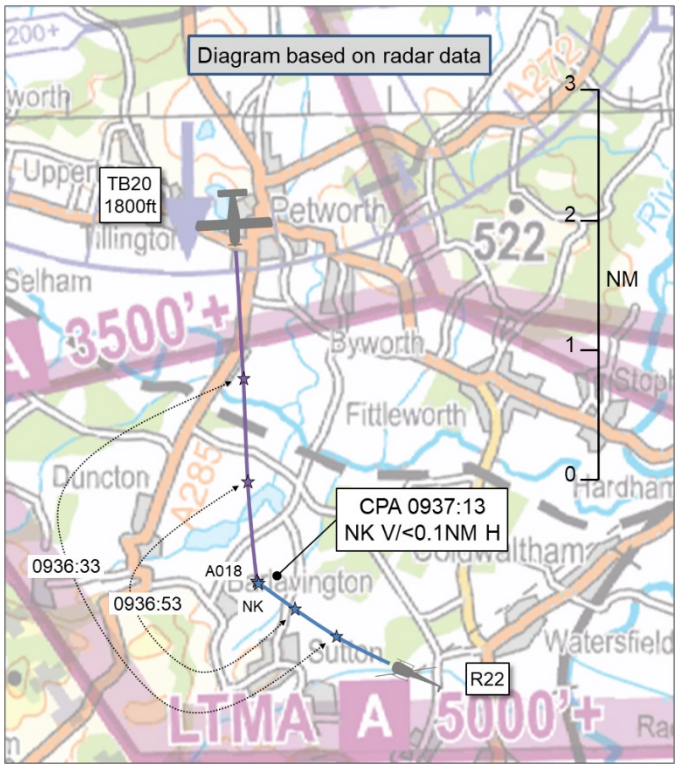
AIRPROX REPORT No 2024055

Date: 20 Apr 2024 Time: 0937Z Position: 5056N 00037W Location: 5NM W Parham

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	R22	TB20
Operator	Civ Helo	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic
Provider	Farnboro' LARS W	Lee Information
Altitude/FL	NK	1800ft
Transponder	A, S[1]	A, C, S
Reported		
Colours	Silver, blue	White, blue
Lighting	Nav, strobe	Nav, strobe
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2000ft	1800ft
Altimeter	QNH (1029hPa)	QNH (1027hPa)
Heading	306°	170°
Speed	70kt	140kt
ACAS/TAS	Not fitted	SkyEcho
Alert	N/A	None
Separation at CPA		
Reported	75ft V/0NM H	"*not seen*"
Recorded	NK V/<0.1NM H	



THE R22 PILOT reports that they were conducting a navigation exercise on a training flight routeing towards Midhurst. They were in the left seat. Their first sighting of the fixed-wing was over their left shoulder as it flew away from them. It must have flown directly below, or very close behind, less than 100ft separation. They informed Farnborough that they had come close to a fixed-wing but did not make an official Airprox report on the radio.

THE TB20 PILOT reports that the TB20 has been a recent aircraft-type conversion for them and the plan was to go with their Flight Instructor for a fly-away with a bit more navigation en-route. They were held at the M3 J4 [VRP] prior to crossing the Farnborough zone to the A31 at Tongham and then routed to the MID VOR remaining at 1800ft on QNH until clear of the London TMA shelf. At that point they initiated a climb to approximately 2500ft at 500ft/min on autopilot proceeding on a heading to Littlehampton.

They were on Farnborough frequency 133.440MHz and in receipt of a Basic Service and squawking a Farnborough discrete code – they believe it was 0460. The frequency was very busy and they were looking-out. When Farnborough terminated the service, they were told to free-call Lee-on-Solent and squawk conspicuity. They cannot recall if the frequency change happened just before the climb or at the top of the climb, but they were in level flight when changing frequency. Their Flight Instructor had Skydemon loaded and had [an EC device] that was receiving traffic. They had no alerts of traffic on the Skydemon on that leg. The [EC device] was configured in 'receive-only' mode as the aircraft had ADS-B-out. However, on this flight, there had been a problem with the COM/NAV 1 box which provided the GPS. This was turned off so they were on Mode S only [without ADS-B-out].

THE FARNBOROUGH LARS W CONTROLLER reports that [the pilot of the R22] called the unit to report an Airprox. From the replay, it had been with [the TB20]. All they can remember is that a pilot

[1] The pilot of the R22 reported that their aircraft had been equipped with a transponder with Modes A, C and S.

reported another aircraft flying close to them, but there was no report of an Airprox on the radio, so they said "*roger*". They do not recollect which pilot it was that had called, but assumed it had been [the pilot of the R22]. [The Farnborough LARS W controller] had already been advised about lots of activity over the South Downs by pilots. It was a busy day and there was a lot of gliding taking place. They do not remember anything else.

Factual Background

The weather at Farnborough was recorded as follows:

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METAR COR EGLF 201050Z 03011KT 9999 SCT042 09/M01 Q1029
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Analysis and Investigation

NATS Safety Investigations

[The pilot of the] TB20 had been outbound from [take-off airfield], inbound to [destination airfield]. The pilot contacted the Farnborough Zone frequency (133.440MHz) at 0922:37 (all times UTC). A clearance to transit the Farnborough CTR was issued with the pilot subsequently informed they were leaving Controlled Airspace at 0929:20 and then received a Basic Service.

[The pilot of the] R22, on a flight from [take-off airfield] to [destination airfield], reported on the Farnborough LARS West frequency at 0932:36 and was initially told to standby due to the controller's handover of the LARS West sector being split off from Approach/Zone.

The Farnborough LARS West controller (LF-LARSW) requested details from the pilot of [the R22] at 0934:03 who reported routeing to Midhurst (whether they meant the town or [VOR] was not known), positioned west of Parham at altitude 1700ft (Figure 1). The pilot requested a Basic Service which was provided as well as the QNH 1029hPa. [The R22] did not display Mode C on radar.

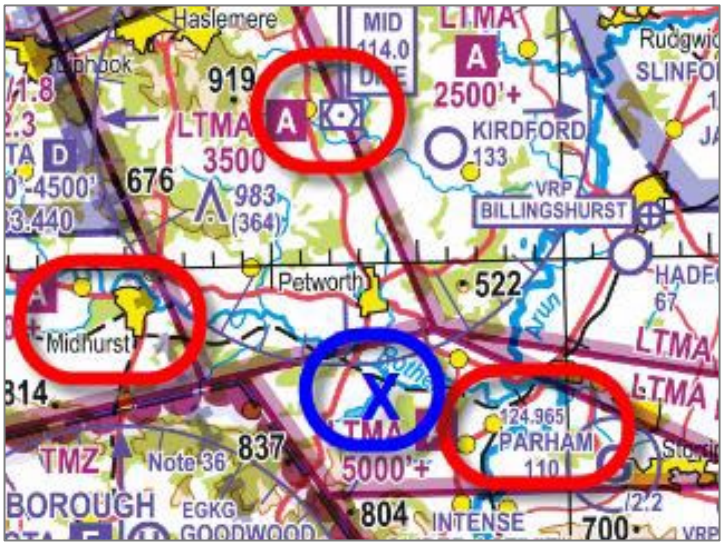


Figure 1. The blue 'X' marks the approximate position of the Airprox

The LF-LARSW [controller] instructed the pilot of [the TB20] to squawk conspicuity and free-call Lee-on-Solent at 0936:03 (Figure 2). The pilot responded transferring to "*Solent*".

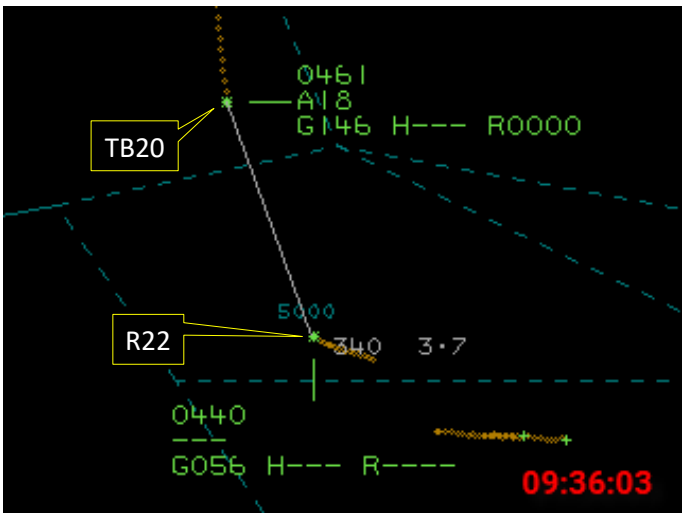


Figure 2. Aircraft tracks

As the two aircraft approached each other, no lateral avoiding manoeuvres were visible on radar (Figure 3).

The Closest Point of Approach occurred at 0937:13 and was recorded on Heathrow 10 radar as 0.04NM. The vertical distance could not be determined as [the R22] did not display Mode C data (Figure 3), however, [the pilot] had previously reported at altitude 1700ft. [The TB20] Mode C displayed 1800ft.

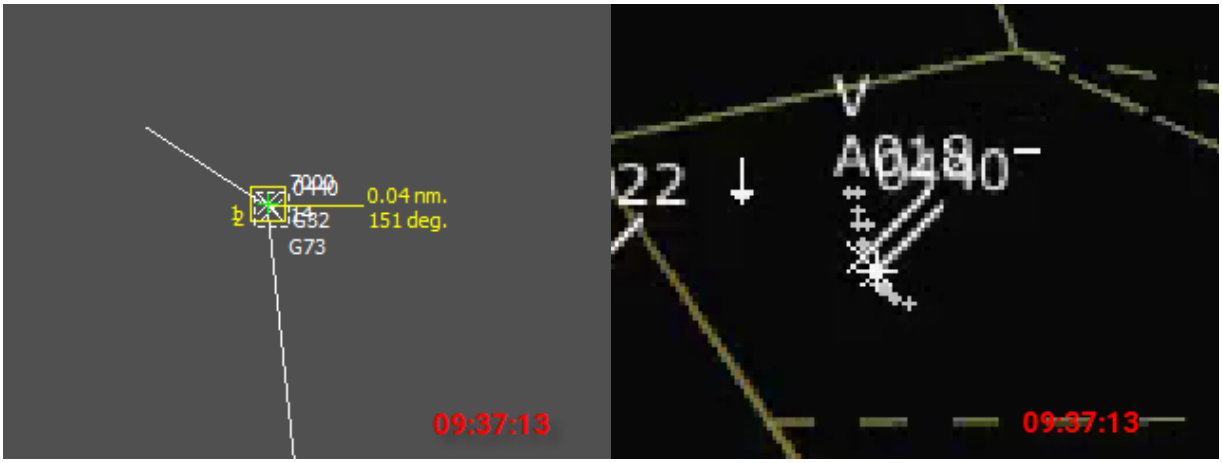


Figure 3. CPA at 0937:13

The LF-LARSW [controller] instructed the pilot of [the R22] to squawk conspicuity and free-call Shoreham at 0937:38. The pilot responded "*can we not stay with you we're routeing to Midhurst?*". The LF-LARSW [controller] responded that they believed they were continuing southbound. The pilot then reported "*we just got pretty close to a fixed-wing heading south.*" There was no response from the LF-LARSW [controller] due to controller workload.

No further transmissions regarding the confliction were broadcast.

Investigation

Information available to the investigation included; radar and RT recordings; a CA4114 from the Farnborough LARS West Controller and a NATS4118 Initial Watch Management Investigation Report.

The Farnborough sector was initially band-boxed as Approach, Zone and LARS West. LARS West was subsequently split-off due to workload.

The NATS4118 stated 'traffic was medium/high' and analysis of RT replay correlated with this. The LF-LARSW [controller] had previously informed pilots on their frequency that only a Basic Service was available due to controller workload. The LF-LARSW [controller] was not aware of the confliction, potentially as [the pilot of the TB20] was no longer on their frequency, and [the R22] did not display Mode C altitude information. This was potentially exacerbated by the high workload at the time of the confliction.

CAP774 UK Flight Information Services Ch 2.1 states that:

> A 'Basic Service relies on the pilot avoiding other traffic, unaided by controllers/ FISOs. It is essential that a pilot receiving this ATS remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic Service is not required to monitor the flight.'

NODE radar indicated that neither pilot performed any visible lateral avoidance manoeuvre prior to, or during, the confliction (Figure 4).

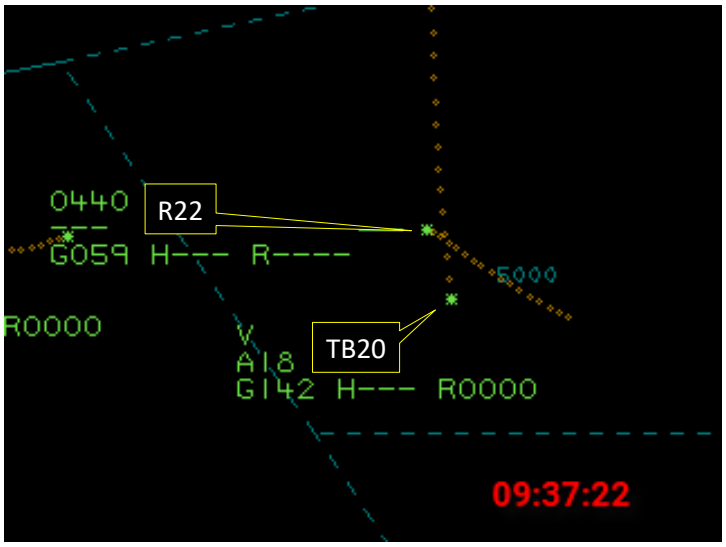


Figure 4. Aircraft positions after CPA

Conclusion

The LF-LARSW sector had been recently split from a bandbox with Approach and Zone due to an increase in controller workload. Prior to and during the confliction, analysis of RT replay displayed high RT occupancy for the controller. RT recordings suggested that, due to this high workload, the LF-LARSW [controller] was potentially unsure of the positioning of [the R22], however, under a Basic Service, there had been no requirement to have monitored the flight. [The pilots of the R22 and TB20] subsequently came into confliction on crossing tracks outside Controlled Airspace. Neither pilot appeared to have displayed any lateral avoidance manoeuvre to avoid the confliction.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft were positively identified from Mode S data (Figure 5). The diagram was constructed and the separation at CPA determined from the radar data.

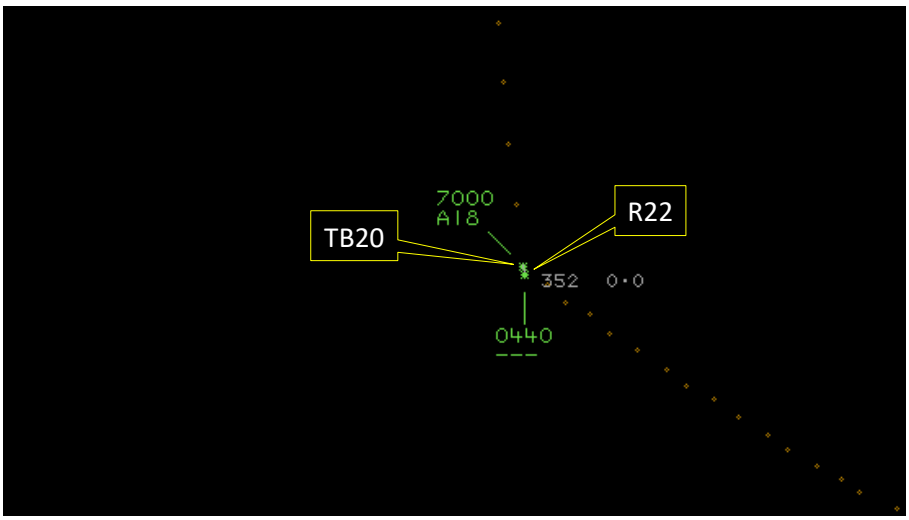


Figure 5 – CPA at 0937:13

The R22 and TB20 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 converging then the R22 pilot was required to give way to the TB20.[3] When the aircraft carries serviceable Mode C equipment, the pilot shall continuously operate this mode unless otherwise dictated by ATC.[4]

Summary

An Airprox was reported when an R22 and a TB20 flew into proximity 5NM west of Parham at 0937Z on Saturday 20th April 2024. Both pilots were operating under VFR in VMC, the R22 pilot in receipt of a Basic Service from Farnborough LARS West and the TB20 pilot likely in receipt of a Basic Service from Lee Information.

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 pilot of the R22. Noting that they had been in receipt of a Basic Service, members agreed that they would not have expected to have received any Traffic Information but may have gleaned situational awareness of the traffic in the vicinity by assimilation of the calls from other pilots. However, members noted that the pilot of the TB20 had left the Farnborough Zone frequency approximately a minute before CPA and, therefore, concluded that the pilot of the R22 would not have had situational awareness of the presence of the TB20 (**CF3**). Members agreed that to have first sighted the TB20 at, or after, CPA effectively constituted a non-sighting (**CF5**).

Members next turned their attention to the actions of the pilot of the TB20 and noted that the Farnborough controller (in a bandboxed frequency configuration at that moment) had instructed them to "*squawk conspicuity and freecall Lee-on-Solent*". Given that the pilot of the TB20 had been over 24NM from Lee-on-Solent at that time, some members wondered whether they may have garnered a better picture of the traffic situation in the area if they had tuned to the frequency for Chichester/Goodwood or, indeed, had re-tuned their radio to the Farnborough LARS West frequency. Notwithstanding, members agreed that the pilot of the TB20 had not had situational awareness of the R22 (**CF3**) and had not visually acquired it at any point during their flight (**CF5**).

[2] (UK) SERA.3205 Proximity.
[3] (UK) SERA.3210 Right-of-way (c)(2) Converging.
[4] (UK) SERA.13010 Pressure-altitude-derived information.

In consideration of the aspect of electronic conspicuity (EC), members noted that the transponder fitted to the R22 had not been transmitting Mode C data and, with the assumption that the transponder had malfunctioned, encouraged the owner or operator of the R22 to attend to its rectification. Members noted that the EC device fitted to the TB20 had been configured for ADS-B in only and that a fault with the aircraft's GPS source during this particular flight had meant that there had not been an ADS-B out signal. Members acknowledged that, for this specific encounter, the EC equipment fitted to the TB20 would not have been expected to have detected the R22 (on account that the transponder fitted to the R22 had not been transmitting an ADS-B out signal) (**CF4**) but, nevertheless, encouraged rectification of the fault with the GPS source.

Members wished to point-out that both pilots had been operating with reduced electronic conspicuity capability in particularly busy airspace whilst in receipt of a Basic Service that had not provided either of them with specific situational awareness of the traffic around them. Members emphasised the importance of a very thorough and effective lookout.

Members next turned their attention to the actions of the Farnborough LARS West controller and it was noted that they had specified that only a Basic Service had been available due to their workload. Members pondered the optimum time for a bandboxed configuration to be 'split-out' when workload had increased. An advisor to the Board explained that controller workload is closely monitored and the number of controllers available is carefully planned to meet expected levels of traffic. When there is an unpredicted increase in the level of traffic, and a high workload persists, the decision to split-out the frequencies is taken. The advisor explained further that, ironically, in order to have provided services to an increased number of pilots, there had been a brief interruption in service whilst the controllers had conducted a handover of the positions. Nevertheless, members agreed that, as both pilots had been in receipt of a Basic Service, the controller had not been required to have monitored their flights (**CF1**) and that it had been the pilot's responsibility to have avoided other traffic unaided by the controller. It was further agreed that the squawk codes transmitted by the transponders fitted to each aircraft would have fallen outside the select frame for the Farnborough LARS STCA to have alerted, irrespective of the absence of the R22's Mode C data (**CF2**).

Concluding their discussion, members summarised their thoughts. It was agreed that there had not been a common frequency in use between the pilots in the minute leading up to the encounter and that neither pilot had had situational awareness of the other aircraft. It was further agreed that the Farnborough LARS West controller had not been required to have monitored the flights. Although an exact measurement of the vertical separation of the aircraft had not been possible, members noted the perceived separation (as reported by the R22 pilot) and agreed that it had reduced to the bare minimum. Further, it was agreed that neither pilot had sighted the other aircraft in time to have taken any avoiding action and that the encounter had only stopped short of an actual collision because providence had played a major part in events (**CF6**). As such, the Board determined that there had been a serious risk of collision and assigned Risk Category A.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024055			
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
	• Electronic Warning System Operation and Compliance			
2	Technical	• Conflict Alert System Failure	Conflict Alert System did not function as expected	The Conflict Alert system did not function or was not utilised in this situation
	Flight Elements			
	• 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	• 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
	• Outcome Events			
6	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: A.

Safety Barrier Assessment[5]

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 **not used** because the Farnborough controller had not been required to have monitored the flight under the terms of a Basic Service.

Electronic Warning System Operation and Compliance were assessed as **not used** because the aircraft transponder codes had been outside the select frame for STCA to have alerted.

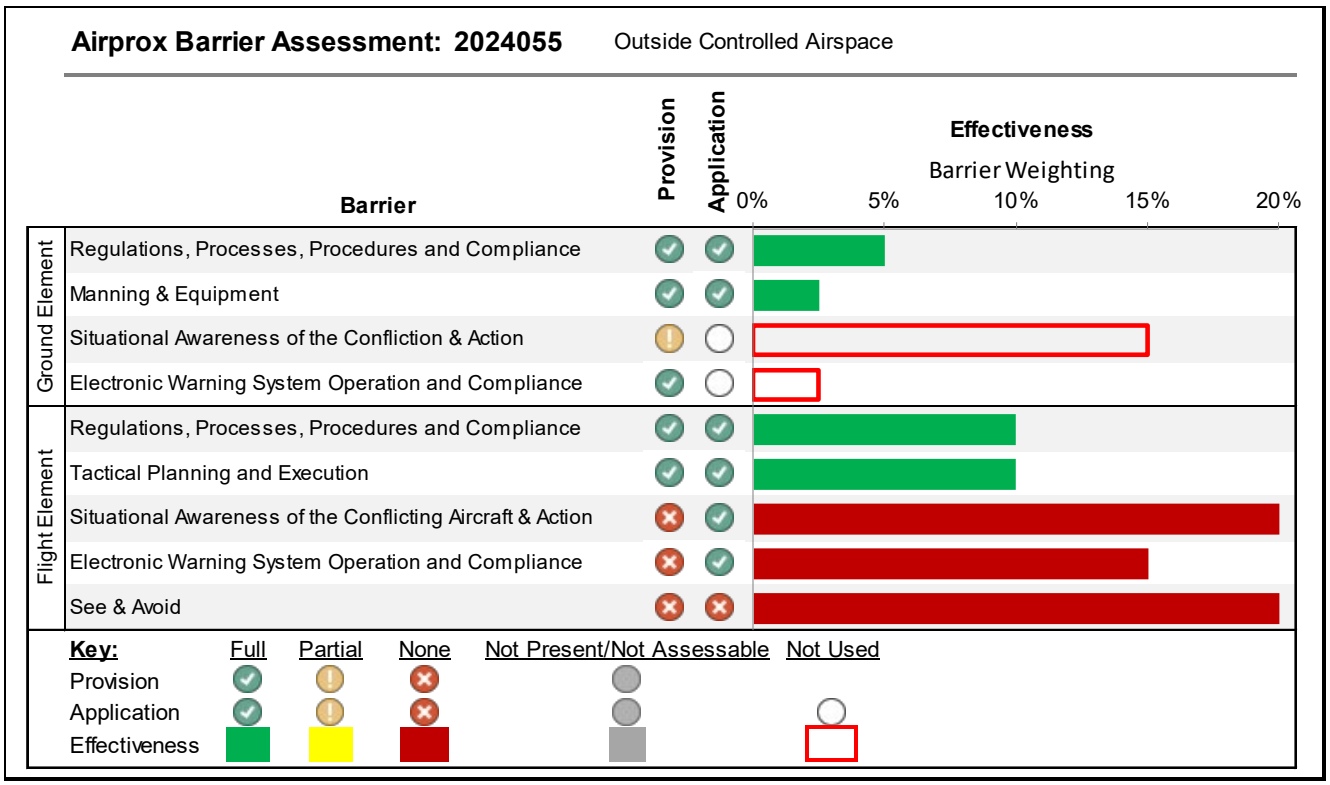
Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had situational awareness of the presence of the other aircraft before CPA.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the EC equipment fitted to the TB20 would not have been expected to have detected the presence of the R22.

See and Avoid were assessed as **ineffective** because neither pilot had sighted the other aircraft before CPA.

[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: 2024055
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:
Full
Partial
None
Not Present/Not Assessable
Not Used
Provision
Application
Effectiveness