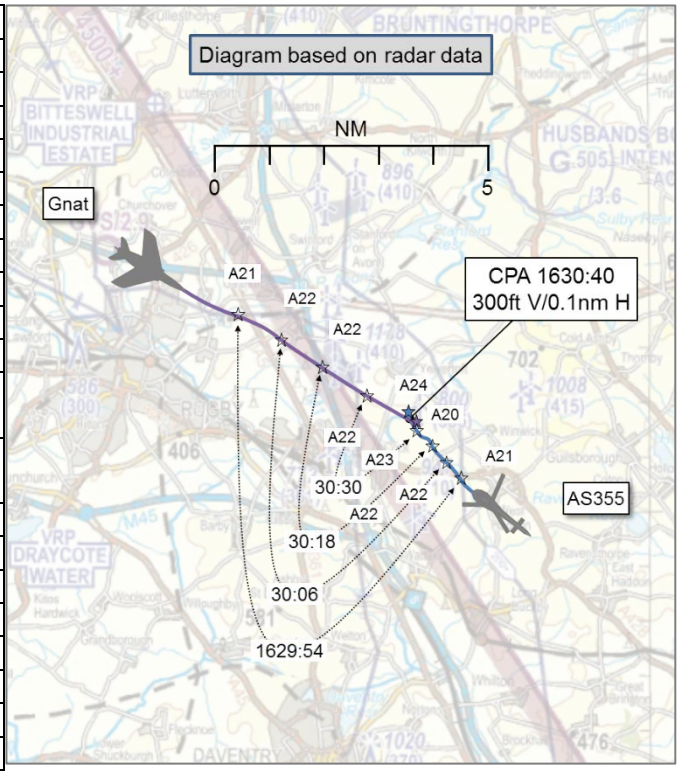
AIRPROX REPORT No 2019107

Date: 18 May 2019 Time: 1631Z Position: 5222N 00107W Location: 4nm NW Rugby

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	AS355	Folland Gnat
Operator	Civ Helo	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	None
Provider	Luton	(Luton Approach)[1]
Altitude/FL	~2350ft	~2050ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Black, orange, silver	Red, white, black
Lighting	Landing light	Anti-col, nav, nose landing light
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2000ft	2300ft
Altimeter	QNH (1007hPa)	QNH (1007hPa)
Heading	320°	140°
Speed	120kt	290kt
ACAS/TAS	TCAS I	Not fitted
Alert	TA	N/A
Separation		
Reported	0ft V/200m H	NK
Recorded	300ft V/0.1nm H	



THE AS355 PILOT reports that he was in transit to a private site near Manchester. Due to range and level, the ATC service from Luton had been downgraded from a Traffic Service to a Basic Service. Nonetheless, Traffic Information was passed on an aircraft in the 11 o'clock position and 'similar' altitude. A climb was initiated to give 500ft vertical separation, the landing light was turned on and TCAS checked. The other traffic was seen and a climbing right avoiding action turn was made. A fast-moving RAF colour-scheme Gnat passed about 200m to the west. No attempt was made to avoid by its pilot. The AS355 pilot changed to the East Midlands frequency and, on checking in, he asked if the Gnat pilot was in contact with East Midlands. He was informed that he had been and had changed to a display frequency some time before but was still displaying an East Midlands transponder code. On landing a call was made to Luton Radar and, from the controllers memory, no mention of an Airprox was made. The other aircraft did not change heading but had climbed from the last level passed by Luton. The aircraft had just left a NOTAM TRA and had been display flying according to ATC.

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

THE GNAT PILOT reports that he was in straight-and-level cruise, having just completed a high-speed final pass at a display site near Nuneaton, preparing for recovery back to home base. In an attempt to minimise fuel usage so as to allow for ample contingency and diversion/reserve at base, while trying to raise Luton Approach and arrange a squawk and zone transit, he allowed the aircraft to slow gradually, following the final high-speed display pass. At the time, this seemed preferable to 'wasting' fuel by slowing down rapidly, then increasing speed again once a Traffic Service was obtained (larger throttle movements), during what he thought would be the brief interval during which Luton Approach was being raised. He was therefore heads-down, selecting the Luton Approach frequency, when he became aware

[1] The Gnat pilot was attempting to raise Luton Approach at the time of the Airprox.

of an object in his peripheral vision, which passed down the left side of his aircraft. The Gnat pilot felt that, with hindsight, this was poor decision making because he was in reality still out-of-range of Luton and subsequently made several unsuccessful attempts to contact them before he finally received a response. He had therefore underestimated the length of time it would take to obtain a squawk and Traffic Service. The safest course of action would have been to slow more positively to 200-250kt until a radar service could be obtained, before resuming best range speed. This would have afforded more time for a robust lookout, not only for him but also for crews of any other potentially conflicting traffic.

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

THE LUTON CONTROLLER reports that he was on duty as the Luton Radar controller mentoring a trainee. They took over the position at 1620 and, as part of the handover, accepted the AS355 on a Basic Service to the northwest of Luton tracking away. At 1621 the trainee advised the AS355 pilot that the aircraft was now at the edge of the radar display and asked the pilot to report leaving the frequency. At approximately 1630 the AS355 was roughly 40nm northwest of Luton when the controller noticed a fast-moving contact tracking towards it on the long range planning radar. They had no previous knowledge of the Gnat or of the pilot's intentions (on its northbound leg it had left the Luton frequency at 1608, before they were on console). He asked the trainee to widen the range of the main display to observe the contacts, which showed the SSR data and levels to be similar. He asked the trainee to pass Traffic Information, but to re-emphasise to the AS355 pilot that he was still in receipt of a Basic Service. The AS355 pilot replied that he was climbing to 2500ft and that he would leave the frequency once the traffic had passed. The Gnat pilot returned to the Luton frequency at 1633 to transit the CTR en-route to his base. No mention of an Airprox was made over the R/T by either pilot.

THE EAST MIDLANDS CONTROLLER reports that the Gnat was displaying at a notified display near Nuneaton, on the display frequency but wearing an East Midlands squawk for conspicuity. The aircraft was not in receipt of an ATC service. The AS355 pilot, having been given traffic information on a Gnat, requested the details of the Gnat because he felt it had got very close to his aircraft. The pilot's initial transmission regarding an Airprox was very weak and quiet, however further details were requested and passed. The frequency was reasonably busy with a combined LARS/Approach due to staffing shortages.

Factual Background

The weather at East Midlands was recorded as follows:

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METAR EGNX 181650Z 32004KT 290V350 9999 FEW020 14/09 Q1007=
METAR EGNX 181620Z 30005KT 260V330 9999 FEW020 14/09 Q1007=
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Analysis and Investigation

CAA ATSI

The AS355 pilot was tracking northwest, in Class G airspace, under a Basic Service from the Luton Radar Controller at the time of the Airprox. The Gnat pilot had recently completed a high-speed final pass at a display site near Nuneaton, was tracking southeast and preparing to recover to base. He was not in receipt of an ATC service at the time of the Airprox although he had previously received a service from the Luton Radar Controller whilst in transit to the display site. This service was terminated at 16:08.40 with the Gnat pilot advising that he would free-call East Midlands. The Luton Radar position was subsequently handed over to another controller and R/T contact was only established with this controller on the return leg after the Airprox had occurred. As such the Gnat was unknown traffic to the Luton Radar controller at the time of the Airprox.

At 16:12.30, the controller advised the AS355 pilot that he had left controlled airspace and a Traffic Service was agreed. At 16:21.40, the controller advised the AS355 pilot that he was reaching the edge of the Luton Radar display and a Basic Service was agreed. The pilot was asked to report leaving the Luton frequency. At 16:28.30, the Gnat was observed leaving the display site at

Nuneaton, southeast-bound, at an indicated ground speed of 399kt, reducing to 252kt groundspeed at 16:29.45 and then steadily increasing again to 289kt groundspeed at CPA.

At 16:28.39 (Figure 1), the Gnat was 13.5nm northwest of the AS355 and displaying a groundspeed of 399kt. The AS355 was displaying a groundspeed of 123kt.

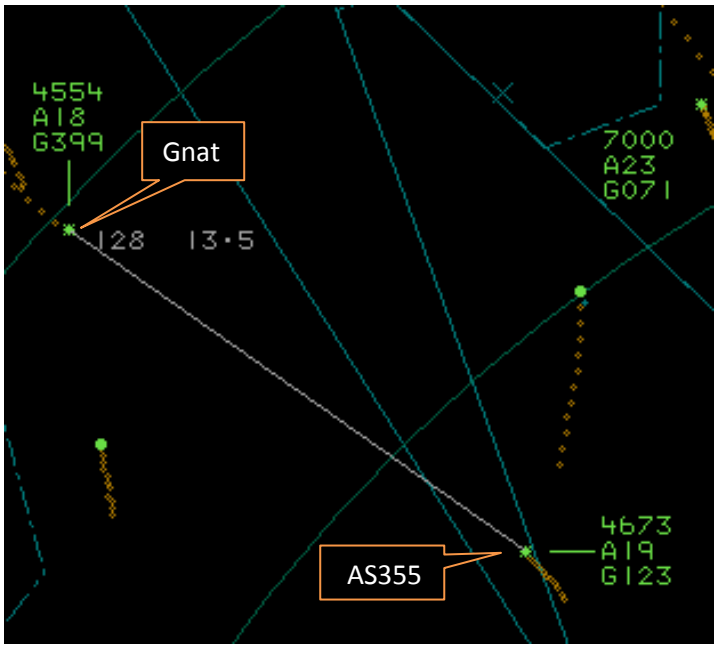

Figure 1- 16:28.39

At 16:30.07 (Figure 2), the Gnat was 3.7nm northwest of the AS355, with both aircraft indicating altitude 2200ft. The Gnat was displaying a groundspeed of 278kt at this point and the AS355 was displaying a ground speed of 117kt. The controller made it clear to the AS355 pilot that he was still under a Basic Service but that he had traffic in the 12 o'clock, range 3 miles, opposite direction, indicating the same level. The AS355 pilot advised the controller that he would climb to altitude 2500ft and, once clear of the traffic, they would 'QSY' to East Midlands.

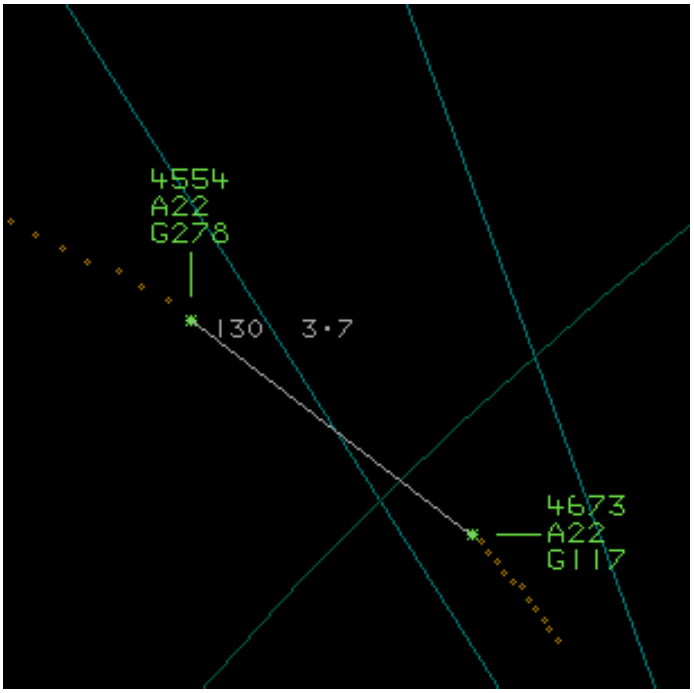

Figure 2 - 16:30.07

CPA occurred at 16:30.39 (Figure 3), with the aircraft separated by 0.2nm laterally and 200ft vertically. The displayed ground speed of the Gnat at CPA was 289kt and the displayed ground speed of the AS355 116kt.

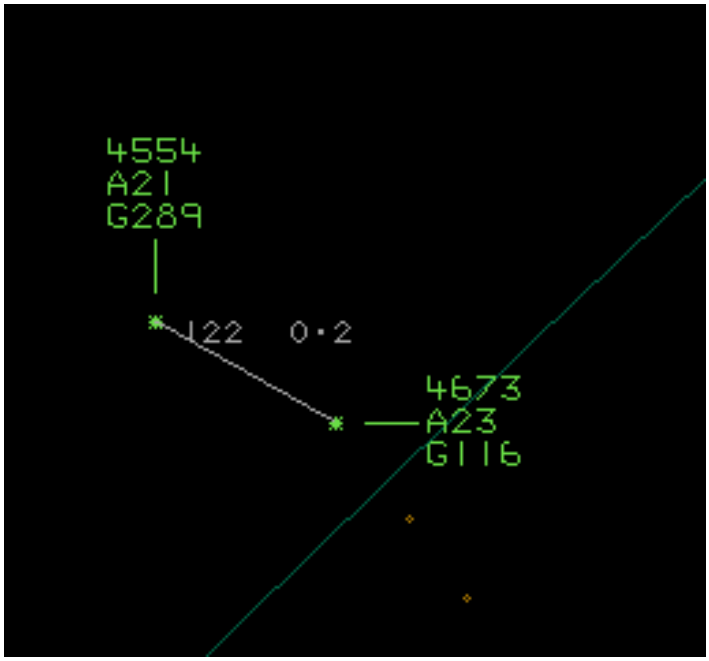

Figure 3-16:30.39 CPA

The Gnat aircraft had been issued with CAA Approval to fly at a speed which, according to the airspeed indicator is more than 250 knots, below FL100, in so far as is necessary to enable the aircraft to fly for the purposes of: Display Practice, Display Flying, Training and Transit.

The permission was granted subject to a number of conditions, one of which is:

> *2. (d) On the said flights the aircraft shall not fly unless it is in receipt of a radar service, except when it is flying within an Aerodrome Traffic Zone (ATZ) or at an Article 86 Flying Display.*

The Gnat pilot did not comply with the above condition of the CAA Approval for the aircraft in that the aircraft was flown at an indicated speed of more than 250kt without having established a Radar Service. The Luton Radar Controller was providing a Basic Service to the AS355 pilot and the Gnat was unknown traffic to the controller. Under the terms of a Basic Service, the avoidance of other traffic is solely the responsibility of the pilots and the pilots should not expect traffic information from the controller. The controller is not required to monitor the flight or to routinely pass traffic information. However, if a controller considers that a definite risk of collision exists, a warning is to be passed to the pilot.

Despite the aircraft concerned being on the extremity of their radar display, the Luton Radar Controller recognised that a definite risk of collision existed. They reminded the AS355 pilot that they were in receipt of a Basic Service and then passed timely and accurate traffic information, resulting in the pilot initiating a climb, thereby increasing the vertical separation between the two aircraft from 0ft to 200ft. The controller should be commended for detecting the confliction and employing good defensive controlling techniques and timely actions.

NATS

At 15:59:39, the pilot of [AS355 C/S] routeing Northbound, reported onto the GW [Luton] INT frequency requesting a Luton zone transit, which was approved. The aircraft was instructed to display Mode-A code 4673 (TC Luton).

At 16:01:47, the pilot of [Gnat C/S], a fast-jet GNAT, reported onto the GW INT frequency stating that they were on a round-robin flight from [home base] to an air display site near Birmingham. As [Gnat C/S] tracked North, the pilot stated at 16:08:49 that they would free-call East Midlands.

[AS355 C/S] continued to track North-West and left Controlled Airspace with the GW INT U/T instructing the pilot at 16:21:43 "reaching the edge of my display, Basic Service, report leaving my frequency," which the pilot acknowledged. The pilot of [AS355 C/S] remained on frequency and the helicopter continued to track North-West at an indicated altitude of 2200 feet.

[Gnat C/S] was observed to carry out high energy manoeuvres to the East of Birmingham before tracking South-East, also at an indicated 2200 feet. [Gnat C/S] was displaying Mode-A code 4554 (East Midlands Approach).

At 16:30:09 (Figure 4), the GW INT U/T informed the pilot of [AS355 C/S] "is still a basic service, but there is traffic in your twelve o'clock, range three miles, opposite direction, same level."

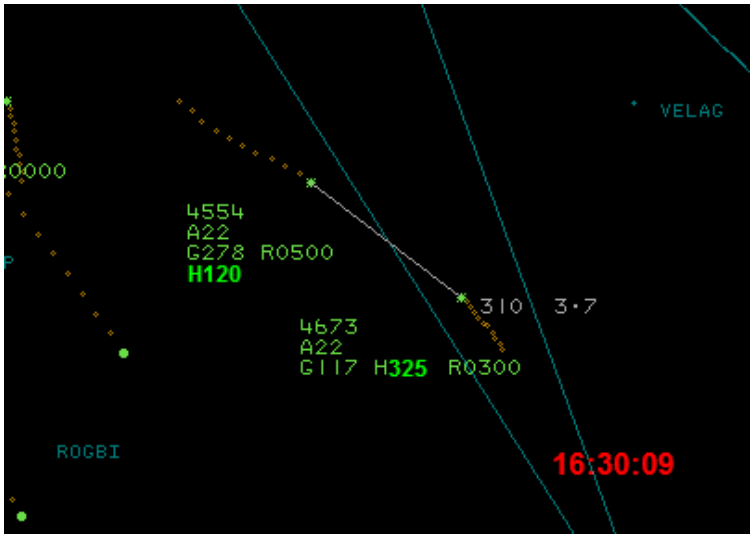

Figure 4

The pilot of [AS355 C/S] responded "we're in the climb to two thousand, five hundred feet, once we're clear of that traffic, we'll QSY to East Midlands." [AS355 C/S] was observed to initiate climb.

CPA occurred at 16:30:39 and was recorded on the LTCC Multi-Track Radar as 0.2nm and 200 feet, see Figure 5.

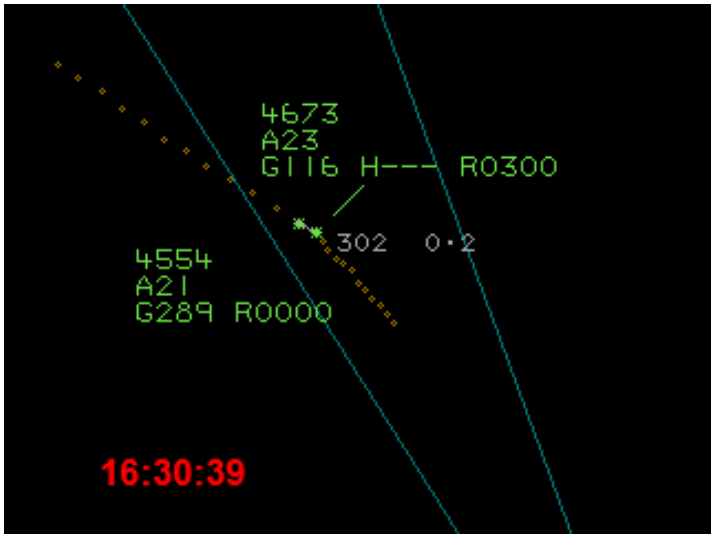

Figure 5

In the next radar update, [AS355 C/S] indicated altitude 2400 feet and [Gnat C/S] 2000 feet as their tracks diverged. At 16:30:47, the GW INT controller informed the pilot of [AS355 C/S] "you've crossed that traffic now, squawk seven thousand, service terminates, free-call en-route". The pilot of [AS355 C/S] proceeded to vacate the frequency without making further reference to the confliction.

The pilot of [Gnat C/S] subsequently reported back onto the GW INT frequency at 16:33:24, requesting a zone transit as the aircraft returned to North Weald. The routeing was approved with the pilot later leaving the frequency at 16:38:00 without making any reference to the earlier confliction.

UKAB Secretariat

The AS355 and Gnat pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[2]. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right[3].

Summary

An Airprox was reported when an AS355 and a Folland Gnat flew into proximity at 1631Z on Saturday 18th May 2019, 4nm northwest of Rugby. Both pilots were operating under VFR in VMC, the AS355 pilot in receipt of a Basic Service from Luton and the Gnat pilot in the process of obtaining a FIS from Luton.

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.

Members first commended the Gnat pilot for his full and honest report, which greatly assisted the Board in its task of establishing the facts of this Airprox incident. They then discussed the Gnat pilot's plan and actions and noted that whilst the ATSI report had noted that he was travelling at a speed that was likely above the maximum allowed whilst not in receipt of a surveillance based FIS (**CF1**), the Airprox occurred soon after he had completed a high speed pass and as he was slowing down and looking inside the cockpit to change to the Luton frequency (**CF5**, **CF7, CF8**). Given that his attention was inside the cockpit, he would probably not have seen the AS355 or received Traffic Information in time to take avoiding action even if he had established 2-way communication with Luton at that stage. This served to highlight once again the need to appropriately prioritise lookout at all times such that only brief periods were spent looking inside the cockpit, especially when flying high-performance aircraft. Some members also felt that the Gnat pilot's distraction with selecting Luton's frequency might also have accounted for the fact that he had not closely monitored his airspeed and had allowed it to remain above 250kts.

The Board discussed options available to the Gnat pilot and agreed that his post-display plan was lacking in some respects (**CF2**). In the knowledge that he required a surveillance based FIS in order to return to base at an appropriate speed for the aircraft type, he should have positively ensured that he remained below 250kts until in receipt of a radar service and may have been better placed by pre-noting East Midlands or Luton on the outbound transit to warn them that he would be returning after the display and would require a Traffic Service; that he did not do so resulted in a delay to his eventual service provision (**CF3**).

Turning to the Luton OJTI/controller and trainee, the Board commended the OJTI for his proactive and safety-enhancing approach to his mentoring and controlling tasks. His actions had enabled the AS355 pilot to be passed valuable information to increase his SA. Although the Gnat pilot had no SA of the

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

converging AS355 (**CF4**), the AS355 pilot was able to use Traffic Information and his TAS information (**CF6**) to climb and turn away from the Gnat. The Board commended the AS355 pilot for his prompt and proactive actions on receipt of this SA, and agreed that his subsequent action had been timely and effective in averting the risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Contributory Factors:

	2019107		
CF	**Factor**	**Description**	**Amplification**
	Flight Elements		
	• Regulations, Processes, Procedures and Compliance		
1	Human Factors	• Flight Crew ATM Procedure Deviation	Regulations/procedures not complied with
	• Tactical Planning and Execution		
2	Human Factors	• No Decision/Plan	Inadequate planning
3	Human Factors	• Communications by Flight Crew with ANS	Pilot did not communicate with appropriate controlling authority
	• Situational Awareness of the Conflicting Aircraft and Action		
4	Contextual	• Situational Awareness and Sensory Events	Pilot had no, only generic, or late Situational Awareness
5	Human Factors	• Distraction - Job Related	Pilot was engaged in other tasks
	• Electronic Warning System Operation and Compliance		
6	Contextual	• ACAS/TCAS TA	TCAS TA / CWS indication
	• See and Avoid		
7	Human Factors	• Distraction - Job Related	Pilot looking elsewhere
8	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: C.

Recommendation: Nil.

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:

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the Gnat pilot was flying slightly faster than an indicated airspeed of 250kt without being in receipt of a surveillance based Air Traffic Service.

Tactical Planning and Execution was assessed as **partially effective** because in his display planning the Gnat pilot had not ensured the prompt availability of a surveillance based Air Traffic Service for his return transit to base.

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

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the Gnat pilot was not aware of the approaching AS355 but the AS355 pilot had been given Traffic Information on the Gnat, and it was displayed on his TAS, such that he was able to manoeuvre to reduce the risk of collision, albeit later than desirable due to their closure speed.

Electronic Warning System Operation and Compliance were assessed as **partially effective** because the Gnat did not have a TAS but the AS355 did.