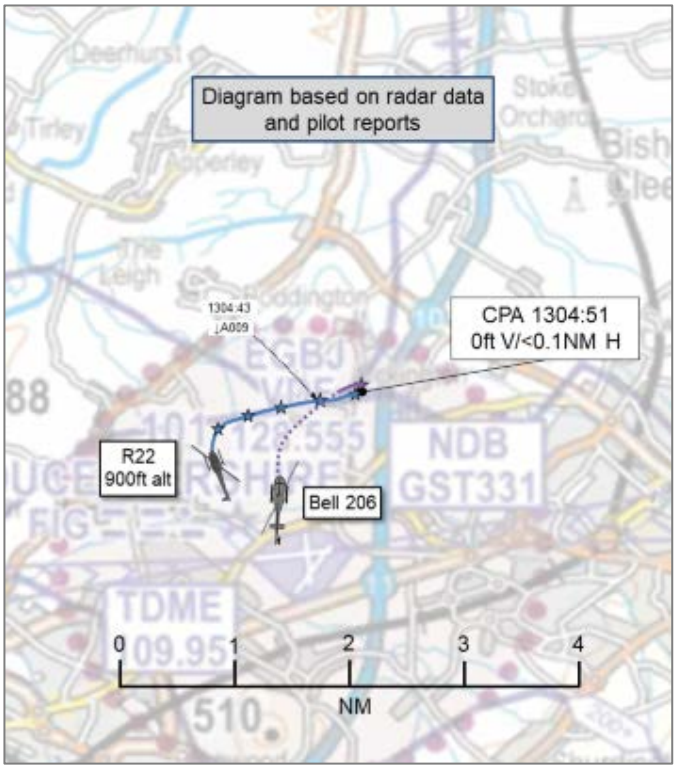
AIRPROX REPORT No 2021146

Date: 11 Aug 2021 Time: 1305Z Position: 5155N 00209W Location: Gloucester airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	R22	Bell 206
Operator	Civ Helo	Civ Comm
Airspace	Gloucester ATZ	Gloucester ATZ
Class	G	G
Rules	VFR	VFR
Service	ACS	ACS
Provider	Gloster Tower	Gloster Tower
Altitude/FL	900ft	900ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Dark Green	Blue
Lighting	Nav	Strobes, HISL
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	700ft	1000ft
Altimeter	QFE (1011hPa)	QNH (NK hPa)
Heading	090°	NK
Speed	60kt	NK
ACAS/TAS	Not fitted	TAS
Alert	N/A	None
Separation		
Reported	0ft V/10m H	NK V/NK H
Recorded	0ft V/<0.1NM H	



THE R22 PILOT reports that whilst conducting circuit training, mid-point downwind they heard their student suddenly take a sharp intake of breath before a [Bell 206] appeared, climbing right-to-left [crossing] directly in front of them, [it then banked to the] right before heading east-northeast.

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

THE BELL 206 PILOT reports that they were [conducting] pleasure flying [trips] at Gloucester Airport. At around 1500 the pilot received a phone call during their break from one of the controllers to tell them that they had had a report from another pilot [regarding] an Airprox incident [involving] themselves and a Robinson R22. At the time of flying they were only aware of one other machine in the circuit [which] had been cleared to cross RW27 by the controller at Gloucester. The Bell pilot passed behind a machine at "Heli-north" and entered the right-hand circuit and then returned as normal. There had been no communication on the radio [stating] that there was another aircraft in the circuit and there had been no communication on the radio from the other aircraft. They were not informed after landing by Air Traffic Control that there had been an issue. They continued to finish their flying and were only told about the [Airprox] on their break. The Bell pilot reports that the controller stated that they were only aware of this through a phone call from [the R22] instructor sometime later. They are not sure of the exact time [the Airprox] took place or even where, however, they had been given the details of the [other] pilot in question and were asked to give them a call. [During the call, the R22 pilot] stated that they had not seen the Bell either as they were looking down discussing carburettor heat with their student [who had seen the Bell]. Both [the R22 and the Bell] pilots discussed this, talked about the implications, and that they would both continue flying and talk with each other on the radio regarding any potential conflict. They were not aware that another aircraft [had been] so close.

THE GLOSTER TOWER OJTI CONTROLLER reports that at 1305, having taken the handover from the ADC position as OJTI to a mid-hours student, the Bell 206, which was departing on the "northern

trip" turned downwind towards [the R22] in the helicopter circuit. It wasn't until the following day that they were made aware of the Airprox. They had an informal debrief about the event but have not reviewed any digital media or recordings appropriate to the event.

Factual Background

The weather at Gloucestershire Airport was recorded as follows:

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METAR EGBJ 111320Z 21007KT 9999 SCT035 21/14 Q1017=
METAR EGBJ 111250Z 20006KT 170V240 9999 SCT032 21/15 Q1017=
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Analysis and Investigation

Gloucester Airport Limited

The initial investigation highlighted that the Bell 206 pilot had already completed many sorties that day including [some] that departed northbound and longer sorties down to the SW, all without incident. Information had also been received that there had been a slight issue with the aircraft at one point where it 'went tech' for a period of time. The helicopter pilot completed approximately 30 sorties that day.

The Airprox occurred at approximately 1305. [The R22 pilot] was conducting helicopter circuits based on RW27RH and had already completed a number (airborne time approximately 1240Z). The [Bell] pilot had been informed of the helicopter circuit being active during their previous sorties (most recently the flight immediately preceding that of the reported Airprox). There was a trainee on ADI with an ADI OJTI plugged in behind. The [Bell] pilot requested lift from the stand (sited just outside the terminal building) and was eventually given taxi to holding point A1 by the trainee [controller]. From A1 the Bell pilot was given a standard helicopter departure to the north and [instructed] to cross RW27. No Traffic Information was passed [to the Bell pilot] on the R22 in the helicopter circuit at this time or vice versa. From an eye witness account the [Bell] helicopter pilot crossed RW27 from A1 and routed pretty much directly to the north over the A + E building on the north-eastern airfield boundary. The Bell pilot was then observed to turn east as if they were joining the helicopter circuit which is where the confliction is believed to have occurred.

When helicopters are given a standard helicopter departure to the north they are expected to depart into wind, turning to depart the circuit at right angles to the runway in use and then to leave the ATZ beneath the downwind leg. This is normally achieved [by routing] via the "gap" between the two business parks as helicopter pilots generally do not like to fly over built up areas. [The R22 pilot] unexpectedly reported "downwind" which then prompted Traffic Information from the OJTI to the [Bell pilot] on the R22 in the circuit. The pilot of [the R22] reported "that was close" [on the RT] which was acknowledged by the ATCO. No mention of an Airprox was made on the RT. There were a few exchanges on the RT following this which highlighted some confusion as to the departure profile.

Both the ATCO and the student were interviewed and the incident was discussed at length. The ATCO suggested that the pilot of the [Bell] had been doing many sorties of varying length and direction however this one was particularly unusual lasting only 3 minutes and effectively conducting a short circuit, not what they had been cleared for or requested.

In conclusion the Airprox occurred after the [Bell pilot] followed an unexpected departure route and instead of departing the ATZ to the north, they turned east into the helicopter circuit (they were cleared for a standard helicopter departure to the north), putting them into confliction with the R22. It was agreed between the assessor and the ATCO that specific Traffic Information should have been passed to both pilots regardless of what was expected. Despite the fact that the pilot of [the Bell] had been given information on the helicopter circuit being active on their sortie 10 minutes prior, re-iteration of this on this sortie would have been beneficial. Moving forward the unit will contact the company which organises these events to ensure the pilot contacts the Tower to agree specific sortie profiles prior to them taking place which should avoid any potential confusion and leave both parties in no doubt as to what is expected. Fortunately there are already trials ongoing

that, if successful, will put robust procedures in place in the whole area of Heli-north and hopefully prevent an occurrence like this in the future.

CAA ATSI

The R22 [pilot] had been flying right-hand circuits from the helicopter training area in the grassed area to the north of RW27. Helicopter circuits are conducted autonomously with no calls being made to the Tower. The B206 [pilot] had been conducting a number of short flights (helicopter experience), operating from between Stands 1 and 2 on the apron to the south of RW27. The previous flight had been to the north to Cheltenham Racecourse. The trainee controller was under the supervision of an On-the-Job Training Instructor (OJTI).

ATSI had access to reports from both pilots and the OJTI. They also received a short unit investigation report contained within an email sent to UKAB. ATSI reviewed area radar recordings not available to the unit, which is only equipped with a primary radar, used by the Tower controller as an ATM. Snapshots in this report are taken from that radar replay, with aircraft levels being displayed as Flight Levels. The difference between FL and the system QNH is +108ft.

At **1302:23**, the pilot of the B206 which was on Stand "*One and a half*" called; "*we're ready for lift, and it's circuit right*". The trainee controller instructed them to taxi to holding-point A1 (Figure 1).

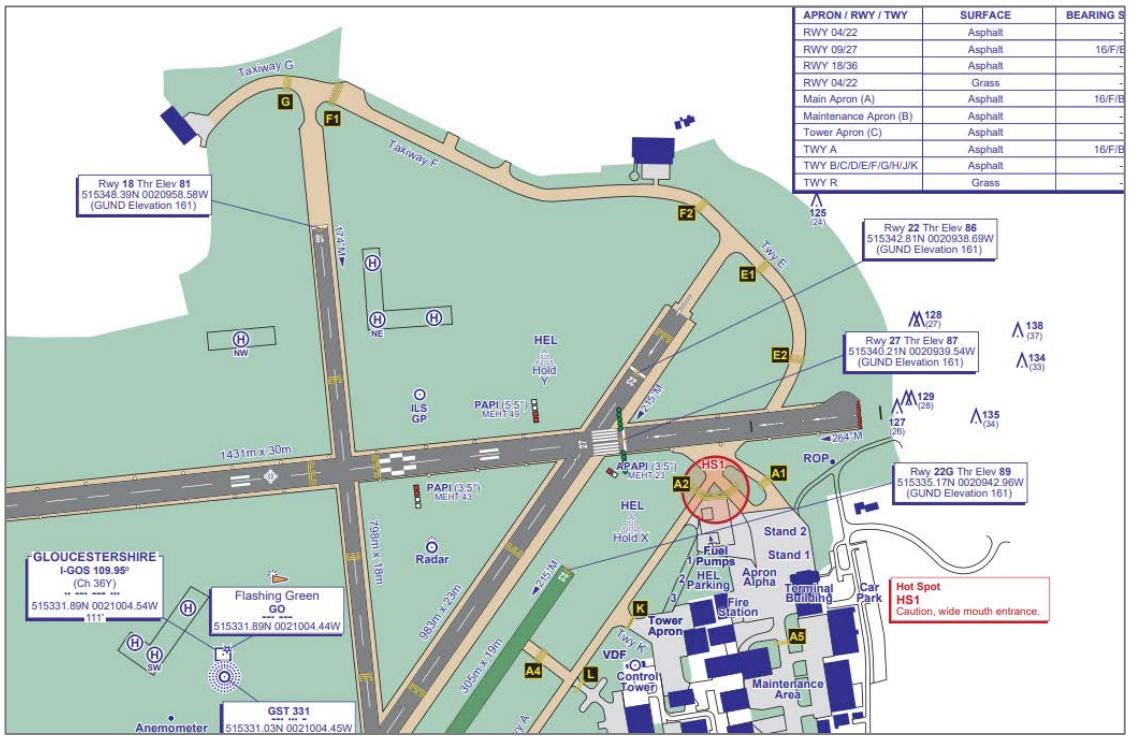

Figure 1 – Gloucestershire Aerodrome – extract from UK AIP

A second helicopter in the helicopter parking area which had called two minutes earlier for departure, but received no response, called again at **1303:02**. The OJTI gave them taxi instructions to Hold X. At **1303:21** the trainee controller instructed the B206 [pilot] to "*cross runway 27, standard helicopter departure to the north. Cleared for take-off* (surface wind)". The B206 pilot replied "*Cross 27. Cleared take-off* (callsign)" (Figure 2).

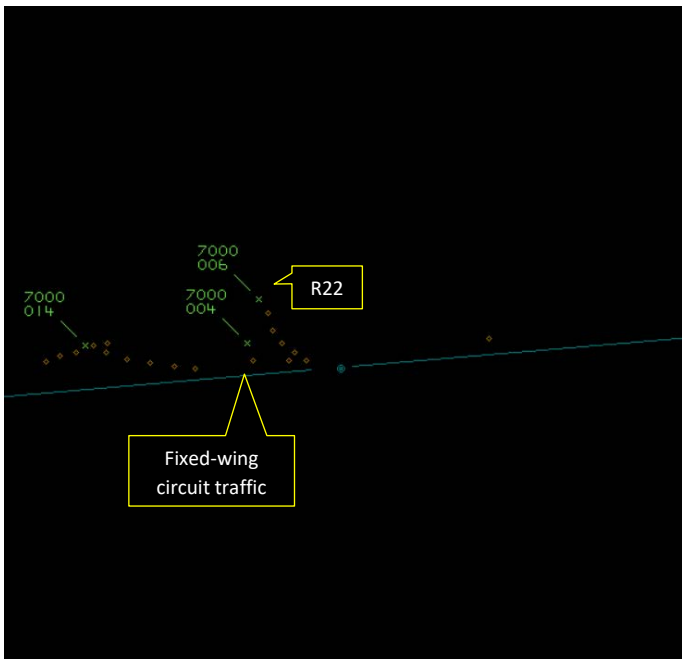

Figure 2 – 1303:21

At **1303:54** the [pilot of the] second helicopter holding at Hold X was given a clearance to cross RW27 on a standard helicopter departure to the north and then cleared for take-off. The pilot read back "*cleared to depart to the north, er just lifting now…*" (Figure 3).

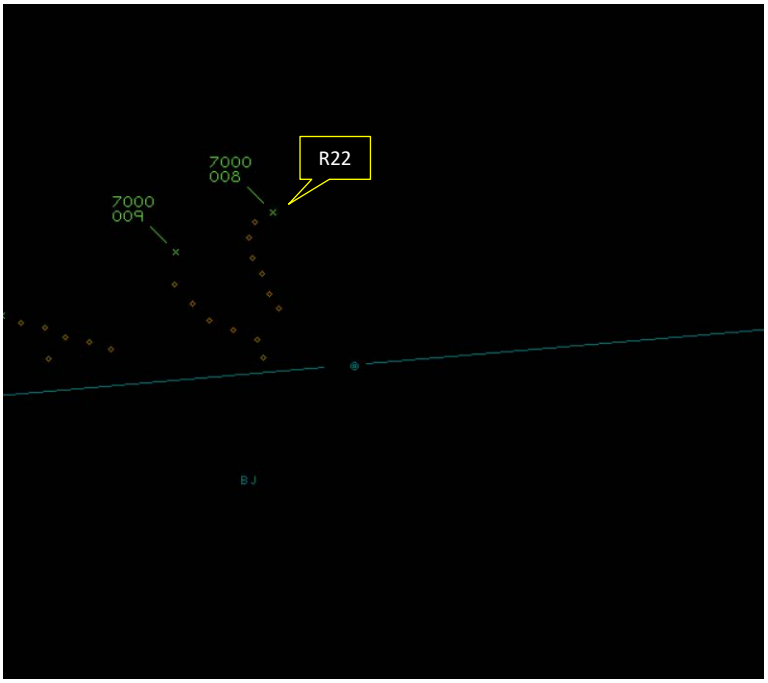

Figure 3 – 1303:54

At **1304:18** the OJTI repeated the instruction to the [pilot of the] second helicopter to cross the runway, which had not been read-back by the pilot.

At **1304:40** [the pilot of] a PA28 in the fixed-wing circuit called downwind. Immediately following this, the R22 pilot reported "*downwind in the heli-circuit*". It is at this point that the B206 became visible on the radar replay, which might have been coincident with CPA, but this could not be determined (Figure 4).

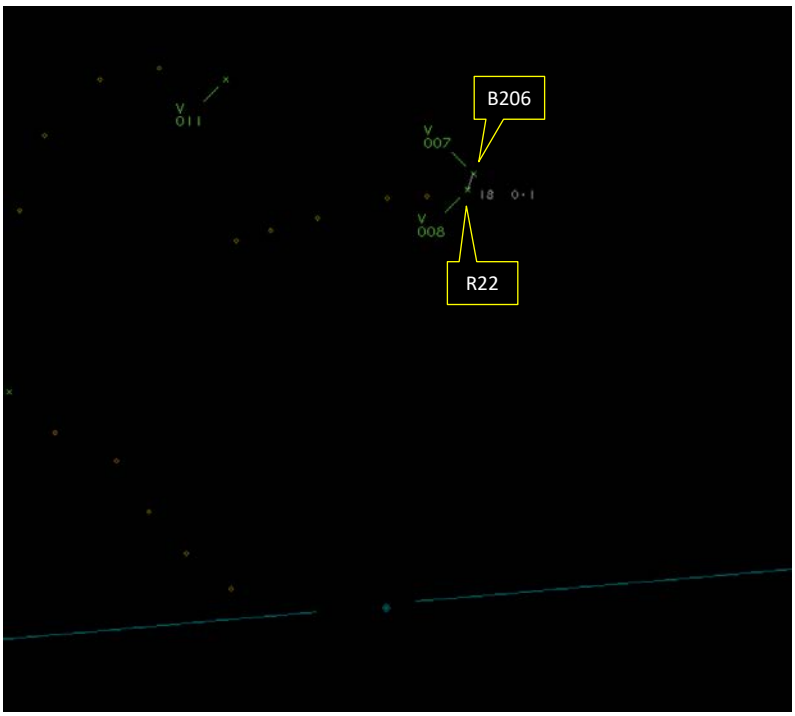

Figure 4 – 1304:42 – possible CPA

The trainee controller instructed the PA28 [pilot] to report on final, advising that they were "*Number One*".
Then the OJTI replied to the R22: "(callsign) – *apologies – the (B206 callsign) is departing out to the east it seems*".
The R22 pilot replied "*yeah, roger that. That was close*".
The OJTI then passed Traffic Information to the pilot of the B206; "*traffic outside of you in the circuit is an R22*".
The B206 pilot replied; "*yeah, copied that – we'll be turning right base very shortly*".
At **1305:28** the OJTI asked the B206 pilot; "*are you doing circuits at the moment then are you?*" The B206 pilot replied; "*er yeah. I've only three to the break, so we're 750 on 1014*". The OJTI replied; "*right – ok – sorry, wasn't a good handover. I thought you were going out toward the racecourse still*".

The B206 pilot was heard to state their request prior to taxi for a "*circuit right*". However, this was missed by both trainee controller and the OJTI. The trainee controller issued a clearance to the B206 pilot for a standard helicopter departure to the north, but this was neither read back by the pilot, repeated by the trainee controller or the OJTI, nor flown by the pilot. No Traffic Information was passed to the pilot of the B206 on either the fixed-wing or the helicopter circuit activity. It was also noted that the pilot of the succeeding helicopter departure also received no Traffic Information on either circuit.

The emailed investigation report from Gloucestershire ATC stated the following:

- Traffic Information on the helicopter circuit had not been passed. Although the pilot of the B206 had been advised of the helicopter circuit activity on their previous sortie to the north, this should have been reiterated, with some consideration given to passing specific Traffic Information on the R22.

- That the B206 [pilot] flew a different route than was expected.

The investigation report incorrectly stated that the pilot had requested a departure to the north, and so had been given a standard helicopter departure to the north, and that they were "*effectively conducting a short circuit, not what* [they were] *cleared for or requested*". A report from an

eyewitness included in the investigation report stated that the B206 was seen to route straight to the north and into the circuit (rather than making any turn to fly upwind initially).

Gloucestershire ATC was asked the following questions by ATSI:

Q. Had the trainee/OJTI heard the request for a circuit, departing from A1 rather than a helicopter holding point (i.e. hold X), how would the clearance into the circuit be phrased, and how would they expect the pilot to fly the departure? (All references in MATS Pt 2 seem to cater for departures into the circuit from the helicopter training area only).

A. *Had the trainee heard, then the helicopter from A1 would (have) had to cross runway 27 first and start circuits from Heli North or tactically, when traffic levels are such, the helicopter could start departure from the runway to join the helicopter circuit after climbing out to circuit height (this would be unusual but more wheeled based helicopters ask to do this).*

Q. When fixed-wing and/or helicopter circuits are active, does the unit expect controllers to pass Traffic Information on both to both northerly departures and other circuit traffic?

A. *Generic traffic given such as helicopter circuit active but specific traffic only given if there is a definite risk of collision.*

The pilot of the R22 reported; "*Whilst conducting circuit training midpoint downwind I heard my student suddenly take a sharp intake of breath before a Long Ranger appeared climbing right-to-left directly in front of us with a right bank before heading east north east*."
The pilot of the B206 reported that they weren't aware of the presence of the R22 with no Traffic Information having been passed by ATC. The pilot of the B206 did not query the standard northerly departure clearance they were issued and, from reports, appeared to route directly towards a point midway downwind in the helicopter circuit.

In conclusion, the pilot of the B206 departed into the circuit on a non-standard routing, which was contrary to the clearance issued by ATC and both the trainee controller's and OJTI's expectations, having not heard the pilot's original request for a circuit. No Traffic Information was passed to the pilots of the B206 or R22 on each other. With the helicopter circuit being flown autonomously and there being no transmitted position reports, situational awareness for departing aircraft is largely dependent on Traffic Information having been passed by ATC. For those helicopters already in the circuit, they must maintain a good listening watch, but are still reliant on precise RTF from others and Traffic Information from ATC.

Gloucestershire ATC was asked to re-examine the incident in light of their original conclusions regarding clearances requested and issued, and confirmed that they agreed with the version of events as depicted within this report.

UKAB Secretariat

The R22 and Bell 206 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] An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.[2]

[1] (UK) SERA.3205 Proximity.
[2] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

Summary

An Airprox was reported when a R22 and a Bell 206 flew into proximity at Gloucester airport at 1305Z on Wednesday 11th August 2021. Both pilots were operating under VFR in VMC, and both were in receipt of an ACS from Gloster Tower.

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.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments.

The Board discussed the helicopter circuit at Gloucester airport and commented that the MATS Pt 2 for Gloucester requires departing helicopter traffic to depart circuit at right angles. However, as mentioned in the Gloucester investigation, it appears to have become usual practice for departing helicopter pilots to route between two prominent business parks rather than via the circuit, in this instance, the B206 pilot had flown a mixture of both procedures (**CF1**). It was noted that the ATCO had not passed relevant Traffic Information to either the R22 pilot or to the B206 pilot (**CF2, CF4**), and that, at this point, the OJTI had not taken the opportunity to step-in to ensure the information had been passed (**CF3**).

On making their initial call, the B206 pilot had requested departure into the circuit, however, this had not been acknowledged by the controller at the time and the pilot had later been cleared for a departure to the north, which was the routing that the controller had expected the B206 to be taking (**CF5**, **CF6**, **CF8**). The Board concluded that the mental model of the B206 pilot had differed from that of the controller, leaving the controller with only generic situational awareness (**CF9**) and hence unable to detect the conflict (**CF7**).

The Board noted that the controller had issued the departure clearance to the B206 pilot along with the take-off clearance, but that the departure element had not been acknowledged or readback by the B206 pilot (**CF16**). Following the RT exchange between the B206 pilot and the Tower controller, the B206 pilot had not detected that the clearance which had been issued differed from that which had been requested (**CF12, CF14**). The B206 pilot had continued to operate in accordance with what they had requested, not what they had been cleared for (**CF10, CF15**). The Board, at this point, discussed the workload of the B206 pilot. A helicopter pilot member familiar with this kind of operation stated that flying multiple, high-intensity, short sorties of this kind is within the limits of the regulation stated in CAP 371[3] but it can be demanding. The Board noted that, at the point at which the clearance had been issued, the B206 pilot would have been particularly busy.

Considering the R22 pilot, the Board agreed that they had had no situational awareness of the B206, and that the B206 pilot had had no awareness of the R22 (**CF17**). After departure the B206 pilot had neither integrated with the circuit traffic or conformed to the pattern of traffic that had already formed (**CF11, CF13**). Despite the B206 having been equipped with a TAS, no warning had been generated – further hindering the B206 pilot's ability to gain situational awareness of the presence of the R22 (**CF18**). The Board discussed the geometry of the event and the design of both helicopters and agreed that both aircraft would have been visually obscured from the other for a period of time (**CF20**). This resulted in the R22 pilot becoming visual with the B206 too late to be able to take any effective avoiding action, and the B206 pilot not seeing the R22 at all. (**CF19**).

[3] CAP 371 The Avoidance of Fatigue In Aircrews. Section B para. 23.2.1. Crew flying repetitive short sectors, for example pleasure flying, offshore short sector shuttles, at an average rate of 10 or more landings per hour, shall have a break of at least 30 minutes away from the helicopter within any continuous period of 3 hours.

Finally, when assessing the risk of collision, the Board commented that operations at Gloucester airport are, at times, highly complex with varying aircraft types, which have different characteristics and are at varying speeds. The Board noted that the availability of aids for controllers, for example surveillance and ATM, is limited. The Board felt that the R22 pilot operating negative RT had reduced the situational awareness of both the controller and the B206 pilot. The conflict had not been detected by the controller and neither pilot had seen the other aircraft in time to be able to take any effective avoiding action. Therefore, the Board concluded that the separation that had existed had been entirely fortuitous and had been the bare minimum and that there had been a serious risk of collision (**CF21**). As such, the Board assigned a Risk Category A to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021146			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Regulations, Processes, Procedures and Compliance			
1	Organisational	• Aeronautical Information Services	An event involving the provision of Aeronautical Information	The Ground entity's regulations or procedures were inadequate
2	Human Factors	• ATM Regulatory Deviation	An event involving a deviation from an Air Traffic Management Regulation.	Regulations and/or procedures not fully complied with
	• Manning and Equipment			
3	Human Factors	• Recurrent/OJT Instruction or Training	Events involving on the job training of individuals/ personnel	
	• Situational Awareness and Action			
4	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
5	Human Factors	• ATM Personnel Hear back	An event involving the hearback (listening) of ATM personnel to communications	
6	Human Factors	• ATM Personnel Read back	An event involving the readback (speaking) of ATM personnel to communications	
7	Human Factors	• Conflict Detection - Not Detected	An event involving Air Navigation Services conflict not being detected.	
8	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	
9	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			
10	Human Factors	• Flight Crew ATC Clearance Deviation	An event involving a deviation from an air traffic control clearance.	
11	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			
12	Human Factors	• Accuracy of Communication	Events involving flight crew using inaccurate communication - wrong or incomplete information provided	Ineffective communication of intentions
13	Human Factors	• Monitoring of Environment	Events involving flight crew not to appropriately monitoring the environment	Did not avoid/conform with the pattern of traffic already formed
	• Situational Awareness of the Conflicting Aircraft and Action			
14	Human Factors	• Flight Crew hear back	An event related to the flight crew not spotting an incorrect transmission from air traffic control personnel	

15	Human Factors	• Flight crew response to communications	An event related to the flight crew taking the incorrect action following communication	
16	Human Factors	• Readback Incorrect	An event involving incorrect readback	
17	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			
18	Human Factors	• Response to Warning System	An event involving the incorrect response of flight crew following the operation of an aircraft warning system	CWS misinterpreted, not optimally actioned or CWS alert expected but none reported
	• See and Avoid			
19	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
20	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	One or both aircraft were obscured from the other
	• Outcome Events			
21	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[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:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because no Traffic Information was passed to either the R22 in the circuit or the departing B206.

Manning and Equipment were assessed as **partially effective** because the OJTI did not intervene to correct omissions or errors made by the student controller.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because, as a result of ineffective read-back and hear-back of instructions and requests, the controller was acting on assumptions rather than reality which impacted their situational awareness and hence their understanding of the requirement for Traffic Information to be passed.

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the B206 pilot flew a departure for which they had not been cleared and then did not integrate with the established circuit pattern.

Tactical Planning and Execution was assessed as **partially effective** because the specifics of the B206 pilot's sotie were not well communicated and, once airborne, the B206 pilot did not integrate with the established circuit pattern.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot was aware of the presence of the other.

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

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TAS on the B206 did not alert when it would have been expected to.

See and Avoid were assessed as **ineffective** because neither pilot saw the other aircraft in time to take effective avoiding action.