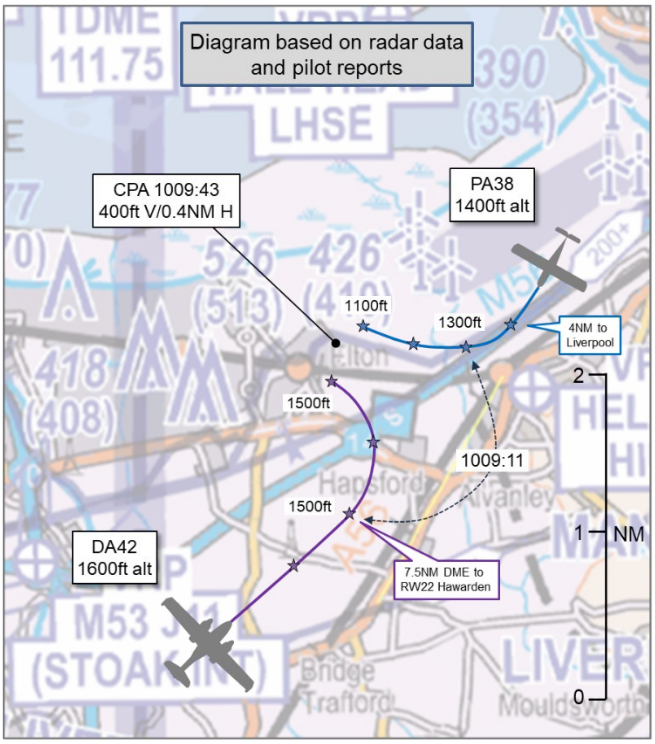
AIRPROX REPORT No 2023211

Date: 15 Aug 2023 Time: 1010Z Position: 5316N 00248W Location: 4NM southeast Liverpool airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA38	DA42
Operator	Civ FW	Civ FW
Airspace	Liverpool CTR	Liverpool CTR
Class	D	D
Rules	VFR	VFR
Service	ACS	Radar Control
Provider	Liverpool	Hawarden
Altitude/FL	1100ft	1500ft
Transponder	A, C, S	A, C, S+
Reported		
Colours	White with yellow stripes	White with green wingtips
Lighting	Strobes, Navigation	Strobes, position
Conditions	VMC	VMC
Visibility	>10km	5-10km
Altitude/FL	1300ft	NK
Altimeter	QNH	QNH
Heading	'Orbit'	NR
Speed	90kt	NR
ACAS/TAS	SkyEcho	TAS
Alert	None	Information
Separation at CPA		
Reported	200ft V/~0.5NM H	NK V/NK H
Recorded	400ft V/0.4NM H	



THE PA38 PILOT reports[1] that at the time of the event there had been an emergency at the [Liverpool] airport so the pilot had been instructed to hold over the south bank of the river Mersey, near Helsby Hill. During one of the orbits in the hold they had noticed a grey DA42 closing slightly above so took control from the student and continued the orbit in a descent to increase separation. The pilot had then queried with Liverpool Tower if there had been another aircraft passing overhead or holding nearby and had been informed that it had been IFR traffic [they recalled] on the ILS for RW22 at Hawarden. The PA38 pilot's reported holding position had been the turning point at 7.5DME for that approach.

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

THE DA42 PILOT reports that they had no recollection of the event.

THE LIVERPOOL CONTROLLER reports that they had been unaware of the Airprox until the start of their next shift (4 weeks later). They report having had a limited recollection of the occurrence until having watched a replay on […] to refresh their memory. They recall having taken over control when the PA38 had already been holding on left base, a southbound check had already been done with no further Traffic Information passed to the controller on handover. They had been dealing with the reopening of the runway following an aircraft accident. The PA38 pilot had requested Traffic Information when the DA42 had been on base leg RW22 for Hawarden. The controller had passed generic Traffic Information with the knowledge they had.

[1] The Airprox was reported to UKAB on 8th September 2023.

THE HAWARDEN CONTROLLER reports that having been notified of this event a month after it occurred, there was nothing they could remember about it. It had not been reported on their frequency and they had been unable to review the recordings.

THE HAWARDEN AIR TRAFFIC SERVICES MANAGER reports that this Airprox had first been reported to Hawarden ATC on 14th September 2023 by the UKAB, 30 days after the event. Due to the elapsed time the ATCO concerned had no recollection of the event.

The ATS Manager investigation notes that the DA42 pilot had been conducting Instrument training to RW22 at Hawarden and this Airprox had occurred on their procedural approach prior to landing. The DA42 pilot had initially been provided with a Traffic Service, this had been changed to a Radar Control Service upon entering controlled airspace (Liverpool CTR). The DA42 pilot had initially been holding at 2500ft at HAW before going outbound for the approach which had then required a descent to 1510ft as per the published instrument procedure. The Hawarden ATCO had correctly obtained permission from Liverpool Radar to access their airspace and, whilst there, Traffic Information had been passed by Liverpool Radar on an aircraft; this had not been in relation to the PA38. The Hawarden ATCO had passed generic Traffic Information to the DA42 to which the pilot had reported visual with the other aircraft, albeit at similar altitudes. Both aircraft had been operating VFR and, in line with the Hawarden/Liverpool Letter of Agreement, the PA38 had been deemed to be VFR and operating not above 1500ft. As Liverpool had given the Hawarden RMA (Radar Manoeuvring Area) to Hawarden for use by the DA42 pilot there had been the understanding that the PA38 would not have been entering the RMA without prior coordination. The two aircraft had become close to each other (within 0.5NM) at a similar altitude, however the DA42 pilot had reported visual. It is unknown if the PA38 pilot had been visual with the DA42.

In conclusion, the two aircraft had both been operating VFR inside the Liverpool CTR (Class D Airspace) where there is no requirement to provide separation. The DA42 pilot had been provided with Traffic Information on the PA38 and had subsequently reported visual, this would have allowed the DA42 [pilot] to have taken any avoiding action they had deemed necessary at any time whilst conducting the procedural instrument approach. It is unknown if the PA38 pilot had been aware of the DA42 as the [pilot of the PA38] aircraft had been in communication with Liverpool ATC.

Factual Background

The weather at Liverpool was recorded as follows:

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METAR EGGP 150950Z 30010KT 9999 FEW020 SCT030 18/14 Q1015=
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Analysis and Investigation

CAA ATSI

The PA38 [pilot] had been operating VFR, transponding SSR code 5050 and in receipt of an Aerodrome Control Service from Liverpool Tower. At the time of the Airprox the pilot had been holding in an orbit to the south of RW27 at Liverpool.

The DA42 [pilot] had been operating VFR, transponding SSR code 0435 and in receipt of a Traffic Service from Hawarden initially, the service had been upgraded to a Radar Control Service when the aircraft entered Liverpool Class D controlled airspace. The pilot had initially been holding at the HAW at altitude 2500ft and subsequently descended on the outbound leg of the procedural ILS approach to RW22 at Hawarden.

The Airprox had not been declared to Liverpool or Hawarden ATC at the time of the event. The Liverpool controller had been made aware of the event three weeks later and initially had no recollection. Their report was drafted based on what they saw and heard after reviewing the recordings, which had been 28 days after the event. Unfortunately, it was also one month after the event when the Hawarden controller had been made aware. The Hawarden controller had no

recollection of the event, and the radar and RTF recordings had not been available to the controller when they had drafted their report.

This report has been drafted using the NATS radar replay facility, the Liverpool RTF recordings and the information reported by the pilots, controllers, and ATC units involved. The RTF transcribed throughout the report is a combination of what ATSI heard on the Liverpool recording and what was contained within the Hawarden investigation report. The radar screenshots have been taken from the NATS radar and are not necessarily indicative of exactly what was being viewed by the controllers on the local radars. The screenshots display aircraft flight levels, the QNH entered into the NATS radar display processor was 1016hPa, a difference of ~90ft when calculating altitude.

Synopsis

At 0940 the PA38 pilot called the Liverpool Tower controller and reported field in sight for rejoin and was instructed to report Helsby Hill and remain south of the M56 motorway until advised.

At 0943:10 the PA38 pilot reported at Helsby Hill and holding south of the M56, they were instructed to orbit until advised.

At 0943:50 the PA38 pilot requested a glide approach before landing and advised that they were happy to hold in their current position until other aircraft had landed. The controller acknowledged the request and instructed the pilot to orbit in their present position until advised.

At 0945:10 the controller instructed the PA38 pilot to roll out of the orbit and report at the south bank of the river Mersey.

At 0946:40 the PA38 pilot reported at the south bank of the Mersey and was instructed to report final number one.

At 0946:50 the PA38 pilot asked if the controller was happy for them to position mid-point downwind for a glide approach and was told, negative and to remain in the orbit.

At 0947:40 the controller received a mayday call from the pilot of an aircraft […]. There were then a number of RTF exchanges between the pilot of the mayday aircraft and the controller, and at 0949:00 the pilot of this aircraft was cleared to land.

At 0955:00 the controller advised the PA38 pilot that there was a RW inspection in progress as a result of the mayday, and the pilot acknowledged.

At 0958:40 the PA38 pilot was instructed to remain in the orbit and was passed Traffic Information on a Cherokee at 7NM, and instructed to report this traffic in sight.

At 1001:30 the PA38 pilot reported the Cherokee in sight. There was no response from the controller.

At 1002:10 the PA38 pilot was instructed to remain in the orbit until advised.

At 1004:20 Hawarden ATC called Liverpool Radar and requested access to Liverpool Class D Controlled Airspace to enable the DA42 to conduct a Procedural ILS approach to RW22 at Hawarden. The Liverpool Radar controller approved entry to the airspace on condition that the DA42 remained VFR. Traffic Information was passed to Hawarden on Liverpool VFR traffic that was currently downwind right-hand for a Surveillance Radar Approach (SRA) to RW27, and transponding SSR code 5056. Note: This traffic was not the holding PA38, and no Traffic Information was passed to Hawarden on the PA38.

At 1004:57 the DA42 pilot was cleared for the procedural ILS approach at Hawarden, having received clearance to enter Liverpool controlled airspace VFR, and at 1007:00 the pilot reported beacon outbound for the procedure.

At 1007:00 a handover of the Liverpool Tower control position had taken place, and the incoming controller advised the PA38 pilot to expect a delay of 5 to 10min before the RW could be guaranteed

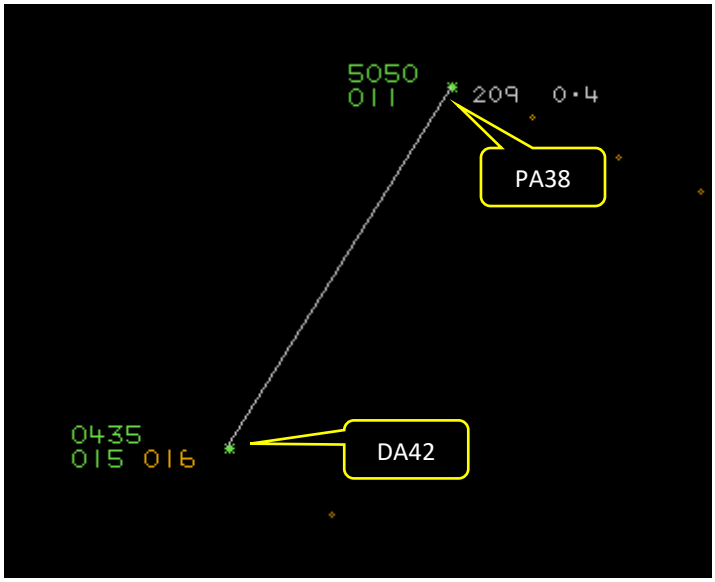
to be safe for use. The pilot advised that they could probably hold for another 25 minutes before they would need to consider diverting, and that they would hold where they were until advised otherwise.

At 1008:35 the Hawarden controller passed Traffic Information to the DA42 pilot on the PA38 as traffic 12 o'clock 3.5NM, in a right-hand orbit, indicating 1400ft. The controller advised the pilot that the plan was to keep the aircraft inside the confines of the Hawarden Radar Manoeuvring Area (RMA) and the pilot acknowledged this.

At 1008:54 the DA42 pilot reported visual with the PA38 traffic and was instructed to report turning left for the approach.

At 1009:38 the DA42 pilot reported turning inbound. The Hawarden controller was engaged in a telephone call with the Tower controller about a pending departure at this time.

At 1009.43 CPA occurred with the aircraft separated laterally by 0.4NM and vertically by 400ft.



1009.43 CPA 400ft V / 0.4NM H

At 1010 the DA42 turned onto the final approach track for RW22 at Hawarden, and the PA38 pilot asked the Liverpool controller if there was a Diamond aircraft orbiting near their aircraft. The controller apologised and advised the pilot that it was *"inbound traffic to Hawarden, just going onto the ILS for RW22 at Hawarden by the looks of it."* The controller went onto say that the RW at Liverpool had just reopened and that the PA38 was number two, to a Cherokee at 4NM, and instructed the pilot to report visual with this traffic.

Analysis

Hawarden Radar Manoeuvring Area (RMA) sits within Liverpool's Class D CAS. A Letter of Agreement (LOA) exists between the two units that requires Hawarden to request access to Liverpool's CAS for aircraft wishing to conduct a procedural approach, to identify the subject aircraft to Liverpool and to specify the type of flight rules that the aircraft will be operating under, which in this case was VFR. Hawarden ATC met these requirements during the telephone call they initiated with Liverpool radar at 1004:20.

The LOA places a requirement on the Liverpool Radar controller to place a "Check South" restriction with the Liverpool Tower controller on VFR departures to the south, to ensure that southbound VFR traffic is given a route to remain clear of the RMA.

The LOA states that Liverpool traffic transponding code 5050 can be deemed to be VFR and operating not above 1500ft. The LOA states that when the RMA is active, VFR traffic operating inside Liverpool CTR will be expected to fly at or below 1500ft on the Liverpool QNH and be given routeings to remain clear of the RMA unless coordination has taken place.

The Liverpool and Hawarden investigation reports confirm that Traffic Information on the PA38 was not passed to Hawarden. However, the Hawarden controller identified the confliction at 1008:35 and passed Traffic Information to the DA42 pilot and this enabled the DA42 pilot to gain sight of the PA38 when there was ~3NM between the two aircraft.

When the Airprox occurred both aircraft were inside Liverpool's Class D airspace where there is no requirement for separation of VFR aircraft, however there is a requirement for Traffic Information to be passed to pilots operating VFR on other VFR traffic. The PA38 pilot did not receive Traffic Information on the DA42 until after the Airprox had occurred and this Traffic Information was passed in response to a query from the pilot.

There had been a change of controller in the Liverpool Tower position two or three minutes prior to the Airprox. The incoming controller was also the ATC supervisor, and just prior to taking over as the Tower controller they had been dealing with the reopening of the runway after the mayday aircraft had landed safely. The PA38 had been on the Tower frequency for 27min when they took over the position. They stated in their report, *"Southbound check already on with no further Traffic Information passed to me on handover."*

This statement is confirmation that the outgoing Tower controller had been advised of the southbound check (by the Liverpool radar controller) in accordance with the terms of the LOA that exists between Liverpool and Hawarden ATC. It could also perhaps be interpreted that the incoming Tower controller did not receive Traffic Information on the PA38 holding, as part of the handover. Note: The Liverpool investigation report confirmed that the incoming Tower controller did not spot the confliction.

The Liverpool procedures place the responsibility for coordination of pertinent traffic with Hawarden on the radar controller. The investigation report does not confirm whether the outgoing Tower controller advised the Liverpool Radar controller of the presence of the PA38 when the check south was implemented (~1004) and this could not be confirmed by ATSI.

There had been a change of controller in the Liverpool Radar position just prior to the call from Hawarden requesting access to the airspace. The PA38 had been holding on the Tower frequency for ~20min at the time the handover of the radar position took place and Traffic Information on the PA38 may have been omitted by the outgoing controller when handing over the radar position. The incoming radar controller had delivered an SRA very shortly after the handover was completed and their focus of attention would have been on issuing heading instructions and level check to the pilot flying the SRA.

The Procedural Approach section of the LOA states that *"the RMA must not be requested or offered for procedural approaches, as there is no certainty that the aircraft will remain within the dimensions of the RMA. Liverpool Radar must take this into consideration when releasing the airspace for such approaches and ensure that standard separation is maintained."* Note: the section of the LOA covering Procedural approaches appears to be primarily focussed on these approaches being conducted IFR.

Hawarden requested the RMA for a procedural ILS approach to be conducted VFR, and advised the DA42 pilot at 1008.35 that their plan was for the DA42 to remain within the confines of the RMA throughout the approach. It could not be confirmed by ATSI whether this information was imparted on the Liverpool Radar controller (and subsequently the Liverpool Tower controller) during the telephone call requesting access to the airspace.

The Liverpool and Hawarden investigation reports confirm that Traffic Information and the intentions of the PA38 pilot were not passed to Hawarden during the telephone call requesting access.

The VFR section of the LOA states that *"if Hawarden request the RMA for a VFR aircraft the Liverpool ATCO will allow the use subject to aircraft being inbound right hand to Liverpool's RW27, or left hand for RW09. Hawarden radar is to ensure the aircraft remains wholly inside the RMA, whilst being vectored. Outbound aircraft from Liverpool departing to the north can be released within the normal procedures."*

The Liverpool Radar controller refers to this in their report, *" When Liverpool allows access to the Hawarden RMA there is an understanding that Liverpool traffic will not enter the HAW RMA without prior coordination."*

The PA38 pilot had flown the inbound leg from the south towards a left-hand circuit for RW27 and had been holding to the south (inside the RMA) for ~20min before the 'Check South' restriction was applied. The LOA does not specify what action should be taken when there is traffic already inbound or holding to the south when this restriction is applied.

UKAB Secretariat

The PA38 and DA42 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 DA42 pilot was required to give way to the PA38.[3] 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.[4]

Summary

An Airprox was reported when a PA38 and a DA42 flew into proximity 4NM southeast of Liverpool airport at 1010Z on Tuesday 15th August 2023. Both pilots were in VMC, the PA38 pilot operating under VFR in receipt of an Aerodrome Control Service from Liverpool and the DA42 pilot operating under VFR in receipt of a Radar Control Service from Hawarden.

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.

Board members firstly commented on the more-than 3 week delay in submission of the initial report from the PA38 pilot, accepting that there may have been extenuating circumstances, but noting that first-hand recollections of events are the most valuable contributions to ensure comprehensive understanding and that link becomes more difficult as time progresses. Therefore, pilots are encouraged to report Airprox on the frequency in use at the time or, if not, as soon as possible after landing. This will ensure that appropriate RTF and radar recording are preserved.

In considering the actions of the PA38 pilot, members accepted that, due to the ongoing emergency situation at Liverpool, they had been asked to hold within the Hawarden RMA (Radar Manoeuvring Area) within the parameters of the Letter of Agreement (LOA) between the 2 units, i.e. in under VFR and below 1500ft whilst awaiting recovery to Liverpool. The Board noted that they had not been passed Traffic Information on the DA42 until after the two involved aircraft had been at the closest point of approach (CPA) (**CF2**, **CF3**). Additionally, although the PA38 had been equipped with an EC device, it had not been compatible with the TAS carried by the DA42 (**CF8**); that, combined with the lack of Traffic Information from Liverpool, had led to a lack of situational awareness of the presence of the DA42 for the PA38 pilot (**CF6**) and, ultimately, they had been concerned by the proximity of the DA42 when they sighted it (**CF9**).

When reviewing the actions of the DA42 pilot, members recognised the nature of their flight – instrument training (via Procedural Approach) to RW22 at Hawarden – and that in operating within the RMA they had been deemed by the Liverpool Radar controller to be VFR. They had been passed Traffic Information from the Hawarden controller and had gained visual contact with the DA42, albeit at the same altitude. Both the PA38 and DA42 had been operating under VFR within the RMA with no

[2] (UK) SERA.3205 Proximity.
[3] (UK) SERA.3210 Right-of-way (c)(2) Converging.
[4] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

requirement (by Air Traffic Control) to provide separation. The DA42 pilot had been carrying a TAS unit, and that system had offered an 'Information' trigger on the PA38 to the DA42 pilot (**CF7**).

The Board went on to discuss the role played by Air Traffic Control in this event. They noted that Hawarden had provided a Traffic Service to the DA42 pilot which they had upgraded to a Radar Control Service (RCS) as the aircraft had entered the Liverpool CTR, having received permission from Liverpool to enter. Members stressed that pilots operating under VFR in Class D airspace whilst under a Radar Control Service are required to maintain their own separation from other traffic, and should not expect assistance from the controller other than through the issuing of Traffic Information. The Board noted that the DA42 pilot had been cleared to descend to 1510ft (i.e. above the 1500ft vertical separation limit in place between Liverpool and Hawarden) and on the understanding that they maintained VFR. The Board also noted that the Liverpool controllers had been in the process of recovering from an emergency event and had been through a number of controller handovers. However, members agreed that the Liverpool controllers had not ensured that the 'Check South' restriction (within the LOA) had been reinforced between Radar and Tower to allow VFR traffic unhindered access to the RMA. Members recognised that Liverpool ATC had been extremely busy and, with post-event controller handovers (**CF5**), omissions had occurred and the conflict between the 2 aircraft had not been detected (**CF4**). In discussing the relationship between Liverpool and Hawarden, members noted some areas where direction had not been precise, this included a lack of clarity for those pilots operating under VFR and conducting Instrument Approaches to Hawarden and a lack of a vertical separation buffer between Liverpool and Hawarden traffic when operating in the RMA (**CF1**). Therefore, the Board undertook to make a Safety Recommendation in 2 parts; namely that *Liverpool and Hawarden review their LoA with a view to affording additional consideration for pilots operating under VFR and conducting Instrument Approaches to Hawarden, and to considering the application of a vertical separation buffer between Liverpool and Hawarden traffic*.

When determining the risk of the Airprox, the Board considered the reports from both pilots together with reports from the controllers involved. They noted that the DA42 pilot had had warnings from their TAS unit and Traffic Information from Hawarden, and had seen the PA38 as the aircraft turned to parallel each other, judging that they had sufficient separation. They also noted that the PA38 pilot had seen the DA42 only at a very late stage and had wished for more separation, but members felt that, although safety had been degraded, there had been no risk of collision and members awarded a Risk Category C to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2023211			
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
	• Situational Awareness and Action			
3	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
4	Human Factors	• Conflict Detection - Not Detected	An event involving Air Navigation Services conflict not being detected.	
5	Human Factors	• Task Monitoring	Events involving an individual or a crew/ team not appropriately monitoring their performance of a task	Controller engaged in other tasks
	Flight Elements			
	• Situational Awareness of the Conflicting Aircraft and Action			
6	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			
7	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
8	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			
9	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: C.

Recommendation: Liverpool and Hawarden review their LoA with a view to:

1. Affording additional consideration for pilots operating under VFR and conducting Instrument Approaches to Hawarden.
2. Considering the application of a vertical separation buffer between Liverpool and Hawarden traffic.

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:

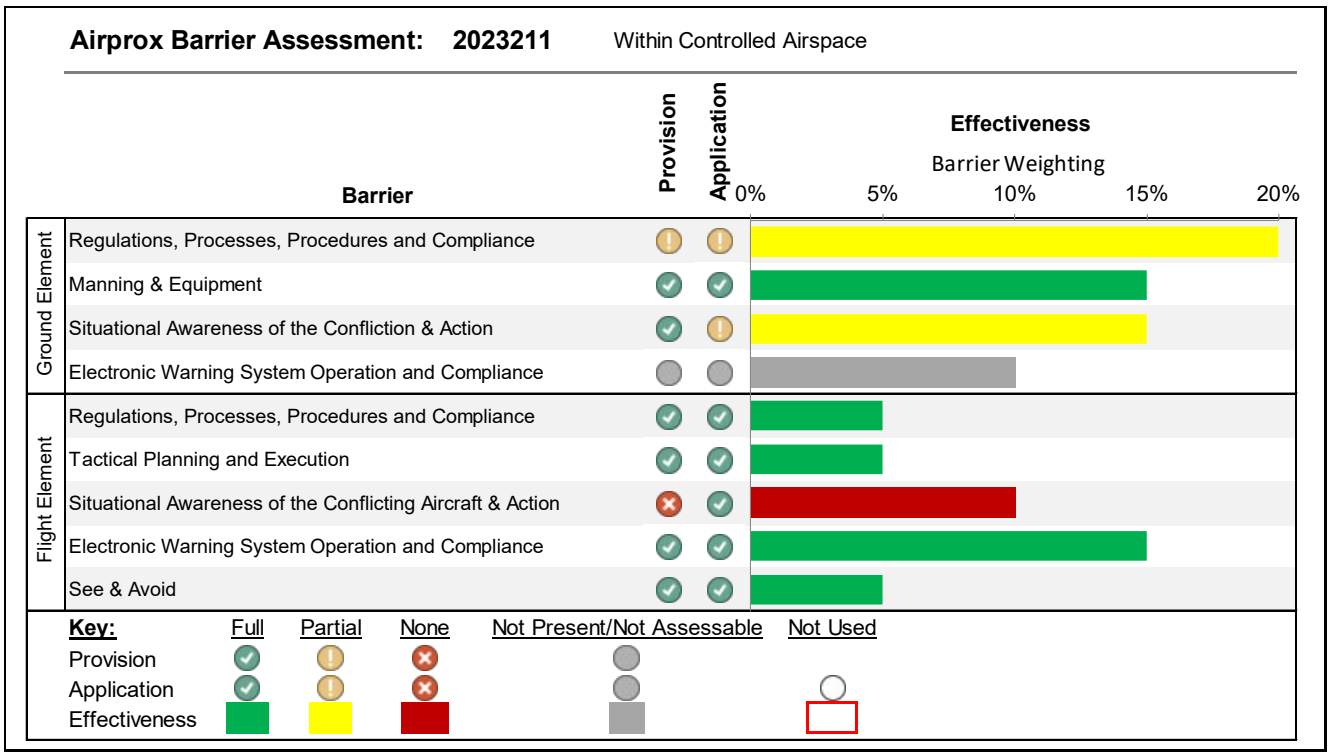
Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because Liverpool Tower did not pass Traffic Information to the PA38 pilot on the DA42, and the LOA between Liverpool and Hawarden does not cover what should happen if the RMA is requested for VFR Procedural Approaches.

Situational Awareness of the Confliction and Action were assessed as **partially effective** because Liverpool Tower had not recognised the potential conflict between the PA38 and the DA42.

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the PA38 pilot had no situational awareness of the presence of the DA42.

[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: 2023211
Within 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