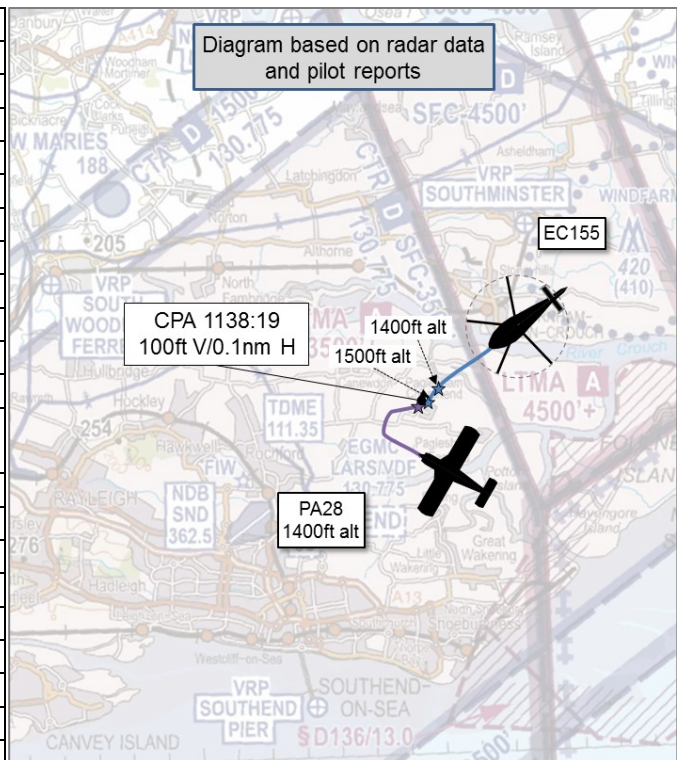


**AIRPROX REPORT No 2018310**

Date: 30 Nov 2018 Time: 1138Z Position: 5136N 00046E Location: Southend CTR

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	EC155	PA28
Operator	Civ Helo	Civ FW
Airspace	Southend CTR	Southend CTR
Class	D	D
Rules	IFR	VFR
Service	Radar Control	Radar Control
Provider	Southend	Southend
Altitude/FL	1500ft	1400ft
Transponder	A, C, S	A, C, S
<b>Reported</b>		
Colours	White	Blue, White
Lighting	Landing, Strobe, Nav	Not reported
Conditions	VMC	VMC
Visibility	>10km	10km
Altitude/FL	1300ft	1000ft
Altimeter	QNH (1006hPa)	NK (1008hPa)
Heading	234°	Orbiting
Speed	120kt	80kt
ACAS/TAS	TCAS I	Unknown
Alert	None	Unknown
<b>Separation</b>		
Reported	300ft V/300m H	Not reported
Recorded	100ft V/0.1nm H	



**THE SOUTHEND CONTROLLER** reports that the PA28 was joining left-base for RW23. Initial contact was made with the PA28 pilot and he was told to report final, number one, with Traffic Information on the EC155 establishing on the ILS passed as 'EC155 helicopter positioning onto the ILS for RW23, approximately 7 miles'. The PA28 was observed to be tracking NE on the ATM. The PA28 pilot was instructed to make a left turn to position onto final. Two-way radio contact was lost. The PA28 routed north through the final-approach track and took up a right-hand orbit displaying 1400ft on the ATM. The EC155 on the ILS was observed on the ATM to be at 1400ft. The EC155 pilot was told to turn left and track south. Traffic Information was given to the EC155 pilot on the PA28 and the EC155 pilot reported visual, turning left, and climbing. The EC155 pilot reported clear of the conflicting traffic and was instructed to route west and contact Southend Director. Further traffic was on the ILS, a DA40. The PA28 was now north of the approach track and the pilot was told to route westbound, he was observed to be doing this, but no readback was received. The DA40 was instructed to descend on the ILS, this was subsequently changed to maintain RW heading and 2000ft. The PA28 was observed to be positioning onto final and descending. The DA40 was instructed to contact Southend Director. The Aldis lamp was used and blind calls were made clearing the PA28 pilot to land RW23.

**THE EC155 PILOT** reports that the pilot flying (PF) was carrying out an ILS to RW23 in the left-hand seat. The weather conditions were CAVOK and the Pilot Not Flying (PNF) was in the right-hand seat in charge of the radios and anti-collision. The PNF spotted the fixed-wing (FW) immediately after the controller's announcement and kept the aircraft in sight all the time. As the FW was certainly due to cross their trajectory with no sign of any avoiding action, the PNF agreed to the controller's advice to turn left. At the same time, the PNF informed the controller of their climb to 1800ft to avoid the collision. The PF cancelled the ILS and, on the PNF's orders, turned left onto a heading of 160° and climbed to 1800ft. The FW flew under their helicopter, about 300 ft below, and reappeared on the left-hand side of their helicopter, the PF was visual immediately. The PF continued the left turn so as to keep the FW

in sight, and came back to the final course while the FW was flying away from them. The FW didn't initiate any kind of avoiding action during that phase. It appeared that the FW was not on the radio and did not see the EC155.

He assessed the risk of collision as 'High'.

**THE PA28 PILOT** reports that he was turning from base leg onto final approach and was experiencing radio problems. While he tried to rectify the problem, he orbited in the vicinity. During this time unfortunately, it became apparent he was near to a helicopter. After trying to resolve the issue with the radios he tried to call several times to ATC to explain the situation and to clarify permission to land. He didn't receive a response, so he saw RW23, which was clear, and landed as soon as possible as he became concerned it wouldn't be good to stay in the area for too long, due to other traffic wishing to land at Southend. As soon as he landed, a marshal came to assist him with taxiing to park due to the issue he had with the radio. The marshal said he had been given permission to land but it was unclear how many transmissions from ATC he missed when he experienced the problem with the radio. He phoned ATC soon after to apologise and explain the situation that had occurred. Later, when he departed Southend, he carried out a radio check before starting the engine and was advised the signals were readability 5. When he was on his way home he received a telephone call from Southend ATC who he apologised to and explained the situation. They said they would file an Airprox and recommended he does the same. Southend ATC gave him advice for future reference if he was to experience a similar problem in the future:

1. Remain clear of the final approach area, and if possible the circuit area, and find a suitable location to orbit to carry out fault management.
2. Continue to broadcast intentions as 'blind calls'. ATC will continue to respond with blind calls.
3. Squawk 7600.
4. If the problem cannot be resolved position slowly towards final approach. Look out for light signals from the ATC tower and keep a good look out.
5. Continue to broadcast intentions. ATC may arrange for a follow me once on the ground.

He was very grateful for the advice and has been upset about the incident ever since, as he believes in responsible airmanship very much and aviation safety.

He assessed the risk of collision as 'High'.

## **Factual Background**

The weather at Southend was recorded as follows:

METAR EGMC 301120Z 23012KT CAVOK 10/06 Q1007

## **Analysis and Investigation**

### **CAA ATSI**

ATSI had access to reports from the pilots of both aircraft and the Southend Tower controller. The local area radar replay data and the unit radio recordings were reviewed for the period of the incident. Screenshots produced in this report are provided using recordings of the area radar and are not necessarily indicative of what the Tower controller could see on the Air Traffic Monitor. Levels indicated are in altitude. All times UTC.

An Airprox was reported in Class D Airspace by the pilot of an EC155 when it came into proximity with a PA28, on final approach at Southend Airport. The EC155 was operating IFR and had been conducting instrument approaches to RW23 under the control of Southend Radar. The pilot had been cleared for the ILS approach and traffic information on the PA28 had been passed. The pilot reported having the PA28 in sight prior to being transferred to the Southend Tower controller. The PA28 was inbound to Southend and was also initially under the control of the Southend Radar

controller. The pilot had been cleared by the Radar controller to enter the Control Zone, VFR, not above altitude 2000ft and to route direct to left-base for RW23. The pilot was subsequently transferred to the Southend Tower controller. The PA28 pilot reported that they had experienced radio problems as they were turning from base leg onto final approach and chose to orbit in the vicinity while attempting to rectify the problems. After attempting to call ATC several times unsuccessfully, the pilot saw that the RW was clear and thought that the safest thing to do was for them to land.

At 1134:20 (Figure 1), the PA28 was routing direct to left-base for RW23 and was instructed to change to the Tower frequency.

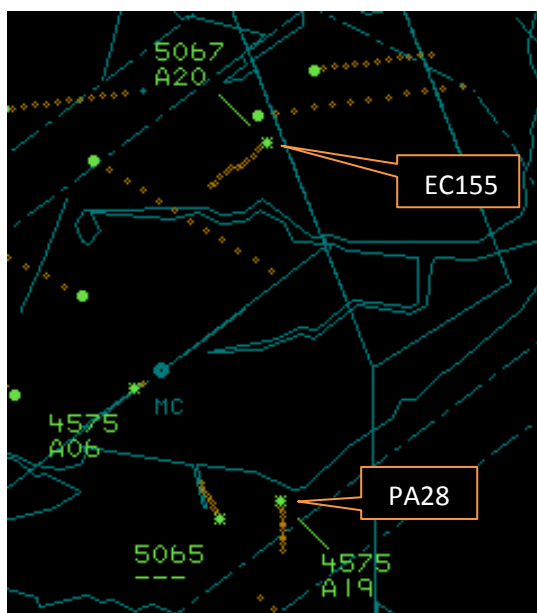


Figure 1-1134:20

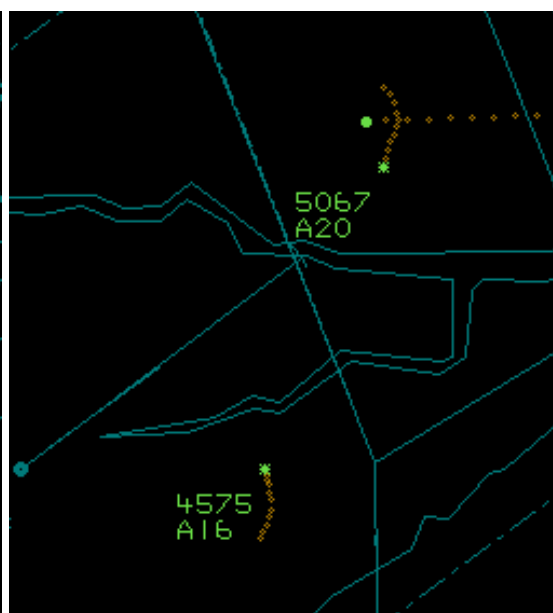


Figure 2-1136:15

At 1135:30, the PA28 pilot made initial contact with the Tower controller and was instructed to report final number one RW23.

At 1135:40, the Radar controller vectored the EC155 onto a closing heading for the localiser and cleared them for the ILS approach.

At 1136:15 (Figure 2), the Tower controller asked the PA28 pilot if they could take a short approach due to helicopter traffic establishing on the ILS at 6.5nm. The PA28 pilot responded that they were looking for the traffic. The controller then instructed the pilot to route direct to final from their present position.

At 1136:40, the Tower controller instructed the PA28 pilot to turn left now to position direct onto final and advised that the EC155 traffic was now 6nm final on the ILS. The pilot responded that they were turning left onto final.

At 1137:09, the Tower controller instructed the PA28 pilot to orbit left in their present position until advised. The pilot asked the controller to repeat the instruction and said that they were "just getting used to this radio". The controller repeated the instruction. The pilot did not respond and did not take up the orbit.

At 1137:10 (Figure 3), the Radar controller passed traffic information to the EC155 pilot on the PA28 as 'eleven o'clock, 3 miles, orbiting to position behind you VFR in the circuit'. The pilot reported having the traffic in sight and was instructed to transfer to the Tower frequency.

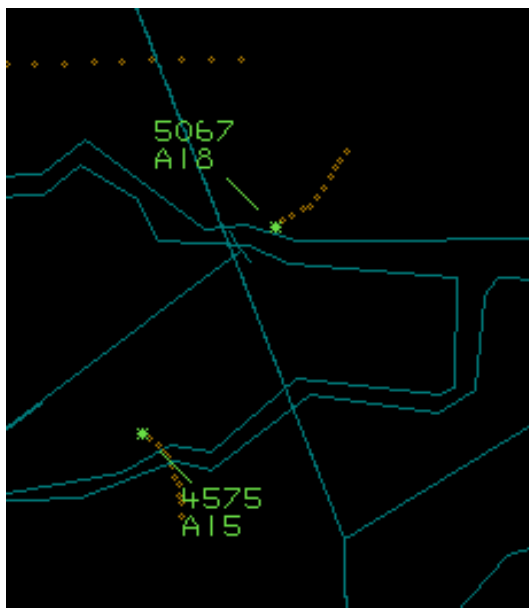


Figure 3-1137:10

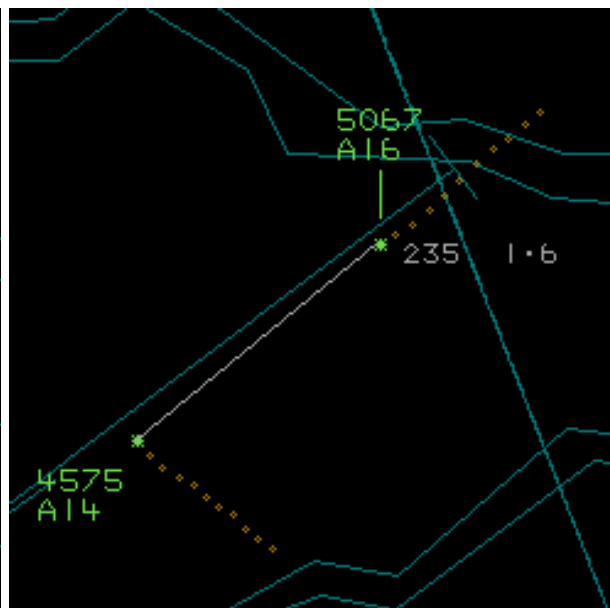


Figure 4-1137:50

At 1137:30, the EC155 pilot made initial contact with the Tower controller and was passed traffic information on the PA28, advising that it was on final approaching at 2 miles. The pilot responded that they were continuing approach and had the traffic in sight.

At 1137:40, the controller tried to contact the PA28 pilot. There was no response from the pilot.

At 1137:50 (Figure 4), the controller instructed the PA28 pilot to continue to route northbound, this instruction was repeated three times in total. There was no response from the pilot.

At 1138:00 (Figure 5), the PA28 pilot made a right turn toward the EC155 and the controller instructed the EC155 pilot to “make a left turn, track southbound, left turn track southbound, opposite direction PA28”. The EC155 pilot responded that they had the traffic in sight and were turning left and that they were also climbing.

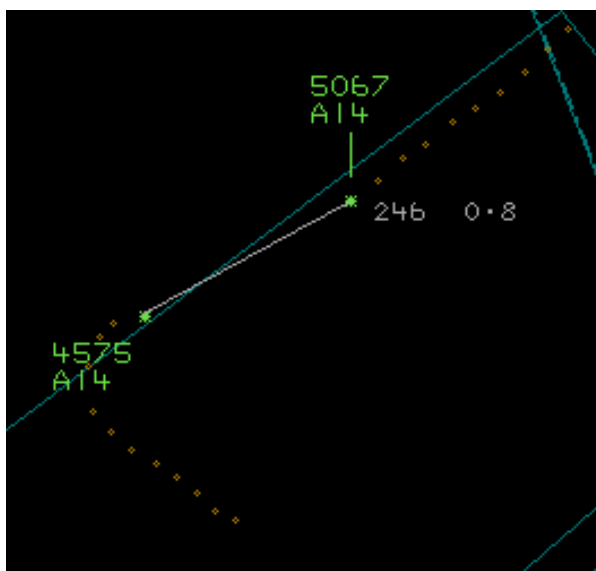


Figure 5-1138:00

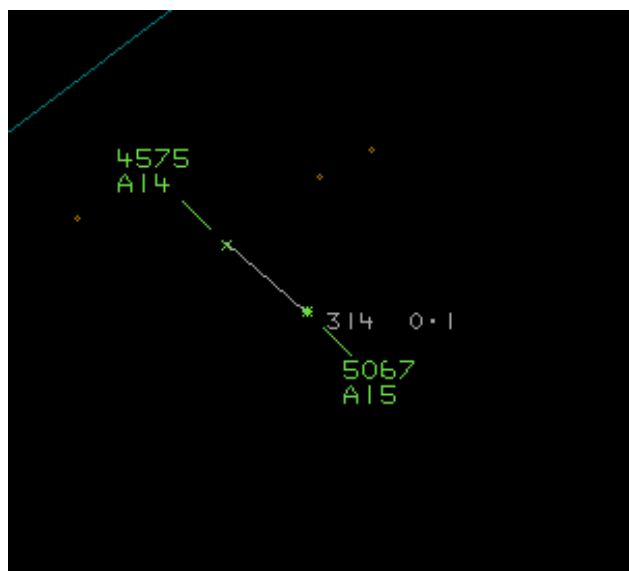


Figure 6-1138:20

CPA was at 1138:20 (Figure 6), with the aircraft separated by 0.1nm laterally and 100ft vertically.

At 1139:40, the EC155 was transferred back to the Radar controller for a further ILS.

Between 1140:20 and 1141:40, the Tower controller continued to try and make contact with the PA28 pilot with no responses received from the pilot.

At 1141:40, the pilot apologised and said that they were having radio problems, were currently orbiting, and were originally cleared for RW 23. The controller requested a radio check and again there was no response from the pilot. The controller continued to try and establish effective two-way communications with no success.

At 1143:20, the pilot reported final. The controller transmitted "callsign if you read me, cleared to land RW23" and included the surface wind. There was no response from the pilot.

At 1144:00, the pilot called final again. The controller transmitted "callsign if you read me to clear to land RW23" and included the surface wind. There was no response from the pilot.

At 1144:20, the pilot called final again. The controller transmitted "clear to land RW23". There was no response from the pilot.

At 1146:40, the pilot advised the Tower controller that they had managed to land and were now at Charlie. The controller responded with taxi instructions to parking. There was no response from the pilot.

The Airprox occurred in Class D Airspace with both aircraft under an Aerodrome Control service from the Southend Tower controller.

Based on the traffic information passed to the pilot of the EC155 prior to transfer from the Radar controller to the Tower controller at 1137:10 (Figure 3), the EC155 pilot could expect that the PA28 would be positioning behind them on final approach. This was a reasonable assumption by the Radar controller based on the relative positions of the aircraft at the time and the slight left turn by the PA28. However, it was apparent from the relative positions of both aircraft at 1136:15 (Figure 2) that, if the PA28 continued onto final approach, the EC155 would be approximately 1.5nm behind the PA28; with the EC155 being slightly faster than the PA28 and also planning to go around from the approach, that this would further erode the distance between the two aircraft.

The Tower controller attempted to alter their original plan of making the PA28 No1 to land, requesting that the PA28 pilot shorten their approach by turning directly onto final approach. The PA28 pilot acknowledged the request and advised that they were turning left. However, the PA28 pilot did not turn left sufficiently to achieve a shortened approach and the controller then instructed the pilot to orbit left. The pilot advised that they were having problems with their radio and asked the controller to repeat the instruction. When the instruction was repeated the pilot did not respond and from then on effective two-way communications were lost.

The PA28 pilot did not take up the orbit but continued toward final approach and subsequently went through the final approach, tracking north, before subsequently turning back through the final approach track southbound and into conflict with the EC155. When the PA28 turned into direct conflict with the EC155 the controller instructed the EC155 pilot to take up a southerly track to avoid the PA28.

Relevant Extracts from CAP 493 are:

*Section 1: Chapter 5: Control of VFR Flights*

*Control of VFR Flight*

*Separation standards are not prescribed for application by ATC between VFR flights or between VFR and IFR flights in Class D airspace. However, ATC has a responsibility to prevent collisions between known flights and to maintain a safe, orderly and expeditious flow of traffic. This objective is met by passing sufficient traffic information and instructions to assist pilots to 'see and avoid' each other as specified at Section 3, Chapter 1, paragraph 2A.2.*

*Instructions issued to VFR flights in Class D airspace are mandatory. These may comprise routing instructions, visual holding instructions, level restrictions, and information on collision hazards, in order to establish a safe, orderly and expeditious flow of traffic and to provide for the effective management of overall ATC workload.*

## *Section 2: Chapter 1: Aerodrome Control*

### *Traffic Information and Instructions*

*7A.1 Traffic information and instructions shall be passed to aircraft on any occasion that a controller considers it necessary in the interests of safety, or when requested by a pilot. In particular, Aerodrome Control shall provide:*

- 1. generic traffic information to enable VFR pilots to safely integrate their flight with other aircraft;*
- 2. specific traffic information appropriate to the stage of flight and risk of collision;*
- 3. timely instructions as necessary to prevent collisions and to enable safe, orderly and expeditious flight within and in the vicinity of the ATZ.*

There was insufficient spacing between the PA28 and the EC155 to enable the Southend Tower controllers initial plan of instructing the PA28 pilot to report final No1 ahead of the EC155 to be effective. Subsequent and repeated attempts by the controller to alter the original plan were thwarted by radio problems being experienced by the PA28 pilot and ultimately a loss of effective two-way communications occurred.

Traffic information on the EC155 was passed and acknowledged by the PA28 pilot on two occasions prior to the loss of communications occurring.

It could be argued that having lost effective communications with the PA28 pilot, the controller could perhaps have turned their attention to the EC155 pilot sooner and issued an avoidance instruction to the EC155 pilot; however, it should be noted that they had previously passed traffic information on the PA28 to the EC155 pilot, the pilot had reported having the PA28 in sight and no avoidance advice was requested.

## **UKAB Secretariat**

The EC155 and PA28 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard<sup>1</sup>. An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation<sup>2</sup>.

Southend UKAIP entry for Radio Communications Failure Procedures states:

### *b) VFR Flights*

*The procedures to be adopted by pilots experiencing two-way radio communication failure, inside Southend CAS, are:*

- i. If suitably equipped, operate the Transponder on Mode A, Code 7600 with Mode C.*
- ii. If it is believed that the radio communication transmitter is functioning, transmit blind giving position reports and stating intentions.*
- iii. If VFR clearance has been obtained when the radio communication failure occurs, proceed as follows:*

<sup>1</sup> SERA.3205 Proximity.

<sup>2</sup> SERA.3225 Operation on and in the Vicinity of an Aerodrome.

1. *Aircraft inbound to an aerodrome in the CTR - proceed in accordance with VFR clearance to the aerodrome and land as soon as possible. When in aerodrome traffic circuit watch for visual signals;*
2. *Aircraft transiting the CTR - continue flight not above the cleared altitude to leave the CTR by the most direct route, taking into account weather limitations, obstacle clearance.*

*Note: In (1) and (2), if flying on a heading advised by radar, when radio communication failure occurs, resume own navigation and carry out the appropriate procedure described.*

## Summary

An Airprox was reported when an EC155 and a PA28 flew into proximity at Southend at 1138hrs on Friday 30<sup>th</sup> November 2018. The EC155 pilot was operating under IFR in VMC and the PA28 pilot was operating under VFR in VMC, both pilots were in receipt of an Aerodrome Control Service from Southend Tower.

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

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board began by discussing the actions of the Southend controller. He had initially tried to integrate the PA28 ahead of the EC155 on an Instrument Approach but, when it was apparent that the PA28 pilot's track would result in the EC155 catching up the PA28 he endeavoured to increase the separation by asking the PA28 pilot to shorten his approach track. Although the PA28 pilot turned slightly, it was not enough to fundamentally increase the separation. When the controller realised his actions had not worked he instructed the PA28 pilot to orbit left to allow the EC155 pilot to continue his approach ahead of the PA28. At this point, the PA28 pilot had difficulties with his radio and it appeared that he did not hear the instruction to orbit left. Instead, being concerned that he did not have clearance to land, the PA28 pilot orbited right on the final approach path, which resulted in the PA28 flying towards the EC155 on final. ATC members opined that they thought that the initial plan to route the PA28 ahead of the EC155 by shortening his track was flawed because the difference in speed meant that the PA28 would always be caught by the faster EC155. In their opinion, the controller should have instead instructed the PA28 pilot to either fly through the final approach path or go-around but they acknowledged that the PA28 pilot's radio problems meant that he might not have received either instruction anyway and so the issue was slightly academic. Controller members also opined that a safe resolution to the conflict would have been to send the EC155 around when the PA28's radio problems were initially identified rather than allowing the EC155 to continue. Accepting that the EC155 pilot had reported visual with the PA28, its routing and intentions could not be known and so, although the controller did eventually turn the EC155 onto a southerly heading, an earlier standard go-around would have been the better option to quickly resolve the conflict.

The Board then turned to the actions of the PA28 pilot. He had been informed he was No1 in the pattern, and also that the EC155 was carrying out an Instrument Approach. Subsequently trying to rectify his radio problems, he had turned away from the airfield to allow himself time to resolve the issue. GA members commented that it was incumbent upon pilots to ensure that they are fully cognisant of their equipment and relevant operating procedures for the aircraft and the airspace they will be operating in, including local radio-failure procedures. In this case, and assuming he had not heard the instruction to orbit left, his last acknowledged instruction was that he was No1 in the pattern and so he should have continued on that basis, watching for any visual signals. Instead, and perhaps now flustered by the fact that he was on the approach path, he had allowed himself to become distracted to the extent that he probably forgot about the EC155 that he had been told about, and had acknowledged was making an instrument approach. Even without the EC155 being present, turning up the approach path of an airfield was not a wise action, especially with radio problems; if the PA28 pilot was unsure of his clearance he would have been better advised either to have continued north away from the

approach path and then conduct a radio-failure rejoin, or go around, move onto the deadside, and fly through for a radio-failure circuit.

For his part, the Board noted that the EC155 pilot was visual with the PA28 at an early stage but had carried on his approach. Some members felt it would have been more prudent to go-around earlier when it became apparent that the PA28 pilot had problems and was not complying with expected procedures. Although the EC155 pilot might then have assumed that the PA28 pilot would follow the local radio-failure procedures, the PA28 pilot's intentions could not be known for sure and, as in this case, an unexpected turn towards could easily exacerbate the situation. Applying a wide berth to other aircraft with problems not only provides a greater safety margin but also serves to reduce the pressure and stress of the pilot in the other aircraft who might be operating at capacity.

Turning to the cause and the risk, members quickly agreed that the cause of the Airprox was that the PA28 pilot had turned into conflict with the EC155 on approach. Contributory to this was that the PA28 pilot was distracted by radio issues. Notwithstanding, members noted that the EC155 pilot was visual with the PA28 at all times and so, although safety had been degraded, they agreed that there had been no risk of collision. Accordingly, they assessed the risk as Category C.

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

Cause: The PA28 pilot turned into conflict with the EC155 on approach.

Contributory Factor(s): The PA28 pilot was distracted by radio issues.

Degree of Risk: C.

#### **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:

#### **ANSP:**

**Situational Awareness and Action** were assessed as **partially effective** because the controller did not act sooner to separate the aircraft when he lost radio contact with the PA28 pilot who then turned towards the EC155.

#### **Flight Crew:**

**Regulations, Processes, Procedures, Instructions and Compliance** were assessed as **ineffective** because the PA28 pilot did not follow the correct procedure for a radio failure at Southend.

**Situational Awareness and Action** were assessed as **ineffective** because neither pilot acted sufficiently on the Traffic Information passed by the Southend controller.

**Warning System Operation and Compliance** were assessed as **ineffective** because the EC155's TCAS I did not alert.

**See and Avoid** were assessed as **partially effective** because the EC155 crew were visual with the PA28 but did not act soon enough when the PA28 pilot turned towards them.

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<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](#).



