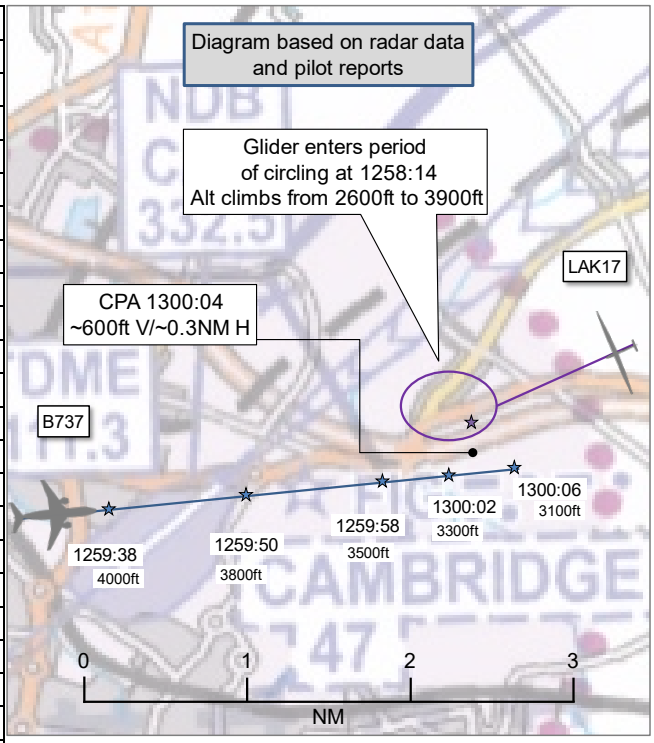
# AIRPROX REPORT No 2023156

Date: 20 Jul 2023 Time: 1300Z Position: 5212N 00012E Location: Cambridge City Airport

## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|---|---|---|
| Aircraft | B737 | LAK17 |
| Operator | Civ Comm | Civ Gld |
| Airspace | London FIR | London FIR |
| Class | G | G |
| Rules | IFR | VFR |
| Service | Procedural | Basic |
| Provider | Cambridge | Cambridge |
| Altitude/FL | 3300ft | 3900ft |
| Transponder | A, C, S+ | A, C, S |
| **Reported** | | |
| Colours | White | White |
| Lighting | Yes | Canopy strobe |
| Conditions | VMC | VMC |
| Visibility | 5-10km | >10km |
| Altitude/FL | 4000ft | 3900ft |
| Altimeter | QNH (1015hPa) | QNH |
| Heading | 087° | Circling |
| Speed | 220kt | 55kt |
| ACAS/TAS | TCAS II | FLARM |
| Alert | RA | None |
| **Separation at CPA** | | |
| Reported | 100ft V/0.2NM H | 800ft V/0.5NM H |
| Recorded | ~600ft V/~0.3NM H | |




**THE B737 PILOT** reports that they had been cleared by London to descend to altitude 4000ft on track to CAM NDB, and to contact Cambridge Approach. On transfer to Cambridge, they requested a procedural approach for the ILS RW23. The pilot had been instructed by Cambridge to maintain 4000ft and cleared for the procedure to go straight outbound. The B737 pilot had been passed Traffic Information that there were gliders, transiting east-to-west between 3000ft and 4000ft. In particular there had been one glider talking to Cambridge who had been orbiting left hand on the outbound track at 3400ft according to TCAS. The glider pilot had been passed Traffic Information about the B737 maintaining 4000ft. The B737 pilot had been visual with the glider intermittently, monitoring TCAS and again searching for the glider. The glider started to climb and still orbiting in their 12 o'clock, orbiting left. The B737 pilot decided to turn right. At exactly the same time they received a TCAS RA to descend which was modified to increase descent. The B737 pilot assessed that they had passed the glider with it in their 9 o'clock position, approximately 0.1 to 0.2NM, and the glider was 100ft to 200ft above. The B737 pilot alerted Cambridge of the TCAS RA and levelling at 3000ft.

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

**THE LAK17 PILOT** reports that, having turned at Rougham, they had been returning to [destination airfield]. A local agreement between Cambridge Gliding Club and Cambridge Airport does not apply to gliders from [destination airfield] but [they] do have the agreed Radio Advisory Zone (RAZ) marked on their electronic maps. Over Newmarket the LAK17 pilot called Cambridge. After establishing contact they replied that they had been squawking 7000 and intended to cross the RAZ. The pilot reports that they expected to be given a different transponder code as they had had on their earlier eastbound crossing but the [RT] conversation had been interrupted by a powerful transmission from someone with a strong accent. ATC had a lengthy conversation with this pilot. The LAK17 pilot [recalled that] they had needed to find a climb so continued on squawk 7000 and concentrated on finding a thermal. A large amount of stratocumulus made soaring conditions difficult and so decided that the best chance had

been a cumulus over Cambridge [airport]. The pilot reports having reached the thermal at 2657ft and climbed in a 200m circle at around 5kts [they recall]. ATC called and asked them to confirm their height. The pilot recalls that they had been at 3700ft and ATC advised that the B737 would be joining overhead at 3000ft [they recall]. The LAK17 pilot [recalls that] they had watched it approach and pass underneath.

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

**THE CAMBRIDGE CONTROLLER** reports that they had been controlling Cambridge Approach in heavy traffic when a the B737 reported a TCAS RA with a glider, believed to be the LAK17 in the Cambridge overhead. The B737 had been co-ordinated to the CAM in the descent to altitude 4000ft and had been given a Procedural Service. The Cambridge controller passed Traffic Information on intense gliding activity in the area and then passed specific Traffic Information on the LAK17 who had been under a Basic Service to the northeast of Cambridge routeing towards the overhead, westbound. The LAK17 pilot reported at 3200ft to the east of the airfield with the B737 descending to 4000ft routeing through the overhead from the east. The B737 pilot had been instructed to maintain 4000ft to stay above the glider but [the Cambridge controller] believed the glider had continued to climb which had resulted in a TCAS RA. The B737 pilot reported a TCAS RA and had descended to altitude 3000ft. The B737 [pilot] had subsequently been cleared for an ILS and landed a few minutes later. The Cambridge controller had later been informed that the pilot of the B737 intended to report the incident as an Airprox.

**THE CAMBRIDGE MANAGER AIR TRAFFIC SERVICES** reports that after speaking with the [B737] pilot they had stated that they would be filing an Airprox. During the call they had said that they were aware the frequency had been very busy. The APP ATCO gave the B737 pilot Traffic Information on multiple aircraft in their vicinity. The B737 pilot had said that they could see the LAK17 on their TCAS screen and, as they had approached the overhead, saw that the glider had been climbing which resulted in a TCAS RA being given by their equipment informing them to descend, which they had done. They had been visual with the glider and said that they were approximately 0.1NM away and passed underneath it by approximately 100-200ft. They continued their flight and landed safely.

## Factual Background

The weather at Cambridge was recorded as follows:

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201250Z 26006KT 9999 FEW035 SCT044TCU 22/07 Q1015=
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## Analysis and Investigation

### CAMBRIDGE WATCH SUPERVISOR

Cambridge ATC had been operating in split positions with Cambridge Approach open and providing services on VHF channel 120.965. Traffic loading had been heavy throughout the hour prior to the Airprox with 2 corporate jet aircraft having landed within the 10min prior as well as intense gliding activity reported in the local area. Gransden Lodge gliding site approximately 10NM west of Cambridge airfield had been active, reporting 17 gliders throughout the day and multiple gliders reporting on frequency from Dunstable which had been generally routeing from the west of Cambridge to the east and returning on reciprocal tracks throughout the day. The B737 had been inbound and is a semi-regular flight in and out. At 1248 the LAK17 [pilot] reported on frequency over Newmarket at 4600ft squawking 7000 heading west towards Dunstable. They had been given a Basic Service and asked to report clear to the west.

At 1255 the B737 had been co-ordinated inbound to the CAM in the descent to 4000ft on the Cambridge QNH of 1015.

At 1257 the B737 [pilot] reported on frequency passing 7700ft, descending to 4000ft QNH 1015 direct to the CAM and had been given a Procedural Service and cleared to the CAM in the descent to altitude 4000ft, QNH 1015 with information Kilo. The B737 [pilot] had then requested a procedural ILS for RW23.

At 1257:27 the Cambridge ATCO had replied "*Okay, no delay expected for an ILS approach RW23, keep a very very good look out for intense gliding activity out of Gransden Lodge with up to 17 gliders most of which will be transiting east-to-west in between three and four thousand five hundred feet, keep a very good look out and no delay expected for an ILS RW23*".

The B737 pilot had reported at 6800ft, 10NM to run to the CAM from the west. The APP ATCO had then checked that the pilot had been happy with the proposed descent profile, to which the pilot confirmed they had been happy with the profile offered.

At 1258:37 the Cambridge ATCO asked the B737 pilot to report their range from Cambridge. The pilot had replied "*We are 5NM west CAM passing 5000ft*" and had subsequently been asked to report reaching 4000ft.

At 1258:54 the LAK17 pilot had been asked to "*report your position and level*". They responded "[callsign] *is at flight level, er, 3200ft er, just over the east end of the airfield*." The APP ATCO had replied "*Glider* [callsign], *traffic B737, 4000ft routeing into the Cambridge overhead*" which had been acknowledged by the LAK17 pilot. The Cambridge ATCO then transmitted "[B737 callsign] - *traffic just reported* [in] *the Cambridge overhead 3200ft thermalling, is a glider, maintain 4000ft on reaching, route directly outbound*". The B737 pilot replied "*Directly outbound wilco* [B737 callsign]" The APP ATCO had replied "*I'll give you descent as soon as I can*".

At 1259:37 the APP ATCO then co-ordinated MATZ penetration into the Lakenheath MATZ in accordance with the Cambridge and Lakenheath Standard Operating Procedures.

At 1259:42 further [unrelated] traffic had made their first call on entering the RMZ overhead and had been passed Traffic Information on the B737.

At 1300:05 the Cambridge ATCO asked "[LAK17 callsign] *report your level*", 2 stations could then be heard transmitting at the same time, the LAK17 pilot can be heard responding with "*4, er, 4*" before the transmission had been blocked by the B737 pilot reporting a TCAS RA.

At 1300:10 "[B737 callsign] *TCAS RA, we are now down at 3000ft just going outbound on the procedural approach*." This had been acknowledged and Traffic Information had been passed on the unrelated traffic in the vicinity of Newmarket. The B737 pilot had then been given descent and cleared for the ILS RW23. The B737 pilot continued with the approach, landing without further incident. After landing, the pilot of the B737 had spoken with the Cambridge Manager of Air Traffic Services and reported that they intended to file an Airprox.

**CAA ATSI**

Synopsis - Intense gliding activity had been taking place during the period, with many gliders operating between Gransden Lodge and Newmarket. The LAK17, which was not based at Gransden Lodge, had also been operating in this area and the pilot had called Cambridge Approach, advising the controller that they were overhead Newmarket at 4600ft, transponding code 7000, and were heading west.

The controller did not immediately acknowledge the call as they had been dealing with the second of two IFR inbound aircraft. When they did reply, a couple of minutes later, they advised the LAK17 pilot that it was a Basic Service and requested they report *"clear to the west*".

Whilst speaking to the IFR inbound, the controller issued the following warning: *"Caution, intense gliding operations in the vicinity of Cambridge this afternoon with gliders operating out of Gransden Lodge 10 miles west, east-west through the overhead, between 3500 and 4500ft".*

The controller had then dealt with another aircraft in transit.

At 1252:00 the pilot of another glider reported *"clear to the west"* .

At 1254:00 the pilot of another glider had then called in the vicinity of Bury St Edmonds. The controller then requested the position of the IFR inbound, (established on RW23 ILS), transferred that aircraft to Cambridge Tower and went on to pass generic information on the gliding activity to another pilot in transit.

The pilot of another glider had then reported clearing to the east and changing frequency following which, at 1255:55, another glider pilot called twice to which the controller did not immediately respond as they were believed to be on the landline.

At 1256:30 that glider pilot had called again, advising that they were overhead Newmarket at 5000ft for a transit east-to-west. The controller asked if they were able to squawk, (they had replied *"negative"),* passed the Cambridge QNH and request they report *"passing north abeam, leaving the zone"*.

At 1257:00 the pilot of the B737 had called, advising that they were *"passing 7700ft, descending 4000ft QNH 1015, direct CAM"* (Figure 1).

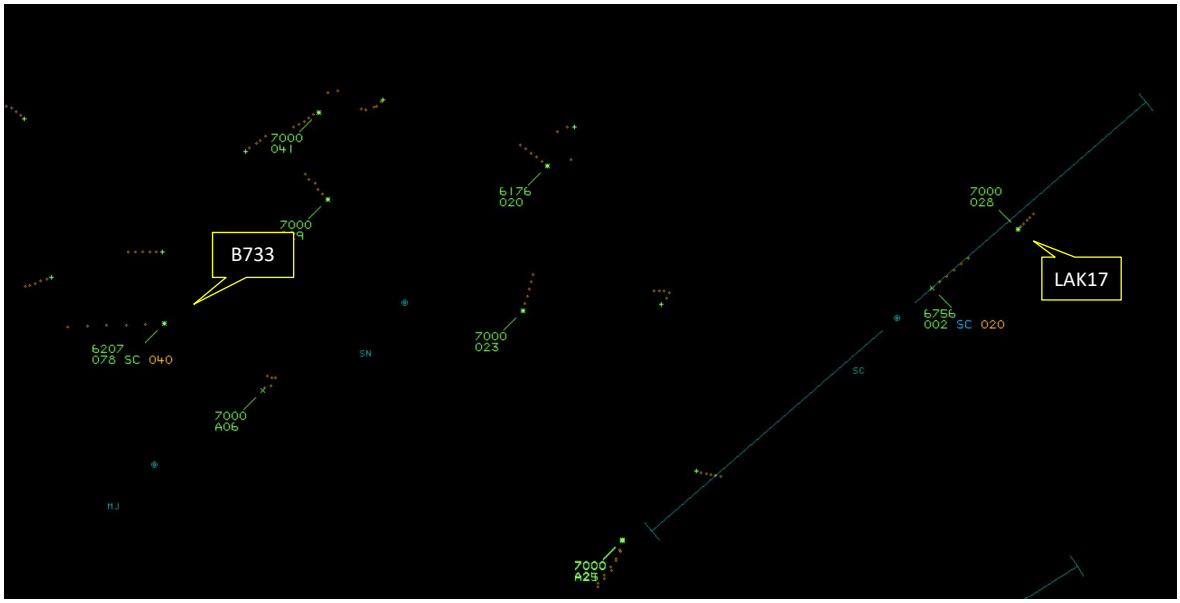


Figure 1 – 1257:00

The controller replied *"Procedural Service. Cleared to the CAM in the descent to altitude 4000ft (QNH)"* and confirmed the current ATIS. The pilot had then requested a procedural ILS to RW23 which the controller confirmed: *"no delay expected for ILS RW23. Keep a very, very good lookout for gliding activity. Intense glider activity out of Gransden Lodge. Up to 17 gliders most of which transiting east to west in between 3 to 4500ft. Keep a very good lookout and expect further descent shortly. No delay expected ILS RW23".*

The B737 pilot had then acknowledged this: "*that's copied. We're 6800ft with 10NM to run to the CAM from the west".* The controller responded *"Copied. Are you happy with that descent profile?"* to which the pilot replied that they were [content with the descent profile].

The controller had then dealt with a VFR inbound, transferring that pilot to the Tower frequency, and the pilot of a transit aircraft changing frequency to Duxford.

At 1258:30 another pilot called, following which the controller asked the B737 for their range to Cambridge which had been reported as *"5NM to the west CAM passing 5000ft"*.

The controller had acknowledged this, and requested they report reaching 4000ft.

At 1258:58 the controller had then requested a position and level report from the pilot of the LAK17 (Figure 2).

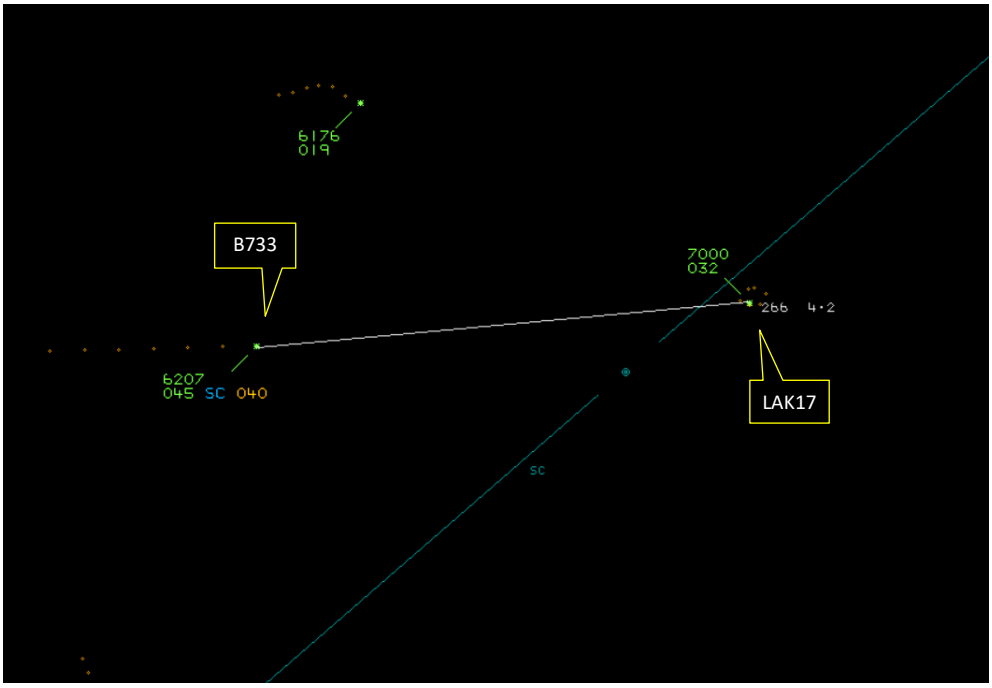


Figure 2 – 1258:58

The pilot had reported *"at flight level, er, 3200ft just over the east end of the airfield"*, to which the controller replied "*traffic, Boeing 737 4000ft routeing into the Cambridge overhead"* which had been acknowledged by the LAK17 pilot *"thank you"*.

The controller immediately advised the pilot of the B737 "*traffic just reported the Cambridge overhead 3200ft thermalling, it is a glider. Maintain 4000ft on reaching, Route direct the outbound".* The pilot replied; *"direct the outbound",* and the controller responded *"I'll give you further descent when I can".*

Another glider pilot then reported "*en route*".

At 1259:40 a glider pilot reported entering the *"RMZ overhead Newmarket*" and a level check had then been requested by the controller.

The controller advised that glider pilot at 1300:00 of "*traffic B737 - 4000ft Cambridge overhead, outbound ILS approach RW23"*. The controller had then requested a level report from the pilot of the LAK17, but that pilot's reply had been stepped-on by the pilot of the B737 who had reported: "*TCAS RA. We're now down at 3000ft. We're just going outbound on the procedural approach*." The controller had acknowledged this and passed further Traffic Information on the most recent glider report at Newmarket and reiterated the previous generic warning about glider activity.

Analysis - ATSI reviewed the Cambridge Approach RTF recordings alongside the area radar replay. Snapshots used in this report have been taken from that replay and do not represent the picture that might have been available to the Cambridge Approach controller. The controller had been sat in the Approach Room in front of a radar console and so would have had access to surveillance-derived data, but they had not been qualified to provide a surveillance service, and resourcing on the day had precluded anyone else from doing so.

A review of reports from both pilots and the Cambridge controller was completed, along with the "Initial" Cambridge investigation report, which the unit has since reviewed and concluded that there was nothing else to add.

The Cambridge controller had been passing detailed, albeit generic Traffic Information to all inbound aircraft, assisted by a number of calls from glider pilots transiting the area. The controller had been

frequently checking if gliders were transponder equipped, and it is clear from the radar replay that whilst a number were, many were not. It cannot be determined in a lot of cases which of the radar contacts were in communication with Cambridge Approach, and conversely how many may not have been.

Those gliders operating out of Gransden Lodge to the west of Cambridge are encouraged to follow the Memorandum of Understanding (MoU) between Cambridge Gliding Club and Cambridge ATC. An extract of the MoU is below, and identifies an area (shaded in red) (in Figure 3) identified by coordinates but not referenced by name, (although one glider pilot had been heard to reference the "*RMZ*"), within which glider pilots are encouraged to speak to Cambridge ATC. For Cambridge ATC; *"When Cambridge Radar is not operating, aircraft inbound to Cambridge IFR from the West (QTE 250-275°) will not be descended below 4000ft AMSL until less than 10 DME from the CAM unless Essex Radar is able to confirm that the aircraft is laterally clear of the Gransden Lodge 1.0NM avoid. Aircraft wishing to make a straight-in Instrument Approach to RW05 (including visual approach) shall be advised to "avoid overflying Gransden Lodge Gliding site below 4000ft" unless it is clear that the aircraft has no possibility of getting within 1.0NM of Gransden Lodge.*" This had been the clearance applied by the controller to the B737.

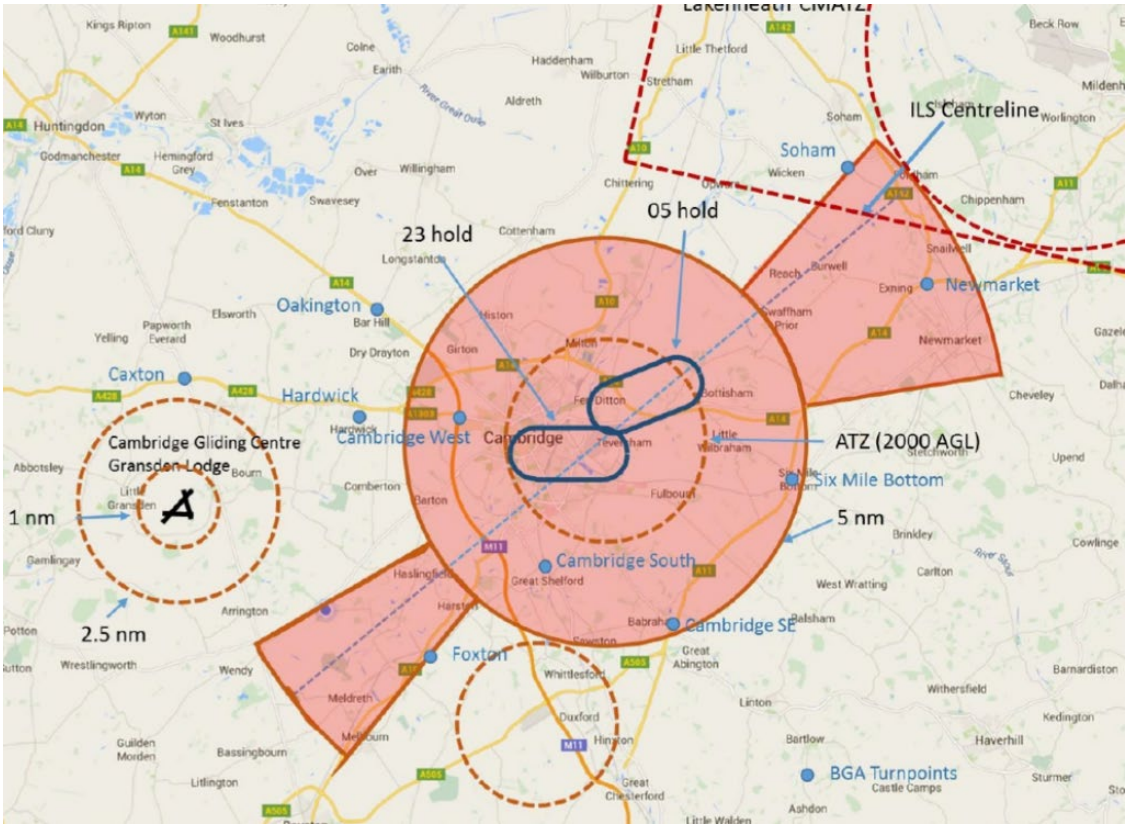


Figure 3

Cambridge ATC reported having recently completed a review of this MoU and a joint risk assessment with Cambridge Gliding Club following Airprox 2023096.

There is no controlled airspace associated with Cambridge Airport, just an ATZ, and therefore the service provision and responsibilities of both pilots and controllers were as per CAP774 UK Flight Information Services.

Under a Procedural Service:

*"the controller has no ability to pass Traffic Information on any aircraft that they are not in communication with, unless they have been passed Traffic Information by another ATS unit.*

*Traffic Information provided under a Procedural Service is unlikely to be as accurate as that provided by controllers using surveillance equipment.*

*Therefore, pilots should be alert to the potential to incorrectly correlate the Traffic Information to other aircraft that they have in sight that are actually unknown to the controller."*

With respect to deconfliction:

*"A controller shall provide deconfliction instructions by allocating levels, radials, tracks, routes and time restrictions, or use pilot position reports, aimed at achieving a planned deconfliction minima from other aircraft to which the controller is providing a Procedural Service in class G airspace."*

The Cambridge Deputy Manager ATS commented later that the glider involved in the Airprox had entered the unit radar's "cone of silence" so even if the controller had been able to utilise surveillance-derived data, they would not have known the glider's precise position. The controller had been aware that the glider had been tracking towards the Cambridge overhead.

In assessing the actions of the controller, there had been little else they could have done in the circumstances. Traffic Information was both thorough and frequent as per the requirements of the service they were providing.

The report from the pilot of the B737 suggested that they had intermittent visual contact with the glider as they approached the overhead together with the TCAS contact. Despite having been advised (twice) by the Cambridge controller of the inbound B737 at 4000ft, the glider pilot who had reported being at 3200ft at the eastern end of the airfield, had then been observed on the radar replay to continue that climb but had not advised the Cambridge controller. The B737 pilot reported that this climb prompted the TCAS RA descent. In a phone call to Cambridge ATC later that the day, the B737 pilot reported: *"Coming over the CAM we did have him on TCAS and he was below us at that stage. We maintained. Just as he was circling he came up towards us. We got a descend increase descent rate (and) had to descend down to 3000ft."* (They also reported having been visual with the glider before receiving the TCAS).

The pilot of the LAK17 also reported being aware of the "agreement" between Cambridge Gliding Club and Cambridge ATC, but stated that it did not apply to gliders from […]. They did report having the "*Radio Advisory Zone*" marked on their electronic map and were certainly appearing to have been operating within the spirit of this agreement. They reported that they had been struggling to find lift due to cloud conditions and had moved towards the airfield due to the presence of cloud more suitable for thermalling. The pilot reported seeing the B737 pass underneath them when they were at 3700ft.

It is understood that the LAK17 pilot would have needed to climb at some stage to ensure sufficient height for their return to [destination airfield]. However, their decision to climb to the same level as the inbound B737 in the vicinity of the overhead at that specific moment, rather than perhaps waiting for the B737 to pass [accentuated the proximity of the 2 aircraft]. ATSI considered that it had been fortuitous that the glider had been both speaking to Cambridge ATC and transponding. It appears that ultimately the Traffic Information being passed to the pilot of the B737 and a TCAS resolution contributed greatly to ensuring that both aircraft passed safely.

Conclusion - Good Traffic Information had been passed by the Cambridge controller, and then a TCAS resolution had been provided by the B737's system. However, the pilot of the B737 had believed that the distance between the 2 aircraft as well as their relative positions and speed had been such that the safety of the aircraft involved may have been compromised.

### UKAB Secretariat

The B737 and LAK17 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] If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.[2] If the incident geometry is considered as converging then the B737 pilot was required to give way to the LAK17.[3]

## Comments

### BGA

Under the terms of the Memorandum of Understanding between Cambridge Gliding Club (based at Gransden Lodge airfield) and Cambridge Airport

"Cambridge Gliding Club will encourage pilots flying from the site to do the following:

* To endeavour to contact Cambridge Approach on VHF channel 120.965 when operating within 5NM of Cambridge Airport and within the approach and climb out areas as illustrated [at Figure 3].

* To endeavour to avoid the instrument holding patterns outlined in blue shown in Figure 3 (above) and if unable to do so to inform Cambridge Approach on VHF channel 120.965.

* On flying days, Cambridge Gliding Club will endeavour to contact Cambridge ATC and exchange details of likely activity at both airfields.

Cambridge Gliding Club will endeavour to brief visiting glider pilots of the contents of this Memorandum of Understanding, and where possible relay the key points to other clubs' glider pilots."

In common with many glider pilots, the LAK17 pilot uses moving-map airspace data downloaded from the ASSelect website. This automatically includes the "bow-tie" defined by this MoU, which it labels as the "Cambridge Radio Advisory Zone". Hence many glider pilots refer to this area as the "Cambridge RAZ", although some incorrectly term it an "RMZ". Although not a member of Cambridge Gliding Club, the LAK17 pilot had studied the MoU, and by all accounts fully complied with it during this flight.

Approaching the Cambridge area from the northeast at 1256, the LAK17 pilot was very conscious of the need to find a thermal in order to stay airborne, and headed for a promising-looking cumulus cloud 1NM NE of Cambridge Airport. According to its barometric logger, at 1258:11 the glider contacted the associated thermal at 2557ft AMSL, and therefore 500ft above the ATZ. If this thermal had not been found, the glider would have descended into the top of the ATZ within a further 2-3 minutes. The pilot judged from the intense RT traffic that the ATZ was busy, so rather than seek permission to descend into it, states that they would instead have glided clear and selected a farmer's field suitable for landing. However, once established in the thermal, the glider would have climbed at the rate that it dictated; hence waiting for the B737 to pass before climbing would have been problematic.

The glider climbed at between 500 and 850ft/min, completing one turn every 23 seconds, implying a bank angle of about 30°. When head or tail-on to a distant observer it would have been difficult to see, but its 18 metre wingspan would have been more visible when planform, twice in the course of each complete turn. This may account for the B737 pilot reporting being "visual with the glider intermittently". As the LAK17 climbed from 2557ft AMSL and the B737 descended from 4000ft AMSL, the two were briefly co-altitude 13 seconds before CPA, at 3750ft AMSL. The glider pilot reports becoming visual with the B737 at some point after this, as it passed beneath. The glider

[1] UK Reg (EU) SERA.3205 Proximity.
[2] UK Reg (EU) SERA.3210 Right-of-way (c)(1) Approaching head-on.
[3] UK Reg (EU) SERA.3210 Right-of-way (c)(2) Converging..

continued climbing in the thermal up to the base of the cumulus cloud; according to its barometric logger, this was just above 5000ft AMSL. The pilot then continued westwards.

The LAK17 pilot is to be commended for contacting Cambridge ATC in good time on both transits through the Cambridge area, and operating their transponder while in this busy airspace, despite concerns about the glider's limited battery capacity. The Cambridge controller is also to be commended for broadcasting frequent, generic warnings about glider activity, even though not equipped to provide more specific information.

**Summary**

An Airprox was reported when a B737 and a LAK17 flew into proximity at Cambridge Airport at 1300Z on Thursday 20th July 2023. The B737 pilot was operating under IFR in VMC in receipt of a Procedural Service from Cambridge and the LAK17 pilot was operating under VFR in VMC in receipt of a Basic Service from Cambridge.

## PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, GPS log file data and reports from the air traffic controllers 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.

The Board first discussed the actions of the B737 pilot. They had been cleared to descend to 4000ft and handed over to Cambridge where they had requested a Procedural Approach and had been cleared to go straight outbound. The B737 pilot had been passed Traffic Information regarding glider operations in the area and specifically on the LAK17 which had been in receipt of a Basic Service and last confirmed at 3200ft. The B737 pilot, having been instructed to remain at 4000ft to remain clear of the glider had continued to monitor the glider's activity in their 12 o'clock and had elected to turn right to generate lateral separation coincidental with a TCAS RA (**CF7**) to descend and did so having been concerned by the apparent proximity of the LAK17 (**CF6**). They had visually acquired the glider in their 9 o'clock at a distance they had estimated to have been 0.1 to 0.2NM and with the LAK17 100-200ft above them. Board members felt that the B737 pilot had acted with the best available information.

Turning to the actions of the LAK17 pilot, members noted that they had been in receipt of a Basic Service from Cambridge, had had a serviceable EC device and an active transponder which had been seen as positive situational awareness building in this very congested area; they noted, however, that the EC device could not have provided an alarm (**CF8**) in this case. Members noted that, on their outbound track, the LAK17 pilot had been given a squawk and service and may have assumed that they had been subject to the same level of support on the return portion of the trip, potentially leading to assumption with respect to the provision of Traffic Information from, and situational awareness for, the controller, and this may have led the LAK17 pilot to reducing their level of voice communication in this event, particularly with respect to their continued climb through the altitude of the approaching B737 (**CF4**). The Board did feel that the LAK17 pilot had not recognised that their continuing climb would have brought it into conflict with the B737 (**CF5**) and they had effectively had no sighting of the B737 ahead of the event (**CF9**). Members observed that, although the vast majority of gliders on the UK register are radio equipped, using those radios to communicate with ATC is still unusual for glider pilots.

When considering the role of the ATSU, members opined that they had provided services as requested (**CF1**) and to the best of their technical ability, service limitations and available situational awareness (**CF3**) believing that the LAK17 pilot had remained at its initially called altitude of 3200ft (**CF2**), leaving it well-clear of the B737's initial level of 4000ft.

When determining the risk, members considered the reports from both pilots together with reports from the controllers involved, radar screenshots and GPS data. They agreed that although the B737 pilot had been concerned by the proximity of the LAK17, the B737 pilot had had intermittent visual contact

and TCAS indications with the LAK17, and there had therefore been no risk of collision and members assigned Risk Category C to this Airprox.

## PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| | 2023156 | | | |
|---|---|---|---|---|
| CF | **Factor** | **Description** | **ECCAIRS Amplification** | **UKAB Amplification** |
| | **Ground Elements** | | | |
| | **• Situational Awareness and Action** | | | |
| 1 | Contextual | • ANS Flight Information Provision | Provision of ANS flight information | The ATCO/FISO was not required to monitor the flight under a Basic Service |
| 2 | Human Factors | • Expectation/ Assumption | Events involving an individual or a crew/ team acting on the basis of expectation or assumptions of a situation that is different from the reality | |
| 3 | 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** | | | |
| 4 | Human Factors | • Accuracy of Communication | Events involving flight crew using inaccurate communication - wrong or incomplete information provided | Ineffective communication of intentions |
| | **• Situational Awareness of the Conflicting Aircraft and Action** | | | |
| 5 | Human Factors | • Understanding/ Comprehension | Events involving flight crew that did not understand or comprehend a situation or instruction | Pilot did not assimilate conflict information |
| 6 | Human Factors | • Unnecessary Action | Events involving flight crew performing an action that was not required | Pilot was concerned by the proximity of the other aircraft |
| | **• Electronic Warning System Operation and Compliance** | | | |
| 7 | Contextual | • ACAS/TCAS RA | An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system resolution advisory warning triggered | |
| 8 | 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** | | | |
| 9 | 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[4]

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, although both the B737 and the LAK17 pilots had been receiving a service from Cambridge, the controller had been operating procedurally (without surveillance equipment) which meant that the

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

controller had not been aware that the LAK17 pilot had climbed and had been at a similar level to the B737.

## Flight Elements:

**Tactical Planning and Execution** was assessed as **partially effective** because the LAK17 pilot could have done more to alert Cambridge ATC to their continuing climb profile in the overhead.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **partially effective** because the LAK17 pilot had not recognised that their continuing climb would place them in the path of the B737 and the B737 pilot had been concerned by the proximity of the LAK17 when alerted by the TCAS.