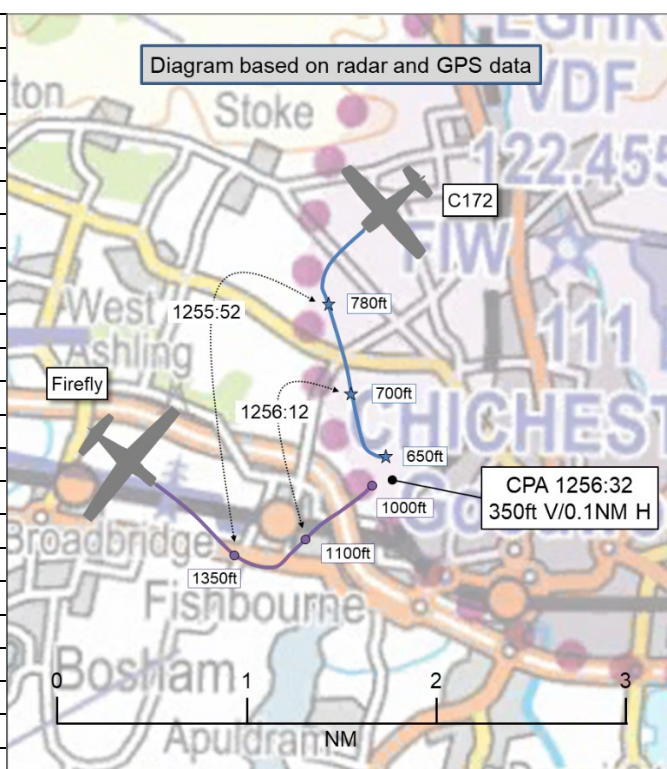


AIRPROX REPORT No 2022174

Date: 09 Aug 2022 Time: 1257Z Position: 5051N 00048W Location: Goodwood ATZ

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	C172	Firefly
Operator	Civ FW	Civ FW
Airspace	Goodwood ATZ	Goodwood ATZ
Class	G	G
Rules	VFR	VFR
Service	AFIS	AFIS
Provider	Goodwood Info	Goodwood Info
Altitude/FL	650ft	1000ft
Transponder	A, C, S	A, S ¹
Reported		
Colours	Blue, yellow	Yellow
Lighting	Landing, taxi	Nav, anti-col, HISL
Conditions	VMC	VMC
Visibility	>10km	NR
Altitude/FL	705ft	1000ft
Altimeter	QFE (NK hPa)	NK (NR hPa)
Heading	172°	60°
Speed	80kt	80kt
ACAS/TAS	Not fitted	Not fitted
Separation at CPA		
Reported	100ft V/200m H	NR V/NR H
Recorded	350ft V/0.1NM H	



THE C172 PILOT reports that they approached Goodwood from the north to join left-hand RW06. They joined overhead as the circuit was busy and they heard an aircraft was due to approach from the south to join the circuit. [The C172 pilot] joined overhead at 2000ft QFE and radioed overhead [with the intention to] descend on the deadside. They were advised by ATC to report downwind. They noticed a yellow aircraft [route] overhead towards the circuit, approximately 900ft below.

They joined downwind and heard two aircraft in the circuit, one of which was advised No2. They called downwind and continued downwind with a white high-wing (possibly a Cessna) on a long downwind leg. They followed this aircraft advising ATC [that the] Cessna was in sight. They turned left-base just inside the ATZ and called up to enquire which aircraft were in the circuit. They were being mindful of another aircraft and to see if the Cessna was the original No2. The Tower advised [that they were] not sure and that [the C172] must be No2 now. The Tower called up [another] aircraft to ask their position and was advised "*final*". The C172 pilot was a little concerned as they were not visual with that aircraft until they were about to turn onto final [themselves]. They spotted it at the last minute and advised Tower that they were commencing a left orbit (subject to other circuit traffic) and flew a left descending-turn mindful that the low-wing aircraft was in the descent and would not have seen them. They then re-joined final. They believe the other aircraft must have left the ATZ during their downwind or base leg to extend their final. ATC was not sure of the aircraft positions. They called ATC a few days later to ask about aircraft doing circuits outside of the ATZ.

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

THE FIREFLY PILOT reports that they were not aware that an Airprox had occurred as it was not reported on the radio. They fly several similar flights in a day and remember electing on this sortie to do an overhead re-join as the circuit was busy. They went further than usual downwind as they were

¹ Mode C altitude information had not been available for the Firefly.

No2 or No3 in the circuit. They recall they had visually identified the aircraft ahead and separated accordingly.

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

THE GOODWOOD AFISO reports that they remember it being quite hard to spot aircraft at the time and there being some confusion regarding the position of aircraft. They remember [the C172 pilot] reporting downwind and there were two ahead ([a Eurofox] and [the Firefly]). When [the C172 pilot] reported on base, there were two ahead, although there was some further confusion, possibly exacerbated by one of the aircraft using the incorrect callsign. The pilot of [the C172] elected to do a left-hand non-standard orbit on base leg. They believe that the pilot of [the C172] was flying a much tighter circuit than the circuit normally flown at Goodwood, making it difficult to follow the two ahead and do the standard go-around if required. The pilot of [the C172] rang up later that day to discuss the incident. They said, at the time, that they intended to take no further action, so no report was written.

The Goodwood AFISO did not believe this to be an Airprox.

Factual Background

The weather at Shoreham was recorded as follows:

METAR EGKA 091250Z 15008KT CAVOK 23/16 Q1028

Analysis and Investigation

CAA ATSI

The C172 was inbound VFR to join for RW06 via the overhead. The Firefly, having completed some general manoeuvring to the south of the airfield, was also inbound to land via the overhead, well ahead of the C172. Ahead of both aircraft was another C172 (C172-A) in the circuit, and a Eurofox which had already joined via the overhead. This Eurofox was not visible at any time on the area radar replay used to provide snapshots.

The C172 pilot had called for join at c1248:50² and been advised by the Goodwood AFISO that they had traffic joining via the overhead (the Eurofox), one in the circuit and one departing. They gave the pilot RW06 left-hand and the QFE. The Firefly pilot then called for join at c1250:33 and was advised by the Goodwood AFISO that "*traffic – we've got one in the circuit now and two for join – 06 left-hand (QFE)*".

At c1250:32 the C172-A pilot reported downwind followed at c1250:42 by the Eurofox pilot reporting in the overhead.

At c1251:26 the C172 pilot reported with 3NM to run to the overhead and was requested to report descending on the deadside. The AFISO then dealt with other aircraft including a departure.

At c1253:16 the C172 pilot reported in the overhead and descending deadside. The AFISO requested a call downwind. The Firefly had already passed through the overhead, but with no report from the pilot, and was now at the end of the crosswind leg (Figure 1).

² Times are estimated as the RTF timecode was found to be in error.

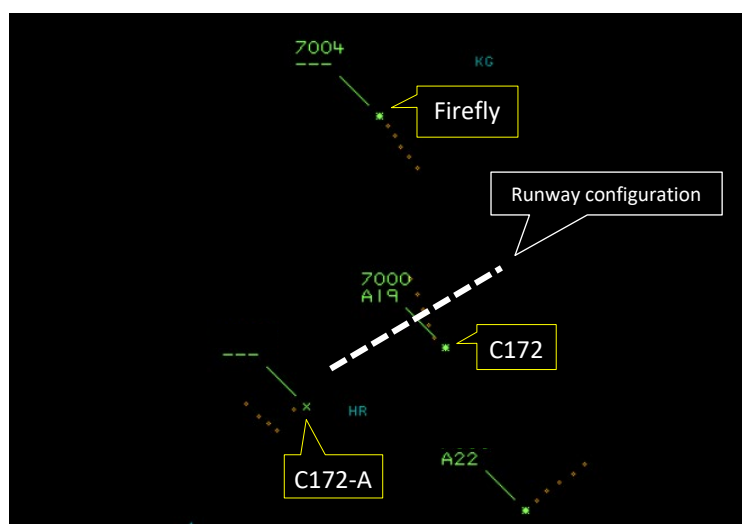


Figure 1 – 1253:16 (runway configuration as a guide only)

Immediately afterwards, the Eurofox pilot reported downwind and was requested to report final by the AFISO.

At c1253:49 the Firefly pilot reported downwind and was advised by the AFISO “*report final – two ahead*” (C172-A and Eurofox) (Figure 2).

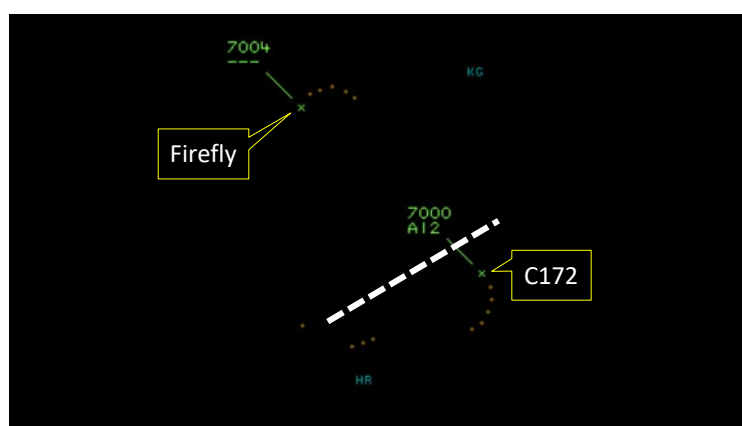


Figure 2 – 1253:49

At c1253:57 the C172-A pilot reported final for a touch and go and was given the runway by the AFISO.

At c1254:32 a pilot called leaving the frequency followed by another pilot reporting at c1254:47 ready for departure. The AFISO requested a position check from the Eurofox pilot who advised they were on base-leg. The AFISO then gave the pilot of the departing aircraft the runway for departure. (Figure 3).

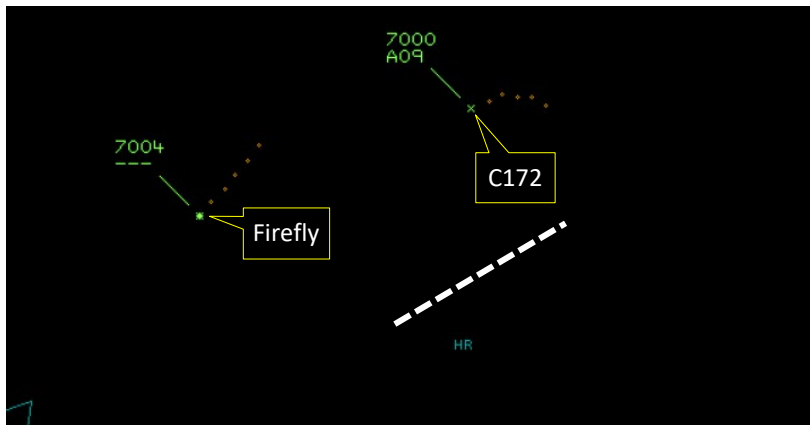


Figure 3 – 1254:47

At c1255:16 the pilot of the C172 reported “*late downwind – visual with the one ahead*”. The AFISO advised the pilot that “*you should have two ahead – one base, one just turning base behind that*”. The C172 pilot acknowledged this “*Copy. I’ve got one high wing – looks like he’s just turning. Getting ready for final, that was on base*” (Figure 4).

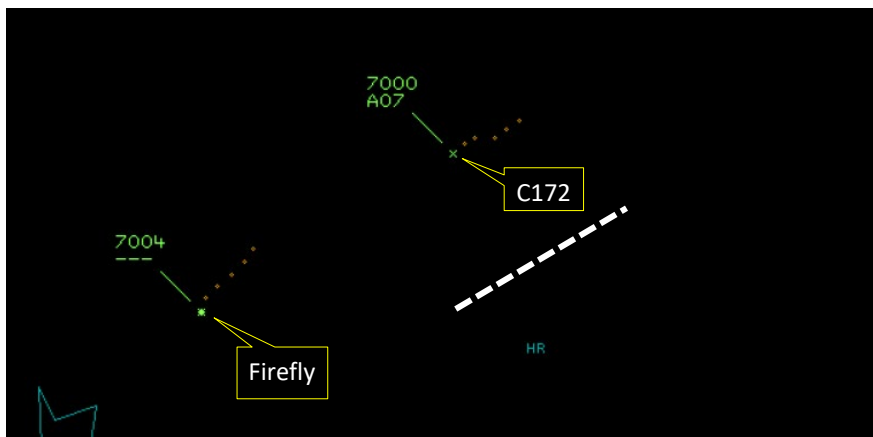


Figure 4 – 1255:16

At c1255:22 the pilot of the Firefly, using a slightly different callsign, (having changed their last letter), advised that “*we’re just turning base now*” (Figure 5).



Figure 5 – 1255:22

The AFISO asked the pilot of the Eurofox to confirm that it was they who had made that base call, (their callsign ending in the same letter wrongly used by the pilot of the Firefly). The pilot of the Eurofox replied “*negative - (callsign) is just about to turn final for 06*” and was given the runway for landing by the AFISO.

At c1256:02 the pilot of the C172 reported “(their callsign) (callsign of the Eurofox) visual ahead. The other one turning base I’m not visual with that” (Figure 6).

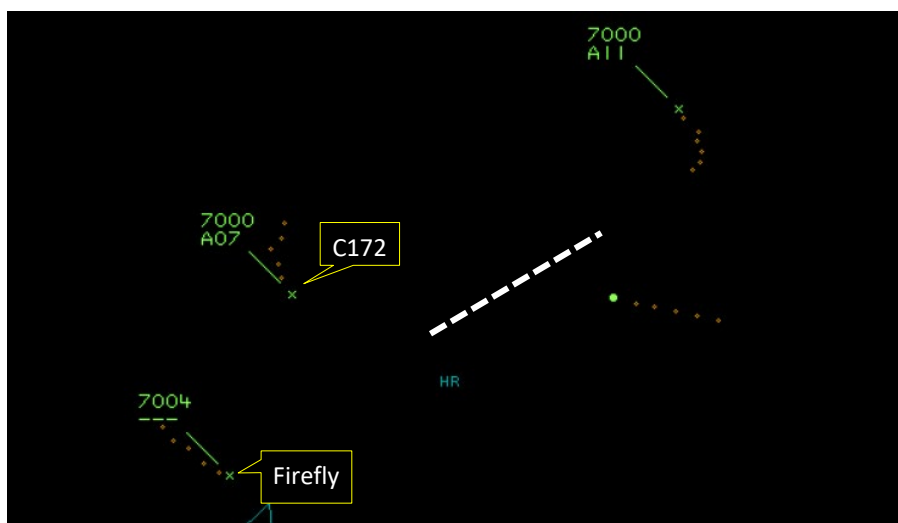


Figure 6 – 1256:02

The AFISO replied “where are you (C172 callsign)?” The C172 pilot reported “mid base, coming up towards finals”, to which the AFISO replied “I think you might be number two then” (Figure 7).

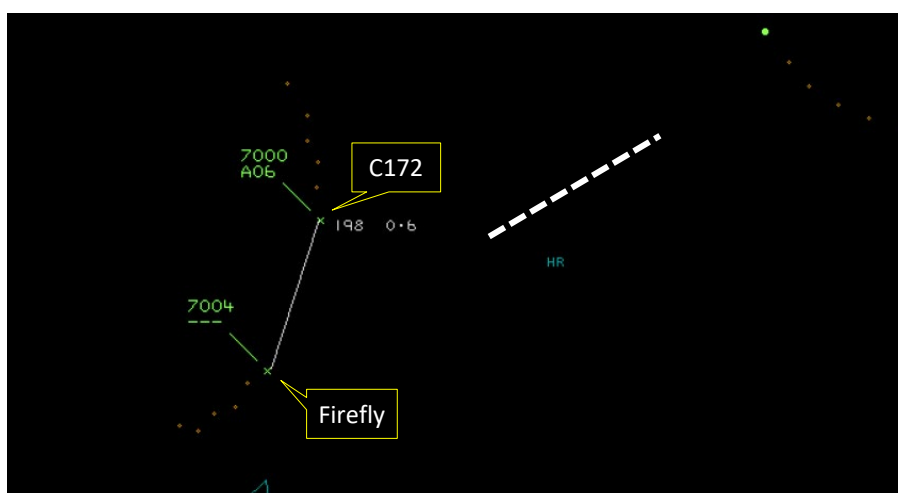


Figure 7 – 1256:15

The pilot of the C172 replied “OK – No2 – visual with the one ahead”. The AFISO then called the pilot of the Firefly “what’s your position?” The Firefly pilot replied; “we’re finals about 1 mile”. The AFISO responded “OK – and (C172 callsign) you’ve got another one on final ahead of you I believe”.

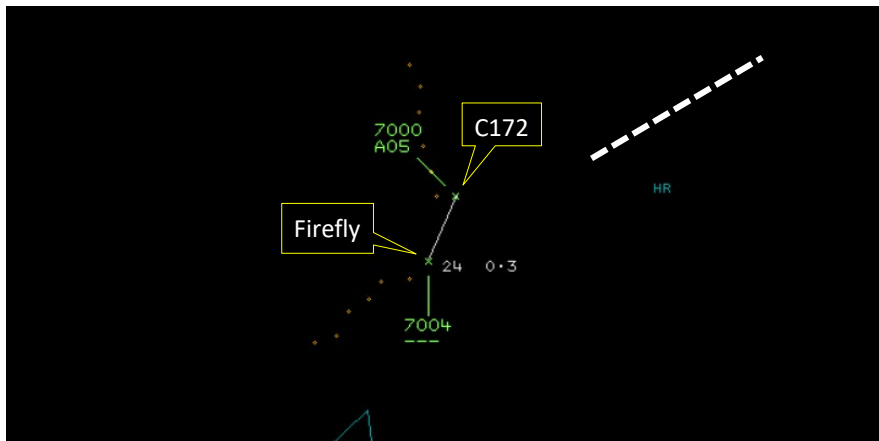


Figure 8 – 1256:26

CPA occurred at 1256:32 with the aircraft separated laterally by 0.1NM (Figure 9).

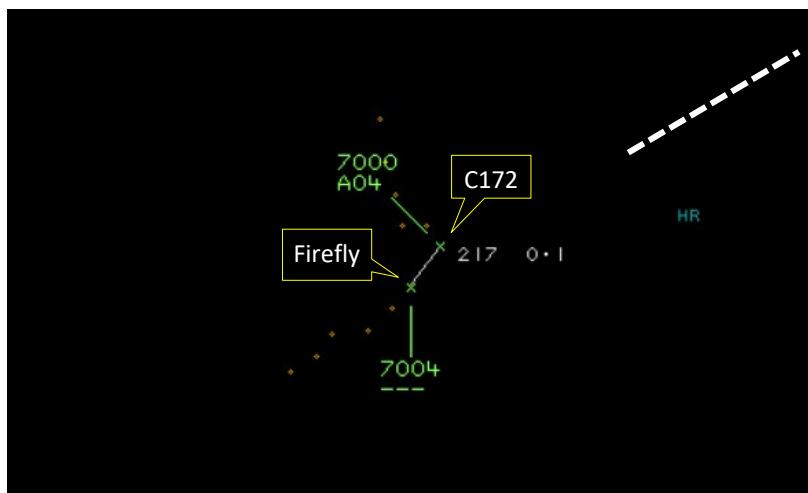


Figure 9 – 1256:32 CPA

The C172 pilot went on; “saw him – top right(?) I’m going to do one left-hand orbit subject to any other traffic, just to maintain clearance”. The pilot of the Firefly then advised; “OK - (Firefly callsign) visual now with the one below”.

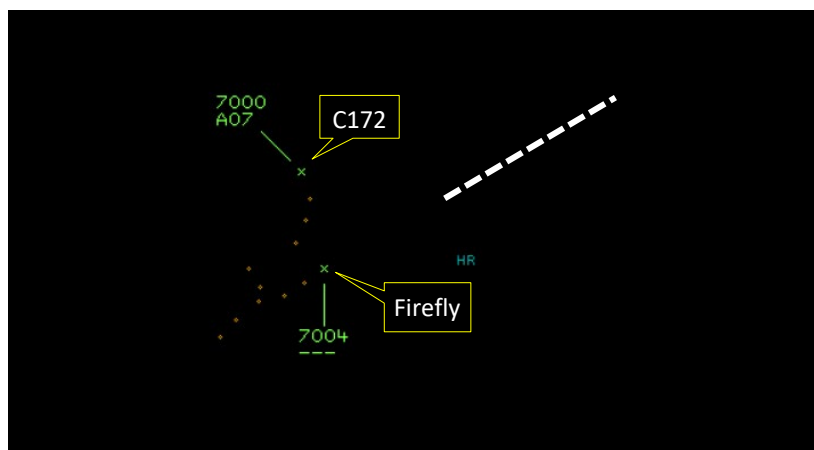


Figure 10 – 1256:47

Analysis: ATSI had access to reports from both pilots and an email response from the Goodwood AFISO. No unit report was completed. A review of the Goodwood RTF and area radar replay was carried out, and it is from this that snapshots have been taken. Goodwood is a FISO unit with no surveillance capability.

The planning and situational awareness by the AFISO appears to be good, reflected in the traffic information being passed. A call in the overhead by the pilot of the Firefly may have been useful for the situational awareness of others, however they did call downwind ahead of the C172. When the C172 pilot reported downwind, they were correctly advised that they had two ahead of them (the Eurofox on finals and the Firefly downwind ahead).

The pilot of the C172 reported visual with one – believed to be the Eurofox but not the second, the Firefly. Despite this, and having been told a second and then a third time by the AFISO that there were two ahead, they had turned onto base leg clearly with the intention of routing to final approach. ATSI consider that the correct action for the C172 pilot should have been to go around and reintegrate with the existing circuit traffic once more. The C172 pilot then completed a left-hand orbit on base leg.

A contributing factor may have been that the pilot of the Firefly extended their downwind leg well beyond what is published locally, ending up outside the ATZ. They also used an incorrect callsign which may have caused confusion. The expected and published routing for traffic for RW06 has been provided by the Airfield Manager (Figure 11).

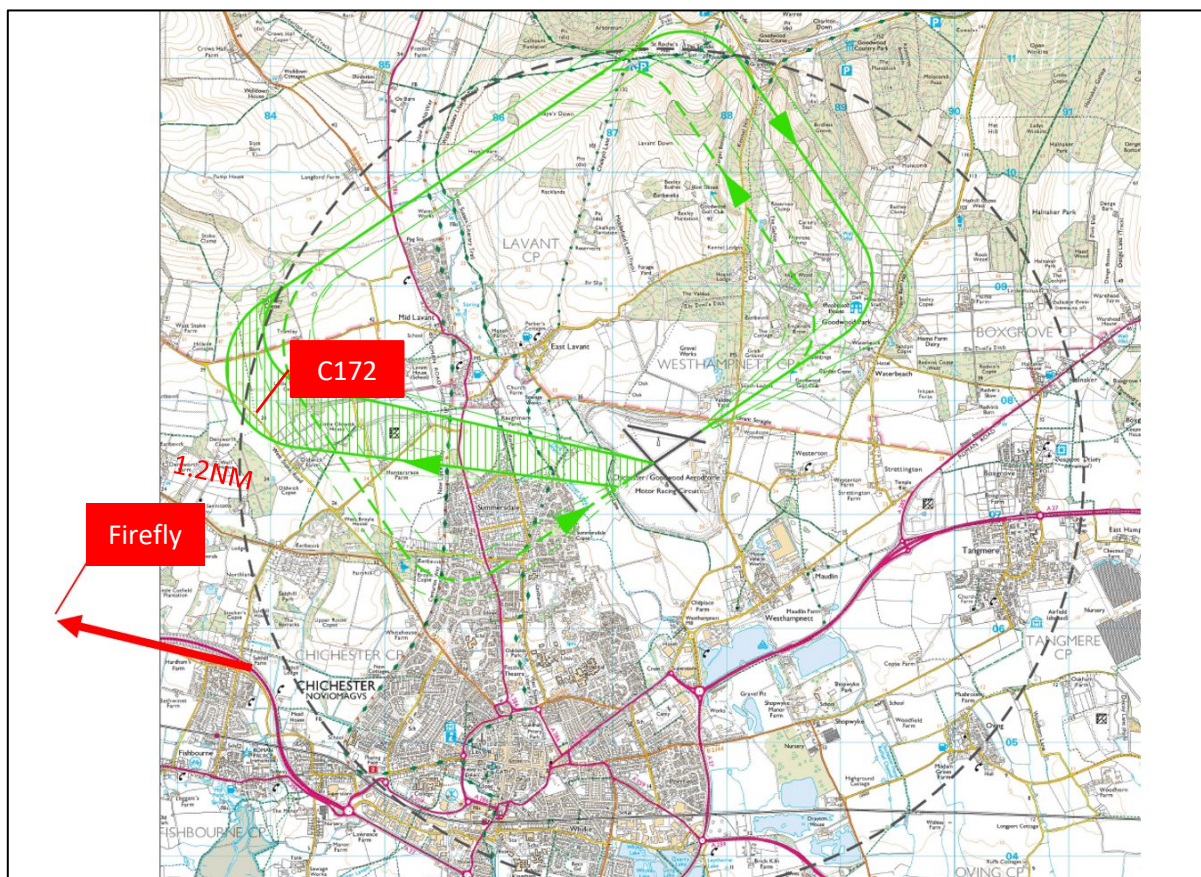


Figure 11 – Goodwood Arrival and Departure Routes and Circuit Pattern (in green) with AC1 and AC2 turns onto base leg marked (in red)

Conclusion: The pilot of the C172 did not integrate with the existing traffic pattern, turning base leg and continuing towards final approach and into conflict with the Firefly already established on final approach.

Goodwood ATC is reminded of its obligations under Regulation (EU) 2017/373 of 1 March 2017 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 ATM/ANS.OR.A.065 paragraphs (a) through (e), with regards to the initial submission of a

mandatory occurrence report and any follow up reports within the specified timescales as defined within Regulations (EU) 996/2010 and 376/2014.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft could be positively identified using Mode S information. The horizontal separation at the CPA was determined from the radar data. Mode C altitude information was not available for the Firefly. However, both pilots kindly supplied GPS tracks of their respective flights and it is with this data that the vertical separation at the CPA was determined.

The C172 and Firefly 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 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.⁴

Summary

An Airprox was reported when a C172 and a Firefly flew into proximity in the Goodwood circuit at 1257Z on Tuesday 9th August 2022. Both pilots were operating under VFR in VMC, and in receipt of an AFIS from Goodwood Information.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first considered the actions of the pilot of the C172. Members heard that the pilot had been advised by the AFISO on three occasions that there had been an additional aircraft ahead of them in the circuit to those the pilot had identified. It was agreed that the pilot of C172 had not assimilated that information (**CF4**) and had turned onto base-leg without being visual with the Firefly (**CF2**). Members considered that it would have been prudent for the C172 pilot to have sought clarification if their 'mental model' had been in contradiction with other information that had been available (**CF5**). Members acknowledged that the pilot of the C172 may have expected that the pattern of traffic would have conformed to the published pattern and would not have expected the pattern of traffic to have extended outside the ATZ, but that there is nothing that prevents circuit traffic from extending beyond the boundaries of the ATZ if circumstances dictate. The Board wished to emphasise the importance of an effective lookout and, referring to (UK) SERA 3225, the requirement to 'conform with or avoid the pattern of traffic formed by other aircraft in operation'.⁴ Members were in agreement that the pilot of the C172 had not conformed to the pattern of traffic that had been formed by the pilot of the Firefly ahead of them (**CF3**). Having visually acquired the Firefly, the pilot of the C172 had been concerned by the proximity of their aircraft (**CF8**) and had chosen to perform a non-standard, left-hand orbit in an attempt to regain separation within the circuit. Members agreed that it would have been more prudent for the C172 pilot to have left the circuit (via a go-around) and subsequently re-integrated into the pattern of traffic.

The Board next considered the actions of the pilot of the Firefly. Noting that there was no recorded track information for the Eurofox ahead of them, members were nevertheless surprised that the Firefly pilot had believed that there had been a need to have extended their downwind leg as far they had, given that the pilot recalled having only been in position 2 or 3 in the circuit. Notwithstanding that, their decision to extend the downwind leg outside the ATZ had defined the pattern of the visual circuit and any following aircraft would have been expected to conform to that pattern. Members noted that the pilot of the Firefly had not used the correct callsign when they had advised the AFISO of their turn onto

³ (UK) SERA.3205 Proximity.

⁴ (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

base-leg (**CF6**). Members discussed the extent of confusion that this may have caused to the situational awareness of the other pilots in the circuit. It was acknowledged that the AFISO had sought clarification as to which pilot had called, and members agreed that that exchange should have been adequate for each pilot to have retained sufficient situational awareness of their position in the landing order. Members also noted that the pilot of the Firefly had not made a call on frequency to advise the AFISO that they had turned onto final despite having been asked specifically to report that turn (**CF1**). The pilot of the Firefly responded to the AFISO's position request and had advised that they were "*on finals, about 1 mile*". Members were in agreement that the estimation of the distance given had been substantially under-estimated and wished to emphasise the importance of making accurate and timely position calls when flying in the visual circuit. The discussion then turned to the sighting of the C172 by the pilot of the Firefly in the moments leading to CPA. As the C172 had been turning onto base-leg ahead of the Firefly, and the Firefly had been on a long final-leg, members agreed that the C172 should have been visible to the Firefly pilot, ahead of them and converging from the left. It had been as the C172 pilot called to advise that they were about to perform a left-hand orbit that the pilot of the Firefly had acknowledged that they had visually acquired the C172. It was therefore determined that the pilot of the Firefly had sighted the C172 late, at the moment of CPA (**CF7**).

Turning their attention to the actions of the Goodwood AFISO, members were in agreement that they had been sufficiently situationally aware of the aircraft in the circuit, and that adequate information on the circuit traffic had been provided to the pilots of the C172 and Firefly for them to have formed situational awareness of their respective positions in the landing order.

Concluding their discussions, and in determination of risk, members agreed that there had been no risk of collision but that safety had been degraded. As such, the Board assigned a Risk Category C to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022174			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
	Flight Elements			
	• Tactical Planning and Execution			
1	Human Factors	• Accuracy of Communication	Events involving flight crew using inaccurate communication - wrong or incomplete information provided	Ineffective communication of intentions
2	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
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	• Incomplete Action	Events involving flight crew performing a task but then not fully completing that task or action that they were intending to carry out	Pilot did not sufficiently integrate with the other aircraft despite Situational Awareness
5	Human Factors	• Lack of Communication	Events involving flight crew that did not communicate enough - not enough communication	Pilot did not request additional information
6	Human Factors	• Readback Incorrect	An event involving incorrect readback	
	• See and Avoid			
7	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
8	Human Factors	• Incorrect Action Selection	Events involving flight crew performing or choosing the wrong course of action	Pilot flew close enough to cause concern

Degree of Risk: C

Safety Barrier Assessment⁵

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 pilot of the Firefly had not communicated that they had turned onto final until they were subsequently asked their position by the AFISO. The pilot of the C172 had turned onto base-leg without being in visual contact with the Firefly and had not conformed with the pattern of traffic in the circuit.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the pilot of the C172 had not assimilated that there had been two aircraft ahead of them in the circuit, and had not requested further clarification from the AFISO of the aircraft known to be in the circuit pattern.

Airprox Barrier Assessment: 2022174		Outside Controlled Airspace		Effectiveness				
Barrier		Provision	Application	Barrier Weighting				
				0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 5%]				
	Manning & Equipment	✓	✓	[Green bar to 2.5%]				
	Situational Awareness of the Confliction & Action	✓	✓	[Green bar to 15%]				
	Electronic Warning System Operation and Compliance	○	○	[Grey bar to 2.5%]				
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 10%]				
	Tactical Planning and Execution	✓	⚠	[Yellow bar to 10%]				
	Situational Awareness of the Conflicting Aircraft & Action	✓	✗	[Red bar to 20%]				
	Electronic Warning System Operation and Compliance	○	○	[Grey bar to 15%]				
	See & Avoid	✓	✓	[Green bar to 20%]				
Key:		Full	Partial	None	Not Present/Not Assessable	Not Used		
Provision	✓	⚠	✗	○				
Application	✓	⚠	✗	○	○			
Effectiveness	■	■	■	■	□			

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