

AIRPROX REPORT No 2021124

Date: 20 Jul 2021 Time: 1144Z Position: 5050N 00112W Location: Lee-on-Solent

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Grob 109	C172
Operator	Civ FW	Civ FW
Airspace	Lee-on-Solent ATZ	Lee-on-Solent ATZ
Class	G	G
Rules	VFR	VFR
Service	AFIS	AFIS
Provider	Lee Info	Lee Info
Altitude/FL	1200ft	900ft
Transponder	A, S ¹	A, C, S
Reported		
Colours	White, Maroon	White, Blue
Lighting	Strobes, Nav	Landing
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1000ft	1000ft
Altimeter	QFE (1019hPa)	QFE
Heading	'Downwind'	140°
Speed	70kt	84kt
ACAS/TAS	FLARM	TAS
Alert	None	None
Separation		
Reported	250ft V/1000m H	150-200ft V/0m H
Recorded	300ft ² V/<0.1NM H	



THE GROB 109 PILOT reports that they had just returned from a Navex around the Isle of Wight and contacted Lee Information as they approached the Cowes VRP. The controller acknowledged the call and passed the joining instructions, including circuit traffic which the pilot read back. They called downwind abeam the RW05 threshold and continued downwind on acknowledgment from ATC. As they approached the latter part of the downwind leg [C172 C/S] requested a right-base join which ATC acknowledged and passed the runway in use and circuit traffic. The pilot acknowledged the runway and the requirements to call on turning final. Moments later the controller asked [C172 C/S] if they had the Grob109 aircraft visual. At that point they decided there was a high risk of collision and applied full power to climb away from the other aircraft. It was at that moment the other pilot caught sight of them, but continued on to land. They had right of way as they were on the right but took avoiding action to ensure safe separation. They [Grob 109] orbited left and tracked in behind. They had informed Lee Information of their actions as the situation developed.

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

THE C172 PILOT reports that they were re-joining after a cross country flight with a student, and were joining from the north – VRP Wickham. They made an initial call to Lee Info and after the runway/QFE info had been passed, stated their intention to join right base for RW23. They were informed of other circuit traffic and heard an aircraft call "downwind". As a result they were actively looking for traffic on the downwind leg and could see nothing, neither could the student. As they are based at Lee on Solent they knew where the correct circuit pattern was and were mainly concentrating on the downwind leg but also scanning the area as a whole. It was slightly hazy but they could not see any aircraft so before they turned to join the base-leg they called Lee Info and said they were not visual with the traffic

¹ Mode C reported but not seen on radar.

² Separation calculated using GPS and radar data.

downwind. The AFISO could only inform them that the other aircraft was downwind. Again they looked and could see nothing. The other pilot did not communicate their position. They could not see any traffic to prevent them turning left (outside the ATZ) to join the base-leg so they did and then called that they were joining base and still not visual with the traffic. Again, there was no communication from the other pilot. They were then straight and level on base leg, reducing the power (probably not descending at that point as they needed to reduce speed to lower flap) and heard something along the lines of "I'm orbiting left" or "I'm turning left" and suddenly saw the Grob in approximately their 2 o'clock making a climbing left turn and proceeding to fly over their aircraft. The student said words to the effect of "what is he doing" and they carried on flying the aircraft and descending as they considered that to be the safest course of action as they had no idea what the other pilot intended to do. They completed the landing. The pilot noted they had several points to make: 1. The other aircraft could not have been flying the correct circuit pattern to fly over the C172 from the direction they did which may explain why they didn't see it. 2. They were aware that traffic in the circuit has priority over traffic joining but due to the unusual position of the aircraft they could not see it, clearly stated they could not see it (twice) and the other pilot made no attempt to clarify their position. 3. The correct procedure would have been for the other aircraft to turn right, not only for collision avoidance but because in a right hand circuit turns should be made to the right, not left, and the only collision risk came from the other aircraft turning towards them and flying over the C172. A simple right turn would have taken them away from the C172 (over the noise abatement area but in a safety situation that is allowed). 4. They considered the only danger to have come from the other aircraft turning towards and flying over – and they wondered why the other pilot decided to do that as they considered it to have endangered both aircraft.

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

THE LEE AFISO reports that they didn't personally see the proximity of the two aircraft. The view is restricted from the Tower at Lee; the section of the circuit in question can only be observed by the AFISO constantly manoeuvring to look around large pillars obstructing their view. This makes a challenging task of accurately assessing aircraft proximity far more difficult. At the time of the incident they had two PA28s in the circuit when the Grob 109 pilot called for a downwind join. The C172 pilot called to join right base three minutes later. The Grob pilot reported downwind and the C172 pilot reported 'joining right base passed'. The C172 pilot reported not visual with the downwind traffic and so the traffic type and last position was given. They recalled the Grob pilot reported that they were conducting an orbit downwind. Shortly after [C172 C/S] reported visual with the Grob. Then [Grob C/S] pilot reported visual with the C172 ahead on base leg. As soon as the two aircraft pilots reported visual with each other the AFISO was content with the situation. A colleague spoke to the pilot of the C172 who informed them that [they believed] the Grob was flying a tight circuit and not in the location they expected when they joined right base. No mention was made of an Airprox on frequency or by either pilot post incident on the day. The pilot of the Grob came up to the Tower after landing and an Airprox wasn't mentioned then either. They weren't aware there was even an incident until they were contacted by the Airprox Board.

Factual Background

The weather at Southampton was recorded as follows:

EGHI 201150Z 21004KT 160V270 9999 FEW034 29/16 Q1020=

Analysis and Investigation

CAA ATSI

Both aircraft were training flights with an instructor and student on board. The G109 was returning from a navigation exercise around the Isle of Wight, whilst the C172 had been operating to the north. ATSI had access to the reports from both pilots and the Lee-on-Solent AFISO report and RTF. Snapshots have been taken from area radar replay, but radar coverage of the Lee-on-Solent area is intermittent.

At 1134:20 the pilot of the G109 called the Lee-on-Solent AFISO advising that they were approaching Cowes for rejoin. The AFISO passed them the runway in use, (23 right-hand) and the QFE. At 1137:50 a PA28(1) took off to operate in the Lee-on-Solent circuit and at 1139:00 a second PA28(2) called up for joining instructions from the Cowes area (Figure 1).

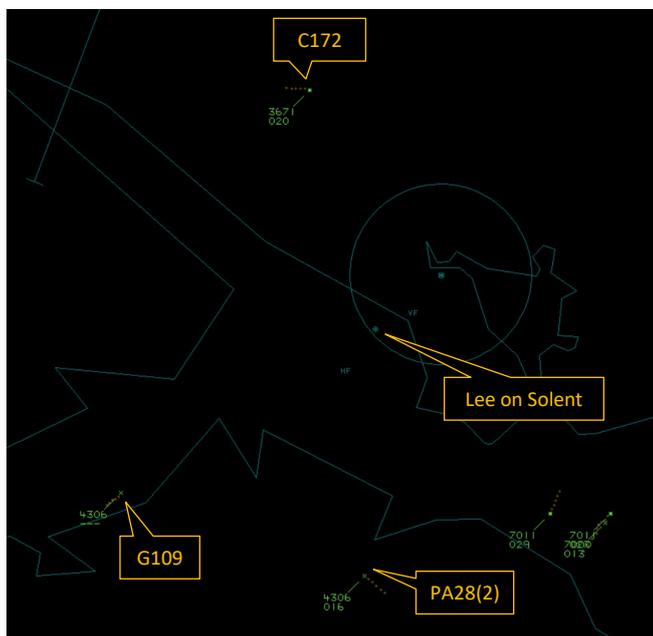


Figure 1 – 1139:00

The AFISO passed the PA28(2) pilot the runway in use and then Traffic Information on the PA28(1) in the climb-out for the circuit and “also a motorglider rejoining shortly”. At 1139:30 the G109 pilot reported at Cowes, advising that they would next call downwind which was acknowledged by the AFISO. At 1139:50 the pilot of the PA28(2) requested the level of the G109 and was advised by them that they were at 1500ft. At 1141:08 the PA28(1) pilot called downwind and was requested to report final (Figure 2).

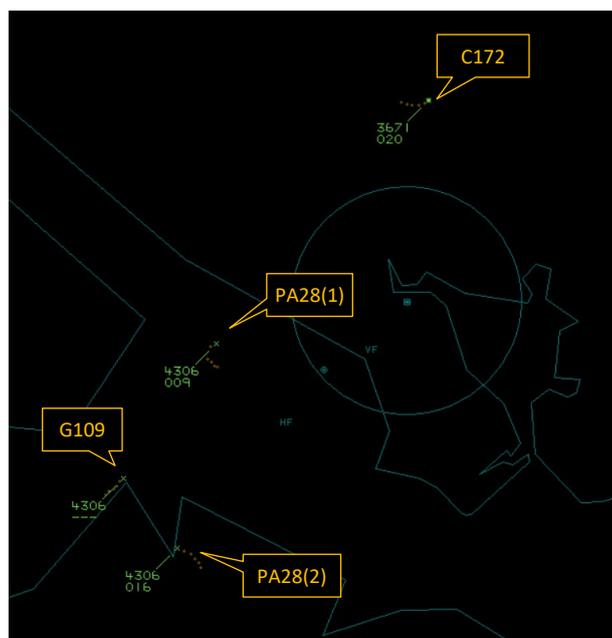


Figure 2 – 1141:08 (PA28(1) in circuit visible)

At 1141:37 the pilot of the PA28(2) advised that they were “*taking an orbit at Cowes just for spacing. (G109 C/S) are you mid-channel er mid-Solent now?*”. The G109 pilot confirmed that they were “*mid-channel*”.



Figure 3 – 1141:37

At 1142:07 the pilot of the C172 called overhead Wickham requesting rejoin instructions (Figure 4).

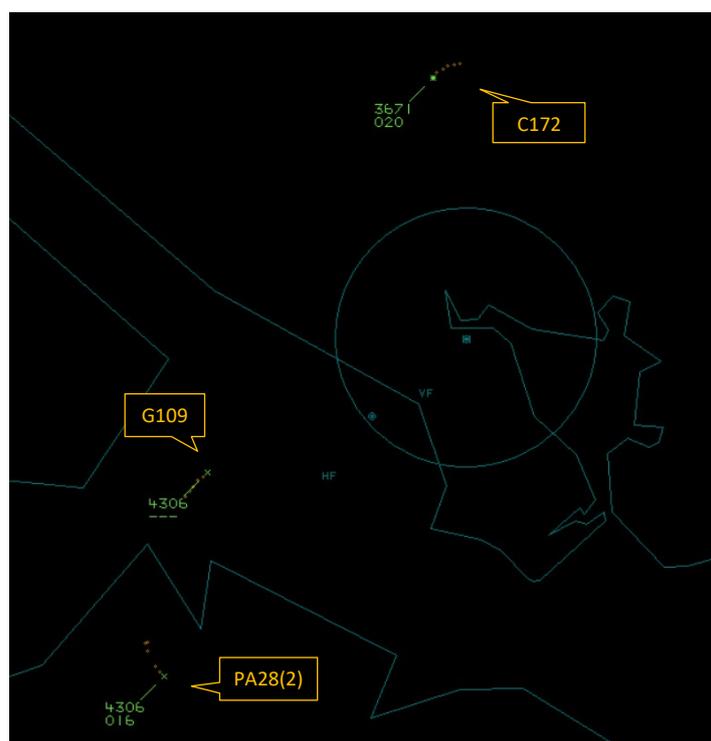


Figure 4 – 1142:07

The AFISO advised; “*Runway in use 23 right-hand (QFE). Traffic is a PA28 descending onto base leg remaining in the circuit. Also another PA28 and a motor glider joining from the Solent.*” The C172 pilot readback “*23 right-hand (QFE) roger, and we’ll join right base for 23*”. The AFISO then asked them to report right-base, which was acknowledged.

At 1143:15 the G109 pilot reported downwind (Figure 5).



Figure 5 – 1143:15

The AFISO missed the callsign and so asked them to say again. The G109 pilot repeated their call and the AFISO advised “roger – one ahead on final and one joining right base shortly”. Immediately following this transmission the pilot of the PA28(1) in the circuit called on finals for a touch and go. The AFISO gave the PA28(1) pilot the runway and surface wind which was acknowledged. The G109 pilot did not acknowledge the Traffic Information passed and it was not repeated by the AFISO.

At 1144:05 the pilot of the C172 reported “*about to turn right-base and not visual with the downwind traffic*” (Figure 6).



Figure 6 – 1144:05

The AFISO replied “*roger, you’ll be looking out for a motor glider reported downwind*”. At 1144:21 the pilot of the G109 advised that they were “*going to orbit left and climb*” (Figure 7).

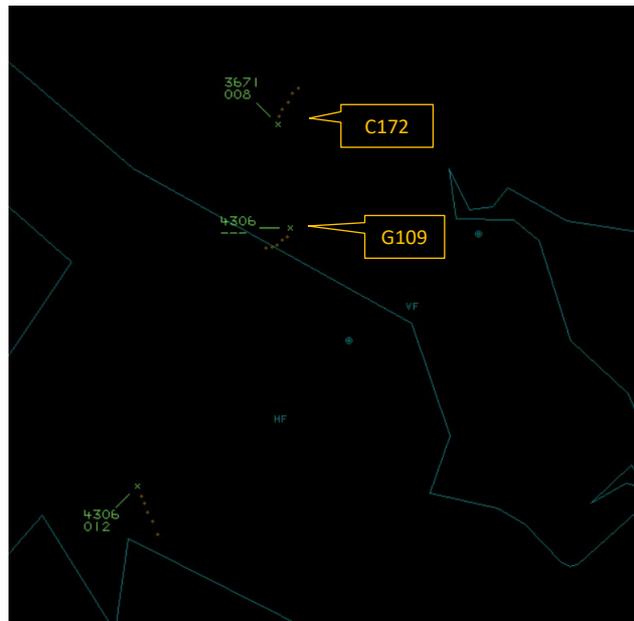


Figure 7 – 1144:21 (C172 1.2NM N of G109)

Then at 1144:32 the pilot of the C172 advised that they were “base leg and now visual with the motor glider” (Figure 8).

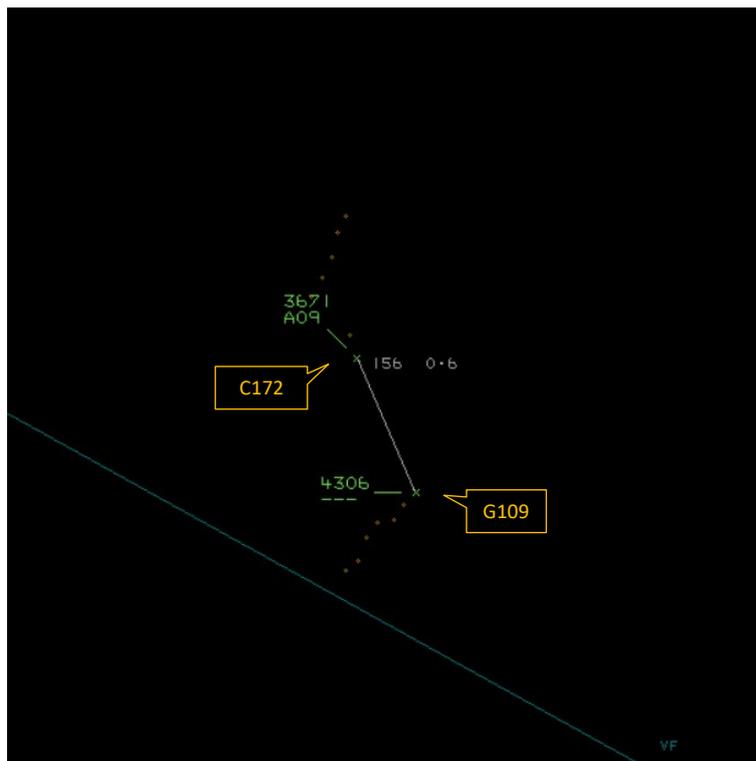


Figure 8 – 1144:32

The AFISO requested the pilot of the C172 to report final which was acknowledged by the pilot.

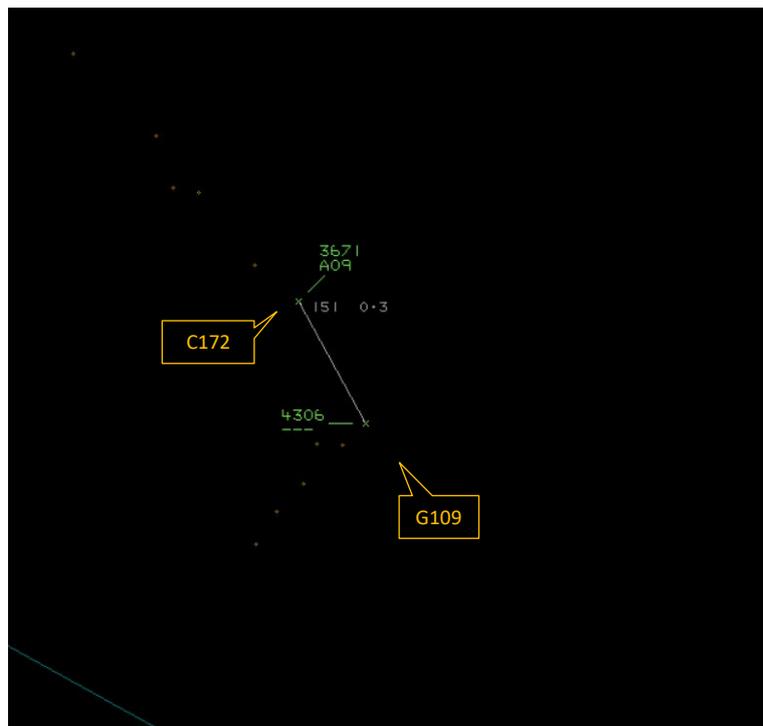


Figure 9 – 1144:48

According to the radar replay CPA occurred at 1144:55 (Figure 10).



Figure 10 – 1144:55

In accordance with Section 1, Chapter 1 of CAP797 the Flight Information Service Officer Manual their responsibilities are limited to the following:

1.15 FISOs may issue advice and shall issue information to aircraft in their area of responsibility, useful for the safe and efficient conduct of flights.

1.16 FISOs are not permitted to issue instructions, except for those circumstances in paragraph 1.17*, or when relaying a clearance from an air traffic control unit (ATCU). Pilots therefore are wholly responsible for collision avoidance in conformity with the Rules of the Air.

.....Elsewhere on the ground and at all times in the air, information shall be passed.

*Note: Para 1.17 relates solely to movement of aircraft on the surface of the aerodrome excluding the runway.

The Lee on Solent AFISO passed Traffic Information to the C172 on the G109 first, when the C172 was joining from the north-east and before the G109 reported downwind. When the G109 pilot reported downwind the AFISO advised them that there was “*one ahead on final and one joining right base shortly*”.

The sequence of events reported by the pilot of the G109 are not exactly as they occurred. They reported that the C172 didn't call for a right base join until the G109 was late downwind, and that the AFISO passed them their joining clearance then, whereas the joining clearance had been issued to the C172 pilot nearly 2 minutes earlier. The actual call from the C172 pilot was “*about to turn right-base and not visual with the downwind traffic*”. The AFISO did not ask the C172 pilot if they were visual with the G109 but rather “*roger, you'll be looking out for a motor glider reported downwind*”.

It could not be determined from the G109 pilot's report at what point they became visual with the C172, but in considering there was a “high risk of collision”, they elected to apply full power and climb away before then taking avoiding action. The C172 pilot reported being informed of the presence of the G109 in the downwind position and so called before turning onto base leg. They did report that there were hazy conditions but having checked for traffic again they believed it safe to turn. Once established on base leg they reported seeing the G109 in their 2 o'clock in a left-hand turn climbing over the top of them. As the G109 was not transponding altitude data, it could not be determined what the vertical separation between aircraft was.

UKAB Secretariat

The G109 and C172 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 head-on or nearly so then both pilots were required to turn to the right.⁴ 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.⁵

Summary

An Airprox was reported when a G109 and a C172 flew into proximity at Lee-on-Solent at 1144Z on Tuesday 20th July 2021. Both pilots were operating under VFR in VMC, both were in receipt of an AFIS from Lee-on-Solent.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and a report from the AFISO 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.

³ (UK) SERA.3205 Proximity.

⁴ (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.

⁵ (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

The Board first looked at the actions of the Grob 109 pilot. They were downwind in the visual circuit and had heard the C172 pilot call to join the circuit. Members thought that if the pilot had heard the C172 pilot questioning their position, it would have been helpful to have provided an update, but noted that the Grob 109 pilot could well have been instructing and may not have realised that the other pilot was struggling to see them (**CF1**). Nevertheless, the Grob 109 pilot was established in the circuit and would rightly have expected the C172 to integrate with them. The FLARM fitted on their aircraft could not detect the C172 (**CF6**), and so the pilot had only generic information on the positioning of the C172 until they became visual (**CF5**). Once visual, the Grob 109 pilot was concerned by the proximity of the C172 and assessed that, despite being established downwind, avoiding action would be necessary. Having assessed the situation they elected that the best course of action would be to turn left (**CF9**).

Turning to the C172 pilot, they had called to join via right-base and had been told about the traffic in the circuit. It was a hazy day and it would have been difficult to see the white motor-glider, indeed another joining pilot had asked the Grob 109 pilot to clarify their position earlier and members thought that the C172 pilot could also have directly called the Grob pilot for an update on their position (**CF1**, **CF4**). The C172 pilot had only generic information from the AFISO that there was traffic downwind (**CF5**). Furthermore, the TAS on-board did not detect the FLARM or the Mode S on the Grob 109 and so did not provide any additional information (**CF7**). Without specific situational awareness on the position of the Grob, members thought that the C172 pilot should not have continued into the circuit without being visual with it (**CF2**). Although the C172 reported that they thought that the Grob 109 was incorrectly positioned in the circuit, this did not appear to be the case according to the NATS radar trace, but regardless, as the Grob 109 was established in the circuit, it was for the C172 to integrate with it, or remain clear (**CF3**). Members commented that pilots should always ensure that they were visual with the circuit traffic before joining, and thought that in this case the C172 should have re-assessed the situation and remained clear. Although it was noted that overhead joins were not the preferred method of joining at Lee-on-Solent, members noted that conducting an overhead join allows pilots the opportunity to assess the circuit traffic prior to joining whilst in the overhead. By continuing onto base without being visual, the C172 pilot was relying on the other pilot becoming visual with them. In the event the C172 pilot did not become visual with the Grob 109 until after the other pilot had taken avoiding action and climbed above, making this effectively a none sighting by the C172 pilot (**CF8**).

The Board briefly looked at the role of the AFISO. An AFISO is not required to sequence aircraft when airborne, but can pass Traffic Information based upon the position reports given by the pilots. When the C172 pilot questioned the position of the Grob 109, the AFISO told them that it was downwind. Although some members wondered whether they could have been a little more helpful, it was agreed that they had discharged their duty in accordance with their responsibilities.

When assessing the risk of collision, the Board considered the reports from both pilots and the AFISO together with the NATS radar and the GPS data provided by the Grob 109 pilot. Although the Grob 109 pilot took avoiding action and the final separation was in the region of 300ft, taking into consideration that they would not have been expecting to need to conduct avoiding action in the circuit, and that the C172 pilot was not visual with the Grob 109, members agreed that there had been a risk of collision and that safety had not been assured; Risk Category B (**CF10**).

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021124			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
	Flight Elements			
	• Tactical Planning and Execution			
1	Human Factors	<ul style="list-style-type: none"> Accuracy of Communication 	Events involving flight crew using inaccurate communication - wrong or incomplete information provided	Ineffective communication of intentions

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
3	Human Factors	• Monitoring of Environment	Events involving flight crew not to appropriately monitoring the environment	Did not avoid/conform with the pattern of traffic already formed
• Situational Awareness of the Conflicting Aircraft and Action				
4	Human Factors	• Lack of Communication	Events involving flight crew that did not communicate enough - not enough communication	Pilot did not request additional information
5	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late or only generic, Situational Awareness
• Electronic Warning System Operation and Compliance				
6	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
7	Human Factors	• Response to Warning System	An event involving the incorrect response of flight crew following the operation of an aircraft warning system	CWS misinterpreted, not optimally actioned or CWS alert expected but none reported
• See and Avoid				
8	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
9	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft
• Outcome Events				
10	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: B.

Safety Barrier Assessment⁶

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

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the C172 pilot did not adapt their plan when they were not visual with the G109 as they approached the circuit and did not ask for further information.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because both pilots only had generic information on the position of the other.

⁶ 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 **ineffective** because the FLARM on the G109 could not detect the C172; furthermore, the TAS on the C172 did not detect the G109.

Airprox Barrier Assessment: 2021124		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	✓	✓					
Key:		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>		
Provision	✓	!	✗	○				
Application	✓	!	✗	○				
Effectiveness								