. The patient was located approximately 150m from the shoreline in the town centre. An area of the beach was identified as a suitable landing site and several orbits were conducted to ensure that the selected landing site had sufficient clearance from people further down the beach. Due to a bank of sea fog lying a few hundred metres offshore the orbits were conducted to the right, overflying the town centre. After the second orbit, a group of people were observed to be moving towards the identified landing site, so the beach area was then discounted as a suitable landing site. Then while turning right, a small dark grey quadcopter drone was observed by the pilot at the same level and very close to the aircraft. The aircraft was positively manoeuvred to the left, during which time the gong was heard and LIMIT on the FLI briefly seen. Distance from the drone was difficult to accurately assess, but they could clearly see the main body of the drone pointing at the helicopter, and the small vertical fins under the rotors. Therefore, it was estimated it to be less than 20m. An initial Airprox report was submitted to Aberdeen Radar (although no service was being given by them at this time), and the aircraft then landed in a park approximately 1km from the patient. The paramedics then made their way to the patient. After consulting the duty engineering manager, no over torque had occurred, and the aircraft was cleared to fly back to Aberdeen.</p> <p><b>Reported Separation:</b> 30ft V/20m H <b>Reported Risk of Collision:</b> High</p> <p><b>The Aberdeen controller</b> reports that the EC135 had departed Aberdeen Airfield to an incident near Stonehaven town. They had departed VFR and had requested and received a Basic Service outside controlled airspace. The EC135 had commenced a descent to the landing site and the pilot advised they would call again on lifting. The controller terminated the 'radar' service. Approximately, one minute later the pilot called on frequency to advise that they had had an Airprox with a drone, and that the drone had come within 40ft of the helicopter. The controller confirmed they had received the message and the pilot advised that they were continuing to land at the site.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 4, 7.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where safety had been much reduced below the norm to the extent that safety had not been assured.</p>	B

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2022182	15 Aug 22 1608	AW169 (HEMS)	Drone	5048N 00200W Wimborne Minster 1100ft	Bournemouth CTR (D)	<p><b>The AW169 pilot</b> reports that they were en-route to a tasking in Bournemouth. They were talking to Bournemouth Radar and had been cleared into Bournemouth airspace. On entering they started a descent from 1300ft to 1100ft. At 1100ft they spotted a drone out of the port window at the same level at a range of 30m. It was a black quadcopter with no lighting. The drone was immediately reported to Air Traffic as they were within Bournemouth CAS. They continued to the task without incident. Bournemouth ATC was later contacted by phone and given further details.</p> <p><b>Reported Separation:</b> 0ft V/30m H <b>Reported Risk of Collision:</b> Medium</p> <p><b>The Bournemouth controller</b> reports that the AW169 pilot called and requested to enter the zone from the NW to Kings Park, 3NM south of Bournemouth. A clearance was issued, and this was co-ordinated with the Tower. They had given an IFR departure aircraft a heading to deconflict with the AW169, and were also vectoring 2 inbound aircraft. As the AW169 was passing west of the airfield the pilot reported that a drone had just passed about 30m away and reported that they were at 1100ft and confirmed that they were over Kingston Lacy. The controller advised the Tower and they reported that they could see something in the location of the reported drone, but couldn't be certain that it was a drone. The first aircraft being vectored was advised about the drone and asked for their intentions. They requested to continue. The second aircraft, a FA20 was also advised and also elected to continue. An aircraft that had pushed back was held, and after co-ordination was offered RW08 for departure. A second aircraft also elected to depart from RW08. The traffic in the hold was at 4000ft and advised of the situation. They were delayed due to the 2 departures for RW08.</p> <p>No aircraft flew to the west of the airfield for 30min, after the last possible sighting at 1620. After speaking with the AW169 pilot after the event, they reported that the drone passed down their left-hand side and it appeared to be a quad-type drone. They advised that they would be filing an Airprox</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 7.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where safety had been much reduced below the norm to the extent that safety had not been assured.</p>	B

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2022184	13 Aug 22 1428	B737 (CAT)	Drone	5238N 00146W 3NM SW Litchfield 4100ft	Birmingham CTA (D)	<p><b>The B737 pilot</b> reports that during downwind approaching the turn onto base leg at ~4100ft, in the vicinity of Lichfield TV mast, a small UAS was seen on the left-hand side of the aircraft, approximately 200-300ft below. Clearly identifiable as a quadcopter style UAS. They immediately reported the sighting to ATC who subsequently informed airport operations in order to pass it on to West Midlands Police.</p> <p><b>Reported Separation:</b> 200-300ft V/NR H <b>Reported Risk of Collision:</b> NR</p> <p><b>The Birmingham controller</b> reports that the B737 was being vectored for left hand pattern for RW15. After being turned left [the pilot] reported sighting a "Mini UAV 300ft below". Aircraft was north of the Lichfield TV transmitter mast passing 4100ft descending. Subsequent aircraft were advised for next 30min and positioned right-hand downwind/base for RW15.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 5.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C
2022186	10 Aug 22 1914	A320 (CAT)	Drone	5138N 00031W Wraysbury reservoir 1200ft	London CTR (D)	<p><b>The A320 pilot</b> reports that a small quadcopter drone passed about 100ft below their left-hand side with approximately 100ft lateral separation. It was seen by both the FO and Captain. They were able to make out rotor blades in sunshine. It was reported to ATC on the Tower frequency. Location was about 1NM east of threshold 09R at 1200ft.</p> <p><b>Reported Separation:</b> 100ft V/100ft H <b>Reported Risk of Collision:</b> NR</p> <p><b>The Heathrow Tower Controller</b> reported that shortly after departure [the A320 pilot] reported a small black drone, 1NM east of 09R at 1200ft. It flew directly underneath the aircraft. Subsequent aircraft were informed but there were no further sightings.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 7.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where safety had been much reduced below the norm to the extent that safety had not been assured.</p>	B

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2022188	13 Aug 22 1429	B737 (CAT)	Drone	5236N 00155W Aldridge 3000ft	Birmingham CTA (D)	<p><b>The B737 pilot</b> reports that just prior to the turn onto final for RW15, a quadcopter UAS was sighted, close to the aircraft, 100-200ft below. The aircraft was to the North of Sutton Coldfield at ~3000ft. The sighting was reported to ATC who subsequently informed airport operations in order to pass it on to West Midlands Police.</p> <p><b>Reported Separation:</b> 100ft-200ft V/NR H <b>Reported Risk of Collision:</b> NR</p> <p><b>The Birmingham Controller</b> reported that the B737 pilot reported a UAV whilst on base leg "just below" them. The aircraft was northeast of Walsall passing 3400ft descending. Subsequent aircraft were advised for next 30 minutes and positioned right-hand downwind/base for RW15.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 7.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where safety had been much reduced below the norm to the extent that safety had not been assured.</p>	B
2022190	21 Aug 22 1934	DJI Mavic 2 Enterprise (Police)	Drone	5247N 00156W Colton 400ft	London FIR (G)	<p><b>The police drone pilot</b> reports they were operating in support of a police traffic operation. The drone was at 400ft or just under to comply with operating rules in Class G airspace. The drone was positioned over an arable farmers field just north of a road. After approximately an hour, and on the 4th flight, they noticed another drone appear next to theirs. It was similar in shape albeit smaller, perhaps a DJI mini or similar. As they started to move away the other drone was flown straight at the police drone. They initially held position because they realised that should there be a collision, the drones were not above anything of risk. As soon as the other drone had passed, they started to descend away from it. The drone continued to follow and behaved in an erratic manner. It was unlit but could clearly be seen. As they brought the police drone safely back to the field from which they were operating, the other drone stopped about 10m away and 10m above the main road. It hovered there for about 5sec whilst the observer signalled at it to move. It then retreated quickly away on apparently seeing them. They were both in full police uniform. They were unable to see where the drone went.</p> <p><b>Reported Separation:</b> 5ft V/0m H <b>Reported Risk of Collision:</b> High</p>	<p>In the Board's opinion the reported description of the object was sufficient to indicate that it was a drone.</p> <p><b>Applicable Contributory Factors:</b> 4, 7.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where safety had been much reduced below the norm to the extent that safety had not been assured.</p>	B

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2022191	21 Aug 22 1806	A320 (CAT)	Unk Obj	5127N 00005W Dulwich 4600ft	London TMA (A)	<p><b>The A320 pilot</b> reports that at 15NM from RW27L, whilst turning onto final the PM spotted a brown drone just off their right wing.</p> <p><b>Reported Separation:</b> 0ft V <b>Reported Risk of Collision:</b> High</p> <p><b>A NATS investigation</b> stated that the pilot reported passing a drone at 4600ft when they were approximately 15NM from touchdown and in the vicinity of London Heliport. The controller asked the pilot for a wind check after they had reported the drone, which the pilot reported as 010° with 2kt. The controller subsequently issued other inbounds in the vicinity with information on the drone. There were no associated primary or secondary contacts visible on the radar at the approximate time of the event.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were such that they were unable to determine the nature of the unknown object.</p> <p><b>Applicable Contributory Factors:</b> 4, 6.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where providence had played a major part in the incident and/or a definite risk of collision had existed.</p>	A
2022193	4 Aug 22 1300	F35 (Foreign Mil)	Orb shaped drone	5304N 00058E 2NM south Y70 FL180	London FIR (G)	<p><b>The F35 pilot</b> reports that 2 drones were sighted at around 18000ft. Each drone was engaged on aircraft radar and confirmed genuine. For each drone the flight lead made the decision to deviate early to avoid the indicated track. The flight passed within 2 miles horizontally of the drones and less than 1000ft below the drones. The first drone was visually dark in colour, 'orb shaped' and propeller driven. The second was seen to be a quad-copter shape with at least 2 propellers below the body of the drone. Both drones were clearly operating as powered aircraft in controlled flight as they were seen to be moving slightly to remain in position over the ground in the wind. Had the radar not detected the tracks the drones would have been directly in the track of the aircraft with less than 1000ft vertical clearance. At the speed of 400kt the aircraft had less than 40sec from radar detection to manoeuvre to avoid the drones.</p> <p><b>Reported Separation:</b> &lt;1000ft V/&lt;2NM H <b>Reported Risk of Collision:</b> Medium</p> <p><b>An RAF Investigation</b> stated that Swanwick Mil had not been notified of any drone activity in the location of the Airprox and, because the drone was not visible on the NATS radar, the Swanwick Mil controller was unable to pass any Traffic Information which would</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 4, 5.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C

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						<p>have aided the F35 pilot. However, the F35 pilot was able to detect the drone on their onboard radar and provide information to Swanwick Mil which was utilised to increase awareness for other airspace users.</p>		
2022194	4 Aug 22 1300	F35 (Foreign Mil)	Quad-copter drone	5304N 00058E 2NM south Y70 FL180	London FIR (G)	<p><b>The F35 pilot</b> reports that 2 drones were sighted at around 18000ft. Each drone was engaged on aircraft radar and confirmed genuine. For each drone the flight lead made the decision to deviate early to avoid the indicated track. The flight passed within 2 miles horizontally of the drones and less than 1000ft below the drones. The first drone was visually dark in colour, 'orb shaped' and propeller driven. The second was seen to be a quad-copter shape with at least 2 propellers below the body of the drone. Both drones were clearly operating as powered aircraft in controlled flight as they were seen to be moving slightly to remain in position over the ground in the wind. Had the radar not detected the tracks the drones would have been directly in the track of the aircraft with less than 1000ft vertical clearance. At the speed of 400kt the aircraft had less than 40sec from radar detection to manoeuvre to avoid the drones.</p> <p><b>Reported Separation:</b> &lt;1000ft V/&lt;2NM H <b>Reported Risk of Collision:</b> Medium</p> <p><b>An RAF Investigation</b> stated that Swanwick Mil had not been notified of any drone activity in the location of the Airprox and, because the drone was not visible on the NATS radar, the Swanwick Mil controller was unable to pass any Traffic Information which would have aided the F35 pilot. However, the F35 pilot was able to detect the drone on their onboard radar and provide information to Swanwick Mil which was utilised to increase awareness for other airspace users.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 4, 5.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C

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2022212	29 Aug 22 1202	A319 (CAT)	Unk Obj	5120N 00022W 4NM NE OCK 5500ft	London TMA (A)	<p><b>The A319 pilot</b> reports that they were flying the GASGU2J standard instrument departure, passing 5500ft, approximately 4NM west of OCK at 250kts when they saw what looked like a drone pass close down their right-hand side, about 100ft below.</p> <p><b>Reported Separation:</b> 100ft V / NR H <b>Reported Risk of Collision:</b> NR</p> <p><b>The Heathrow Radar Controller reports that the</b> [the pilot of the A319] reported a drone, approximately. 100ft on their right-hand side, 3NM NNE of OCK, at 6000ft. The pilot was unable to give a visual description, as the sighting was too brief. They informed the Heathrow Tower controller.</p> <p><b>NATS Safety Investigations</b> reviewed the radar at the time the pilot of [the A319] reported the sighting, however, no radar contacts were visible. It has been estimated that the UAS was at 5200ft.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were such that they were unable to determine the nature of the unknown object.</p> <p><b>Applicable Contributory Factors:</b> 4, 6.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where safety had been much reduced below the norm to the extent that safety had not been assured.</p>	B
2022217	19 Sep 22 1236	B787 (CAT)	Drone	5128N 00030W IVO Heathrow 900ft	London CTR (D)	<p><b>The B787 pilot</b> reports that at 900ft after take-off, a yellow and black drone was seen passing at the same level, within the aircraft wingspan on the right-hand side. The FO saw it clearly and thought it was close enough to go down the right-hand engine. The autopilot was engaged and remained so. ATC were informed. The drone was around 0.7 to 1.0m wide.</p> <p><b>Heathrow ATC</b> reports that the pilot reported the drone sighting to ATC on the frequency and the police were subsequently informed. There were no other drone sightings reported by other pilots. No drone activity had been approved by ATC.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 7.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where providence had played a major part in the incident and/or a definite risk of collision had existed.</p>	A



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2022222	9 Aug 22 2000	A320 (CAT)	Unk Obj	5438N 00548W Holywood, NI 4000ft	Belfast TMA (D)	<p>The <b>A320 pilot</b> reports that they were on approach into Belfast at 4000ft on heading 320°. Somewhere between 2 and 5NM left of the centreline for RW25, the captain spotted something passing the left wing. It was dark in colour, it didn't look like a bird or a balloon and it didn't have lights so they thought it was probably a drone. It passed close to the wingtip.</p> <p><b>Reported Separation:</b> NR <b>Reported Risk of Collision:</b> NR</p>	<p>In the Board's opinion the reported altitude and/or description of the object were such that they were unable to determine the nature of the unknown object.</p> <p><b>Applicable Contributory Factors:</b> 4, 5.</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where there was insufficient information to make a sound judgement of risk.</p>	D

## Relevant Contributory Factor (CF) Table

CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Flight Elements</b>				
<b>• Regulations, Processes, Procedures and Compliance</b>				
1	Human Factors	• Flight Crew ATM Procedure Deviation	An event involving the drone operator deviating from applicable Air Traffic Management procedures	The drone operator did not comply with regulations by flying above 400ft and/or in controlled airspace/FRZ without clearance
<b>• Tactical Planning and Execution</b>				
2	Human Factors	• Action Performed Incorrectly	Events involving the drone operator performing the selected action incorrectly	The drone operator was flying above 400ft without clearance.
3	Human Factors	• Airspace Infringement	An event involving an infringement / unauthorized penetration of a controlled or restricted airspace	The drone pilot was flying in controlled airspace/FRZ without clearance.
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
4	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, generic, or late Situational Awareness
<b>• See and Avoid</b>				
5	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft
<b>• Outcome Events</b>				
6	Contextual	• Near Airborne Collision with Other Airborne Object	An event involving a near collision by an aircraft with an unpiloted airborne object (unknown object or balloon)	
7	Contextual	• Near Airborne Collision with RPAS	An event involving a near collision with a remotely piloted air vehicle (drone or model aircraft)	