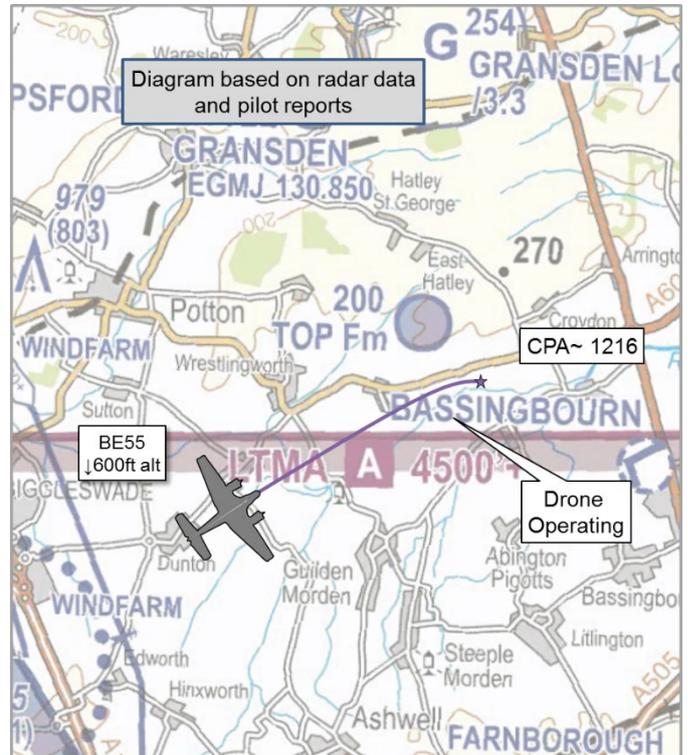


## AIRPROX REPORT No 2018069

Date: 03 May 2018 Time: 1216Z Position: 5206N 00007W Location: N Guilden Morden

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	eBee SQ UAS	BE55
Operator	Civ Comm	Civ Pte
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	None
Altitude/FL	NK	600ft
Transponder	Not fitted	A, C
Reported		
Colours	Black	Green, White
Lighting	Nil	Strobes
Conditions	VMC	VMC
Visibility	>10km	NK
Altitude/FL	360ft	NK
Altimeter	N/A	NK
Heading	200°	NK
Speed	25kt	NK
ACAS/TAS	Not fitted	Unknown
Separation		
Reported	100ft V/200m H	Not Seen
Recorded	NK	



**THE DRONE OPERATOR** reports flying his 'eBee SQ' drone at 360ft VLOS, in accordance with his company Operations Manual and under CAA permissions for commercial operations. He saw a light-aircraft flying at low altitude (400ft or possibly lower), heading north towards the field that he was surveying at the time. He immediately initiated an emergency descent, and at the same time the pilot banked to the left avoiding the field, possibly because he saw the drone he thought. Although the drone operator had been keeping a good lookout for aircraft, he saw the light-aircraft late, possibly because the engine was idling. Once the aircraft had banked to the left the engine rpm increased, although the aircraft didn't appear to climb. He believed the aircraft may have been undertaking a practice emergency.

He assessed the risk of collision as 'Low'.

**THE BE55 PILOT** reports that he was on a VFR flight to a private strip (Top Farm) in Cambridgeshire. The flight was flown at 1500ft, descending to 500ft for finals to the private site. He did not see the drone. He was listening out on Safety Comm and opined that if drones were being operated close to airfields, then the operator should be equipped with a 2-way radio.

### **Factual Background**

The weather at Cambridge was recorded as follows:

METAR EGSC 031220Z 25007KT 9999 SCT040 14/04 Q1019=

## Analysis and Investigation

### UKAB Secretariat

The BE55 can be seen on the NATS radars approaching the vicinity of the drone at 1216:06 (Figure 1). Transiting at 1500ft, the pilot descends shortly afterwards (Figure 2) and, at 1217:34 turns onto west to make an approach to his private strip. The drone cannot be seen on the radar.

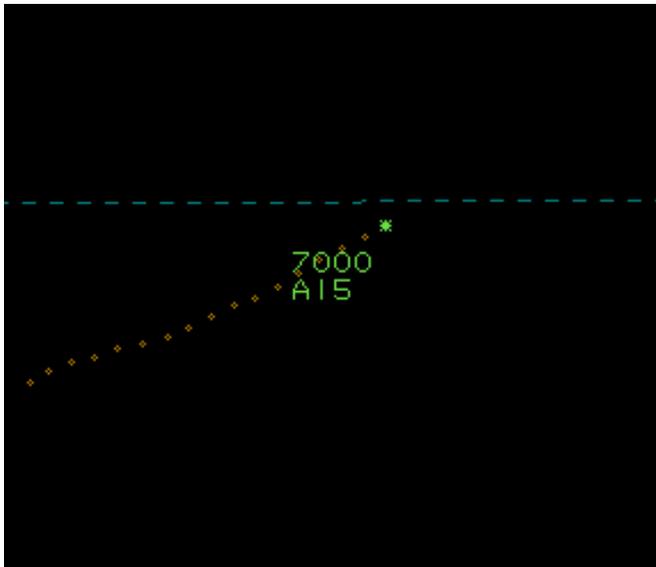


Figure 1: BE55 Squawk 7000, 1216:06

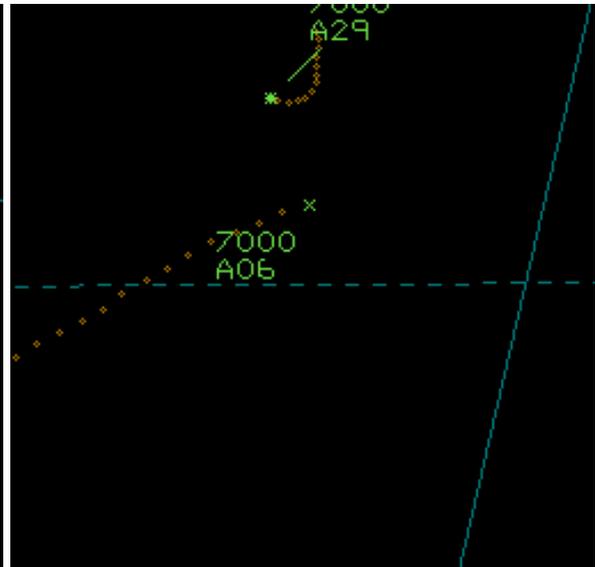


Figure 2 1216:44

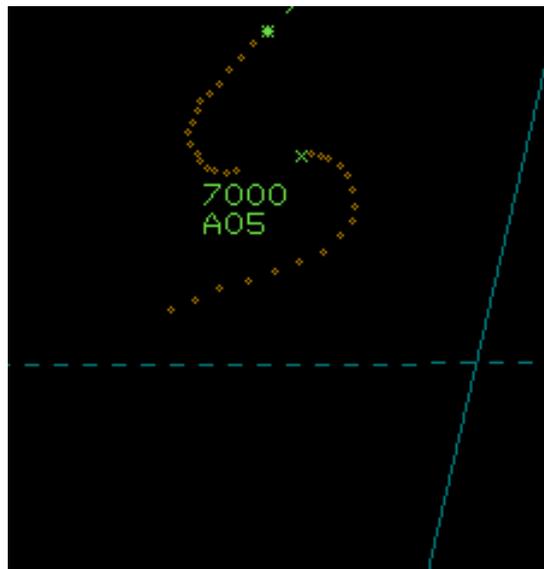


Figure 3 1217:34

The drone operator was entitled to operate in that position and at that height, as was the BE55 pilot who was descending to land at an airfield.

A CAA web site<sup>1</sup> provides information and guidance associated with the operation of Unmanned Aircraft Systems (UASs) and Unmanned Aerial Vehicles (UAVs). As part of this information, CAP722 (UAS Operations in UK Airspace) and CAP658 (Model Aircraft: A Guide to Safe Flying) provide comprehensive guidance. Additionally, the CAA has published Drone Aware<sup>2</sup> which states the responsibilities for flying unmanned aircraft. This includes the following comment:

<sup>1</sup> [www.caa.co.uk/uas](http://www.caa.co.uk/uas)

<sup>2</sup> CAP 1202

'You are responsible for avoiding collisions with other people or objects - including aircraft. Do not fly your unmanned aircraft in any way that could endanger people or property. It is illegal to fly your unmanned aircraft over a congested area (streets, towns and cities). ... , stay well clear of airports and airfields'.

The drone operator reported operating his drone below 400ft, complying with the requirements above.

## Comments

### Drone Operating Company

Our safety advisors have encouraged the submission of this Airprox to highlight the conflicting risk between VLOS UAS traffic below 400ft and GA traffic operating at, or perhaps a fair bit below their minimum height of 500ft and especially all other low-level traffic operating within the low-level system.

The remote pilot, a company contractor, displayed good airmanship and integrity in reporting this incident immediately. Becoming aware of the aircraft as it was almost overhead highlights the importance of a complete 360° scan and that auditory cues cannot be relied upon for initial sensing of low-level aircraft. The remote pilot's immediate actions were exemplary and all company remote pilots will be reminded that low-flying traffic may present nil auditory cues and emergency actions should be practised to ensure that their reactions are as good as those demonstrated in this case.

## Summary

An Airprox was reported when a drone and a BE55 flew into proximity near Top Farm strip at 1216hrs on Thursday 3rd May 2018. The drone operator was operating at 360ft under VLOS conditions. The BE55 pilot was operating under VFR in VMC without an ATS as he made an approach to Top Farm.

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

Information available consisted of reports from the drone operator and the pilot of the BE55, and radar photographs/video recordings.

The Board first looked at the actions of the drone operator. They questioned his pre-flight planning and wondered whether he was aware that Top Farm strip was near to his operating area. In that respect, members wondered whether he was carrying an aviation chart with him when operating his commercial drone (as pilots are required to do), because although Top Farm is clearly marked on the aviation charts, he obviously didn't realise that it was there. He was surprised to see an aircraft flying so low in the vicinity of his drone, when in fact the BE55 was descending onto a base leg to land at the strip. That being said, once he saw the BE55, members commended him for reacting quickly to ensure adequate separation between the two air-systems.

For his part, the BE55 pilot had no knowledge that the drone was operating there and would have been focusing on integration into the visual circuit and his approach to land. Furthermore, he would be looking to his left for the airfield at the time and so was unlikely to see a small drone to his right and below him.

In determining the cause of the Airprox the Board agreed that both the BE55 pilot and the drone operator were entitled to operate where they were, although there were questions as to the drone operator's awareness of Top Farm and his requirement to stay well clear of airports and airfields so as not to endanger other people and to avoid collisions with aircraft. That being said, his operating site was in the region of 1nm south of the strip and so it was a finely balanced judgement. As a result, the Board agreed that the incident was best described as a conflict in Class G, resolved by the drone operator. Based on the drone operator's reported separation and description of the incident, the Board assessed the risk as Category C; safety had been degraded, but there had been no risk of collision.

During the course of the investigation, it was noted that Top Farm was not evident as an aviation hazard on the Drone Assist App without zooming in to a high resolution to show ‘ground hazards’. New legislation will come into force on the 30<sup>th</sup> July restricting drone operators to being outside 1km of the boundary of an airfield with an ATZ but, in order to assist drone pilots with their risk assessments, Board members thought that all airfields and strips that are marked on aviation charts should also be clearly marked on Drone Assist as at least ‘Areas of Increased Risk’ lest their presence be overlooked if drone pilots do not zoom in to the appropriate level on the map. They therefore resolved to make a recommendation to NATS that Drone Assist should display all minor airfields more obviously. The Board also resolved to recommend that the CAA re-emphasise that commercial drone operators are required to have access to a current VFR chart before commencing operations.

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

Cause: A conflict in Class G resolved by the drone pilot.

Degree of Risk: C.

- Recommendations:
1. Drone Assist should display all minor airfields more obviously.
  2. The CAA re-emphasise that drone operators are required to have access to a current VFR chart before commencing operations.

Safety Barrier Assessment<sup>3</sup>

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

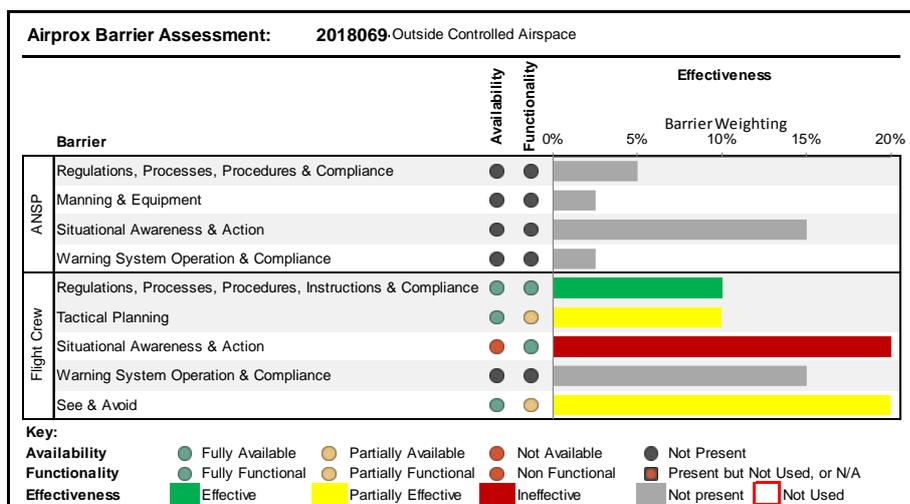
**Flight Crew:**

**Tactical Planning** was assessed as **partially effective** because the drone operator should have known about the private strip just to the north of his operating area.

**Situational Awareness and Action** were assessed as **ineffective** because neither operator knew about the other until the drone operator saw the BE55.

**Warning System Operation and Compliance** were not available.

**See and Avoid** was assessed as **partially effective** because the drone operator took emergency avoidance action.



<sup>3</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).