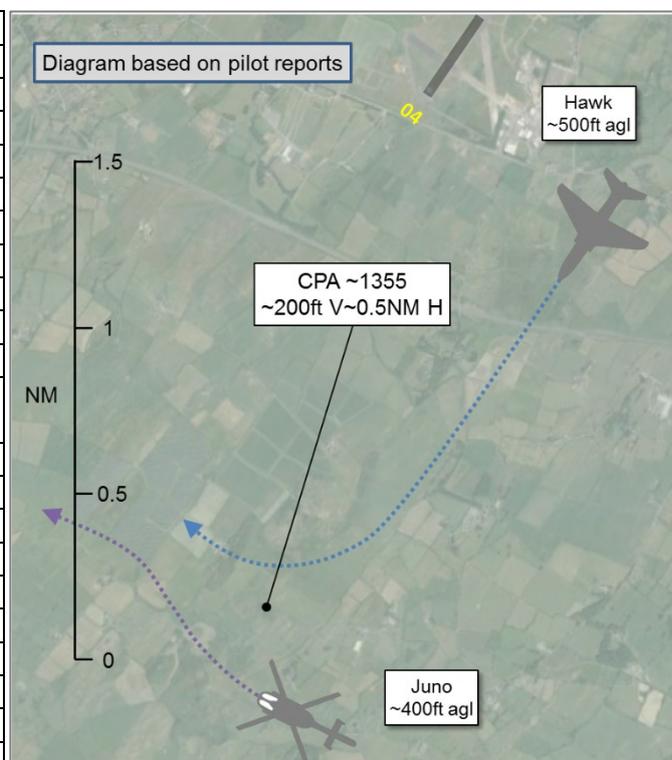


AIRPROX REPORT No 2019322

Date: 27 Nov 2019 Time: 1355Z Position: 5314N 00424W Location: Mona

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Hawk T2	Juno
Operator	HQ Air (Trg)	HQ Air (Trg)
Airspace	Valley CMATZ	Valley CMATZ
Class	G	G
Rules	VFR	VFR
Service	ACS	ACS
Provider	Mona Tower	Valley Tower
Altitude/FL	NK	NK
Transponder	A, C, S	A, C, S
Reported		
Colours	Black, RAF markings	Black/Yellow
Lighting		Nav, strobe, HISL
Conditions	VMC	VMC
Visibility	8km	10km
Altitude/FL	500ft	400ft
Altimeter	QFE (978hPa)	QFE (978hPa)
Heading	220°	290°
Speed	170kt	100kt
ACAS/TAS	TCAS II	TCAS I
Alert	TA	TA
Separation		
Reported	300ft V/300ft H	NK
Recorded	NK	



THE HAWK PILOT reports that, during a 500ft low-level circuit to RW04RH at Mona, configured and approaching the end of the downwind leg, a TCAS contact appeared on the nose at approximately 1NM, moving from left-to-right, 200ft below and with associated audio. The front-seat student pilot was handling at the time and gained visual shortly afterwards. The rotary-wing aircraft was in his 1 o'clock, approximately 0.5NM and closing, 1-200ft below and would have been hidden during a normal finals turn, with the Hawk descending onto the helicopter. The circuit was discontinued and a climbing go-around flown. The traffic was passed to the Mona Tower controller, who was unaware of it. The helicopter was significantly north of the published East Gate VFR rotary-wing recovery procedure and was unaware that the Mona circuit was active.

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

THE JUNO PILOT reports that he was recovering visually to RAF Valley following the prescribed helicopter recovery route but, in order to remove disturbance to a persistent noise complainer, he deviated slightly to the north, following a ground track approximately 400m right of the published track; this procedure had been agreed with RAF Valley through the Media and Communications Officer. Being aware of the proximity to RAF Mona, he pointed this out to his student as they had seen and discussed circuit traffic which was displayed on ACAS. At this point, the student and crewman called visual on the circuit traffic and neither considered there to be any likelihood of collision.

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

THE MONA TOWER CONTROLLER reports the cloud at the time was reported as patches at 400ft with a broken layer at 800ft. The Hawk pilot had joined the circuit for a SIPFL¹ to RW04RH with

¹ Straight-In Practise Forced Landing.

everything as normal. Following a touch-and-go, the pilot called downwind. As he did this, the aircraft entered a patch of cloud and the controller lost sight of the aircraft for the rest of the downwind leg. The pilot reported going-around due to cloud and requested to descend to 500ft for low-level circuits, which was approved. During this, he was listening to the Valley Approach frequency on the speaker in the background and was aware of a rotary-wing callsign transiting back to Valley from the Menai Strait via East Gate, which is a normal daily occurrence that does not infringe at Mona. The published procedure for the East Gate recovery ensures that safe separation exists between Mona circuit traffic, Valley instrument traffic returning on RW31RH and the route the rotary-wing aircraft takes. The Hawk pilot called downwind, low to touch-and-go, which was acknowledged. As the Hawk pilot was about to turn final, he reported going-around due to traffic south of them on TCAS. The controller looked right and saw the rotary-wing aircraft transiting towards Valley; it seemed higher and closer than the usual transits. He looked at the ATM and saw that the rotary-wing was, indeed, closer to Mona than expected (approximately 1½NM from the runway) and informed the Hawk pilot that it was believed to be the rotary-wing aircraft transiting back to Valley. No mention of an Airprox was transmitted. The Hawk pilot then completed one more circuit before returning to Valley.

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

THE VALLEY APPROACH CONTROLLER reports that the Juno was transiting from the Menai Strait towards RAF Valley via East Gate. There was a Hawk T2 conducting visual circuits at Mona (operating RW04RH). The pilot of the Juno advised her that he was changing frequency to Valley Tower at East Gate (as is SOP) and he continued inbound. She looked at the radar screen to see that the 2 aircraft appeared to be in quite close proximity and the Mode C readouts appeared to have a 2-300ft difference. This looked unusual, because the East Gate profile is designed to laterally deconflict from Mona circuit traffic, yet the 2 aircraft appeared closer together (both laterally and vertically) than normal. It was difficult for her to ascertain from her radar screen where both aircraft were in relation to their respective procedures (i.e. maintaining the East Gate profile for the rotary or maintaining at least 1NM NE of the Bangor/Holyhead railway line for the Hawk T2). She called Mona via landline to speak with the controller to ask whether there had been any comment made by the Hawk pilot and was advised that he had been visual with the helicopter but had elected to go-around from his approach due to the proximity of the rotary.

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

THE VALLEY SUPERVISOR did not comment.

Factual Background

The weather at Valley was recorded as follows:

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METAR EGOV 271350Z 01007KT 9999 FEW006 BKN080 10/08 Q0985 TEMPO SCT010 RMK BLU TEMPO GRN=
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Analysis and Investigation

Military ATM

The Juno pilot was conducting a visual recovery to RAF Valley via East Gate, a published helicopter recovery route. Due to noise complaints along this route, an alternative path to the north of the published procedure had been agreed between the helicopter squadron and the Station Communications Officer and, as an additional noise barrier, the Juno pilot elected to fly the procedure at the maximum permissible height of 500ft rather than the usual 200ft. This route placed the Juno higher than normal and approximately 400m north of the published track, which was closer to Mona airfield although just outside the ATZ.

The Hawk pilot was conducting circuit training to RW04RH at Mona. Due to poor weather, the Hawk captain elected to conduct a low level circuit (500ft) and, due to the surface wind, extended the downwind leg of the approach further than normal, although remaining within the ATZ.

The Mona Tower controller was monitoring the Valley Approach frequency (although there was no requirement to do so) and was therefore aware that the Juno pilot was making an East Gate recovery. Extant procedures did not require the controllers involved to pass Traffic Information to the aircraft under their control in this situation. The Unit investigation established that all controllers were of the belief that the Mona circuit procedures and East Gate recovery procedures, by design, would maintain safe separation between aircraft without the need for ATC intervention. The investigation additionally noted that the track deviation agreed between the Juno squadron and the Station Communications Officer had not been notified to ATC nor other airspace users at Valley.

The controllers involved were faced with, from their perspectives, a benign and routine flight occurrence which did not require them to intervene. Neither controller involved was sufficiently concerned about the proximity of the aircraft to pass Traffic Information, and this was probably due, in part, to their belief the procedures were procedurally safe. It is unfortunate that ATC was unaware of the agreed amendment to the East Gate route, as this may have prompted them to offer additional information to the aircraft under their control.

UKAB Secretariat

The Hawk and Juno 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 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.³

Occurrence Investigation

As part of the planned sortie from RAF Valley, the Hawk pilot had completed a PFL recovery to RW04RH at Mona before continuing into the circuit. The first circuit was flown at the standard circuit height of 1000ft on the Mona QFE; however, the cloud coverage was not ideal at this height so the crew subsequently elected to fly a low-level circuit at 500ft Mona QFE. The trainee Juno pilot had just completed his first mountain sortie and was now transiting back to RAF Valley from the SE along the published East Gate VFR Rotary Wing (RW) recovery route, just below the upper limit of 500ft on the Valley QFE. The Juno instructor was talking the student pilot through the East Gate recovery route. Light levels were good, with clear visibility at 7000m, few cloud at 700ft and wind 040/10. Mona is approximately 170ft higher than Valley.

13:53:19 – The Hawk pilot informed Mona Tower that he was descending to 500ft to continue with low-level circuits. The Mona Tower controller was maintaining a listening watch on the Valley Approach frequency and was aware from R/T communications between Valley Approach and the Juno pilot that the Juno was recovering to RAF Valley along the East Gate RW VFR recovery route. The Mona Tower controller did not inform the Hawk crew that Juno would be transiting past to the SW of Mona.

13:54:28 – The Hawk T2 TCAS displayed a contact left the nose at greater than 2NM and 200ft low. At this range, the TCAS gave no audio warning and the Hawk crew was unaware of the contact at this time.

13:54:37 – At the designated changeover position, in accordance with the East Gate RW recovery procedure, the Juno instructor changed frequency from Valley Approach to Valley Tower.

13:54:40 – To avoid a farm situated directly on the East Gate RW recovery route and approximately 1NM on the extended centreline of Mona RW04RH, the Juno instructor instructed his student to turn right and head towards the left-hand edge of a solar farm. This would take them approximately 400m

² MAA RA 2307 paragraphs 1 and 2.

³ MAA RA 2307 paragraph 15.

to the north of the published route and clear of the farm, whilst remaining just outside the Mona ATZ (see Figure 1).

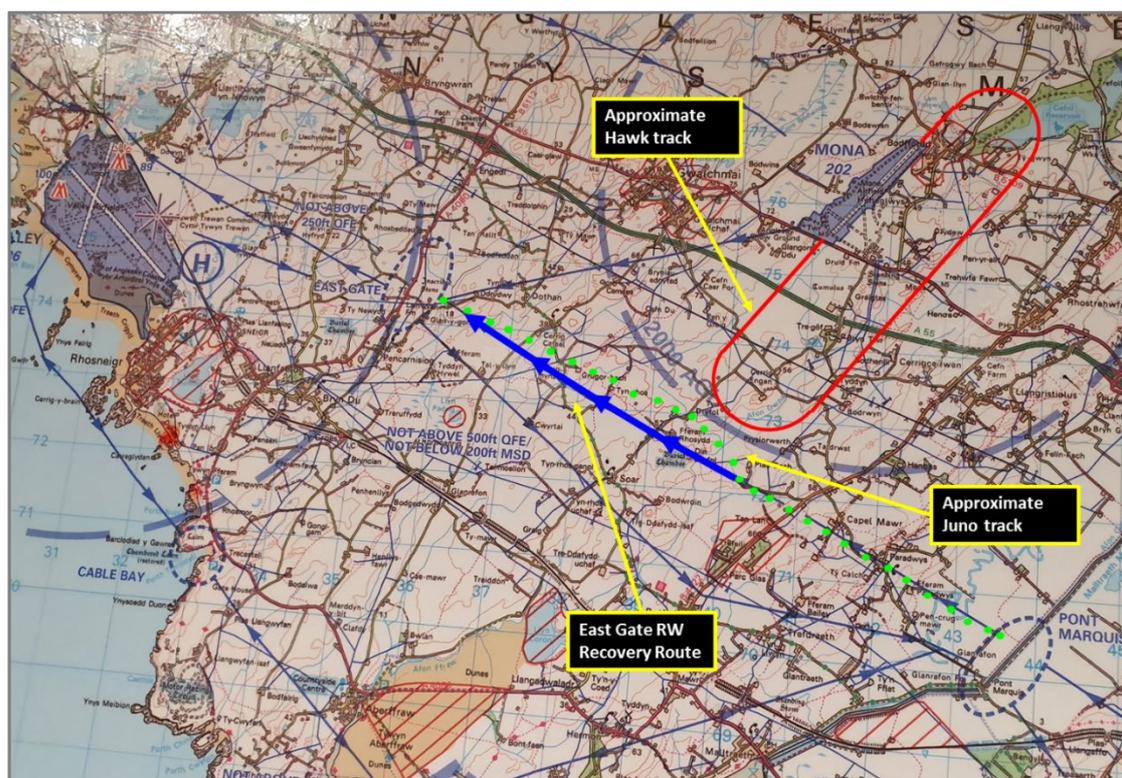


Figure 1

13:54:42 – The Valley Approach controller had just taken over on the console and was aware that the Juno was inbound to Valley via the East Gate route and that there was a Hawk T2 operating in the Mona circuit. The controller observed the Juno turn right, away from the expected routing towards the East Gate reporting point, and noticed that the Hawk and Juno were starting to converge more than expected. The controller did not have time to contact Mona Tower or Valley Tower via landline to relay this information to the Hawk or Juno crews. The Juno Airborne Collision Avoidance System (ACAS) indicated a non-conflicting contact in the 4 o'clock position. The Juno instructor discussed the contact with his student, explaining that it would be an aircraft in the Mona circuit. The Juno pilot confirmed that he was visual with a Hawk in the 4 o'clock position. He could not recall his assessment of distance, however, he was confident that there was no conflict; this was reinforced by his belief that the Hawk was turning slightly left at the time, therefore increasing the separation. The Hawk T2 mission replay gave no indication of a left turn at any point during the downwind leg of the circuit. The Juno crewman was also visual with the Hawk, confirming it to be in the 4 o'clock position, approximately 100-200ft high and 0.5-1NM away. The crewman stated that the Hawk was on a steady heading that would take it behind the Juno, and that the Juno's heading was continually increasing the separation from the Hawk. The crewman did not see the Hawk make a right turn onto finals, however, he was aware that it would be turning and was not concerned about this causing any significant conflict. Situated in the left-hand seat of the Juno, the instructor was not able to see the Hawk, however, as both the student pilot and crewman were unconcerned about the contact, he was satisfied that there was no conflict.

13:54:58 – Approaching the end of the downwind leg, the Hawk T2 TCAS gave an audio alert for the contact, which was now displayed on the nose within 2NM and 200ft below. The Hawk pilot announced "Looking not visual" (see Figure 2).



Figure 2

13:55:05 – As the Hawk pilot started a right turn to commence finals to RW04RH, he gained visual contact with the Juno, estimating it to be 200ft low and between 0.5 to 1NM to the right of the nose. The Hawk pilot continued the right turn to follow the circuit pattern and remained at 500ft Mona QFE to overshoot and maintain vertical separation. The Juno was now approximately 400m to the N of the published East Gate recovery route, close to the Mona ATZ and on the extended runway centreline. The route trace for the Juno confirmed a maximum deviation of approximately 400m from the published route. The Mona Tower controller was visual with the Juno. He had observed RW aircraft recovering to Valley along the East Gate recovery route on numerous occasions previously, during which they had always been visible just above the horizon. On this occasion the Juno was higher, however, he could not say if it appeared to be further N than was normally the case and did not perceive there to be an issue with the separation between the Juno and the Hawk.

13:55:11 – The Hawk pilot informed the Mona Tower controller that they were going-around at circuit height due to RW traffic.

13:56:32 – The Valley Approach controller contacted the Mona Tower controller by landline to ask if the Hawk aircrew had mentioned anything about the Juno. The Mona Tower controller informed the Valley Approach controller that the Hawk pilot had gone-around due to the proximity of the RW traffic but had not mentioned anything Airprox-related. The Hawk crew continued with further circuits at Mona before returning to RAF Valley. On completion of the sortie, the Hawk pilot submitted an Airprox. The Juno instructor was later informed that an Airprox had been filed; neither he nor the other 2 Juno crew members were of the opinion that an Airprox had occurred.

In interview, the Mona Tower controller stated that there is no requirement for the Valley Approach frequency to be monitored in the Tower at Mona. However, as a qualified controller, it was his preference to do so in order to enhance his own SA. Although aware the Juno was transiting to the SW of Mona, the Mona Tower controller stated there was no procedural requirement to inform the Hawk crew. Likewise, there is no requirement for ATC at Valley to inform Mona Tower of RW traffic transiting along the East Gate Recovery Route when there is traffic in the Mona circuit. The Mona Tower controller was of the belief that the Mona circuit procedures and East Gate RW recovery procedure, by design, would maintain safe separation between aircraft without the need for ATC intervention.

The Valley Approach controller stated that there is no requirement for Valley ATC to inform Mona Tower of RW traffic transiting along the East Gate recovery route when there are aircraft operating

in the circuit at Mona. The Approach controller was also of the belief that the Mona circuit procedures and East Gate RW recovery procedure would maintain safe separation between aircraft without the need for ATC intervention. The Approach radar display did not enable the controller to accurately assess the position of the Juno or Hawk in relation to the published East Gate Recovery Route or Mona ATZ; however, they estimated that the lateral separation between the 2 aircraft reduced to approximately 0.5NM.

The RAF Valley SATCO confirmed that there are no ATC procedures to inform aircrew operating in the Mona circuit of RW traffic transiting along the East Gate recovery route, or *vice versa*, and was also of the belief that both procedures would provide safe separation from one another.

RW aircraft recovering to RAF Valley from the south can also use the Cable Bay VFR Rotary Wing (RW) recovery procedure. Historically, the East Gate and Cable Bay procedures were used in approximately equal measure. However, the recently introduced Juno helicopter is not fitted with a life-raft and, therefore, not cleared to fly over water; this excludes it from being able to use the Cable Bay recovery procedure. Consequently, this has created a 2-fold increase in the use of the East Gate procedure and coincided with an increase in noise complaints. In response to this increase, the Squadron commander requested that all squadron aircrew, if considered safe to do so by the aircraft captain, route around a particularly sensitive site. This was disseminated through the Squadron's internal means, with the added information that routing to the left-hand side of a solar farm would remain clear of the Mona ATZ. However, this was not discussed with ATC; neither were other aircraft operators at Valley informed.

The Juno instructor believed it was safe to comply with the noise abatement request by deviating to the N of the published route and was aware that keeping to the left of the solar farm would take them close to, but clear of, the Mona ATZ. The Juno instructor stated that it was normal practice to fly closer to the lower limit of 200ft MSD, however, on this occasion, he instructed his student to fly just below the upper limit of 500ft on the Valley QFE, as this would further increase the effectiveness of the noise abatement. The Juno instructor was of the belief that all aircraft (including the Hawk T2) operating in the circuit at Mona would stay inside the ATZ boundary, which would therefore ultimately provide separation. The investigation found this was the general belief of the Juno squadron's aircrew.

The Juno Squadron commander informed the investigators that it is not possible for RW aircraft to fly at low-level in a straight line, as depicted by the published East Gate RW recovery route. RW aircrew must continually zig-zag along a designated route to maintain safe distance and separation from the likes of farm animals, horses, people and buildings etc. To achieve this, aircrew may have to make several consecutive deviations in the same direction before being able to converge back onto the designated route; providing aircrew remain clear of statutory avoids, there is no defined limit as to how far laterally the published East Gate RW recovery route can be deviated from.

The Hawk crew did not see the Juno contact displayed on the Hawk TCAS until the audio alert sounded; a period of approximately 30sec. The Hawk instructor explained to the investigation that the TCAS is not prioritised by a handling pilot when operating in the circuit. By nature, operating in the circuit of an airfield often results in the display of contacts on the TCAS. The instructor was the non-handling pilot for the duration of the sortie, however, at the time of incident, his concentration was focused on refreshing the student pilot of the low-level circuit pattern, technique and turning points etc.

The Hawk crew were both of the opinion that the Juno must have been significantly north of the published East Gate recovery track and were surprised to learn that the Juno had not deviated to the N by more than 400m. Both confirmed that they had never previously seen RW traffic using the East Gate recovery route when operating in the Mona circuit and assumed that it would be considerably further south. A substitution test was conducted with 4 other Hawk T2 QFIs. All were aware that RW traffic can recover to Valley by routing to the SW of Mona, but did not know the precise routing of the East Gate RW recovery procedure. Whilst operating in the Mona circuit, none of them could recall previously seeing RW traffic transit past and were not aware of where they

would be likely to see it in relation to Mona. Hawk T2 QFIs informed the investigation that it is not possible to consistently remain inside the ATZ when conducting circuits at Mona, and that no consideration is specifically given to do so. Extending the downwind leg to compensate for light winds can position the aircraft outside the ATZ during the turn onto finals. This could be exaggerated even further when Advanced Fast Jet course students are flying in the circuit.

The investigators were informed that, since the incident, low level circuits at Mona have been suspended; aircrew are still permitted to carry out standard circuits at 1000ft. The standard 1000ft circuit at Mona would afford safe vertical separation from RW traffic using the East Gate recovery procedure, however, unless RW traffic can stay on the published East Gate recovery route and without deviation, safe separation cannot be ensured when operating in the low level circuit at Mona.

The Valley FOB details the East Gate VFR Rotary Wing (RW) recovery procedure⁴ and the Mona procedures.⁵ Neither section contains any reference to indicate the possibility of potential confliction between aircraft operating in the Mona circuit and RW traffic using the East Gate RW recovery procedure. The investigation found that both Hawk T2 and RW aircrew had a limited understanding of each other's procedures regarding the Mona circuit and East Gate RW Recovery. The subsequent potential for the procedures to conflict was not understood by the Hawk T2 aircrew, RW aircrew or Valley ATC.

Comments

HQ Air Command

This Airprox was subject to an Occurrence Safety Investigation which made 4 recommendations to decrease the likelihood of a similar occurrence in the future. In the period leading up to the Airprox, ATC was not obliged to inform each aircraft of the proximity of the other and believed that the helicopter recovery procedure was sufficient to deconflict each aircraft. The pilots of both the Hawk and Juno had SA on each other's location provided by their CWS and spotted each other in enough time to ensure that safe separation was maintained, yet it is evident that conditions existed to cause at least one of them concern about the risk of collision.

It is concerning that the Juno squadron's aircrew generally believed that aircraft operating at Mona would remain inside the ATZ whilst Hawk T2 QFIs stated that 'it is not possible to consistently remain inside the ATZ when conducting circuits at Mona', and that no consideration is specifically given to do so. As a result of this Airprox, a process of education of all aircrew on the rotary departure and recovery routes and their proximity to Mona (including normal tolerances for RW) is being undertaken, partly through updating the Flying Order Book and Terminal Charts. In addition, ATC is to produce a procedure to notify Mona circuit traffic when the rotary wing routes are active.

Consideration was given to reducing the maximum height on the helicopter procedure, although this was not deemed appropriate as the increased risk to helicopters operating at a lower level was not deemed acceptable. RAF Valley has determined that the existing published helicopter routing remains the safest and most effective option. This Airprox highlights that even minor adjustments to published procedures, however well-intentioned, can have unforeseen consequences, especially if they are not communicated to other parties that might be affected. Requests for aircraft avoidance of specific areas in proximity to RAF Valley are now being centrally co-ordinated.

Summary

An Airprox was reported when a Hawk and a Juno flew into proximity at 1355hrs in the vicinity of the Mona circuit on Wednesday 27th November 2019. Both pilots were operating under VFR in VMC, the Hawk pilot in receipt of an Aerodrome Control Service from Mona Tower and the Juno pilot in receipt of an Aerodrome Control Service from Valley Tower.

⁴ Section A21, Rotary Wing VFR Recoveries.

⁵ Section A23.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, reports from the air traffic controllers involved and reports from the appropriate ATC and 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. Although not all Board members were present for the entirety of the meeting and, as a result, the usual wide-ranging discussions involving all Board members were more limited, sufficient engagement was achieved to enable a formal assessment to be agreed along with the following associated comments.

The Board first considered the actions of both the Hawk and the Juno pilots, and quickly agreed that they had both been acting in accordance with the local procedures that had been extant at the time of the Airprox. However, members agreed with the findings of the investigation, in that there had been an implicit potential conflict between the low-level fixed-wing circuit at Mona and the tolerances of the ground track and height of the East Gate RW Recovery Procedure that had not been highlighted within local documentation (**CF1, CF5**); the Board was heartened to hear from a military member that a review is underway regarding how changes to local procedures are managed and promulgated. Members agreed that neither pilot had received prior warning of the presence of the other aircraft (**CF6**) until each had received a TCAS indication (**CF7**), which had cued their respective lookout scans to the area of the other aircraft and permitted both crews to gain visual contact, albeit late (**CF8**). This, in turn, had led to the Hawk pilot being concerned by the proximity of the Juno, as he had not expected to see a helicopter in that position and at that height (**CF9**).

Turning to the actions of the controllers, the Board agreed that both the Tower controllers had acted in accordance with local orders and had been of the belief that the procedures were deconflicted-by-design, but that neither of them had received any specific information to alert them to the proximity of the 2 tracks, and therefore they each had had only generic situational awareness on the activity of the Mona circuit and the Rotary Wing Recovery route (**CF2**). Members considered that this had had a detrimental effect on the ability of the Mona Tower controller to detect any conflict between circuit traffic and transit traffic and that was why the Mona Tower controller had only detected the conflict once it had been reported by the Hawk pilot (**CF3**). Furthermore, and after hearing from a military advisor member, the Board agreed that the controllers' belief that the procedures were deconflicted-by-design had led to there being no Traffic Information issued to either pilot (**CF4**). In this regard, members were again heartened to hear that a recommendation had been forthcoming from the investigation for controllers to notify fixed-wing aircraft in the circuit at Mona of rotary-wing traffic on the East Gate Recovery route, and *vice versa*.

When discussing the risk of this encounter, the Board noted that this incident occurred below the base of radar coverage and therefore CPA could not be accurately measured. Members considered the differing assessments of the Hawk and Juno pilots and concluded that the Hawk pilot may well have been surprised to see the Juno so high and close to the Mona circuit, and that this may have influenced his risk assessment. Ultimately, although there had only been only approximately 100ft of vertical separation, there was enough lateral separation for there to have been no risk of collision. That said, the Board concluded that the lateral separation achieved was largely fortuitous because the Juno pilot believed that Mona circuit traffic would be contained entirely within the ATZ and, therefore, safety had been degraded; consequently, members agreed on a Risk Category C for this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**Contributory Factors:**

	2019322		
CF	Factor	Description	Amplification
Ground Elements			
• Regulations, Processes, Procedures and Compliance			
1	Organisational	• Organisational Documentation and Publications	Inadequate regulations or procedures
• Situational Awareness and Action			
2	Contextual	• Situational Awareness and Sensory Events	Generic, late, no or incorrect Situational Awareness
3	Human Factors	• Conflict Detection - Detected Late	
4	Human Factors	• Traffic Management Information Provision	Not provided, inaccurate, inadequate, or late
Flight Elements			
• Regulations, Processes, Procedures and Compliance			
5	Organisational	• Flight Operations Documentation and Publications	Inadequate regulations or procedures
• Situational Awareness of the Conflicting Aircraft and Action			
6	Contextual	• Situational Awareness and Sensory Events	Generic, late, no or incorrect Situational Awareness
• Electronic Warning System Operation and Compliance			
7	Contextual	• ACAS/TCAS TA	TCAS TA / CWS indication
• See and Avoid			
8	Human Factors	• Monitoring of Other Aircraft	Late-sighting by one or both pilots
9	Human Factors	• Perception of Visual Information	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: C

Safety Barrier Assessment⁶

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 **partially effective** because a potential for confliction existed between fixed-wing traffic conducting low-level circuits at Mona and rotary-wing traffic using the East Gate VFR recovery procedure.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because all the controllers involved believed that rotary-wing traffic on the East Gate recovery procedure and circuit traffic at Mona were deconflicted by design, and thus there would be no requirement for ATC intervention when the aircraft flew into proximity.

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because neither the East Gate Rotary Wing recovery procedure nor the Mona procedures (as

⁶ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

defined in the RAF Valley Flying Order Book) recognised the potential for conflict between the two sets of procedures.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the Juno pilot believed that, by avoiding the ATZ at Mona, he would be laterally deconflicted from any circuit traffic at Mona and had not appreciated that circuit traffic is not always wholly contained within the ATZ.

See and Avoid were assessed as **partially effective** because neither pilot saw the other aircraft until alerted to its presence by their respective TCAS equipment.

Airprox Barrier Assessment: 2019322		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	🟢	🟡	🔴	⚪	🔴			