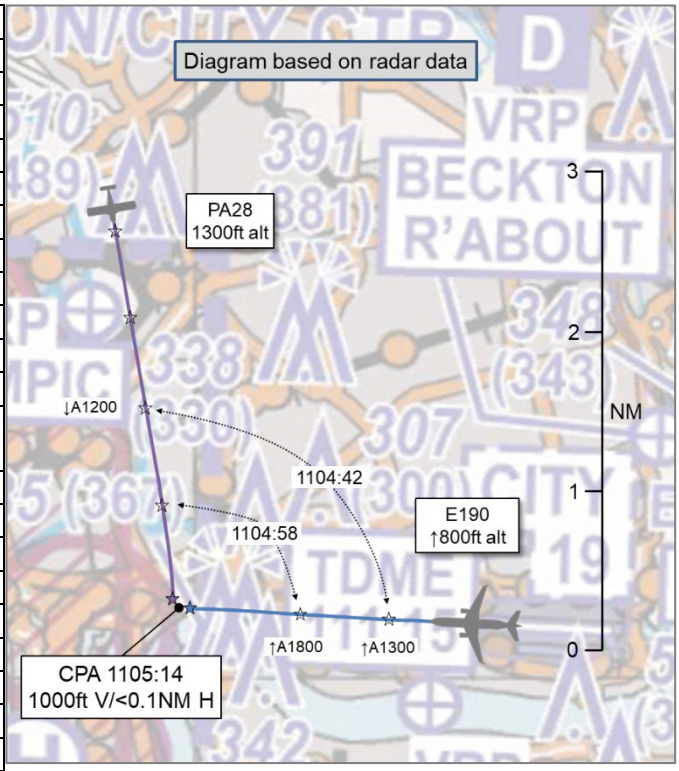
AIRPROX REPORT No 2021150

Date: 16 Aug 2021 Time: 1105Z Position: 5130N 00000W Location: 2NM W of London City Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	E190	PA28
Operator	CAT	Civ FW
Airspace	London/City CTR	London/City CTR
Class	D	D
Rules	IFR	VFR
Service	ACS	ACS[1]
Provider	London City Tower	London City Tower
Altitude/FL	2200ft	1200ft
Transponder	A, C, S	A, C
Reported		
Colours	White, blue	White, red
Lighting	Strobe, nav anti-col and landing	Strobe
Conditions	VMC	VMC
Visibility	>10km	5-10km
Altitude/FL	1000ft	1200
Altimeter	QNH (1017hPa)	QNH (NR hPa)
Heading	272°	360°
Speed	180kt	100kt
ACAS/TAS	TCAS II	Not fitted
Alert	TA	N/A
Separation at CPA		
Reported	600ft V/0m H	2000ft V/2NM H
Recorded	1000ft V/<0.1NM H	



THE E190 PILOT reports that having been advised of a helicopter holding position in the departure area, when the Tower controller asked if they were happy to depart with it in situ, they declined; [traffic was] holding at an altitude (1000ft) and position (12-1 o'clock) and, though the crew were not visual with the traffic, it was noted on TCAS (at about 1-1.5NM out). [Traffic in this position] would conflict if they were to encounter any issues on departure (emergency turn procedure is ahead to 0.9NM, then right turn to LAM), with climb performance obviously impacted in such a situation, a short delay was deemed the safer option. They subsequently departed when the traffic cleared to the north sometime later on, after liaison with ATC. They were advised of further traffic [PA28] entering the zone as they received their take-off clearance, but did not understand/appreciate that [this traffic] was being routed to exactly the same area that the helicopter, for which they had delayed, had been holding [at previously]. The E190 crew encountered the [PA28] traffic on departure [which was] on a perpendicular routeing towards them on their initial straight climb-out and passing pretty much exactly underneath them as they commenced their northerly turn at 1NM. Just 600ft separation was seen on TCAS at this point, though it might have been less as the high workload environment necessitated the crew's attention elsewhere - only one pilot visually noted the traffic (and even then only just as it headed underneath the nose).

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

THE PA28 PILOT reports that, passing abeam Potters Bar, they changed frequency to Thames Radar on 132.70MHz. They requested entry to the [London] City control zone with the intention of routing south from the Lea Valley lakes towards Canary Wharf, to track overhead the Olympic stadium. They stated that their intention was to reach Canary Wharf and carry out a 180° turn to the north, and route to [destination airfield]. They were given a squawk and given permission to enter the zone, not above

[1] Pilot reported Radar Control but was in receipt of Aerodrome Control Service from London City Tower.

1500ft initially, and to hold north of the Olympic stadium. On approaching the stadium they were given the frequency for City Tower for onward clearance. They changed frequency while executing a holding turn to the right, [remaining to the] north of the stadium as instructed. They were then given onward clearance by City Radar[2] to track towards Canary Wharf to the south of the Isle of Dogs not above 1300ft. They descended to 1200ft and continued south with the intention of carrying out a 180° turn once reaching the southern point of the Isle of Dogs. Once reaching [the Isle of Dogs] they recall reporting their intention to turn and head back north. They were told there was a helicopter to the northwest and they reported that they had visual contact. They were then told of another helicopter and they replied that they had copied and were looking but had no visual contact. On their northerly heading, still within the Zone, they did see a passenger aircraft to the east around 2000ft above them and approximately 2 miles away. They did not see the need for avoiding action due to the distance, and their speed and heading, which would have [meant that they] cleared the Zone fairly rapidly. They consider that this may have been the E190 as it departed downwind and accept and that it is likely that they did not see it at the time of the Airprox. On exiting the Zone they were told to squawk 7000 and to change frequency, which they did. They landed at 1120. They were not aware that they had been involved in an Airprox until they received an email. They recall following all instructions correctly but if they had misinterpreted any then they apologise to all concerned.

The pilot assessed the risk of collision as 'None'.

THE LONDON CITY TOWER CONTROLLER reports [the E190 pilot] was lined up ready to depart RW27, however, they were unsatisfied with the position of [a helicopter] on a 3NM climb-out and had been waiting for some time. [The helicopter pilot] was [asked] to proceed 1NM north of their location to clear the way for the departure. At the same time [the PA28] had entered [the zone] from the north and [the pilot had requested] a southbound routing to the Isle of Dogs and then a reciprocal northbound routing. As the [helicopter] was routing away northbound the controller gave [the PA28 pilot] a southbound routing assuming that, as they were orbiting, it would take time for them to roll out of the orbit and proceed south. Traffic was given on [the E190]. [The E190 pilot] was cleared for take-off, on the assumption that [as] they had been holding for fair while they would be quick to roll. Traffic was given on [the PA28]. The controller opined that their judgement had been incorrect on both [the E190 pilot] rolling quickly and [the PA28 pilot] being slow to roll out of the orbit and head south and they got much closer together than they had anticipated.

Factual Background

The weather at London City airport was recorded as follows:

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METAR EGLC 161120Z AUTO 30014KT 9999 SCT033 BKN040 OVC048 17/10 Q1017=
METAR EGLC 161050Z AUTO 30012KT 9999 BKN031 18/10 Q1017=
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Analysis and Investigation

Occurrence Investigation

An investigation was carried out by NATS. The investigator interviewed the controller and the E190 pilot, listened to the radio recording and viewed the radar replay.

Timeline and RT Transcript:

1056:00 [Helicopter c/s] was operating approximately 3NM WNW of EGLC not above 1100ft
[The] E190 was lined up RW27, due to depart on an EKNIV1A [standard instrument departure] to [destination airfield], and the pilot was given Traffic Information on [the helicopter], and elected to 'wait a little bit longer please'.
1056:54 TC SVFR rang City Tower (CT):
CT: "*City Tower"*

[2] Clearance was issued by City Tower.

TC SVFR: "*Request coordination I've got a fixed wing to come down the Lea Valley to Canary Wharf do you want to take the details?"*
CT: "*Yeah sure"*
TC SVFR: "*[PA28 c/s], a PA28, [PA28 departure airfield] to [PA28 destination airfield]"*
CT: "*Yep"*
TC SVFR: "*7030 just south of BPK by 3 miles"*
CT: "*Contact"*
TC SVFR: "*They would like to come down the Lea Valley"*
CT: "*Yep"*
TC SVFR: "*Just as far as Canary Wharf and back out again"*
CT: "*Back out via the Lea Valley"*
TC SVFR: "*Via the Lea Valley affirm"*
CT: "*Roger"*
TC SVFR: "*Clear it in to the Olympic Park for you to bring on or do you want me to give it to you outside controlled airspace"*
CT: "*Clear him in to the Olympic park to hold"*
TC SVFR: "*Roger not above 1300ft coordinated thank you"*
1100:00 A Jet Centre aircraft requested and was given taxi.
1101:00 [E190 pilot] asked how long the helicopter might take. The ATCO discussed this with the [helicopter pilot], who agreed that they would move 1NM north shortly.
1102:15 [PA28]: "*Tower good morning [PA28 c/s]"*
CT: "[PA28 c/s] *City Tower continue routing southbound to hold south of the southern tip of the Isle of Dogs, traffic information helicopter currently 3 miles south of your position at 1100ft."*
[PA28 c/s]: "*Thank you very much continue south up to the Isle of Dogs and er we'll do a 180 and back to [destination airfield] if that's ok [PA28 c/s]."*
CT: "[PA28 c/s*] in due course just remain south of the Isle of Dogs for the time being I have got departing traffic."*
[PA28 c/s]: "*South of the Isle of Dogs thank you."*
[Helicopter c/s]: "*City Tower [helicopter c/s] we're departing scene now routing north of the Olympic Park. Let me know when it's done and I'll route back on scene."*
CT: "*[Helicopter c/s] Roger"* (traffic information on [PA28] was passed.)
[Helicopter c/s]: "*[Helicopter c/s] looking."*
1103:13 CT: "*[E190 c/s] Helicopter traffic now routing clear of your departure track further traffic just entering the zone from the north routing southbound below 1300ft is a fixed wing aircraft runway 27 you're clear for take-off wind 28015KT"*
1103:26 [E190 c/s]: "*27 Clear for take-off [E190 c/s]."*
The Jet Centre aircraft was given further taxi instructions. [The helicopter pilot] reported visual with the fixed-wing aircraft.
1103:53 [E190 c/s] commenced their departure roll. [PA28] was at this point 4NM NW of the field, in the vicinity of the Olympic Park, routing southbound.
1103:59 [PA28 c/s]: "*[PA28 c/s] (unclear) with you Olympic Village and heading south to hold south of the Isle of Dogs."*
CT: "[PA28 c/s] *Roger traffic just rotating now is a E190 will be routing through your level climbing to 3000ft."*
[PA28 c/s]: "*[PA28 c/s] That's copied thank you"*
1104:12 [The E190] was airborne
1104:26 [The E190] painted on the ATM, indicating 1500ft approx. 1NM west of the field. [The PA28] was approximately 1NM north of the 2 mile climb-out point, indicating 1200ft approximately 1.5NM north-west of the departure.
1105:13 The two aircraft crossed over 2NM west of the field, [the E190] indicated 2100ft, [the PA28] (squawking 7030) indicated 1200ft.
The Jet Centre aircraft was given a line-up.
1105:22 [The PA28 pilot] reported south of Canary Wharf and requested 180° and return, which was approved.
1105:45 CT: "*[E190 c/s] contact Thames Director 128.025"*
[E190 c/s]: "*128.025 [E190 c/s] er was that fixed-wing aircraft where you expected it to be?"*
CT: "*Affirm."*

[E190 c/s]: "*OK Sorry I thought he was passing overhead south and then behind us [E190 c/s].*" [The E190] pilot later reported to radar that they were unhappy with the traffic separation.

The investigation team contacted the E190 operating company and the pilot's reply is summarised below:

During taxi out, with inbound traffic just landing and no further traffic following, they were instructed to line up on RW27 and report ready for departure. Just as they were about to report ready (having received the cabin secure and completing the checks), ATC informed them of a helicopter at 12 to 1 o'clock, maintaining 1000ft and asked whether they would be happy to depart with it in that position. The crew was unable to visually acquire the helicopter and after cross-referencing the given information with the TCAS display [it was deemed] that the position of this helicopter would conflict with their emergency turn procedure (the helicopter was hovering just where they would be turning for LAM after 0.9d), therefore, the crew declined.

After a good 5 or so minutes, with no further calls at all on the radio, they asked Tower if they had any information on what the helicopter was doing, and if they might have an idea on how long they'd be remaining in situ. Passing-on the question, [the helicopter pilot] replied, seemingly unaware the E190 crew was holding for them, indicating that they would be happy to move away for a short time to allow for their departure. Once this was confirmed and the helicopter received the relevant clearance from ATC to head northbound for a short period, the E190 pilot was given clearance to take-off. In the same transmission, they were informed of further (fixed-wing) traffic, which would be heading southbound, but they were not informed of any potential conflict.

Seeing the helicopter move off to the north as expected, and not seeing the further traffic on TCAS, believing they were now clear of conflict, the crew then took off. In the initial climb, the fixed-wing traffic appeared on their [TCAS] screens in pretty much the exact same position as the helicopter had been for which they had been holding. In their current mental model, the crew had not expected to see traffic there, and quickly assessed it as being on a direct course towards them. The traffic then quickly became a TA whilst the crew was attempting to visually acquire the traffic. They eventually saw them just before they passed pretty much right overhead, on a perpendicular trajectory, with a minimum spacing of 600ft.

Both crew felt this was a serious conflict, and in case of [an engine failure], it would have been difficult to avoid the traffic either vertically or laterally. They opined that the manoeuvre would have needed 'live' visual deviation from the ETP, clearly less than ideal in a high workload scenario - not to mention this being exactly the reason they had declined departing just a few minutes earlier with the helicopter holding in that same area.

Immediately prior to the handover to departure [frequency], they enquired with Tower about the traffic, as they hadn't expected it to be in conflict with them in the way it was. The Tower confirmed that it was where it was supposed to be.

The ATCO stated that they had not felt fatigued and that they felt no outside work issues were causing any impact on them. They mentioned that the General Manager was in the Digital Tower Ops Room (DTOR) and sat in the Ground Movement Control (GMC) position, next to the ADC position, but they did not consider this to have had any impact on operations.

They stated that they felt their decision making and reactions felt a little slow but they are not sure of the reasons for this. They mentioned that, as they have taken on another role within NATS, they have had less time in the seat than they normally would, that the pandemic's impact on traffic levels may have been the cause though they couldn't say if either or both of these issues had an impact. They also stated that the mix of VFR and IFR traffic was highly unusual for the last 18 months and so they were unused to dealing with a situation that, pre-pandemic, was commonplace.

They stated that their initial plan was to get the traffic moving as quickly as possible, they felt there was an element of having "done it before" during busy periods. The plan was for the VFR to roll out

and head south and that that would take longer than actually happened and that the departure would roll and there would be no conflict at all. They expected the departure to roll faster than it did given that the departure had been sat for some time waiting to depart. Prior experience told them that the climb rate of the Embraer departure and the speed of the VFR would be such that they would be "well clear" and that the VFR would probably transit behind the departure. They conceded that they did not factor in other issues that might mean the traffic behaved differently to expected but that they monitored the situation closely both on the ATM and from the screens in the DTOR and were not concerned that there would be a conflict or that the departure would receive a TCAS RA. If they were given the same scenario again they would hold the VFR north of the Olympic Park, orbiting until the departure was clear.

Attempts were made to contact the pilot of the VFR, without success.

Conclusions.

The pilot of the departing flight was unhappy with the position of the VFR overflight given that, had the flight experienced an Engine Failure After Take-off, it would have been in the position occupied by the VFR flight. As the departure appeared on the ATM, the aircraft were approximately 1.5NM apart and the departure was 600ft above. At the point the VFR crossed beneath the departure, there was 900ft between them.

The ATCO involved recognised that their plan had not been as robust as it should have been, utilising aircraft performance and prior experience as a guide led them to believe the VFR would take longer to roll out of its orbit and that the departure would begin its take-off roll faster than it did, given how long it had been waiting at the end of the runway. They ascribe this to possibly a combination of events including a shorter time controlling than previously, the lighter traffic loadings caused by the pandemic and that the mix of traffic at that time was highly unusual in recent times, though commonplace before Covid. The ATCO remained visual with both flights throughout and was satisfied that no confliction would occur.

Traffic information had been passed both ways and, although the traffic was not as precise as it could have been, it was accurate enough to give an indication of the flight and its route, though it is possibly the reason the departing crew had differing ideas as to where the flight would be from its actual position.

Whilst no contact could be made with the pilot of the VFR flight, given their position, accurate and concise Traffic Information having been passed to them and the meteorological conditions, it is considered very likely that they would have been visual with the departing aircraft and would have been able to take any avoidance action had an EFATO occurred.

Whilst standard separation is not applied between VFR and IFR flights, it is noted that the best practice standards at London City were not utilised in this instance. The ATCO recognised this and advised that they would not act similarly in the future.

UKAB Secretariat

The PA28 and E190 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[3] If the incident geometry is considered as converging then, notwithstanding ATC instructions, the E190 pilot was required to give way to the PA28.[4]

[3] (UK) SERA.3205 Proximity.
[4] (UK) SERA.3210 Right-of-way (c)(2) Converging.

Summary

An Airprox was reported when an E190 and a PA28 flew into proximity 2NM W of London City Airport at 1105 on Monday 16th August 2021. The E190 pilot was operating under IFR and the PA28 pilot was operating under VFR, both were in VMC. Both pilots were in receipt of an ACS from London City Tower.

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.

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.

Firstly the Board considered the actions of the E190 pilot. There was a discussion regarding emergency turn procedures (ETPs), how they differ for different operators and aircraft types and that, because of this, controllers do not have prior knowledge of the routing a pilot will request in such circumstances. The Board appreciated that the E190 pilot had wanted to, as far as possible, ensure that the routing they would have had to have followed, in the event that an emergency had occurred which would impact the aircraft's climb performance, would be clear of traffic. In the first instance this traffic had been a helicopter which, after negotiation with the pilot, had been vacating the area in which they had been operating whilst the E190 departed. During this negotiation, the PA28 pilot had established contact with the City Tower controller and routed towards the Isle of Dogs. When the City Tower controller had issued take off clearance to the E190 pilot, the controller had also passed Traffic Information on the PA28. The take-off clearance had been read-back by the E190 pilot but there had been no acknowledgement of the Traffic Information, and the pilot had not requested further information regarding the traffic (**CF1**). Once airborne, the E190 pilot had received a "Traffic Advisory" from the aircraft's TCAS system (**CF3**) and, as they turned above it, had visually acquired the PA28, closer than had been anticipated (**CF2**).

It was agreed by the Board that the pilot of the PA28 had been communicating with the correct agencies and had flown in accordance with their clearance. The resultant routing of the PA28 had taken them to the same area from which the helicopter traffic had previously departed. The PA28 pilot had been passed Traffic Information regarding the E190 and had continued to route to the Isle of Dogs but had not visually acquired the traffic until sometime after the event (**CF4**). A Civilian Airfield ATC member stated that operations and clearances such as this had previously been commonplace but that due to the Covid-19 pandemic there may have been some lack of familiarity for all parties. The Board agreed that the ATCO had carried out the correct and required actions.

Finally, the Board considered the risk involved in this event. Whilst the Board appreciated the E190 pilot's concern regarding what their flight path would have been should an emergency have occurred, the vertical separation on the flight path followed had been measured on the NATS radar replay at 1000ft. Both pilots had been in receipt of an ACS within class D airspace and separation standards had been met. Members concluded that normal safety standards had pertained and that there had been no risk of collision. Consequently, the Board assigned a Risk Category E to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

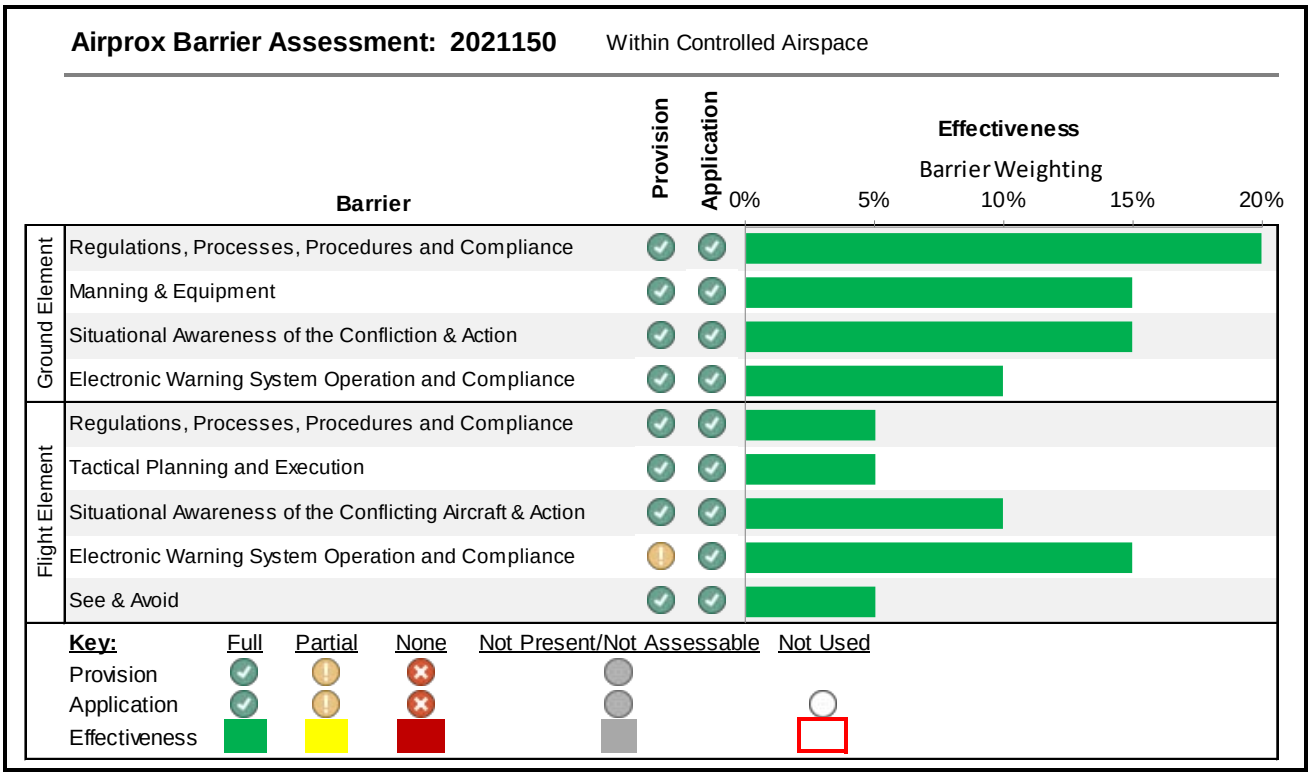
Contributory Factors:

	2021150			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Flight Elements			
	• Situational Awareness of the Conflicting Aircraft and Action			
1	Human Factors	• Lack of Communication	Events involving flight crew that did not communicate enough - not enough communication	Pilot did not request additional information
2	Human Factors	• Unnecessary Action	Events involving flight crew performing an action that was not required	Pilot was concerned by the proximity of the other aircraft
	• Electronic Warning System Operation and Compliance			
3	Contextual	• ACAS/TCAS TA	An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system traffic advisory warning triggered	
	• See and Avoid			
4	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: E

Safety Barrier Assessment[5]

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the recognised barriers to mid-air collision had all been fully effective in this case.



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