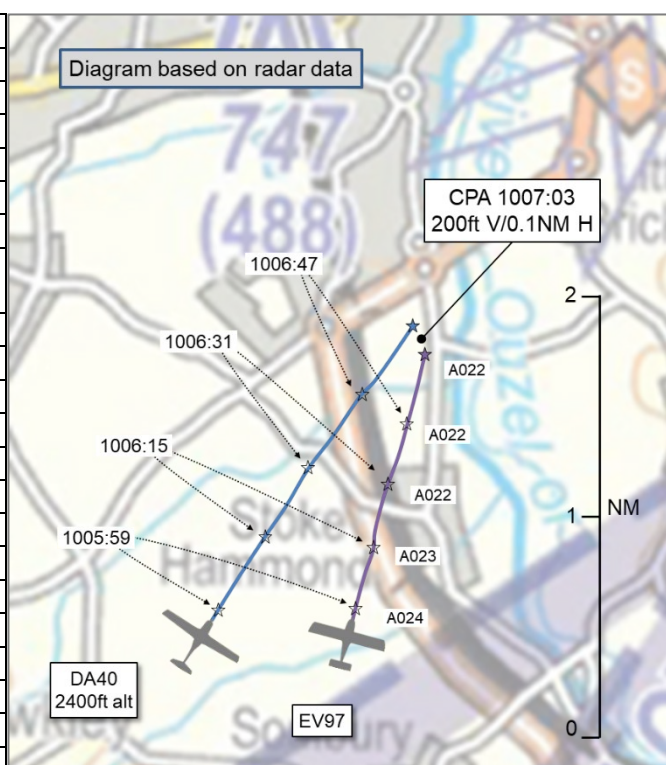


## AIRPROX REPORT No 2022206

Date: 31 Aug 2022 Time: 1007Z Position: 5158N 00043W Location: 7.5NM SW Cranfield

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA40	EV97
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Procedural	Listening Out
Provider	Cranfield Approach	Halton Radio, Safety Com
Altitude/FL	2400ft	2200ft
Transponder	A, C, S+	A, C, S
<b>Reported</b>		
Colours	NR	Grey, Blue, Yellow
Lighting	NR	Strobe, Landing
Conditions	VMC	VMC
Visibility	NR	>10km
Altitude/FL	NR	2100ft
Altimeter	NR (NK hPa)	QNH (1025hPa)
Heading	NR	205°
Speed	NR	NK
ACAS/TAS	TAS	PilotAware
Alert	Information	None
<b>Separation at CPA</b>		
Reported	100ft V/NR H	200ft V/35m H
Recorded	200ft V/0.1NM H	



**THE DA40 PILOT** reports that they were [on an instructional flight and] cleared to conduct the RNP approach on RW03 via DEKAP. ATC wanted them to report Final Approach Track (FAT) established. Whilst turning past the intermediate fix, they noticed an aircraft on the right side to them, initially 300ft below (referring to TAS) but the height [differential] was slowly decreasing down to 100ft below, climbing. They had to take control of the aircraft [from their student] and advised ATC that they wanted to break off the approach and route back to the Initial Approach Fix (IAF). ATC clarified the aircraft's pilot was not speaking to Cranfield ATC unit.

**THE EV97 PILOT** reports that they were flying with [a passenger] (with no flying qualifications) from [departure airfield] to [destination airfield] on a clear day with cloud about 2000ft above. They had tracked to Wing and then turned to pass to the west of the Cranfield ATZ. They were flying at about 2100ft on QNH 1025hPa. They suddenly noticed an aircraft passing from directly behind slightly right-to-left at about 200ft above and 100ft to their left. They instinctively prepared to dive right but quickly assessed that the aircraft was flying straight and level and moving away from them. They therefore slightly lost some altitude and moved to the right, assessing whether the other aircraft was looking to turn right and descend towards Cranfield, or continue moving away and to the left. It then turned left and west and departed. Having watched it quickly separate and depart, the EV97 pilot turned left to re-join their flightpath (watching the departing aircraft continue to separate) to stay to the west of the Cranfield ATZ. From the point they observed the aircraft passing overhead to the point of its departure to the west, they would assess the risk of collision to be low as separation occurred quickly and they were prepared to respond to increase separation. The greatest risk was up to the point of them observing the other aircraft. They received no warning from [their EC equipment] that an aircraft was close or on a potential collision course.

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

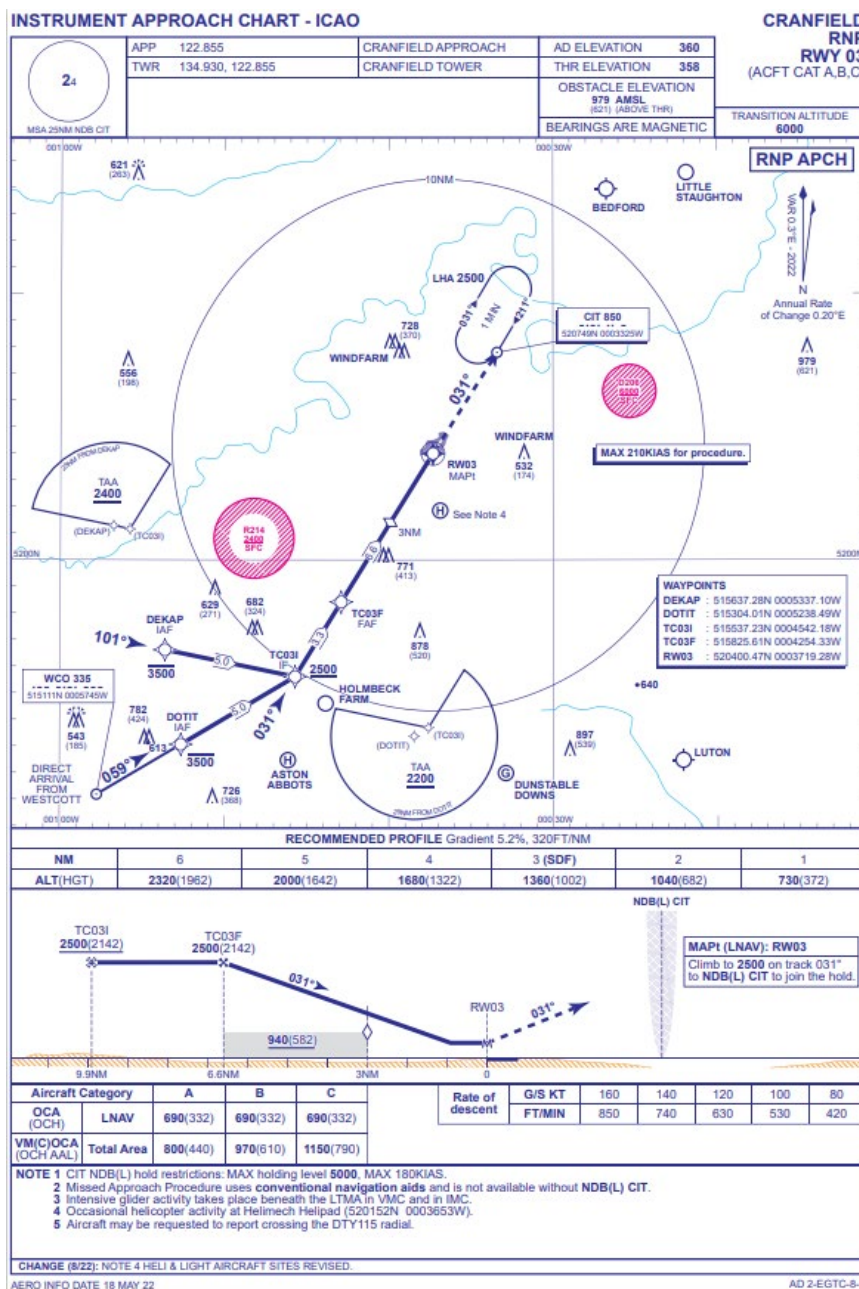
**THE CRANFIELD APPROACH CONTROLLER** reports that [the DA40] was inbound to Cranfield on an RNP Approach via DEKAP. The aircraft pilot reported passing DEKAP at 1003 and was asked to report Final Approach Track established. At approximately 1006 they asked the pilot if they were FAT established and they advised that they were but could not descend due to conflicting aircraft on final beneath them. The controller offered the pilot the opportunity to reposition to DEKAP at 2500ft which they accepted. The DA40 instructor advised that they would file paperwork on the incident.

**Factual Background**

The weather at Cranfield was recorded as follows:

METAR EGTC 310950Z 05012KT 9999 FEW023 SCT030 19/12 Q1025  
 METAR EGTC 311020Z 04013KT 020V090 9999 SCT032 20/11 Q1025

Cranfield RW03 RNP approach plate:



## Analysis and Investigation

### DA40 Operating Organisation Investigation

The [other] aircraft was seen [by the instructor] and then the TAS gave an alert. The pilot commented that, had it been in IMC ([other aircraft] not seen), it is likely that the student would have configured and started descending towards the other aircraft leaving only the TAS [as an alerting mechanism, leading to] a closer loss of safe separation. ATC was no barrier as the Procedural Service is only effective against traffic known to the controller.

### Cranfield ATSU Investigation

An investigation was carried out by Cranfield which found that the flight progress strips and R/T recordings did not indicate that either of the aircraft on frequency were in confliction.

### CAA ATSI

ATSI reviewed this event and have no additional comments.

### UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft were detected and identified using Mode S data.

The EV97 had been maintaining a reasonably straight and level flightpath in the lead-up to the Airprox and the DA40 had been manoeuvring to intercept the final approach track for RW03 at Cranfield.

At 1004:47, the DA40 had been on an intercept heading for the Final Approach Track at 2500ft with the EV97 1.3NM away at 2200ft, 300ft below, which matches the report of the DA40 pilot, Figure 1.

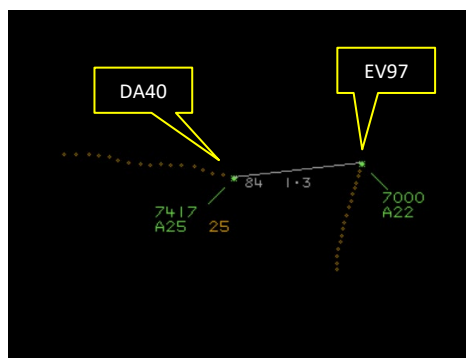


Figure 1 – 1004:47

The DA40 pilot then turned on to their Final Approach Track, rolling wings level at approximately 1005:11. From this point the difference in heading of the two aircraft was approximately 20° causing the aircraft to converge as the faster DA40 slowly overtook the EV97. The EV97, at this point, had been slowly climbing, Figure 2.

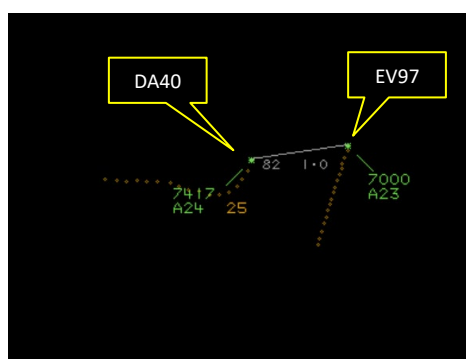


Figure 2 – 1005:11

The EV97 reached a maximum altitude of 2400ft, level with the DA40, at 1005:23, after which the EV97 commenced a slow descent, Figure 3.

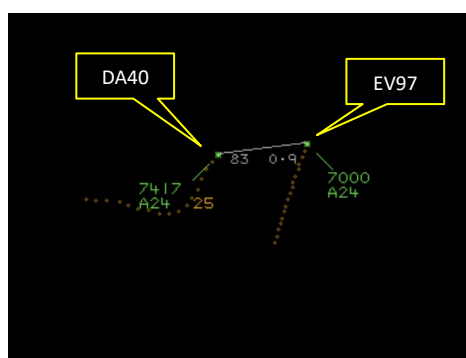


Figure 3 – 1005:23

The DA40 passed abeam the EV97 at 1006:31 at which time the separation was 0.4NM horizontally and 200ft vertically, Figure 4. Although the DA40 was then ahead of the EV97, the separation continued to decrease until 1007:03 when it reached a minimum of 0.1NM and 200ft, the CPA, Figure 5.

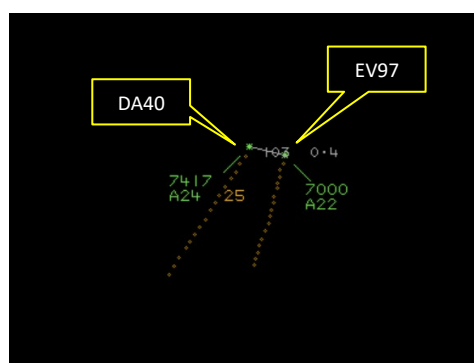


Figure 4 – 1006:31

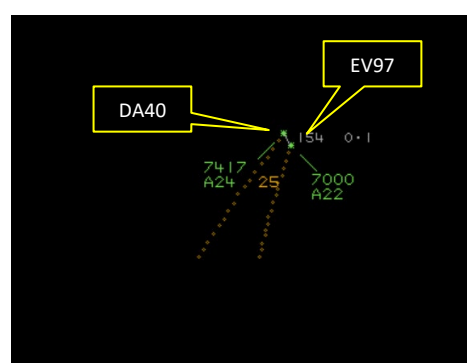


Figure 5 – 1007:03. CPA.

The DA40 and EV97 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.<sup>1</sup> If the incident geometry is considered as overtaking then the EV97 pilot had right of way and the DA40 pilot was required to keep out of the way of the other aircraft by altering course to the right.<sup>2</sup>

## Summary

An Airprox was reported when a DA40 and an EV97 flew into proximity 7.5NM southwest of Cranfield at 1007Z on Wednesday 31<sup>st</sup> August 2022. The DA40 pilot was operating under IFR in VMC in receipt

<sup>1</sup> (UK) SERA.3205 Proximity.

<sup>2</sup> (UK) SERA.3210 Right-of-way (c)(3) Overtaking.

of a Procedural Service from Cranfield Approach, the EV97 pilot was operating under VFR in VMC, not in receipt of an ATS.

## **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.

The Board first discussed the actions of the EV97 pilot and was encouraged that the pilot had been aware of their proximity to the Cranfield ATZ and had been avoiding it. However, members agreed that, in accordance with the recommendation printed on aeronautical VFR charts, it would have been appropriate for the EV97 pilot to have contacted Cranfield Approach (**CF2**). The Board noted that the EV97 pilot had been equipped with EC equipment that would have been expected to have alerted them to the presence of the DA40, but no alert was reported (**CF6**). Members agreed that without this alert, the mechanisms available to the EV97 pilot to have gained awareness of the presence of the DA40 had been eroded, leaving the pilot with no awareness of the presence of the DA40 prior to sighting it (**CF4**). Members next discussed the geometry of the event and noted that, although the EV97 pilot had become visual with the DA40 prior to CPA, it had been at a point when the DA40 pilot's overtake manoeuvre had been nearing completion, and likelihood of collision had been decreasing (**CF7**), the Board therefore agreed that any action taken by the EV97 pilot would have had a reduced mitigation effect.

Next, members considered the actions the DA40 pilot, noting that they had been delivering instruction to a student flying an instrument approach to Cranfield RW03. Members discussed that the Procedural Service which they had been receiving was not a surveillance-based service and the Board was encouraged that the plot had been utilising additional EC equipment to help with their situational awareness. The EC equipment employed had issued a genuine alert to the DA40 pilot regarding the presence of the EV97 (**CF5**), however, the Board noted that the DA40 had initially continued toward the EV97 (**CF3**), although acknowledged that the pilot had visually acquired the EV97 shortly afterwards. A GA pilot member added that the actions taken by the DA40 pilot in breaking off the approach had been correct, however they added that, had DA40 pilot been unsure, they could have done this immediately upon becoming aware that another aircraft had been in close proximity.

The Board then turned its attention to the ground element involvement. Members noted that Cranfield ATSU is not surveillance equipped and therefore, as the EV97 pilot had not contacted them, the controller would not have had any awareness of their presence (**CF1**). Members agreed that the Cranfield controller had acted appropriately in this event.

Finally, the Board considered the risk involved in this Airprox. Members discussed that the DA40 pilot had become aware of the presence of the EV97 following an alert from their EC equipment, but that they had initially continued toward it. Although both pilots had visually acquired the other aircraft, for the EV97 pilot this had been after the risk had been at its highest, whereas for the DA40 pilot, it had been early, at a time where they had been able to take appropriate and effective action to increase their separation from the EV97. The Board concluded that there had been no risk of collision however, safety had been degraded. Consequently, the Board assigned a Risk Category C to this event.

## **PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

### Contributory Factors:

	2022206			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
	<b>Ground Elements</b>			
	<b>• Situational Awareness and Action</b>			
1	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness



Flight Elements				
• Tactical Planning and Execution				
2	Human Factors	• Communications by Flight Crew with ANS	An event related to the communications between the flight crew and the air navigation service.	Pilot did not request appropriate ATS service or communicate with appropriate provider
• Situational Awareness of the Conflicting Aircraft and Action				
3	Human Factors	• Lack of Action	Events involving flight crew not taking any action at all when they should have done so	Pilot flew close enough to cause concern despite Situational Awareness
4	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
• Electronic Warning System Operation and Compliance				
5	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
6	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				
7	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: C

### Safety Barrier Assessment<sup>3</sup>

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

#### Ground Elements:

**Situational Awareness of the Confliction and Action** were assessed as **ineffective** because the Cranfield controller had not had any awareness of the presence of the EV97 as the unit is not surveillance equipped, and the pilot had not called them.

#### Flight Elements:

**Tactical Planning and Execution** was assessed as **partially effective** because the EV97 had been within 10NM of Cranfield but the pilot had elected not to call Cranfield ATSU.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **partially effective** because the EV97 pilot had not had any awareness of the presence of the DA40 prior to sighting it and, although the DA40 pilot had been aware of the EV97, they had initially continued toward it, reducing the separation.

<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](#).

<b>Airprox Barrier Assessment: 2022206</b>		Outside Controlled Airspace						
<b>Barrier</b>		<b>Provision</b>	<b>Application</b>	<b>Effectiveness</b>				
				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>		<b>Full</b>	<b>Partial</b>	<b>None</b>	<b>Not Present/Not Assessable</b>	<b>Not Used</b>		
Provision	✓	⚠	✗	○				
Application	✓	⚠	✗	○				
Effectiveness								