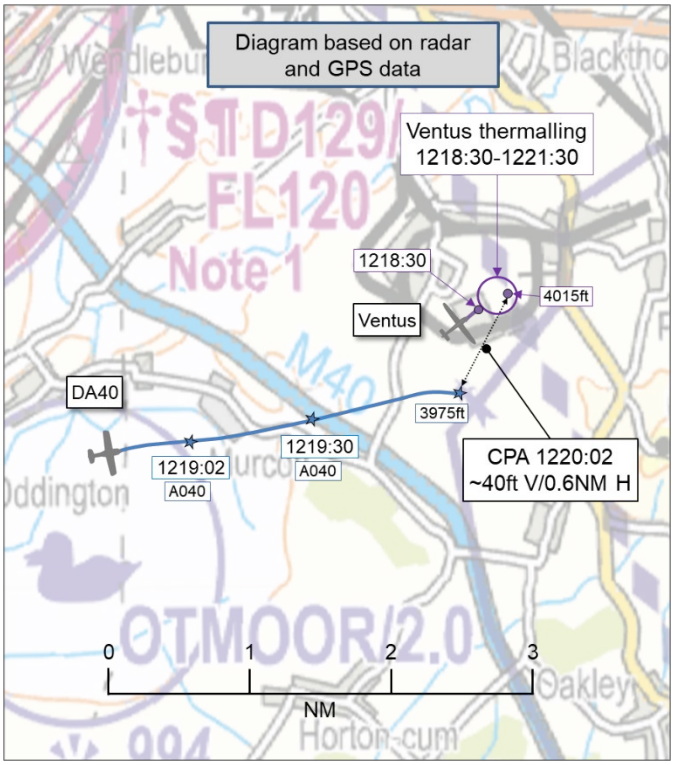
# AIRPROX REPORT No 2024144

Date: 25 Jun 2024 Time: 1220Z Position: 5150N 00106W Location: 3.5NM SSE Bicester

## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|---|---|---|
| Aircraft | DA40 | Ventus |
| Operator | Civ FW | Civ Gld |
| Airspace | London FIR | London FIR |
| Class | G | G |
| Rules | IFR | VFR |
| Service | Traffic | None |
| Provider | Oxford Radar | Gliding frequency |
| Altitude/FL | 3975ft | 4015ft |
| Transponder | A, C, S | Not fitted |
| **Reported** | | |
| Colours | White | White |
| Lighting | Wing strobes | None |
| Conditions | VMC | VMC |
| Visibility | >10km | >10km |
| Altitude/FL | 4000ft | 4000ft |
| Altimeter | QNH (1016hPa) | NK |
| Heading | 080° | NR |
| Speed | 110kt | NR |
| ACAS/TAS | SkyEcho | FLARM |
| Alert | None | None |
| **Separation at CPA** | | |
| Reported | 100ft V/50m H | 200ft V/1NM H |
| Recorded | 40ft V/0.6NM H | |




**THE DA40 PILOT** reports that this was a training flight with a student who was flying on instruments. While tracking towards WCO at 4000ft they were passed Traffic Information on 2 contacts in their 12 o'clock, altitude unknown, by Oxford Radar. They reported the traffic in sight, one was approximately 500ft below their level to the left of the nose while the other was at the same level in their 12 o'clock. They judged that the lower aircraft was not a threat but kept watching the higher aircraft, which was tracking north. They instructed the student to turn right by 30° to ensure they would pass behind it. The glider then seemed to begin a turn onto a northwesterly heading, which would still carry them behind it, but as the distance closed it continued the turn to come round directly towards them. They took control of the aircraft, closed the power, and initiated an immediate descending turn to the right as avoiding action.

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

**THE VENTUS PILOT** reports they had turned over Bicester airfield and were flying southbound to return to [destination]. They climbed in a thermal from 3000ft to 3500ft and then moved to a different thermal core nearby to continue climbing at a higher rate.

They noted that the Airprox filing reached them 3 weeks after the incident so they do not recall the exact details but they do remember seeing the other aircraft and did not feel it necessary to take avoiding action or report it. They had stated that they fly frequently in this area, which is often busy so they know to keep a good lookout. They had checked NOTAMs before flying but there was not anything relevant.

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

**THE OXFORD RADAR CONTROLLER** reports that they were the RAD1 controller on duty being observed by a Unit Assessor (UA) for an annual revalidation check. Director was open and traffic in the

FIR was heavy with a large number of non-transponding contacts (believed to be gliders) primarily to the northwest of the aerodrome.

[The DA40 pilot] departed IFR on track to WCO and when clear of the OX hold they issued them with a climb to 4000ft. They passed Traffic Information on two intermittent non-transponding contacts, 12 o'clock at 2NM, no height information. At 1220 [the DA40 pilot] reported an Airprox with a glider in approximately those contacts' last known position. [The DA40 pilot] reported taking avoiding action of a 30° turn, then the glider turned back into them. The 'miss distance' was reported as less than 100ft at the same level.

**THE OXFORD SUPERVISOR** reports that they were conducting the controller's APP/APS revalidation at the time of the reported Airprox. The frequency had been building in complexity and the airspace was congested mainly to the northwest with multiple primary contacts believed to be gliders, there were also several other primary contacts surrounding Oxford for up to 20-30 miles. The controller had already requested RAD2 at 1208 and Director was in place by 1210. [The DA40 pilot] was released at 1211 on a WCO 2.5A [departure]. At 1215 [the DA40 pilot] called on requesting a Traffic Service, was identified and the Traffic Service issued, and the climb was delayed due to traffic in the OX hold. Once clear of the hold [the DA40 pilot] was given a climb to 4000ft and also, in a later call, they were given Traffic Information on 2 primary contacts at 12 o'clock, 2 miles southbound. These then faded from the display and did not reappear until some 20-25sec later. One primary contact appeared south of [the DA40] by 1.5-2 miles tracking south, [and the DA40 pilot] then reported an Airprox on their right, the controller asked for details of the aircraft and estimated miss distance etc, which the [DA40 pilot] reported.

They had reviewed their [radar replay system] to recount more accurately the presentation of the primary contacts for this report. They were satisfied that the controller was not a contributory factor to the Airprox, they had passed Traffic Information to [the DA40] on primary contacts. The controller has been reminded to consider reduction in service provision in this or similar circumstances due to the gliding activity.

## Factual Background

The weather at Oxford was recorded as follows:

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METAR EGTK 251220Z 13003KT CAVOK 26/12 Q1016
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## Analysis and Investigation

### Oxford Airport Investigation

The Investigation report included a review of the RTF recordings, radar replay, ATC watch logs and the UA report.

At the time of this Airprox the Oxford Radar controller was operating whilst being monitored by an Oxford UA in accordance with the practical element of an annual revalidation for this rating.

Oxford Tower called for release of [the DA40] (IFR) and the aircraft was released by Oxford Radar at 1211. The 'after departure' instructions for this aircraft were a left turn from RW19, routeing to WCO and climbing to altitude 2500ft, this was the standard departure routeing for such a flight on this intended route. The aircraft was subsequently airborne at 1213 and the crew first made contact with Oxford Radar at time 1215.

The DA40 was identified by Oxford at 1215 and at 1217 [the pilot was] cleared to climb to 4000ft. At 1219 Oxford Radar called *'traffic twelve o'clock, two miles, two contacts, non-transponding, no height information',* which was acknowledged by the DA42 pilot, and at 1221 the DA40 [pilot] transmitted *'just for the record I've just had an Airprox with a glider'.* The controller followed up by asking for some details and the DA40 pilot replied *'Distance was certainly less than a hundred feet, er, but didn't get any details of the aircraft…'* and went on to confirm that they were at 4100ft eastbound, had turned right 30° but the glider had turned back towards them.

Analysis: Traffic loading at the time of the Airprox was 'Medium' and the RAD2/DIR position had been opened some 10min prior to the Airprox occurring. For the period surrounding the Airprox the local airspace was very busy with unknown contacts, many of which were not transponder-equipped and most probably gliders. This significantly added to the complexity of the task.

It was noted that the [DA40] crew did not readback the type of service when first given, however, as it was a Traffic Service that was requested by the pilot and a Traffic Service specified by the controller, this review is treated as such.

The Oxford Radar controller appeared to be endeavouring to maintain a consistent scan throughout the period reviewed, Traffic Information was being accurately passed to those in receipt of a Traffic Service. It was also noteworthy that Traffic Information was passed to other aircraft [uninvolved] who were under a Basic Service, this was passed in 'general terms to assist with the pilot's situational awareness' as per CAP774, the Traffic Information referencing the intense gliding activity in the local area. This general warning was not passed to [the DA40 pilot] but may have been helpful given the density of activity in the area and considering such aircraft were largely not transponder-equipped and therefore more difficult to track and/or 'dropping' from radar coverage.

As per CAP774 under the provision of a Traffic Service, "*Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting aircraft's observed flight profile indicates that it will pass within 3 NM and, where level information is available, 3000ft of the aircraft in receipt of the Traffic Service or its level-band if manoeuvring within a level block*" and that, *"Controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5NM, in order to give the pilot sufficient time to meet their collision avoidance responsibilities and to allow for an update in Traffic Information if considered necessary."*

The Oxford Radar controller passed Traffic Information on two non-transponder-equipped aircraft. It is inconclusive, given the resources of the investigation, as to which [the DA40] had the Airprox with, it may or may not have been one of these aircraft, at the time the Airprox was reported there was nothing displaying on the controller's situation display, this was noted with the Oxford UA's review that reports, *'These then faded from display and didn't re-appear until some 20-25 seconds later 1 primary contact appeared south of [the DA40] by 1.5-2 miles tracking south'.*

Working on the inference that this Airprox involves one of these two aircraft it can be noted that the Traffic Information passed on these aircraft by the Oxford Radar controller came in a position whereby these aircraft were in closer proximity than the 5NM previously quoted in CAP774. It was appreciated, however, that the aircraft called were not transponder-equipped and therefore were seemingly only appearing on the controller's situation display intermittently and for a relatively short time, therefore a period of track observation was required to ascertain whether these would be called by the controller or dismissed as radar 'clutter'. The aircraft was not in receipt of headings at this time and was instead tracking to WCO. No attempt to vector in order to deconflict was made as (in accordance with CAP774), "D*econfliction is not provided under a Traffic Service*" and *"If a pilot requires deconfliction advice outside controlled airspace, Deconfliction Service shall be requested"*; this was not requested by the pilot, a Traffic Service was requested and being provided.

The pilot involved reported that the *"Distance"* between aircraft *"was certainly less than a hundred feet"* and that they *"turned thirty degrees to the right but then [the glider] turned and came back towards* [them]". A right turn could seemingly be observed on the radar replay at 1220 (about a half a minute before the Airprox was reported to the controller); at this time, no other radar contacts were showing in the aircraft's immediate vicinity (a primary return could be seen but this was some 2NM south/south-east of [the DA40]). With this, the unit is unable to establish a CPA or exact timing in which the Airprox occurred.

**UKAB Secretariat**

An analysis of the NATS radar replay was undertaken and the DA40 was positively identified using Mode S data. There were 2 primary tracks that had appeared sporadically close to the reporting point, which appeared to continue to the southwest as the DA40 flew toward the area of the reported Airprox. A further analysis was undertaken of ADS-B data and both the DA40 and Ventus were positively identified, with another glider having passed the reported point of the Airprox 1.5min earlier, tracking south, before the DA40 had reached it.

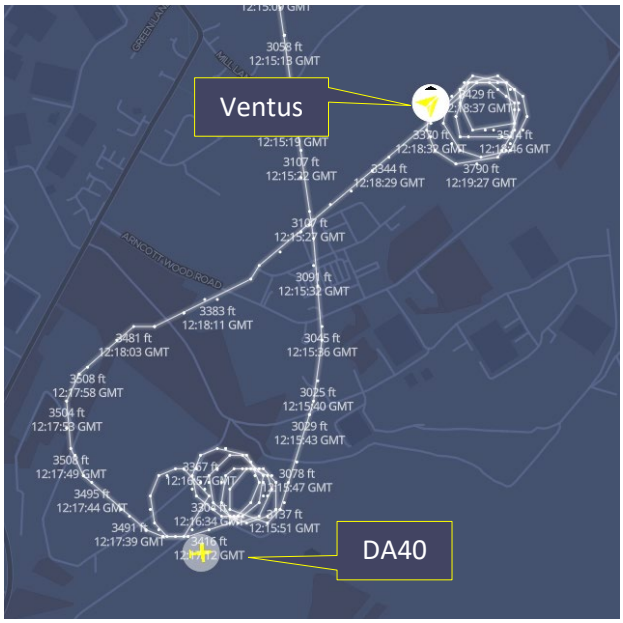



Figure 1 - Time 1220:02 CPA separation was 40ft and 0.6NM

The Ventus had been thermalling from 1218:30 and continued through to 1221:30 in clockwise orbits. The ADS-B data matches the radar replay and the Ventus pilot's GPS data. The CPA was assessed to have been at 1220:02 with the ADS-B data displaying a separation of 40ft vertically and 0.6NM horizontally, the DA40 at 3975ft and the Ventus at 4015ft (Figure 1).

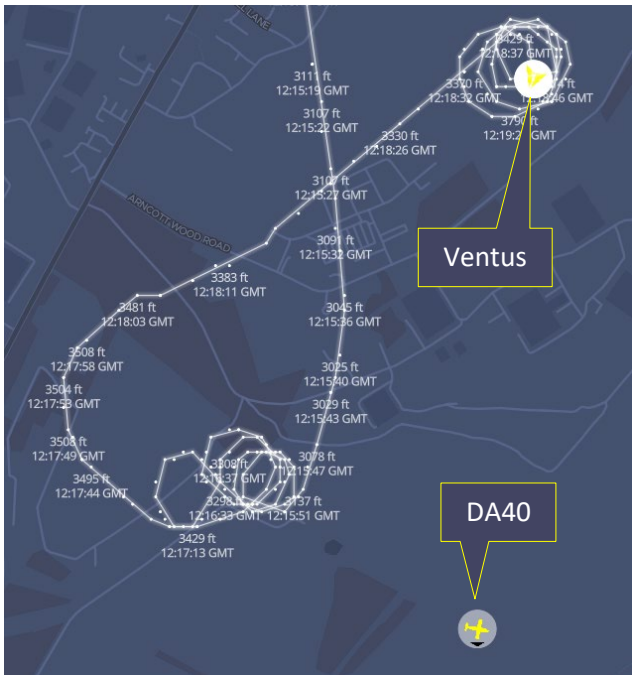



Figure 2 - Time 1220:10 aircraft positions 4sec after CPA

At 1220:10, 8sec after CPA, the DA40 was seen to have continued on track to WCO while the Ventus continued to orbit.

The DA40 and Ventus pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[1]

## Comments

### AOPA

It is gratifying to see that an appropriate radar surveillance service was requested by the pilot and action taken when the glider was sighted. Until the Department for Transport announces a common form of electronic conspicuity system, effective lookout is still the main barrier for a mid-air collision.

### BGA

A glider climbing in a thermal typically has an airspeed of about 50kt and completes one 360° turn in 20-40sec, implying a turn radius of between 75 and 150m. For comparison, a light-aircraft making a rate one turn (3°/second) at 110kt completes a 360° turn in 2min, implying a turn radius of 1090m (0.6NM). An observer unused to gliders' small turn radii may regard a thermalling glider momentarily pointing directly at them at a range of 0.6NM as a collision threat. However, if that glider continues its thermalling turn, then it's unlikely to get more than one turn radius (75-150m) closer to that observer.

The carry-on CAP 1391 ADS-B-based TAS on board the DA40 can be configured to receive transmissions from the EC equipment carried by almost all gliders (including this Ventus) and display nearby glider traffic via participating EFB applications. Using this option could provide a useful additional safety barrier in airspace where gliders operate.

## Summary

An Airprox was reported when a DA40 and a Ventus flew into proximity 3.5NM south-southeast of Bicester at 1220Z on Tuesday 25th June 2024. The DA40 pilot was operating under IFR in VMC and in receipt of a Traffic Service from Oxford Radar. The Ventus pilot was operating under VFR in VMC and 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, GPS data, a report from the air traffic controller involved and a report from the appropriate operating authority. 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 looked at the actions of the Oxford Radar controller and noted that they had been diligent in providing information to the DA40 pilot regarding the multiple glider contacts in the area, yet they had also lacked situational awareness of the Ventus glider's height due to only observing primary radar returns and having had no other information.

Next, the Board considered the actions of the DA40 pilot and noted they had only had generic situational awareness of the position of the Ventus based on the information provided by the Oxford Radar controller. Members also noted that the EC equipment carried in the DA40 had not been able to detect the Ventus, but that the pilot had been concerned by the proximity of the Ventus, and had manoeuvred away from it.

The Board then turned their attention to the Ventus pilot's actions and noted that the pilot had not been in receipt of a FIS and members considered whether it would have been more appropriate for the pilot

[1] (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

to have communicated with Oxford Radar for a FIS. The Board also discussed the compatibility of the EC device used by the Ventus pilot, noting that it had been unable to detect the DA40. Members thought that, because of these factors, the Ventus pilot had not had any situational awareness of the presence of the DA40. The Board noted, however, that the pilot had reported that they had sighted the DA40 and considered that it had not been necessary to take avoiding action.

Members were satisfied that there had been sufficient separation between the aircraft and that there had been no risk of collision. It was therefore agreed that normal safety parameters had pertained and, as such, the Board assigned Risk Category E to this event. Members agreed the following factors (detailed in Part C) had contributed to this Airprox:

**CF1.** The Oxford Radar controller had only had generic situational awareness of the Ventus glider.

**CF2.** The Ventus pilot had not selected a FIS.

**CF3.** The Ventus pilot had not had situational awareness of the presence of the DA40, and the DA40 pilot had only had generic awareness of the presence of the Ventus.

**CF4.** Neither the EC device used by the Ventus pilot nor the EC device used by DA40 pilot had been able to detect the other's aircraft.

**CF5.** The DA40 pilot had been concerned about the proximity of the Ventus.

## PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| | 2024144 | | | |
|---|---|---|---|---|
| CF | **Factor** | **Description** | **ECCAIRS Amplification** | **UKAB Amplification** |
| | **Ground Elements** | | | |
| | **• Situational Awareness and Action** | | | |
| 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 | 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** | | | |
| 4 | 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 |
| | **• See and Avoid** | | | |
| 5 | 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 |

Degree of Risk: E.

Safety Barrier Assessment[2]

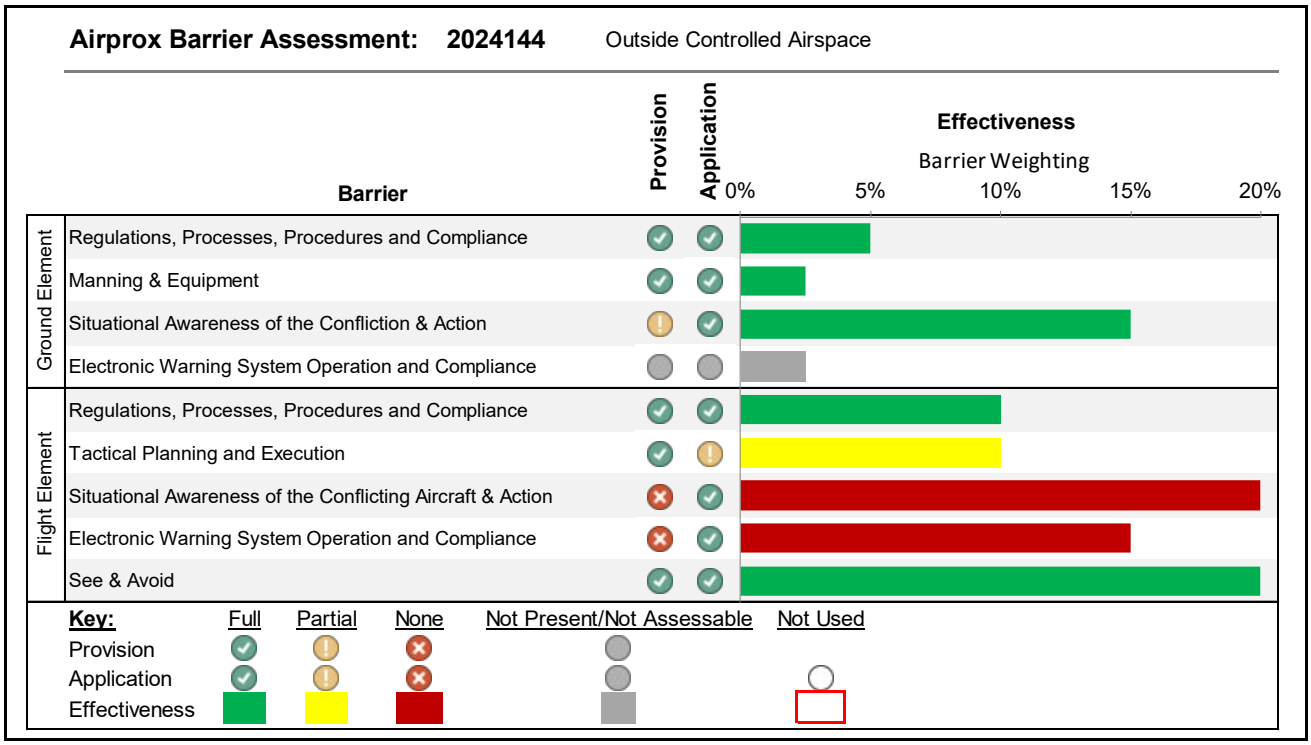
In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

**Flight Elements:**

**Tactical Planning and Execution** was assessed as **partially effective** because The Ventus pilot could have requested a FIS from Oxford.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because the Ventus pilot had had no situational awareness of the presence of the DA40, and the DA40 pilot had only had generic situational awareness of the Ventus.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because neither the DA40 nor the Ventus pilots' EC equipment could detect the other's aircraft.




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