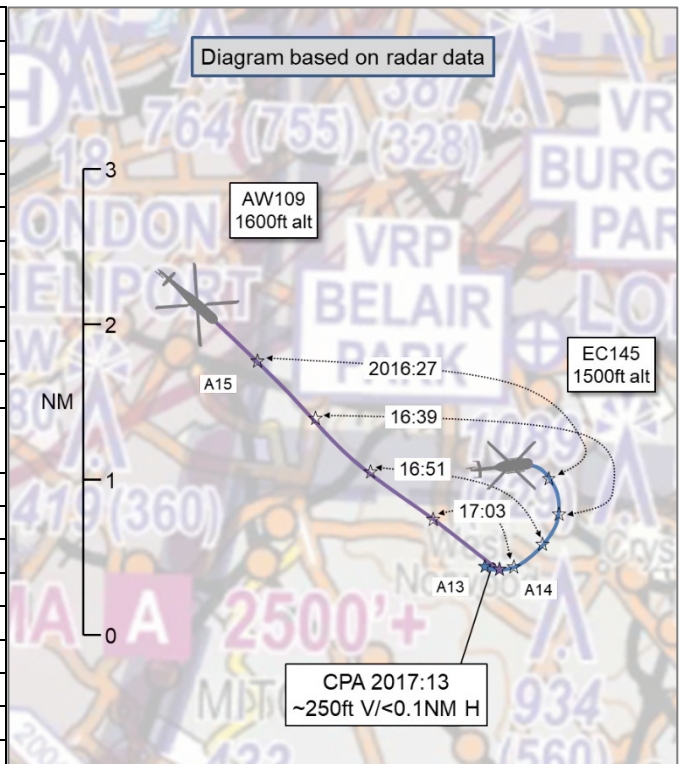


**AIRPROX REPORT No 2021235**

Date: 23 Nov 2021 Time: 2017Z (Night) Position: 5125N 00006W Location: Norbury

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	EC145	AW109
Operator	NPAS	Civ Helo
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic <sup>1</sup>
Provider	Heathrow SVFR	Heathrow SVFR
Altitude/FL	~1350ft	1600ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Dark blue, yellow	Silver, red
Lighting	Anti-col, position, strobes	Anti-col, nav, landing
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1400ft	1600ft
Altimeter	QNH (1031hPa)	QNH (NK hPa)
Heading	Orbiting right	~135°
Speed	NK	155kt
ACAS/TAS	TAS	TAS
Alert	Alert	Information
Separation at CPA		
Reported	~200ft V/<100m H	100ft V/200-300ft H
Recorded	~250ft V/<0.1NM H	



**THE EC145 PILOT** reports on an active police tasking (Category B) conducting right hand orbits around a location near the Crystal Palace masts, on the edge of the London City CTA and operating under a Basic Service outside the zone and Radar Control inside. They heard the initial clearance given to the AW109, to route Brent - Battersea - Biggin, initially not above 1300ft until Brent and then not above 1500ft thereafter. The EC145 was initially at 2000ft when the clearance was passed to the AW109. They informed Heathrow Radar that they were aware of the AW109 routing and that they would look out for it. Heathrow acknowledged and said that the AW109 was just entering the zone near Brent. The EC145 then descended down to 1400ft for operational reasons. When the AW109 approached the Battersea overhead, Heathrow Radar passed them traffic information regarding the EC145 location and that they were at a similar altitude, to which the AW109 pilot reported that they were visual with the EC145. The AW109's location was passed, just overhead Battersea. At this point they were facing the AW109, were visual with it, and continued the right-hand orbit. They heard the AW109 pilot say that they were climbing to maintain 1600ft (at some point prior to this call they had been given a clearance to be not above 2000ft). As the EC145 came back around the right-hand orbit, maintaining 1400ft, they re-acquired the AW109 and noticed that it was heading straight toward them. They initially slowed the rate of orbit to see if the AW109 would change direction, but no change of direction was observed so they briefly ceased the orbit to allow the AW109 to pass down the starboard side and above them. The separation was perceived to be too close. Shortly after they notified ATC that they would like to file an Airprox. At the point the Airprox occurred, they were outside controlled airspace, under a Basic Service, although the Heathrow Radar Controller provided them with updates to the AW109's position. In the EC145 pilot's opinion, this was instrumental in helping both pilots gain early visual contact with the other aircraft.

<sup>1</sup> Reported as a Radar Control Service but was a Basic Service at CPA.

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

**THE AW109 PILOT** reports transiting single pilot at night, to land at Biggin Hill. They called Heathrow Radar when passing south of RAF Halton to request a Heathrow Zone transit and was offered Brent – Battersea overhead. This was a routing with which the pilot was familiar and which they accepted. Clearance was VFR not above 1500ft until Brent then not above 1300ft. On frequency, they heard a police callsign near Kenley in Surrey. They recognised the pilot as a former colleague, who noted that they were aware of the AW109's presence and subsequently requested "free range in the City zone, south of the 27 approach" which they were given not above 2000ft VFR. The AW109 pilot entered the Heathrow Zone under radar control and transited via Brent and then the Battersea overhead. They were re-cleared not above 2000ft direct to Biggin so climbed to 1600ft, which put them 1000ft above Biggin Hill, which is common practice for pilots returning to Biggin and is circuit height for Biggin Hill. The controller made them aware of the presence of the police helicopter which they saw pass right to left some miles ahead and was told was at a 'similar altitude'. They reported they were visual and level at 1600ft. This was specifically for the information of the EC145 pilot, who they knew to be familiar with the area due to their activity with the commercial helicopter company some years previously. They switched on the left and right side landing lights and the EC145 pilot reported that they were 'visual.' The AW109 pilot saw the police helicopter travel in a north-easterly direction. It looked to be travelling towards the Greenwich area but it was difficult to remain visual due to the backdrop of lights in southeast London. The AW109 was equipped with a TAS but, unusually for an AW109 it only shows traffic on the screen in front of the P1 position, on which it is difficult to assess range and bearing due to the small screen and fairly cluttered display. The controller informed them that, "Biggin would like you to join left base for 21" which they queried because they were positioned for a right base join, to which the controller agreed that was what was meant. The AW109 pilot was then aware of the EC145 helicopter passing down the right side, about 200-300ft away, although this was difficult to assess, and about 100ft below. While they were surprised at its location, because from the EC145 pilot's communication they had thought it to be closer to London/City than it was, they did not assess that they were at risk of collision. They then heard the EC145 pilot report an Airprox over the radio. The AW109 pilot noted that they were surprised that this incident occurred, given how very careful they were to make the controller and the other pilot know their position and altitude at all times. The routing they had been given was discussed on a number of occasions and they knew that the EC145 pilot was particularly familiar with the airspace and routing. The AW109 pilot suggested that they had perhaps misunderstood the 'free range' request because they thought this meant the police helicopter was going to be closer to London/City. If it was orbiting in the Crystal Palace area then it made no sense that the police pilot, knowing their location and routing, did not transmit a position report. Had this been the case then they would have immediately turned south towards Croydon in order to avoid conflict. While they could see the EC145 lights intermittently, they looked to be about 1200ft below their level, which made it very difficult to see against the very well-lit London backdrop. They therefore had no idea it was so close to them. The AW109 pilot noted that it was important to make clear they were not relying on a 'right of way' or on a given or implied clearance. Had they understood that the helicopter was orbiting they would have altered course and remained clear by some miles. It was unclear to the AW109 pilot why, if the EC145 was 'on-task' at that location, the pilot did not transmit this information, given how much prior dialogue had taken place regarding their respective positions. It was also important to stress that they were a single pilot flying at night and preparing for landing; although they were fully engaged with lookout at the time, a multi-crew helicopter with probably three crew on board had more capacity to look out. They did not consider the incident worthy of an Airprox report and noted that nothing contained within their account implied any criticism of the Heathrow controller, who was helpful and professional.

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

**THE HEATHROW SVFR CONTROLLER** reports that the sector was bandboxed with Thames. At approximately 2020, an EC145 helicopter was on-site near the Crystal Palace masts. The aircraft was operating in Class G airspace, under a Basic Service. An AW109 helicopter was transiting through the London CTR, routing via Brent Reservoir and Battersea, then onward to Biggin Hill. Both pilots were flying under VFR. As the AW109 flew through Battersea's overhead, the controller passed traffic information to the pilot on the location of the EC145, as being in their 12 o'clock at 3NM. The pilot replied that they were visual with the aircraft. The altitude clearance was 'not above 2000ft'. They then advised

the EC145 pilot that there was traffic in the Battersea overhead that was routing towards Biggin Hill and that the pilot had them in sight. The EC145 pilot advised that they were also visual with the AW109. As the AW109 passed by the EC145, the EC145 pilot advised that they would be filing an Airprox. The EC145 pilot rang in to the Terminal Control Operations Room after they had landed and advised that although they originally had the other aircraft in sight, they were facing in the opposite direction at the time the AW109 passed by and had anticipated the AW109 pilot would make a track adjustment. They considered the distance between the aircraft to have been about 200ft and said the proximity had 'spooked' the crew.

## Factual Background

The weather at Biggin Hill was recorded as follows:

METAR EGKB 232020Z 36004KT 9999 MIFG FEW011 03/02 Q1030=

## Analysis and Investigation

### NATS Ltd

#### Summary

[EC145] was receiving a Basic service from the Heathrow SVFR Controller in class G airspace, with [AW109] transiting the London CTR. Traffic information was passed to the pilots of both aircraft with the pilots confirming that they were visual with each other. The pilot of [EC145] subsequently stated that prior to the Airprox they were not visual with [AW109] due to enacting an operational orbit. The pilot of [EC145] became visual with [AW109] again, prior to the closest point of approach, stating there was 200 feet vertical distance between the two aircraft, and they had expected [AW109] to have made a track adjustment. The pilot of [EC145] informed the LL SVFR Controller that they were reporting an Airprox.

#### Description and Investigation

Information available to the investigation included:

- CA4114 from the Heathrow Special VFR Controller (LL SVFR) (NATS Ref No:177618)
- Airprox report from the pilot of [EC145] (UKAB Ref No: 2021235)
- Radar and R/T recordings

[EC145] was an EC145 helicopter on an operational police task outside of controlled airspace, orbiting abeam the Crystal Palace masts, VFR in night conditions. [EC145] was receiving a Basic service from the LL SVFR Controller.

[AW109] [...] was an A109 helicopter on a routing VFR from [departure] to Biggin Hill. The pilot of [AW109] was informed they were receiving a Radar Control Service (RCS) by the LL SVFR Controller at 20:10:59 (all times UTC) as they entered the London CTR.

At 20:11:52, the pilot of [EC145] requested approval to enter the London City CTR. This was approved by the LL SVFR Controller with a stipulation of not above 2000 feet. This was acknowledged by [EC145] who further stated they copied the routing of [AW109] and they would maintain a good look out. The LL SVFR Controller provided a position report for [AW109] to assist [EC145]. The pilot of [AW109] acknowledged this information for the benefit of [EC145].



Figure 1

The Airprox report from the pilot of [EC145] stated that they subsequently descended to altitude 1400 feet for operational reasons, and radar displayed this descent commenced at 20:15:27.

The pilot of [AW109] was provided with a revised clearance of not above altitude 1500 feet for their routing at 20:15:01 which was acknowledged.

Further traffic information was provided to the pilot of [AW109] at 20:15:30 (see Figure 1), stating that [EC145] was in their “twelve o’clock, about three miles, similar level.” The pilot responded that they were visual. The pilot of [EC145] also stated that they were visual with [AW109]

A further revised clearance of not above altitude 2000 feet was provided to the pilot of [AW109] at 20:16:12. [AW109] exited the London CTR, now tracking through the southern portion of the London City CTA (1500-2500).



Figure 2

The pilot of [AW109] reported level at altitude 1600 feet at 20:16:58 and were visual with [EC145], which displayed a Mode-C altitude of 1400 feet whilst manoeuvring through an orbit (see Figure 2). The pilot of [EC145] responded that they were also visual with [AW109].

[AW109] vacated the London City CTA at 20:16:59.

The Airprox report from the pilot of [EC145] stated that “as we came back around maintaining 1400ft and became visual with [AW109], we noticed they were heading straight toward us. We initially slowed our rate of orbit to see if [AW109] would change direction, no change of direction was observed so we briefly ceased the orbit to allow them to pass down the starboard side and above us.”



Figure 3

The closest point of approach between the two aircraft occurred at 20:17:11 immediately prior to the two radar returns crossing and was measured on the Multi-Track Radar Display as 0.1nm and 200 feet. (see Figure 3). The next radar update displayed the two targets had crossed with 0.1nm lateral and 300 feet vertical distance.

At 20:17:29, the pilot of [EC145] informed the LL SVFR Controller that they were declaring an Airprox reference [AW109]. The pilot of [AW109] was subsequently transferred to Biggin Hill Approach.

Note: Although [AW109] had exited controlled airspace (20:16:59), the LL SVFR Controller at the time of the airprox had not downgraded the level of service from RCS. Although there was no change in radar service, it was assessed that appropriate and updated traffic information had been passed to both pilots with no critical action required from either pilot to ensure the aircraft did not come into unsafe proximity, and so this had no bearing on the event.

The pilot of [EC145] later telephoned the TC Operations room to provide further clarity on their Airprox declaration stating that the traffic information provided by the LL SVFR Controller was “exceptional”. The pilot further stated that as [EC145] was orbiting, and the pilot again became visual with [AW109] who didn’t appear to alter their track, and there subsequently appeared to be approximately 200 feet vertical distance between the two aircraft.

The Airprox report from the pilot of [EC145] stated that ‘the Heathrow Radar Controller provided us with updates to [AW109]’s position, which in my opinion were instrumental in helping both aircraft acquire early visual contact with one another.’ The report further detailed the pilot of [EC145] had initially slowed their rate of orbit, then ‘ceased the orbit to allow [AW109] to pass down the starboard side and above us.

At the time of this report completion, Safety Investigations were not aware of an Airprox report submission from the pilot of [AW109].

#### Conclusions and RAT Assessment

Closest Point of Approach occurred at 20:17:11 and was recorded on Multi-Track Radar as 0.1nm and 200 feet.

The Airprox occurred when [EC145] was enacting an orbit for operational reasons and the pilot lost visual contact with [AW109]. The pilots of both aircraft had been passed Traffic Information and had previously reported being visual with each other. The Airprox report from the pilot of [EC145] stated they had regained visual with [AW109] tracking towards them and that they had expected [AW109] to adjust their track to avoid their position.

The scenario was resolved as the pilot of [EC145] decreased their turn rate and ceased their orbit manoeuvre as a precaution. The pilot report of [EC145] stated ‘the Heathrow Radar Controller provided us with updates to [AW109]’s position, which in my opinion were instrumental in helping both aircraft acquire early visual contact with one another.’

## UKAB Secretariat

The EC145 and AW109 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>2</sup>

### Comments

#### NPAS

It appears that both pilots made incorrect assumptions regarding the intentions of the other, leading to a degradation of situational awareness and for separation to become less than intended or expected. Pilots should be aware that police aircraft frequently change height, speed and direction and they should aim to give them the maximum separation possible.

### Summary

An Airprox was reported when an EC145 and an AW109 flew into proximity at Norbury at 2017Z (night) on Tuesday 23<sup>rd</sup> November 2021. Both pilots were operating under VFR in VMC, both in receipt of a Basic Service from the Heathrow SVFR controller.

### **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.

Members first discussed the helicopter pilots' actions and agreed that both were conducting 'normal operations' for their roles. The EC145 pilot was operating tactically by necessity and also maintained accurate situational awareness on the approaching AW109. Unfortunately, the AW109 pilot formed an inaccurate mental model of the EC145 pilot's track and intentions, perhaps from the EC145 pilot's transmission requesting 'free range in the City zone, south of the 27 approach' and the AW109 pilot's reported visual sighting of the EC145 travelling 'in a north-easterly direction'. Members thought that this was either a mistaken visual sighting of something else for the EC145 (operating against a cluttered cultural background) or that they had lost sight of the EC145 shortly after seeing it on a north-easterly leg of its right-hand orbit. Either circumstance resulted in the AW109 pilot operating in the mistaken belief that the EC145 was transiting to the northeast and would not be a factor on their planned routing (**CF4**). Some members thought that the AW109 pilot's report of the EC145 being 1200ft below, when it was initially slightly above and then only 200ft below, indicated that the AW109 pilot had not seen the EC145 at all. The Board felt that it is appropriate for other airspace users to avoid an orbiting police helicopter but the AW109 pilot's faulty situational awareness (**CF3**) and loss of visual contact resulted in them not being able to adapt their plan (**CF2**) and subsequently flying in to close proximity with the EC145. The EC145 TAS provided an alert on the closing AW109 (**CF5**) but members were unable to ascertain why the AW109 TAS did not alert (**CF1**) and felt that it should have under the circumstances. In the event, although the AW109 pilot only saw the EC145 very shortly before CPA (**CF6**), Traffic Information had been passed by the Heathrow SVFR controller and the Board agreed that the EC145 pilot was visual with the AW109 at range and had taken action to prevent the risk of collision, Risk C.

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<sup>2</sup> (UK) SERA.3205 Proximity.

**PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK****Contributory Factors:**

	2021235			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Ground Elements</b>				
<b>• Electronic Warning System Operation and Compliance</b>				
1	Technical	• Conflict Alert System Failure	Conflict Alert System did not function as expected	The Conflict Alert system did not function or was not utilised in this situation
<b>Flight Elements</b>				
<b>• Tactical Planning and Execution</b>				
2	Human Factors	• Insufficient Decision/Plan	Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation	Inadequate plan adaption
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
3	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
4	Human Factors	• Understanding/Comprehension	Events involving flight crew that did not understand or comprehend a situation or instruction	Pilot did not assimilate conflict information
<b>• Electronic Warning System Operation and Compliance</b>				
5	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
<b>• See and Avoid</b>				
6	Human Factors	• Identification/Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots

**Degree of Risk:** C.

**Recommendation:** Nil.

**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:

**Ground Elements:**

**Electronic Warning System Operation and Compliance** were assessed as **not used** because STCA is not used in that environment.

**Flight Elements:**

**Tactical Planning and Execution** was assessed as **partially effective** because the AW109 pilot's incorrect situational awareness precluded plan adaption.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **partially effective** because the AW109 pilot had incorrect situational awareness and did not assimilate the conflict information.

<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](#).

**Electronic Warning System Operation and Compliance** were assessed as **partially effective** because the AW109 TAS did not alert.

<b>Airprox Barrier Assessment: 2021235</b>		Outside Controlled Airspace					
Barrier	Provision	Application	Effectiveness				
			Barrier Weighting				
			0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓				
	Manning & Equipment	✓	✓				
	Situational Awareness of the Confliction & Action	✓	✓				
	Electronic Warning System Operation and Compliance	✓	○				
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✓				
	Tactical Planning and Execution	✓	⚠				
	Situational Awareness of the Conflicting Aircraft & Action	✓	⚠				
	Electronic Warning System Operation and Compliance	✓	⚠				
	See & Avoid	✓	✓				
<b>Key:</b>		Full	Partial	None	Not Present/Not Assessable	Not Used	
Provision	✓	⚠	✗	●			
Application	✓	⚠	✗	●		○	
Effectiveness							