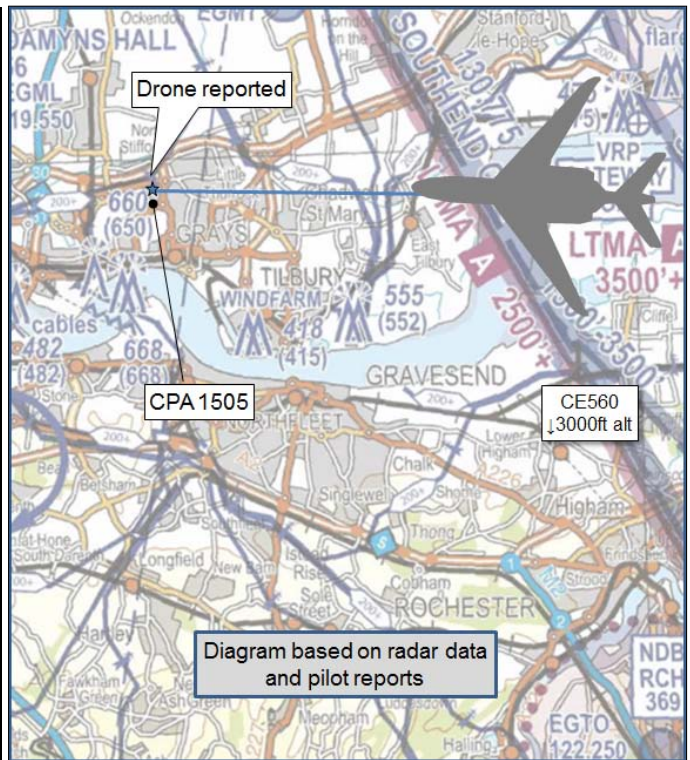


**AIRPROX REPORT No 2016119**

Date: 25 Jun 2016 Time: 1505Z Position: 5129N 00018E Location: App to Biggin Hill

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

Recorded	Aircraft 1	Aircraft 2
Aircraft	CE560	Drone
Operator	CAT	Unknown
Airspace	LTMA	
Class	A	A
Rules	IFR	
Service	Radar Control	
Provider	Thames	
Altitude/FL	3000ft	
Transponder	A, C, S	
<b>Reported</b>		
Colours	White, Red, Grey	
Lighting		
Conditions	IMC	
Visibility	10km	
Altitude/FL	3000ft	
Altimeter	QFE (1017hPa)	
Heading	260°	
Speed	180kt	
ACAS/TAS	TCAS II	Unknown
Alert	None	
<b>Separation</b>		
Reported	20ft V/10m H	
Recorded		NK



**THE CE560 PILOT** reports that they were taking radar vectors for weather avoidance and had a high cockpit workload. The PM visually acquired a contact on the nose at a range of about 1/2nm, and estimated it to be below. He made the PF, who was in the right-hand seat, aware and within 2 seconds of the PF acquiring the contact (and 5 seconds from when the PM had first seen it), a drone passed down the right-hand-side of the aircraft, 20ft below and 30ft to the right of the cockpit position, therefore only just beyond the wing-span. The object was a day-glo orange drone with 4 rotors and an under-slung camera housing with a 'fisheye' lens bubble, estimated to be about 1 cubic ft. It could have been hovering, although it looked to be slowly drawing to the right.

He assessed the risk of collision as 'High'.

**The drone operator could not be traced.**

**THE THAMES RADAR CONTROLLER** reports that the pilot of the CE560 reported passing a drone in close proximity at 3000ft. The details were passed to Kent police.

**Factual Background**

The weather at Biggin Hill was recorded as follows:

METAR EGKB 251450Z 22010KT 190V260 9999 SCT025 16/13 Q1017=  
 METAR EGKB 251520Z 23009KT 190V260 9999 VCSH SCT020CB 17/12 Q1016=

## UKAB Secretariat

The Air Navigation Order 2009 (as amended), Article 138<sup>1</sup> states:

A person must not recklessly or negligently cause or permit an aircraft to endanger any person or property.

Article 166, paragraphs 2, 3 and 4 state:

(2) The person in charge of a small unmanned aircraft may only fly the aircraft if reasonably satisfied that the flight can safely be made.

(3) The person in charge of a small unmanned aircraft must maintain direct, unaided visual contact with the aircraft sufficient to monitor its flight path in relation to other aircraft, persons, vehicles, vessels and structures for the purpose of avoiding collisions.’

(4) The person in charge of a small unmanned aircraft which has a mass of more than 7kg excluding its fuel but including any articles or equipment installed in or attached to the aircraft at the commencement of its flight must not fly the aircraft

- (a) in Class A, C, D or E airspace unless the permission of the appropriate air traffic control unit has been obtained;
- (b) within an aerodrome traffic zone ...; or
- (c) at a height of more than 400 feet above the surface unless it is flying in airspace described in sub-paragraph (a) or (b) and in accordance with the requirements for that airspace.

In addition, the CAA has published regulation regarding First Person View (FPV) drone operations which limit this activity to drones of less than 3.5kg take-off mass, and to not more than 1000ft<sup>2</sup>.

## Summary

An Airprox was reported when a CE560 and a drone flew into proximity at 1505 on Saturday 25<sup>th</sup> June 2016. The CE560 pilot was operating under IFR in IMC and in receipt of a Radar Control Service from Thames Radar. The drone operator could not be traced.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available consisted of reports from the CE560 pilot, radar photographs/video recordings, and a report from the air traffic controllers involved.

There are no specific ANO regulations limiting the maximum height for the operation of drones that weigh 7kg or less other than if flown using FPV (with a maximum weight of 3.5kg) when 1000ft is the maximum height. Drones weighing between 7kg and 20kg are limited to 400ft unless in accordance with airspace requirements. Notwithstanding, there remains a requirement to maintain direct, unaided visual contact with the aircraft sufficient to monitor its flight path in relation to other aircraft, persons, vehicles, vessels and structures for the purpose of avoiding collisions. CAP 722 gives guidance that, within the UK, visual line of sight (VLOS) operations are normally accepted to mean a maximum distance of 500m [1640ft] horizontally and 400ft [122m] vertically from the Remote Pilot.

Neither are there any specific ANO regulations limiting the operation of drones in controlled airspace if they weigh 7kg or less other than if flown using FPV (with a maximum weight of 3.5kg) when they must not be flown in Class A, C, D or E, or in an ATZ during notified hours, without ATC permission. Drones weighing between 7kg and 20kg must not be flown in Class A, C, D or E, or in an ATZ during notified hours, without ATC permission. CAP722 gives guidance that operators of drones of any

<sup>1</sup> Article 253 of the ANO details which Articles apply to small unmanned aircraft. Article 255 defines ‘small unmanned aircraft’. The ANO is available to view at <http://www.legislation.gov.uk>.

<sup>2</sup> ORS4 No. 1168 Small Unmanned Aircraft – First Person View (FPV) Flying available at: [ORS4 No 1168](#).

weight must avoid and give way to manned aircraft at all times in controlled Airspace or ATZ. CAP722 gives further guidance that, in practical terms, drones of any mass could present a particular hazard when operating near an aerodrome or other landing site due to the presence of manned aircraft taking off and landing. Therefore, it strongly recommends that contact with the relevant ATS unit is made prior to conducting such a flight.

Notwithstanding the above, all drone operators are also required to observe ANO 2016 Article 94(2) which requires that the person in charge of a small unmanned aircraft may only fly the aircraft if reasonably satisfied that the flight can safely be made, and the ANO 2016 Article 241 requirement not to recklessly or negligently cause or permit an aircraft to endanger any person or property. Allowing that the term 'endanger' might be open to interpretation, drones of any size that are operated in close proximity to airfield approach, pattern of traffic or departure lanes, or above 1000ft agl (i.e. beyond VLOS (visual line of sight) and FPV (first-person-view) heights), can be considered to have endangered any aircraft that come into proximity. In such circumstances, or if other specific regulations have not been complied with as appropriate above, the drone operator will be judged to have caused the Airprox by having flown their drone into conflict with the aircraft.

The Board noted that the drone was operating at 3000ft and therefore beyond practical VLOS conditions. Also, in flying as it was within Class A airspace without the permission of Swanwick ATC, the Board considered that the drone operator had endangered the CE560 and its occupants. Therefore, in assessing the cause, the Board agreed that the drone had been flown into conflict with the CE560. Turning to the risk, although the incident did not show on the NATS radars, the Board noted that the pilot had estimated the separation to be 20ft below the aircraft and 30ft horizontally, just beyond the wing-tip and that there was no time to take any avoiding action. Acknowledging the difficulties in judging separation visually without external references, the Board considered that the pilot's estimate of separation, allied to his overall account of the incident, portrayed a situation where a collision had only been narrowly avoided and chance had played a major part; they therefore determined the risk to be Category A.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: The drone was flown into conflict with the CE560.

Degree of Risk: A.