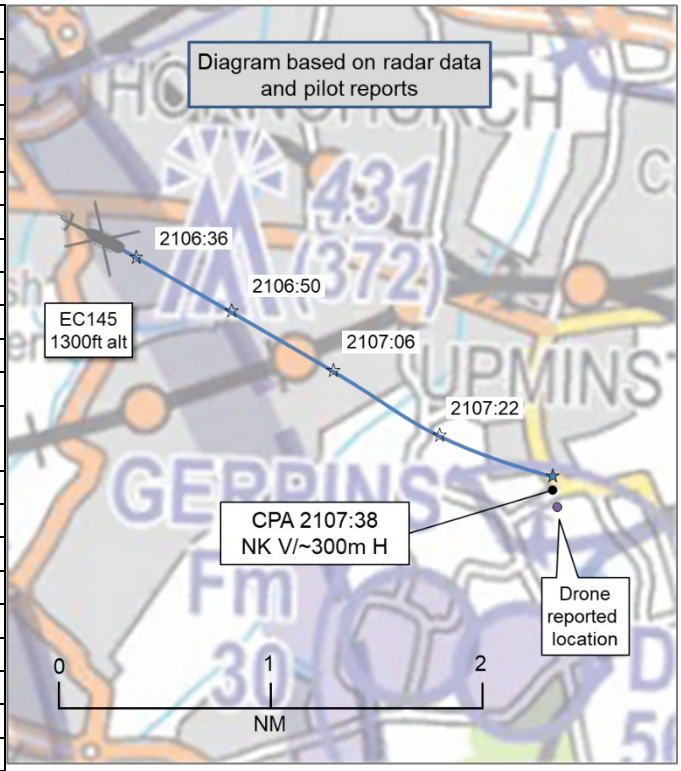
AIRPROX REPORT No 2022170

Date: 05 Aug 2022 Time: 2108Z Position: 5132N 00014E Location: 1NM S Upminster

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	EC145	DJI Mavic
Operator	NPAS	Civ UAS
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VLOS
Service	Basic	N/A
Provider	Heathrow SVFR	N/A
Altitude/FL	1300ft	NK
Transponder	A, C, S+	Not fitted
Reported		
Colours	Blue, Yellow	Dark Grey
Lighting	Nav, Red strobe, HISL	Nav, Anti-col, Beacon HISL
Conditions	VMC	VMC
Visibility	>10km	5-10km
Altitude/FL	1200ft	800ft
Altimeter	QNH (1025hPa)	RPS (NK hPa)
Heading	115°	N/A
Speed	120kt	Stationary
ACAS/TAS	TCAS I	Not fitted
Alert	None	N/A
Separation at CPA		
Reported	100ft V/100m H	208ft V/200m H
Recorded	NK V/~300m H	



THE EC145 PILOT reports that they were tasked by the National Police Air Service Control Centre (NPAS CC) to attend a brush fire in the vicinity of Harwood Hall by the Metropolitan Police Service (MPS) on behalf of the London Fire Brigade (LFB). The NPAS CC informed them shortly after take-off that an LFB drone was also in attendance at the scene. It was questioned about the maximum operating altitude of the drone and they were assured it was operating under standard rules (not above 400ft AGL), which implied no altitude exemption was stated from the LFB to the NPAS CC. Knowing the ground level was not above 100ft (60-70ft in this area), no separation issues were foreseen at this point. The police staff shift changeover was underway and this meant that there was no police presence at the site of the fire. All communications were routed via NPAS CC who had to coordinate with the LFB via phone. At no point did the aircraft have direct communication with the drone operator. They arrived on scene at approximately 1250ft AMSL and immediately entered a right-hand orbit as the aircraft camera is on the right-hand side, to give an overview as requested by the LFB. While the police crew undertook their tasks, they tried searching for the drone location which they estimated to be approximately 700-800ft below them in the centre of their orbit over the site. Approximately halfway around the first orbit, both they and the rear-seat Police Officer (who both sit on the right-hand side of the aircraft), saw the drone, with its white strobe light, pass approximately 100m away from the right-hand side of the aircraft. They estimated it to be approximately 100-200ft below their altitude and a climb was immediately initiated. At roughly this time, the drone did seem to start descending and ended up at an estimated height of approximately 400ft AGL. 20-30sec after the Airprox, the camera operator was able to record the drone descending on their camera. Shortly after this, NPAS CC stated that there was a drone in the area (for which they had already received this information from them). They asked NPAS CC to clarify with LFB their maximum height, and it was re-iterated that they would not be above 400ft AGL. They asked NPAS CC to clarify if they had been above 400ft AGL at any point and they stated they had not. Whilst this was night-time and altitude/height estimations are approximate, all 3 crew members onboard were absolutely certain that the drone, at the point of Airprox, was well in

excess of 400ft AGL and likely to be in the region of 900ft-1000ft AGL. Upon leaving this task, NPAS CC contacted them on behalf of LFB to ask if they were going back to the site, as they were looking to fly their drone up to 1000ft AGL. It is their personal opinion that this is what they were doing as they arrived on scene in the first instance.

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

THE DRONE PILOT reports that, as per standard protocol, even though in Class G airspace, they always inform NPAS and HEMS of their drone activity. The ongoing agreement is normally that if an NPAS unit heads towards one of the incidents they are attending after notification, the Ops desk normally phones them to let them know that NPAS are coming so they can ensure they are landed or out the way by the time NPAS arrives. On this specific occasion, the Ops desk did not phone them. They always use max AGL of 400ft however, on this one occasion, they used their CAA exemption to elevate to 800ft to view the entire incident, as it had by this time spread over a large area. This was an express command from the incident commander. This incident was big enough to be attended by over 15 fire appliances. When they became visual with the NPAS helicopter they initiated an immediate descent.

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

THE HEATHROW SVFR CONTROLLER reports that the pilot did not report the event on their frequency at the time and they have no recollection of the event in question.

Factual Background

The weather at London City was recorded as follows:

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METAR EGLC 052050Z AUTO 34005KT 320V020 9999 NCD 19/07 Q1026
METAR EGLC 052120Z AUTO 35005KT 310V030 9999 NCD 19/06 Q1026
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Analysis and Investigation

LFB internal review.

Following an internal review, the LFB has taken the following actions:

- Removed the option to use the Emergency Services Exemption whilst working with the CAA to review the exemption. (Currently operating solely under normal UAS flight rules (400ft AGL).
- Reviewed and implemented improved notification dialogue with NPAS.
- Liaised with NPAS London to ensure the ops desk notifications are passed on to crew.
- Continue to hold interoperability meetings with NPAS and HEMS operators.

NATS Safety Investigations

NATS Safety Investigations completed an investigation into this event which is summarised below.

[The EC145 was a] National Police Air Service helicopter operating to the east of the London City Zone. The pilot contacted the Heathrow (LL) SVFR controller at 2103:11 and requested a Basic Service outside controlled airspace. The pilot of [the EC145] did not report the encounter on the LL SVFR frequency, therefore no further information is available.

Analysis of the radar by Safety Investigations indicated that there were no associated primary or secondary contacts visible on radar at the approximate time of the event (Figure 1).

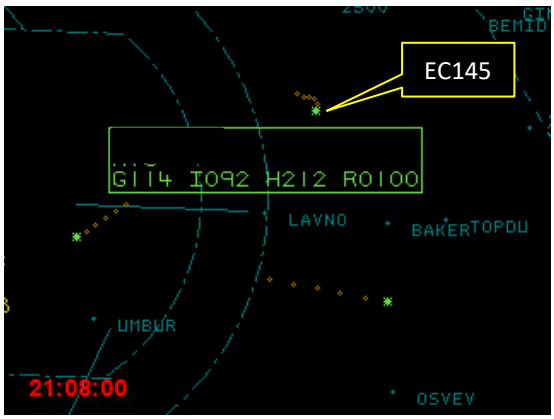


Figure 1.

The estimated height of the UAS could not be determined as no contact was displayed on radar. The pilot report suggested the drone was at approximately 1000ft altitude.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and the EC145 was detected and identified using Mode S data. The reported drone position was plotted and the track of the EC145 was overlaid and the CPA was measured to be approximately 300m horizontally, which occurred at the time the EC145 was observed to commence their orbit. No vertical separation has been measured due to no altitude information for the drone.

The EC145 and DJI Mavic drone 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] 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.[2]

Comments

NPAS

Crews would not normally expect UAS to be operating above 400ft unless NOTAM'd. Deconfliction with emergency service drones is a known risk and NPAS are currently trialling use of [specific communications equipment] to facilitate direct communication between Police aircraft and Emergency Service drone operators with the aim of being able to agree deconfliction and facilitate simultaneous operations.

Summary

An Airprox was reported when a EC145 and a DJI Mavic drone flew into proximity 1NM south of Upminster at 2108Z Friday 5th August 2022. The EC145 pilot was operating under VFR in VMC, the drone pilot in VLOS. The EC145 pilot was in receipt of a Basic Service from Heathrow SVFR.

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.

[1] (UK) SERA.3205 Proximity.
[2] EASA Part UAS.OPEN.060 Responsibilities of the remote pilot (2)(b).

The Board first discussed the actions of the EC145 pilot and members noted that they had become aware of the drone activity and had attempted to gain more information regarding its type of operation and vertical limit. Members agreed that not all of the information required by the EC145 pilot had been available, including details regarding the drone operating under an exemption from the vertical restriction of 400ft agl (**CF3**), and members agreed that other methods of obtaining this information had also been unavailable, namely direct communication with police officers and/or the drone operator at the scene. Members noted that the EC145 had been equipped with TCAS, however, this had been incompatible with the drone as it had not been equipped with any form of EC (**CF5**). The Board went on to agree that the EC145 pilot had had an incomplete picture regarding the drone operation and therefore had inaccurate Situational Awareness (**CF4**) which, when the pilot observed the drone operating higher and in closer proximity to their aircraft than expected, had caused them some concern (**CF6**).

Next, members discussed the actions of the drone pilot and noted that whilst they had notified the EC145 operator of their activity, they had received no notification regarding the inbound EC145 and therefore had not had any awareness of it prior to sighting it (**CF4**). The Board again discussed EC equipment and a pilot member stated that bespoke drone EC equipment is available and members agreed that commercial drone operators should consider the addition of such equipment to their aircraft, especially if intending to operate either at night or above 400ft agl.

The Board then considered the involvement of the ground elements in this event and first examined the involvement of the Heathrow SVFR controller. Members agreed that the EC145 pilot had been under a Basic Service and so the controller had not been required to monitor the flight (**CF2**). A controller member stated that some drone operators, when operating within or close to controlled airspace, notify the ATSU if they have an exemption and intend to operate above 400ft agl. The Board deemed the NPAS and LFB operation departments and control centres to be ground elements in this event and members agreed that the communication between the agencies and the aircraft operators had been sub-optimal (**CF1**). Members had been encouraged by the steps taken by the LFB in identifying these and working with partner agencies to facilitate an improvement in procedures.

Finally, the Board considered the risk involved in this Airprox. Members noted that the pilot of the drone had, in accordance with regulation, discontinued their flight when they had become visual with the EC145; however, prior to that they had not had any awareness of its presence. Although the EC145 pilot had had awareness of the drone operation, this had been inaccurate. The Board agreed that the actions of the drone pilot and the separation that had existed between the aircraft at the CPA had meant that there had been no risk of collision, but that safety had been degraded. Consequently, the Board assigned a Risk Category C to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022170			
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	Contextual	• ANS Flight Information Provision	Provision of ANS flight information	The ATCO/FISO was not required to monitor the flight under a Basic Service
	Flight Elements			
	• Tactical Planning and Execution			
3	Organisational	• Flight Planning Information Sources	An event involving incorrect flight planning sources during the preparation for a flight.	
	• Situational Awareness of the Conflicting Aircraft and Action			

4	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			
5	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			
6	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

Degree of Risk: C

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 communications between the agencies involved to facilitate interoperability had been insufficient.

Situational Awareness of the Confliction and Action were assessed as **not used** because when providing a Basic Service, the controller is not required to monitor the flight.

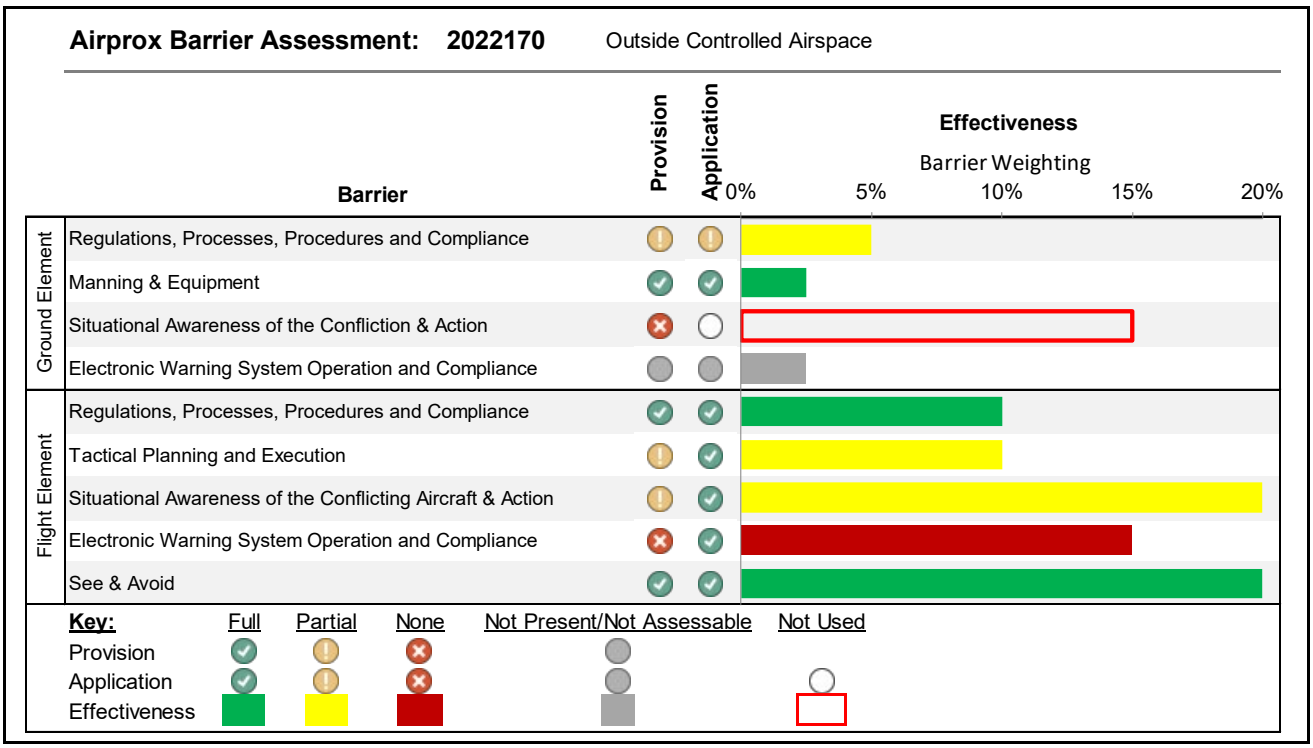
Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because information regarding the operating area of the drone had not been available to the EC145 pilot.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the drone pilot had not had any prior awareness of the arrival of the EC145 and the EC145 pilot had an inaccurate mental model regarding the maximum operating altitude of the drone.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TCAS system carried on the EC145 had been incompatible with, and therefore unable to detect, the drone.

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


Airprox Barrier Assessment: 2022170
Outside Controlled Airspace
Barrier
Provision
Application
Effectiveness
Barrier Weighting
0%
5%
10%
15%
20%
Ground Element
Regulations, Processes, Procedures and Compliance
Manning & Equipment
Situational Awareness of the Confliction & Action
Electronic Warning System Operation and Compliance
Flight Element
Regulations, Processes, Procedures and Compliance
Tactical Planning and Execution
Situational Awareness of the Conflicting Aircraft & Action
Electronic Warning System Operation and Compliance
See & Avoid
Key:
Full
Partial
None
Not Present/Not Assessable
Not Used
Provision
Application
Effectiveness