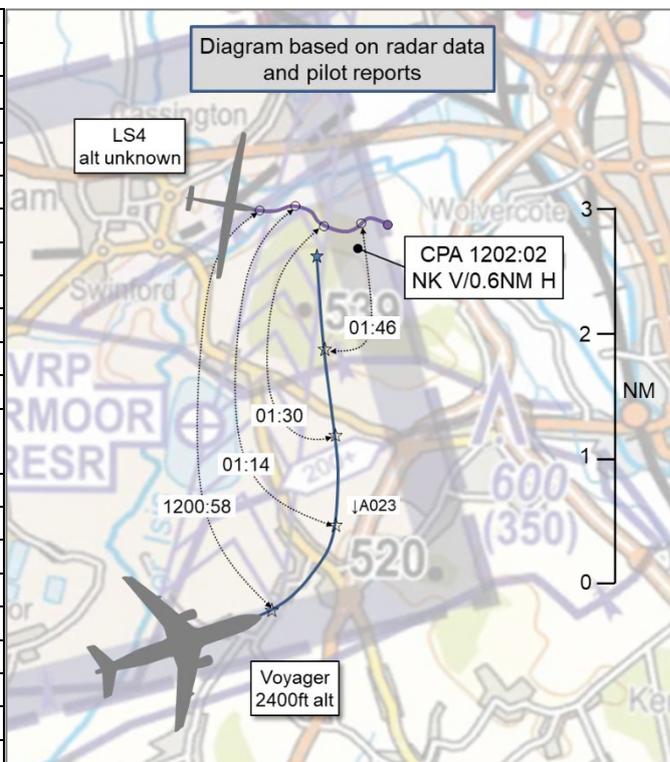


AIRPROX REPORT No 2021118

Date: 16 Jul 2021 Time: 1202Z Position: 5147N 00119W Location: 4NM NW of Oxford

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Voyager	LS4
Operator	HQ Air (Ops)	Civ Glid
Airspace	Brize Norton CTR	Brize Norton CTR
Class	D	D
Rules	IFR	VFR
Service	Radar Control	None
Provider	Brize Director	N/A
Altitude/FL	A023	NK
Transponder	A, C, S	Not fitted
Reported		
Colours	Grey	White, red
Lighting	Strobes, beacon, nav, landing lights	N/A
Conditions	VMC	VMC
Visibility	>10km	5-10km
Altitude/FL	NR	2500ft
Altimeter	QNH (1027hPa)	QNH (NK hPa)
Heading	340°	180°
Speed	174kt	50kt
ACAS/TAS	TCAS II	FLARM
Alert	None	None
Separation		
Reported	0ft V/400-500m H	750ft V/500m H
Recorded	NK V/0.6NM H	



THE VOYAGER PILOT reports that they were recovering from an AAR¹ mission on the south coast. After a substantial hold overhead the BZ [NDB] at FL60, they were cleared for the NDB ILS DME for RW25 at Brize Norton. It was noted during the hold that there was a high level of General Aviation in the vicinity of Brize Norton and a good lookout would be required. During the base turn at 2300ft, Brize Director called "pop-up traffic at 1 o'clock, no height indication". They replied "looking" and searched for traffic. The traffic was sighted just before intercepting the localiser; it was co-altitude and estimated within 400-500m of their aircraft. The traffic was a glider and started a left-hand turn away from them as it was sighted, and as they turned left onto the localiser. The glider had no transponder [they opined] so wasn't squawking. The rest of the approach was continued without incident.

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

THE LS4 GLIDER PILOT reports that they were flying on a cross-country flight, routing from [departure airfield] to Chippenham. The thermic conditions were not as good as they had expected. They were climbing on the eastern edge of the Brize Zone, under a high workload, when they spotted the Airbus A330 approaching from within the Brize Zone. At the time, they believed they were just on the outside of the Brize Zone. They have since been informed by the RAF that it has been identified that they were inside the Brize Zone when the incident occurred. This was a genuine mistake and was in no way intentional. The trajectory of the Airbus appeared to be above their height. In their opinion as a pilot, they believed there was no risk of collision so they continued to climb as the Airbus passed by. Since they did not believe there was any risk of collision, nor were they aware of any airspace infringement, they thought no more of the matter.

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

¹ Air-to-Air Refuelling.

THE BRIZE DIRECTOR CONTROLLER reports that they had 2 aircraft on frequency [the incident Voyager and an A109]. [The Voyager] had to make multiple holds due to inbound traffic causing RW inspections to be delayed. Once [the Voyager pilot] was cleared for the procedure, the controller noticed a primary contact operating approximately 10 miles in the approach lane. The traffic was called but at the time was believed to be outside CAS. [The Voyager pilot] turned to intercept the ILS and this was when they reported that the glider was in close proximity to them. [The A109 pilot] had the traffic called and could see it on their TCAS [they believed] but wasn't visual. To keep 5 miles [separation] on the unknown traffic, [The A109 pilot] was given a different approach to that which they had requested.

The controller perceived the severity of the incident as 'Medium'.

THE BRIZE SUPERVISOR reports This incident occurred towards the end of a particularly complex and busy hour. The Approach and Director controllers had been working a difficult scenario with A330 inbounds, ATC-enforced holds to facilitate RW inspections, A330 departures as well as light aircraft and returning parachute aircraft, and a busy zone frequency. Their attention had been split between this, the controllers upstairs in the visual control room who were managing a complex taxi pattern and the need to juggle aircraft taxiing and runway inspections, and the LARS controller who had been working 8 aircraft on frequency (the maximum [permitted at Brize Norton]) for most of the past hour.

The Supervisor had noticed the non-squawking aircraft over the eastern edge of the CTR when the A330 was overhead Brize Norton and, from the speed, direction and size of radar return, they believed it to be a glider. They powered-up the PAR² (an accurate radar with a quick refresh rate used to control aircraft from 10NM to touchdown in a narrow cone) to see if it showed any returns in the approach cone; there was nothing displayed out to 10NM from the threshold. They monitored the PAR display as the A330 went outbound on the NDB-ILS procedure and saw no returns in the location of the non-squawking aircraft. ATC does not yet have FLARM installed so they did not check that, but they were content that the PAR showing nothing and the rules of the air stating that aircraft cannot enter the Class D [airspace] without a clearance to do so meant the aircraft was not inside the CTR.

When the A330 [pilot] said that the glider had passed close, they spoke to the Director [controller] to ensure they were going to avoid the non-squawking aircraft with their [A109] (they were), then found their phone and looked on the FLARM website to obtain details of the glider, which FLARM showed as inside the Brize CTR and indicating an altitude of 900m [~3000ft].

Factual Background

The weather at Brize Norton was recorded as follows:

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METAR EGVN 161150Z 01008KT 9999 FEW034 SCT041 25/16 Q1027 NOSIG RMK BLU BLU=
METAR EGVN 161220Z 04011KT 9999 SCT040 25/14 Q1027 NOSIG RMK BLU BLU=
```

Analysis and Investigation

Military ATM

The A330 crew was on recovery to Brize Norton after an AAR sortie and was in receipt of a Radar Control Service flying IFR with Brize Director. After a substantial hold overhead Brize Norton, the crew was cleared to conduct an NDB ILS DME to RW25. Traffic Information was passed to the pilot regarding a CTR transit prior to a second set of Traffic Information being passed on the glider shortly after as pop-up traffic. There was no TCAS contact and the reported separation was 400-500m horizontally and 0ft vertically.

The glider was conducting a cross-country flight and was climbing on the eastern edge of the Brize CTR not in receipt of a radar service. They reported that the thermic conditions were not as good as expected and were unaware that they were operating within the Brize CTR. They reported that

² Precision Approach Radar.

they were first visual with the A330 at 5km with the minimum separation reported as 750ft vertically and 500m horizontally and did not believe there was a risk of collision.

The Brize Director was providing a service to the A330 and another aircraft which was outside controlled airspace at the time of the incident. They reported that the A330 had had to make multiple holds due to other inbound traffic causing the required runway inspections to be delayed. Traffic Information was passed to the A330 regarding a CTR transit and it was reported that a primary contact was operating approximately 10NM in the approach lane. The glider was believed to be operating outside controlled airspace, however, the controller passed Traffic Information as pop-up traffic and informed the A330 pilot that they believed the traffic to be outside controlled airspace.

The Supervisor reported that they had seen the glider operating over the eastern edge of the CTR but stated that this was not an unusual occurrence. After the A330 pilot reported that the glider was inside controlled airspace, they checked FLARM on their mobile and were able to confirm the glider and altitude.

Figures 1 – 3 show the positions of the A330 and the glider at relevant times during the Airprox. The screenshots are taken from a replay using the NATS radars, which are not utilised by Brize Norton, therefore may not be entirely representative of the picture available to the Brize Norton controllers.

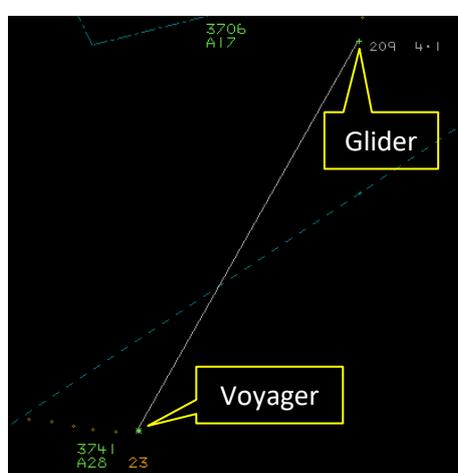


Figure 1 – The A330 pilot had been cleared on the NDB ILS DME and had been passed Traffic Information on the CTR transit.

The Director had given the A330 pilot Traffic Information on the CTR transit then proceeded to pass a control instruction to the pilot of the other aircraft under their control. Separation was measured at 4.1NM.

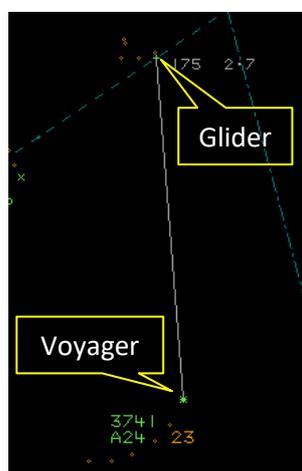


Figure 2 – Traffic Information was passed to the A330 pilot regarding the glider.

Fifty-one seconds after the control instruction was passed to the pilot of the other aircraft under their control, the Brize Director passed Traffic Information to the A330 pilot stating “*pop-up traffic north two miles manoeuvring slow moving believed to be outside controlled airspace*”. Separation decreased to 2.7NM.

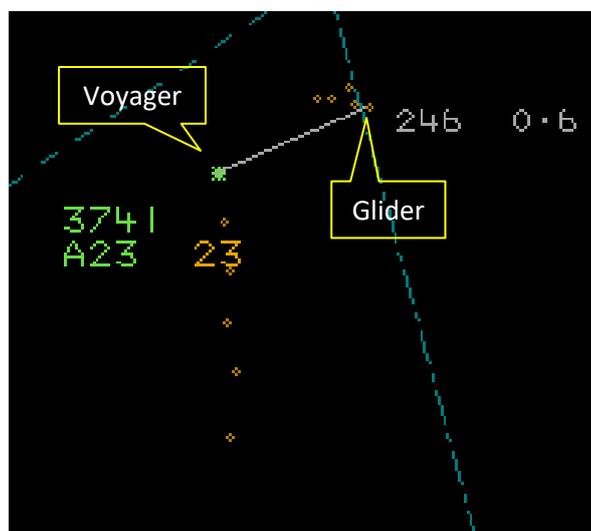


Figure 3 – CPA

Fifty-one seconds later CPA occurs, separation decreased to 0.6NM. On the next radar sweep the glider disappears from radar.

It is understood why the Brize Norton controller and Supervisor made the assumption that the glider could be deemed to be outside controlled airspace, however, it is encouraging to see that, despite this assumption, the controller opted to pass Traffic Information which allowed the A330 pilot to become visual. The Traffic Information contained most of the required information although could have potentially been passed earlier, especially if the controller was concerned. It can be assessed that the glider was visible on the controller's radar screen as they reported observing it from the point that the A330 pilot was cleared for their approach; therefore, the term “pop-up” traffic was incorrect.

The Supervisor noted in their report that FLARM was checked after the event to ascertain the identification and altitude of the glider. FLARM has not yet been approved to supplement controllers' situational awareness when passing Traffic Information at Brize. However, the unit is actively investigating the introduction of a situation awareness building tool.

UKAB Secretariat

The Voyager and LS4 glider pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.³ If the incident geometry is considered as converging then the Voyager pilot was required to give way to the LS4 glider.⁴ The rules for flight in Class D airspace are specified in the UK AIP, ENR 1.4, paragraph 2.4, reproduced in Figure 4 below:

³ (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

⁴ (UK) SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

2.4 Class D - Controlled Airspace

Service	IFR	VFR
	Air Traffic Control Service.	
Separation	Separation provided between all IFR flights by ATC. Traffic information provided on VFR flights and traffic avoidance advice on request.	ATC separation not provided. Traffic information provided on IFR flights and other VFR flights; traffic avoidance advice on request.
ATC Rules		Flight Plan required (See Note 1); ATC clearance required; Radio Communication required; ATC instructions are mandatory.
VMC Minima	Not applicable.	At and above FL 100: 8 KM flight visibility 1500 M horizontal and 1000 FT vertical distance from cloud. Below FL 100: 5 KM flight visibility 1500 M horizontal and 1000 FT vertical distance from cloud. Alternatively, during day only, at and below 3000 FT AMSL, or 1000 FT above terrain, whichever is the higher (See Note 2): a. For aircraft other than helicopters, flying at 140 KT IAS or less: 5 KM flight visibility Clear of cloud and with the surface in sight. b. For helicopters, flying at 140 KT IAS or less: 1500 M flight visibility Clear of cloud and with the surface in sight.
Speed Limitation	Below FL 100: 250 KT IAS; OR lower when published in procedures or instructed by ATC.	

Note 1: In certain circumstances, Flight Plan requirements may be satisfied by passing flight details on RTF (detailed at ENR 1.10).

Note 2: The VMC criteria stated in the table above for flight by day at and below 3000 FT AMSL, or 1000 FT above terrain, whichever is the higher, reflect changes from SERA.5001 Table S5-1, as enabled through the Aviation Safety (Amendment) Regulation 2021.

Figure 4 – extract from the UK AIP ENR 1.4.

Occurrence Investigation

The glider was not transponding and [Traffic Information] was passed to the A330 [pilot] as “*believed to be outside controlled airspace*” because Class D is a known traffic environment. No RT contact was made by the glider [pilot] and it was only identified with the help of a Glidernet-like site on the internet. It also affected another [aircraft] that was making an approach to Brize Norton. There is an ongoing Airprox investigation [UKAB note: the UKAB does not conduct investigations – the UKAB secretariat analyses the investigation results from the aircraft and ATC operating authorities] into this incident that could have been a lot worse if it were not for good lookout by the A330 crew. The glider was identified using a Glidernet-type App. Although they can give controllers SA on glider traffic, they are not used as a controller aid due to possible lag due to the internet. At present this information is reliant on having access to an App on a mobile phone or a computer. There is an ongoing project to have a more permanent display available in the Approach room to aid controllers’ SA on where and what glider traffic is doing.

Comments

HQ Air Command

This occurrence was subject to a Local Investigation. The incident occurred towards the end of a particularly busy and complex hour for ATC with enforced holds to facilitate runways inspections, A330 departures in addition to light aircraft operations and returning parachute aircraft. A non-squawking contact (the glider) was noticed at the eastern edge of the CTR and passed to the Voyager crew. The Voyager crew had noted that there was a high level of GA activity in the vicinity of Brize and adopted a good lookout throughout the hold and procedure. ATC did particularly well once they noticed a contact by using the Precision Approach Radar (PAR) with its higher fidelity and refresh rate. Although the distance between aircraft was large enough not to pose a risk of collision, a good prompt from ATC and good lookout from the Voyager crew meant the see and avoid barrier worked.

The positioning by the glider pilot was unfortunate; operating within the airspace (without clearance) and close to the runway centreline without squawking or talking to the ATC unit is not advised. It not only poses great risk to themselves but also to the larger aircraft operating from Brize Norton, with

some potentially carrying 200+ passengers. It was lucky on this occasion that the glider appeared on radar, which allowed the controller to pass Traffic Information to the Voyager crew; all-too-often the radar cannot normally detect gliders.

BGA

It is most unfortunate that the glider pilot was unable to provide a log file to unequivocally establish their flight path. Be that as it may, it is always wise to contact the relevant ATSU when operating close to the edge of a busy CTR. If FLARM data had been available to the Brize ATSU, this incident would probably have been averted.

Summary

An Airprox was reported when a Voyager and an LS4 glider flew into proximity 4NM NW of Oxford at 1202Z on Friday 16th July 2021. The Voyager pilot was operating under IFR in VMC and under Radar Control from Brize Director; the LS4 glider pilot was operating under VFR in VMC and was 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 considered the actions of the Voyager pilot and noted that they had been passed Traffic Information on the LS4 glider by the Brize Director controller, but that this information had indicated to them that the glider had been assessed to have been outside the Brize CTR. Furthermore, the Board also noted that the TCAS II equipment fitted to the Voyager had not detected the FLARM fitted to the LS4 glider (**CF10**) and so members agreed that the Voyager pilot had only had generic situational awareness regarding the presence of the glider (**CF9**). Not expecting unknown traffic to be inside the Brize CTR, and although not proximate, the Board concluded that the Voyager pilot had also been concerned by the proximity of the LS4 glider (**CF11**).

Turning to the actions of the LS4 glider pilot, the Board heard from a glider pilot member that BGA advice is to communicate with the relevant ATC agency when planning to operate, or actually operating, close to controlled airspace. The member also briefed the Board that the software application XCSOAR, in use by the LS4 glider pilot at the time of the Airprox, should normally alert users to the proximity of controlled airspace, but that it is also possible to deselect this function (although there was no suggestion that the LS4 glider pilot had deselected the controlled airspace warning function on this occasion). From the information available, the Board assessed the glider pilot to be within the Brize CTR at the time of the Airprox (**CF5, CF6**) and considered that the LS4 glider pilot had not sufficiently adapted their plan when they had encountered inadequate thermal activity to maintain their altitude above the Brize CTR (**CF8**). The Board also noted that they had not been in contact with Brize Norton ATC (**CF7**). On this latter point, ATC members opined that, had the LS4 glider pilot spoken to Brize and informed them of their presence in the CTR, then the controllers could have re-routed the Voyager to ensure that the 2 aircraft remained separated. In the event, because of a combination of not communicating with ATC and the fact that the FLARM equipment fitted to the LS4 glider could not detect the transponder signals from the Voyager (**CF10**), members agreed that the LS4 glider pilot had not had any situational awareness of the presence of the Voyager (**CF9**) but had, nonetheless, sighted the aircraft at an early stage.

The Board then considered the actions of the Brize controller. Members noted that the presence of the glider had been spotted by the Supervisor some moments earlier and that they had elected to utilise the Precision Approach Radar in an attempt to establish if the primary contact was within the approach cone. The Board heard from a military controller member that, at their airfield, FLARM data has been in use (with caveats) for some time and that, occasionally, gliders displaying as within the approach cone on FLARM-derived data were not visible on PAR, so this was not a reliable means of establishing

that the approach cone is clear. That said, it is not unusual at Brize to see GA traffic over and around the lateral confines of the CTR, and contacts with no height information would normally be expected to be outside controlled airspace. However, the Board felt that the primary contact had been visible to the controller for some time prior to the passage of Traffic Information and, although the primary contact had been deemed as outside controlled airspace, the controller had passed late Traffic Information to the Voyager pilot (**CF1**). Furthermore, the Board agreed that the controller had not had full situational awareness of the position of the LS4 glider (there had been no height information) (**CF4**) and had been working on the assumption that the primary contact had been above the CTR (**CF3**). The Board concluded that the controller had, therefore, not detected a possible conflict between the 2 aircraft (**CF2**). The Board then heard from a military ATC advisor that FLARM-derived data is not currently in use at Brize Norton ATC because a safety assessment needs to be completed before its use can be authorised. The Board also heard from the MAA advisor that a military regulation is currently being drafted regarding the use of unassured data by military air traffic controllers.

Finally, the Board considered the risk involved in this Airprox. Members noted that the LS4 glider had crossed the Voyager's nose at a range of approximately 2NM and that, from that point forward, the 2 tracks had been diverging and so there had been no risk of collision. However, the Board agreed that safety had been degraded because the LS4 glider had been operating within the Brize CTR without an ATC clearance and, therefore, without the controller's explicit knowledge that the contact was within controlled airspace. Accordingly, the Board assigned a Risk Category C to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021118			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Ground Elements				
• Situational Awareness and Action				
1	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
2	Human Factors	• Conflict Resolution-Inadequate	An event involving the inadequate provision of conflict resolution	
3	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	
4	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late or no Situational Awareness
Flight Elements				
• Regulations, Processes, Procedures and Compliance				
5	Human Factors	• Use of policy/Procedures	Events involving the use of the relevant policy or procedures by flight crew	Regulations and/or procedures not complied with
• Tactical Planning and Execution				
6	Human Factors	• Airspace Infringement	An event involving an infringement / unauthorized penetration of a controlled or restricted airspace.	E.g. ATZ or Controlled Airspace
7	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
8	Human Factors	• Insufficient Decision/Plan	Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation	Inadequate plan adaption
• Situational Awareness of the Conflicting Aircraft and Action				
9	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late or only generic, Situational Awareness
• Electronic Warning System Operation and Compliance				

10	Technical	<ul style="list-style-type: none"> 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				
11	Human Factors	<ul style="list-style-type: none"> 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: 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:

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **partially effective** because the Brize Director controller did not have any height information on the primary contact (the LS4 glider) and so had deemed the aircraft to be above the Brize Norton CTR (which it was not).

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the LS4 glider pilot had not received an ATC clearance to operate in the Brize Norton CTR, in accordance with the rules for flight in Class D airspace.

Tactical Planning and Execution was assessed as **ineffective** because the LS4 glider pilot had not considered their options should they not have been able to maintain sufficient altitude to remain above the Brize Norton CTR.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the LS4 glider pilot had no awareness of the presence of the Voyager until they saw it, and the Voyager pilot had been informed that the primary contact seen by the Brize Director controller was “believed to be” outside the Brize Norton CTR.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TCAS II equipment fitted to the Voyager could not detect the non-transponding LS4 glider, and the FLARM fitted to the LS4 glider could not detect the transponder signals from the Voyager.

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

Airprox Barrier Assessment: 2021118 Outside Controlled Airspace

Barrier		Provision	Application	Effectiveness				
				Barrier Weighting				
				0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓					
	Manning & Equipment	✓	✓					
	Situational Awareness of the Confliction & Action	⚠	⚠					
	Electronic Warning System Operation and Compliance	⊘	⊘					
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✗					
	Tactical Planning and Execution	✓	✗					
	Situational Awareness of the Conflicting Aircraft & Action	⚠	✓					
	Electronic Warning System Operation and Compliance	✗	✓					
	See & Avoid	✓	✓					
Key:		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>		
Provision	✓	⚠	✗	⊘				
Application	✓	⚠	✗	⊘	⊘			
Effectiveness								