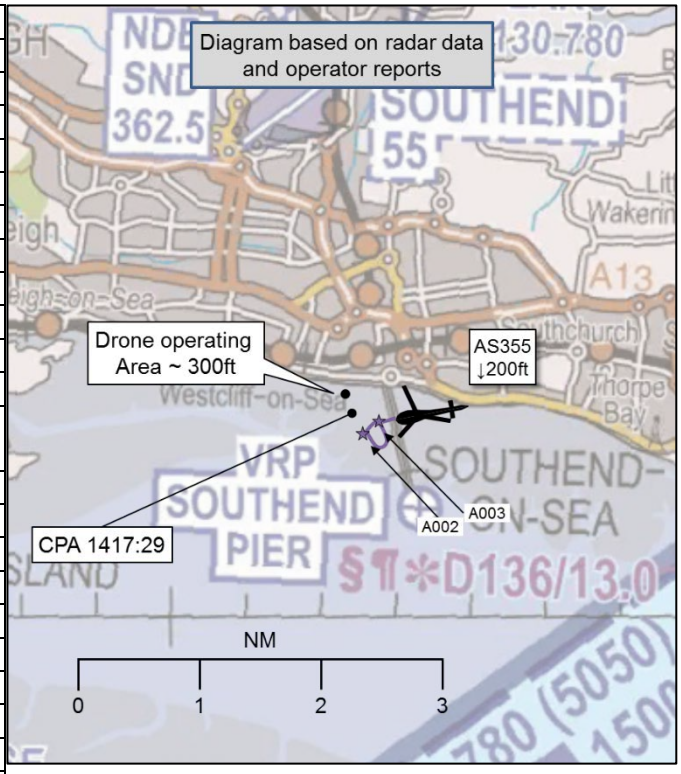
AIRPROX REPORT No 2020056

Date: 25 Jun 2020 Time: 1417Z Position: 5131N 00042E Location: Southend

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DJI Phantom UAS	AS355
Operator	Civ UAS	Civ Comm
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	Radar Control
Provider	600ft	Southend
Altitude/FL	NK	200ft
Transponder	Not Fitted	A, C, S
Reported		
Colours	White	Silver
Lighting	Red Nav, Rear LEDs	NR
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	300ft	'Various'
Altimeter	QFE	QNH (1015hPa)
Heading	040°	'Various'
Speed	5kt	NK
ACAS/TAS	Not fitted	Not fitted
Alert	N/A	N/A
Separation		
Reported	NK V/150m H	Not seen
Recorded	NK	



THE UAS OPERATOR reports operating the UAS in accordance with the ANO and with approval from Southend ATC whilst in the FRZ (ATZ), the drone was operating above the water along the Southend seafront. Whilst operating the UAS at around 350m away from the remote pilot, the remote pilot and 2 spotters heard a helicopter. The UAS was held in position whilst visual line of sight (VLOS) was maintained at all times. The helicopter appeared from east to the west, travelling slowly (approx 50kt) at a similar height of 300ft AMSL. The UAS was immediately operated into Sports Mode (45mph) away from the helicopter. The helicopter continued on its course. The UAS returned to capture the shot, the helicopter and UAS were both in VLOS of the remote pilot. The helicopter made a 180° turn and flew back towards position of UAS at a lower height than the UAS, over the water, now heading from west to east. The UAS was again moved in Sports Mode back to overhead the remote pilot, held in position and a visual inspection carried out to ensure the helicopter had flown away. When visual confirmation was maintained that the helicopter had flown away and continued to fly away, UAS was operated back over water again. The mission continued safely with no further incident. The remote pilot opined that should the UAS not have been moved there may have been a collision, or extremely close to a collision. The helicopter at some points was lower than the UAS. At the end of the mission, the remote pilot called ATC to close down the mission and inform them of the incident. ATC confirmed that the helicopter crew had a Traffic Service and were aware of the UAS operation. A diagram showing the position of the remote pilot and the UAS is at Figure 1, the UAS operator estimated the drone was operating around 60m out over the sea.

Figure 1: Position given by the drone operator

The operator assessed the risk of collision as 'Medium'.

THE AS355 PILOT reports that they were flying for the purposes of aerial filming and had completed a task at Cambridge and were re-tasked to Southend. Clearance was given to transit through Southend CTR to Southend Pier and they were filming the beach for around 10min. Whilst on task Southend ATC notified them of a drone operating a mile north of their position up to 400ft. They were operating over the water and the pilot had 'eyes-out' and was keeping up a good visual scan. At no point did he see a drone and he was happy to continue the task. There were no further interactions with ATC about the drone.

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

THE SOUTHEND CONTROLLER reports that the drone operator was authorised to operate in the vicinity of Southend Airport (Westcliff-on-Sea) not above 400ft in accordance with Southend ATC's approval. The AS355 pilot was cleared to enter Southend's CAS VFR from the west to operate in the vicinity of Southend Pier. Generic Traffic Information about the UAV was passed to the AS355 pilot. Upon completion of task, the UAV operator telephoned ATC to advise that the helicopter was very close to their location and had to take actions with the drone to avoid it. UAV operator stated the intention to report an Airprox.

Factual Background

The weather at Southend was recorded as follows:

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METAR EGMC 261350Z 15011KT 110V170 9999 FEW050TCU 28/18 Q1008=
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Analysis and Investigation

Southend ATM Investigation

The AS355 pilot was in receipt of a Radar Control Service from Southend Radar at time of incident. The drone was operating under an approved application (LSA ref 20/046) to operate not above 400ft at the following site in Westcliff-on-Sea, Essex.

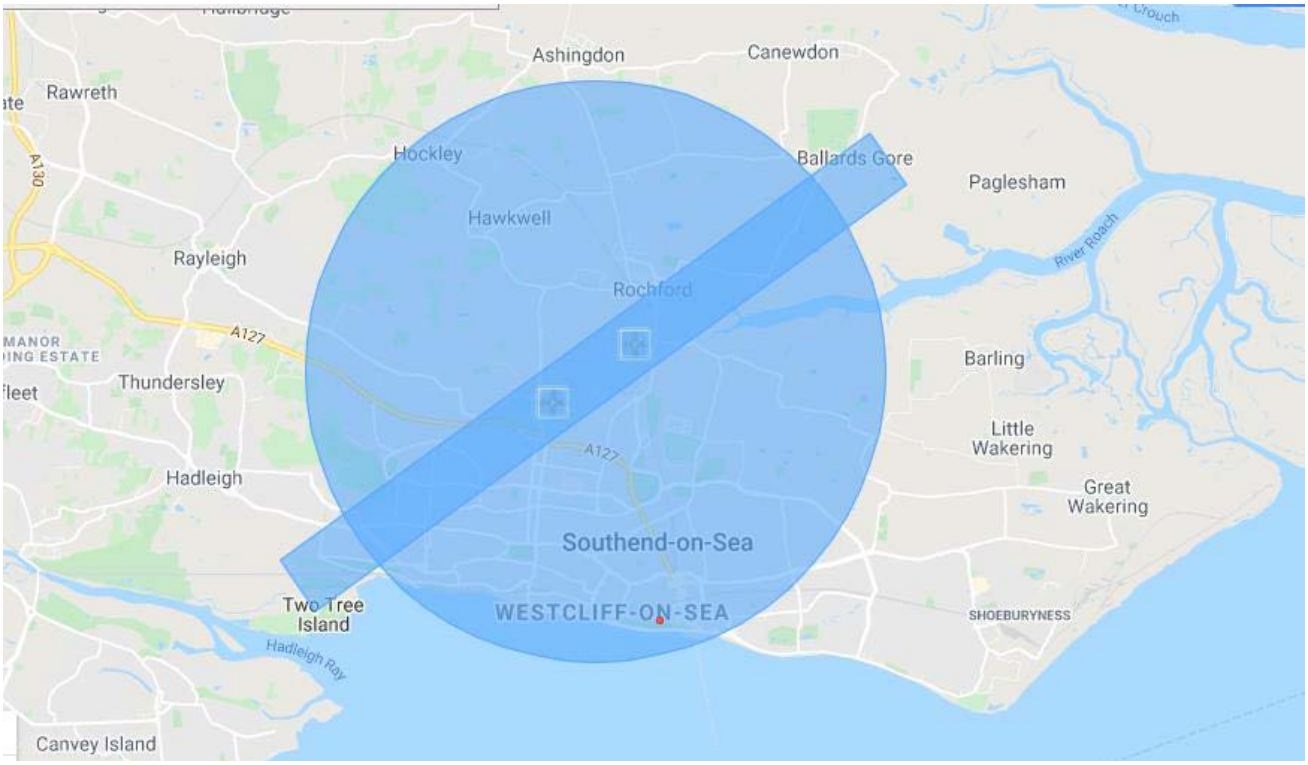


Figure 2: Drone site indicated by red dot.

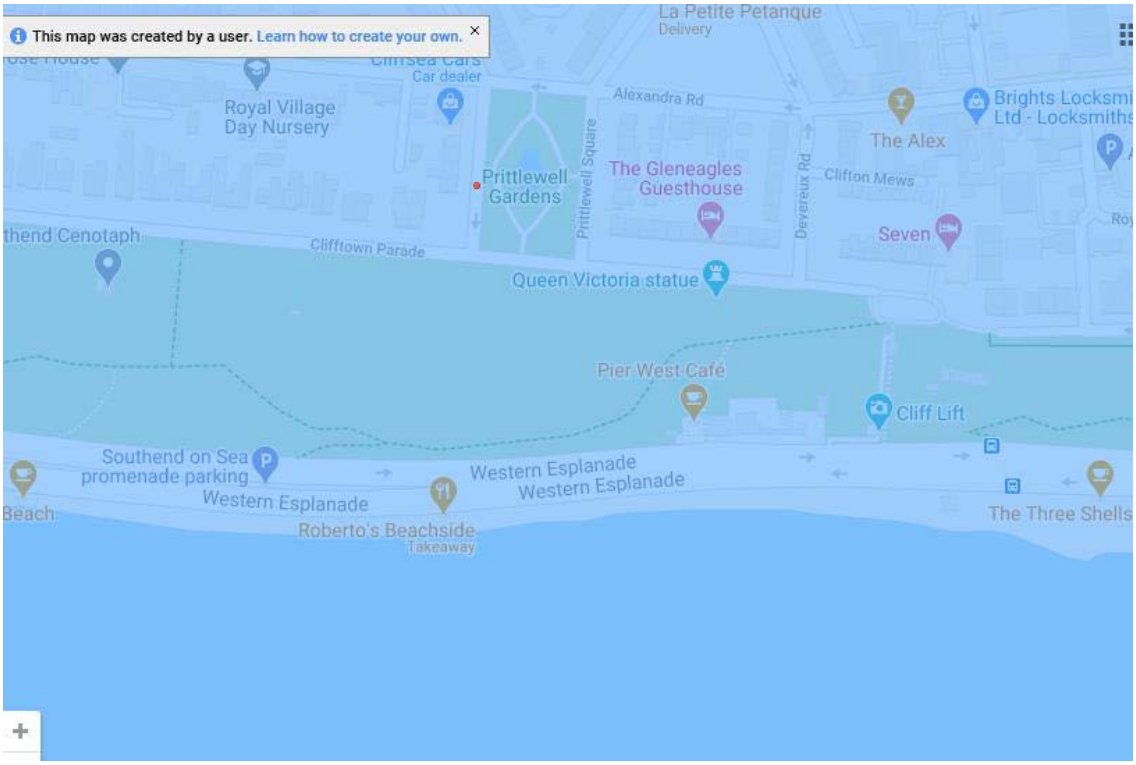


Figure 3: Drone Site approx 180m inland from coast

The drone operator telephoned ATC at 1323Z to confirm that they could commence the flight based on the approved application. This was approved by ATC. The flight was expected to last for up to one hour.

At 1326Z the Aerodrome controller (ADC) informed the radar controller (APC) about the drone saying: "*Drone at Westcliff, not above 400ft, south of the centreline"*. This was acknowledged by APC controller. Based on the OJTI report and interview with the APC OJTI, this information was not fully detailed in the operational position in the radar position.

At 1353Z, the AS355 pilot contacted Southend Radar to request a clearance "*looking to enter CTR if we may to the coast towards the pier for a short time"* a squawk was given and a Basic Service, followed shortly with a clearance as follows: "*cleared to enter Southend CAS, VFR, not above 2400ft on track Southend Pier*". This was read back correctly by pilot.

At 1355Z, APC co-ordinated the flight with ADC and agreed to keep the helicopter on their frequency. Upon entering LSA CAS, the AS355 pilot was given a Radar Control Service and remained on the Southend Radar frequency throughout the flight in Southend CAS. At 1410Z, the ADC, noticing the position of the AS355 on the ATM, telephoned APC and said "*That drone, still up at 400ft, about one mile west of where your man is there, by the pier*". This was acknowledged by APC and this triggered the Traffic Information to the AS355 pilot as follows: "*Caution, drone activity, one mile west of your present position, not above 400ft*." The AS355 pilot replied "*OK that's understood, will be mindful*".

Timeline of events:

1404:30: The AS355 approached the pier from the west indicating 1200ft
1405:00: Descended over south end of pier down to 500ft, reported on site, descended to 300ft
1407:40 Tracked north towards seafront along pier, 400ft tracked east then began manoeuvring
1410:00: Call received from ADC warning of drone activity 1NM West of AS355
1410:13: AS355 pilot cautioned about "*drone activity approx. one mile of your present position, not above 400ft*" (figure 4)
1410:21: Pilot replied that "*that is understood, will be mindful*". Position at the seafront east of base of pier 400ft, tracking west
1412:50: Turned east at pier 700ft
1417:10: AS355 pilot is asked "*for planning, how long are you in that position?*". He replied "*another minute or so then looking to route direct [destination]*". Position now north end pier orbiting at 600ft
1417:25: AS355 pilot is passed a departure clearance to leave CAS southwest VFR not above 1500ft. Read back correctly
1418:27: Mode C lost
1418:29: Contact lost, last seen ¼ NM south of seafront tracking west
1418:52: Contact reappeared still ¼ NM south of seafront, 200ft climbing, turning more southwest over the Thames
1419:20: 2 nm west of pier tracking away 60ft.

The helicopter approached the area concerned at around 1417:55Z. The AS355 commenced a descent whilst still over water, and was last seen at 1418:29Z, still over water, but possibly converging slightly inland. However, it was still over water when it re-appeared at 1418.52, having turned more south westerly. Therefore, it was below radar cover for 23 seconds, very low level. It would appear likely that the helicopter must have remained over water given the short time radar contact was lost based on the aircraft's performance. The AS355 pilot did not mention anything to APC about a sighting of the drone.

Figure 4:1410:13Z Traffic Information passed on drone (1NM west of AS355's position)

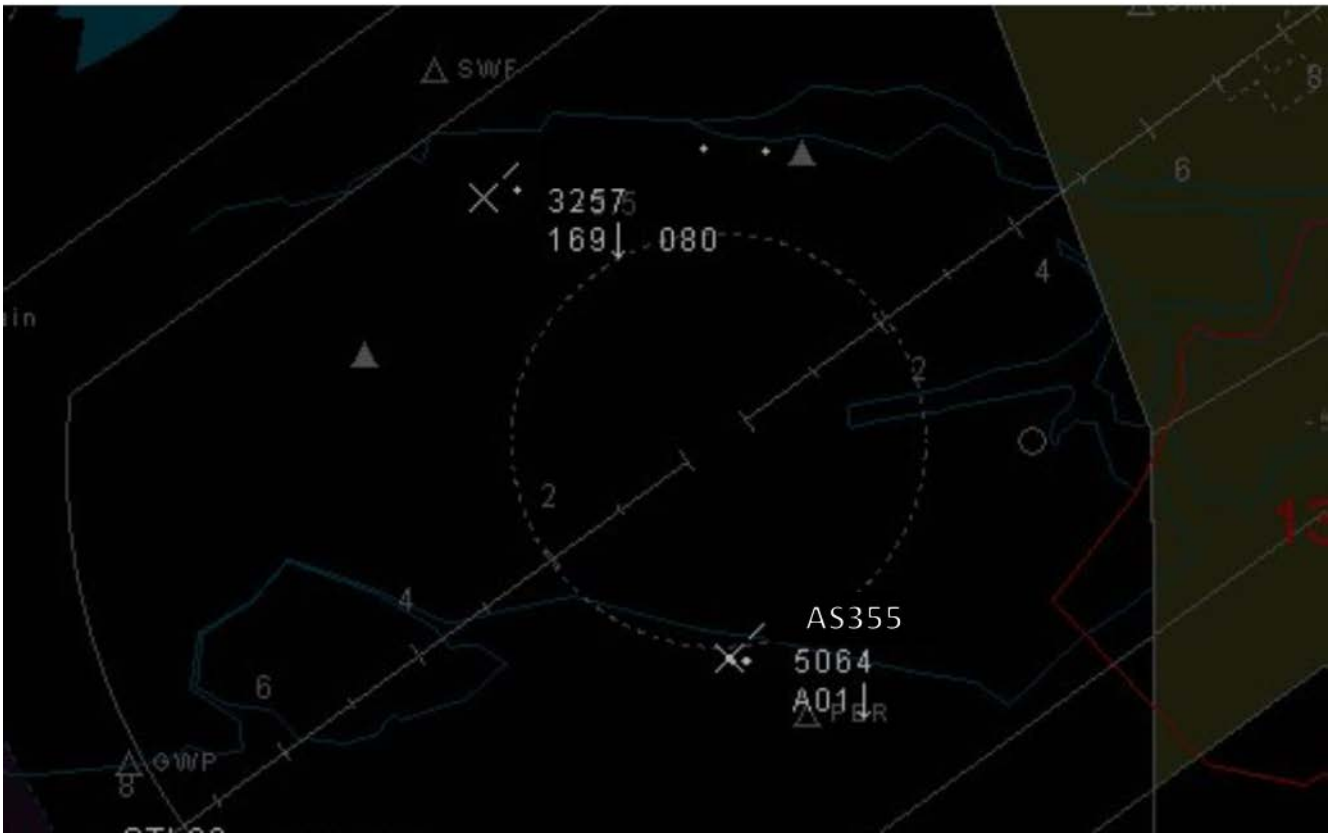


Figure 5: 1418:14Z

The drone operator telephoned Southend ATC to confirm that they had finished the flight and reported that a helicopter had flown close to the drone at around 1415Z. The drone operator advised ATC that he would file an Airprox.

The OJTI did not sit as close to the trainee as he normally would have done, due to the COVID-19 issues. All OJTIs had been briefed about the importance of ensuring that safety would not impacted by any OJT and PPE was provided. OJTIs were told that they should position themselves appropriately to ensure that they could still monitor the operational position appropriately. The OJTI had elected not to wear any PPE but should still have ensured that he could discharge his OJTI responsibilities.

The height or position of the drone at the time of the Airprox could not be confirmed. The proposed drone site was approximately 180m inland from the coast. It would have been expected for the drone to remain within 400ft (120m) laterally from the site. Based on the surveillance recording it would appear that the helicopter remained over the sea albeit fairly close to the coast in the vicinity of the drone. It was not known at what stage the drone operator saw the helicopter and if any prevention/avoiding action was taken.

APC were told in a timely manner about the drone operation but did not pass the information to the AS355 pilot initially. This was partly due to not having the full information on a Flight Progress Strip and partly forgetting about the initial information received from ADC. Upon receiving an update from ADC this triggered the Traffic Information to the AS355 pilot. Based on the reported time of the Airprox by the drone operator, it would appear the pilot was advised of the drone prior to the incident. The surveillance recording would concur with this based on the position and altitude of the AS355 when the Traffic Information was passed.

UKAB Secretariat

The drone could not be seen on the NATS area radar, however, from the position given by the drone operator an approximate position could be plotted. The AS355 can be seen manoeuvring into the area from 1405Z (Figure 6) and remaining in place for approximately the next 15min. At various times it came within 1NM of the plotted position of the drone, at various heights, (Figures 7-9). Radar CPA was at 1417:29Z when the AS355 was 0.3NM from the plotted drone position indicating 200ft. Shortly afterwards the AS355 maintained a southerly heading, descended to 100ft before climbing and departing the area.

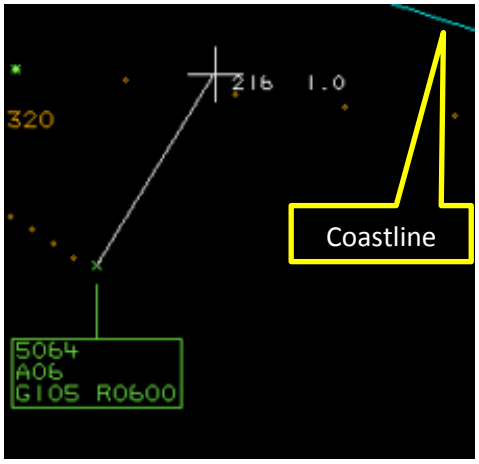


Figure 6:1405:08
(AS355 squawking 5064)

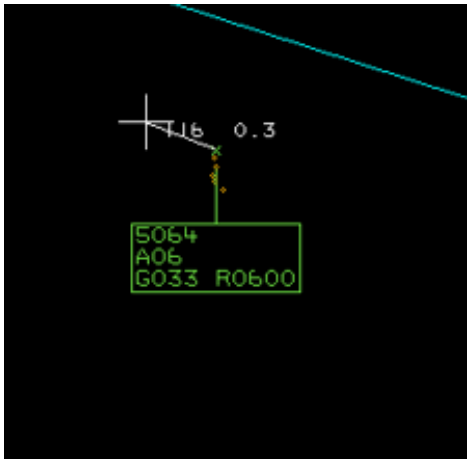


Figure 7: 1411:36

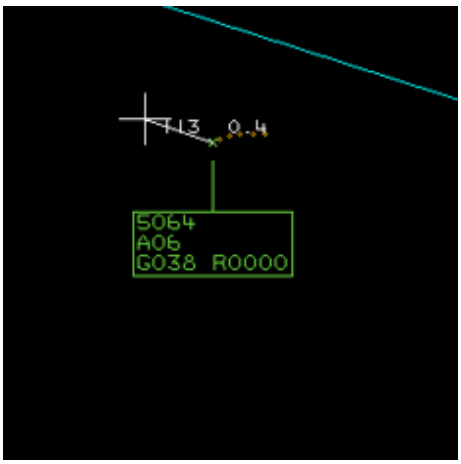


Figure 8:1416:26

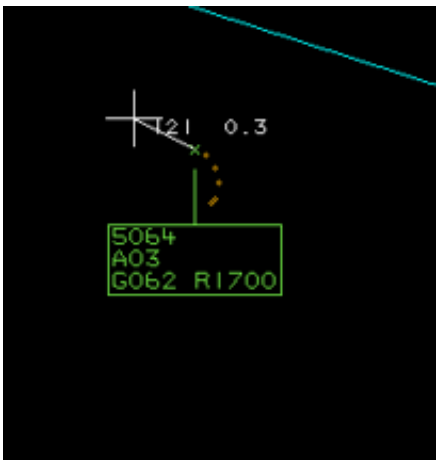


Figure 9:1417:20

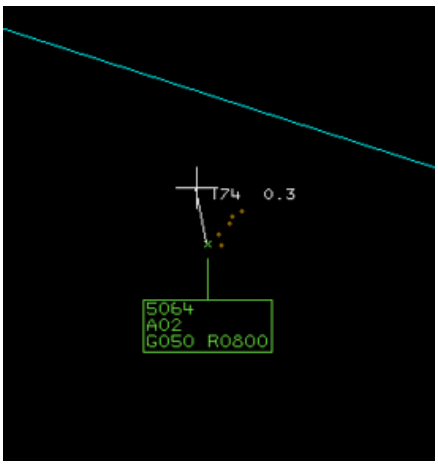


Figure 10: Radar CPA -1417:29

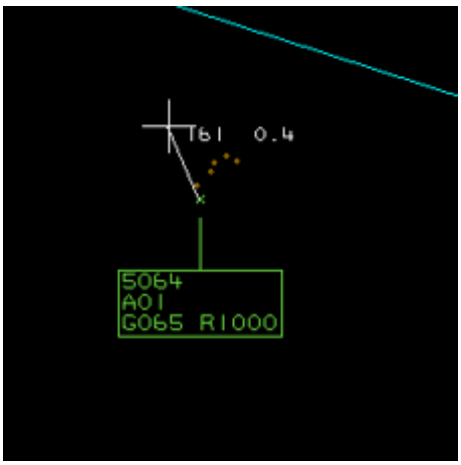


Figure 11: 1417:36

The DJI Operator and AS355 pilot shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[1]

Summary

An Airprox was reported when a DJI Phantom and an AS355 flew into proximity at Southend-on-Sea at 1417Z on Thursday 25th June 2020. Both pilots were operating under VFR in VMC, the DJI Phantom operator had permission to operate in the Southend FRZ from ATC. The AS355 pilot was in receipt of a Radar Control Service from Southend.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both drone operator and the AS355 pilots, transcripts of the relevant RT frequencies, radar photographs/video recordings and reports from the air traffic controllers involved. 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.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments. Although not all Board members were present for the entirety of the meeting and, as a result, the usual wide-ranging discussions involving all Board members were more limited, sufficient engagement was achieved to enable a formal assessment to be agreed along with the following associated comments.

[1] SERA.3205 Proximity.

The Board first looked at the actions of the drone operator. They had informed Southend ATC of their intention to operate and had permission to do so, however, not being in contact with Southend ATC at the time, the operator had no knowledge that the AS355 would also be operating in the area (**CF5**). The operator was required was to maintain VLOS and whilst doing so saw the helicopter operating in the vicinity of the drone. Concerned, the drone was put into sport mode in order to get it back to the operator as soon as possible (**CF9**), which the Board was informed by an advisor was to be viewed as normal operations, akin to taking avoiding action in an aircraft.

The AS355 pilot was also given permission to operate in the area by Southend ATC and at first was not given any Traffic Information on the drone. Even once this was remedied, an exact location was not given and the pilot seemed to be under the impression that the drone was operating 1NM away even as he transited towards to beach front (**CF5**). Board members with helicopter experience opined that given the Traffic Information was that the drone was operating up to 400ft, they would have expected that the AS355 pilot would opt to remain above that height to remain clear (**CF3**), or at the very least to have requested more information from ATC about the exact location of the drone (**CF6**, **CF7**). This led them to wonder whether the pilot had become distracted by his tasking and had not assimilated that the drone was operating at a similar level (**CF7**). Furthermore, they thought that had the pilot informed ATC of the intention to descend as low as 100ft over the sea, it may have triggered ATC to inform the drone operator about the helicopter (**CF4**). Perhaps unsurprisingly, given that it would have been against a background of people on the beach, the AS355 pilot did not see the drone (**CF8**).

Turning to ATC, they had taken the details of the drone operation and given permission for it to operate in that location but seemed to expect that it would remain much closer to the drone operator, over the land (**CF1**). Members wondered whether they were fully aware just how far away VLOS operations could be from the drone operator, noting that CAP 722 defined VLOS as:

> *Within the UK, VLOS operations are normally accepted out to a maximum distance of 500 metres horizontally from the remote pilot, but only if the aircraft can still be seen at this distance. The ANO also limits the maximum distance from the earth's surface to a height of 400 feet….. Operations at a greater distance from the remote pilot may be permitted if an acceptable safety case is submitted. For example, if the aircraft is large it may be justifiable that its flight path can be monitored visually at a greater distance than 500 metres[2].*

They commended the ADC for reminding the Approach controller about the drone, leading them to provide generic Traffic Information to the AS355 pilot, albeit late (**CF2**). That being said, members thought it a missed opportunity that the drone operator was not also passed Traffic Information on the AS355, by telephone, given that a phone number was provided by the drone operator (**CF2**).

In determining the risk of the Airprox, some members considered the event to be normal operations in that the drone operator took action to avoid the helicopter. However, after some discussion it was agreed that given ATC did not seem to be aware that the drone and the AS355 were operating in the same vicinity and that neither the AS355 pilot, nor the drone operator had full situational awareness about the other, members considered that safety had been degraded, although thanks to the actions of the drone operator there had been no risk of collision; Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020056		
CF	**Factor**	**Description**	**Amplification**
	Ground Elements		
	• Situational Awareness and Action		
1	Contextual	• Situational Awareness and Sensory Events	The controller had only generic, late or no Situational Awareness

[2] CAP722 Chapter 2, 3.6.1 Operations, Visual Line of Sight

2	Human Factors	• ANS Traffic Information Provision	TI not provided, inaccurate, inadequate, or late
	Flight Elements		
	• Tactical Planning and Execution		
3	Human Factors	• Insufficient Decision/Plan	Inadequate plan adaption
4	Human Factors	• Accuracy of Communication	Ineffective communication of intentions
	• Situational Awareness of the Conflicting Aircraft and Action		
5	Contextual	• Situational Awareness and Sensory Events	Pilot had no, late or only generic, Situational Awareness
6	Human Factors	• Lack of Communication	Pilot did not request additional information
7	Human Factors	• Distraction - Job Related	Pilot engaged in other tasks
	• See and Avoid		
8	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots
9	Human Factors	• Perception of Visual Information	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:

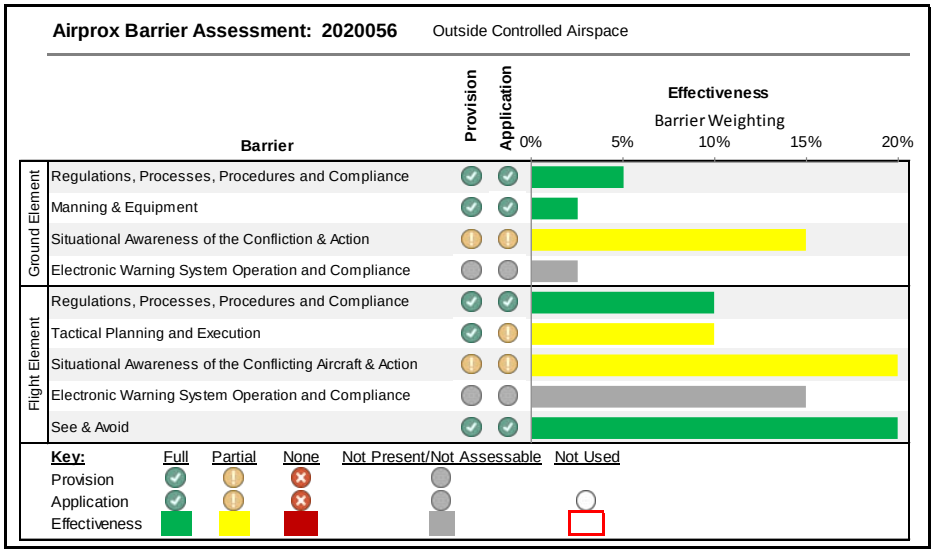
Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **partially effective** because the Southend controllers believed the drone to be over the land, when in fact it was operating over the sea.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the AS355 pilot did not modify their plan after receiving Traffic Information that the drone was operating up to 400ft.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the AS355 pilot believed the drone was operating 1NM away.



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