AIRPROX REPORT No 2022103

Date: 13 Jun 2022 Time: 1000Z Position: 5621N 00314W Location: IVO Errol

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	ATR42	PA28
Operator	CAT	Civ FW
Airspace	Scottish FIR	Scottish FIR
Class	G	G
Rules	VFR	VFR
Service	Procedural	Basic
Provider	Dundee	Dundee
Altitude/FL	NK	NK
Transponder	A, C, S+	A, C
Reported		
Colours	White, Red, Black	White, Blue
Lighting	Landing, Nav, HISL, Strobes, Beacon	Nav, Strobe, Beacon, Landing
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	3200ft	2000ft
Altimeter	QNH (1020hPa)	QNH (1020hPa)
Heading	160°	310°
Speed	180kt	80kt
ACAS/TAS	TCAS II	Not fitted
Alert	RA	N/A
Separation at CPA		
Reported	200ft V/1NM H	300ft V/0.5NM H
Recorded	NK	

THE ATR42 PILOT reports that they were approaching Dundee from the south, initially with a Traffic Service from RAF Leuchars, and were made aware of two IFR arrivals into Dundee ahead. They were anticipating holding and slowed down and routed towards the DND (NDB). They were cleared to the DND hold at altitude 4000ft. The crew's intention at this point was to commence the outbound leg when cleared and, once clear of cloud, make a left turn and position the aircraft for a left-hand downwind join for a visual recovery to RW27. This seemed the safest option due to a large number of TCAS returns within the vicinity of Perth. This was approved by ATC. They completed 2 hold patterns before commencing outbound. They descended below the cloud layer and again checked with ATC that their plan was acceptable and were cleared for a visual approach. During the left turn a TCAS "Traffic" call-out occurred and the LHS pilot became visual with an aircraft at the 11 o'clock position. It seemed to be above them. Very shortly afterwards they received a TCAS RA "Climb, Climb" call-out which was responded to in accordance with company SOPs. Once clear of conflict, an easterly track was resumed and they joined downwind left-hand for RW27 and landed without further incident.

Traffic avoidance was the primary concern of the arrival brief. They were aware that there were two IFR arrivals ahead and that holding would be required. A high amount of GA traffic in the vicinity of both Dundee and Perth with all procedures in uncontrolled airspace make arrivals to this field very difficult. ATC can only provide a Procedural Service and their workload at times can be intense.

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

THE PA28 PILOT reports they were operating in the Errol area. They heard the [ATR42] be cleared for the ILS approach RW09 and so they remained over the river between Errol and Newburgh at around 2000ft to stay away from the instrument approach, climbing and descending every now and again, +/- 300ft as they delivered the lesson (advance turns). At one point, while recovering from a left spiral

descent (climbing at 80kt and banking at 15°) and with a northwest heading, they spotted the ATR head-to-head tracking towards the southeast to join a visual left-hand circuit RW27. Separation at the time they first spotted the other aircraft would be +2NM. They stopped climbing immediately and as they were recovering from the left spiral descent, kept turning to the left to set a southwest heading (240°) to fly away from the ATR. As a guestimate, the closest they got would be about 0.5NM, with the ATR always higher than them, and with the traffic in sight at all times. The ATR did not fly overhead, but to the north of their position. They noted that they might have missed some of the ATR pilot's radio calls, but both the instructor, as the PIC, and the three students onboard were expecting the ATR42 to fly the ILS approach and break right to join the visual circuit on short final RW09. Nevertheless, once they spotted the aircraft and following the actions taken, they did not feel to be in danger.

Figure 1: Photo taken by PA28 student

The pilot assessed the risk of collision as 'None'.

THE DUNDEE CONTROLLER reports that they were duty ATCO with a moderate-to-high workload involving several IFR arrivals, VFR circuit and joining traffic, IFR and VFR departures and multiple telephone calls. The third IFR arrival was [the ATR42 C/S] who had been cleared to the DND at 5000ft to take up the hold with an estimated approach time of 0958. The controller had organised the circuit and joining traffic to land after an arriving Learjet, so there would be no circuit traffic to affect the ATR42's circling approach. They were also co-ordinating the departure of an EMB55 jet. After the Learjet had landed, they cleared [ATR42 C/S] for the ILS RW09 with circling to land RW27. [The ATR42 pilot] had made clear their intention to break-off the approach when visual with the ground, [the pilot] was unable to make their beacon outbound call owing to other transmissions, but reported breaking off the approach in the vicinity of Errol to continue visually. They cleared [ATR42 C/S] to join left-hand downwind not below 2000ft with circuit traffic to land. They were now coordinating with Leuchars for the EMB55 departure, when the Leuchars ATCO called traffic in the vicinity of [ATR42 C/S] during this call. They checked their strip board and the only aircraft local flying was [PA28 C/S] who was marked to be to the north. They made a transmission to [ATR42 C/S] of traffic reported in their vicinity, [ATR42 C/S] then reported TCAS RA, which the controller acknowledged, and the pilot subsequently called clear of conflict and continuing. They called [PA28 C/S] to confirm position and altitude; it was approximately in the same area as [ATR42 C/S] when they called TCAS RA.

The controller stated that they had subsequently made a brief check of the Ricochet [RT recording] to confirm the time stamp of the TCAS RA call, all their recollections were that the situation developed very quickly and finished just as quickly, it seemed only a matter of seconds between them making the generic traffic call, [ATR42 C/S] reporting TCAS RA and then clear of conflict.

THE LEUCHARS APP CONTROLLER reports that when they were handed the ATR42 from Scottish there were two RNPs ahead, so they sent the aircraft across to the DND hold at 5000ft. At the time that they believed the Airprox happened, the squawk they believed to be [ATR42 C/S] had left the hold and was descending towards two tracks in the vicinity of Newburgh – one [wearing a Dundee VFR squawk], and a Basic Service under their control. They couldn't remember whether they called Dundee or whether they were already on the line for another reason but they told the Dundee controller about the traffic. The Dundee controller told them that they were deconflicting their own traffic, at which point [the Leuchars controller] gave Traffic Information on their aircraft as SE 2 miles 3-400ft below. The Dundee controller relayed this to [ATR42 C/S] as 'traffic in your vicinity'. They couldn't remember whether they

called the ATR42 to their Basic Service traffic, but this traffic was starting to move to the south anyway. The [ATR42 C/S] then passed in between the [Dundee VFR] and the Basic Service contacts within 500ft of both.

Factual Background

The weather at Dundee was recorded as follows:

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METAR EGPN 130950Z 25012KT 9999 FEW025 BKN035 14/09 Q1020=
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Analysis and Investigation

CAA ATSI

The ATR42 called Dundee Approach at 0951:20, having been released by Leuchars Radar, with the pilot reporting just to the south of Dundee, in a descent to 5000ft and routing to the DND (Dundee NDB) to hold. The Dundee Approach controller acknowledged this, confirming a Procedural Service, and cleared the pilot to descend further to 4000ft and to report taking up the hold. They were given an Expected Approach Time of (09)58, there being two IFR aircraft ahead of them.

At 0955:45 the pilot of the ATR42 reported in the hold at 4000ft (Figure 1).

The PA28 had previously departed to the west of Dundee at 0854 and a Basic Service was agreed. According to the Dundee investigation report, there were no further transmissions to, or from, the PA28 until after the Airprox had occurred. During the period covering the Airprox, the PA28 was not visible on the area radar replay although an intermittent contact to the south of Newburgh was visible for a short period of time but which could not be positively identified.

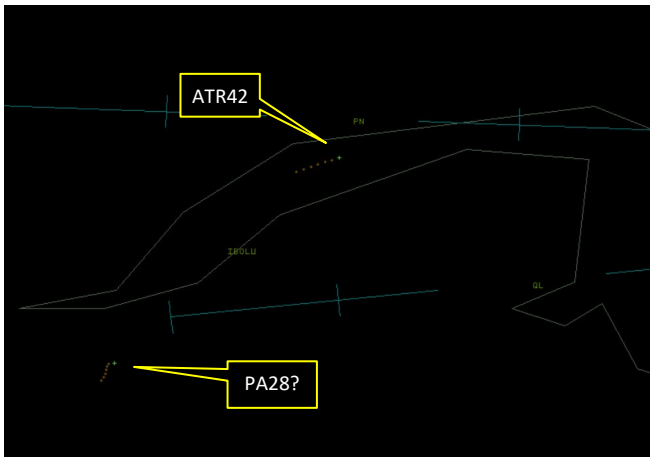


Figure 1 – 0955:45

The Dundee controller acknowledged the ATR42 pilot's call, instructing them to maintain 4000ft and asked the pilot if they would be happy to commence the procedure from that level. The pilot replied "*ah, yeah we could do, if traffic allows we'd like to just use the outbound leg for the cloud break and then position downwind left hand for 27*". The controller replied *"(callsign) that is copied*"

At 0956:30 the controller cleared the pilot "*ILS procedural approach to Runway 09, with visual manoeuvre to land Runway 27. Report beacon outbound and report when visual*". The pilot missed the call and asked the controller to repeat, which they did but excluded the request to report visual (Figure 2).

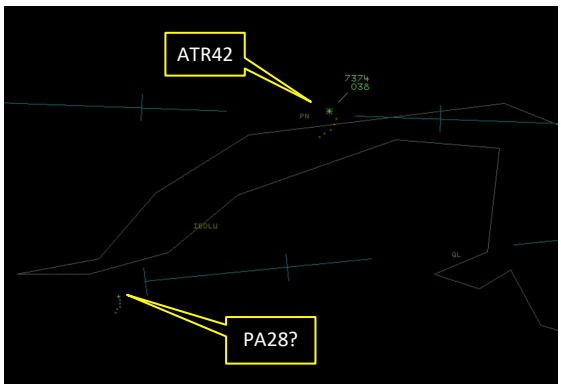


Figure 2 – 0956:30

At 0958:48 the pilot of the ATR42 reported "*visual just north of Errol 3400ft. Happy for us to position downwind from here?*" (Figure 3).

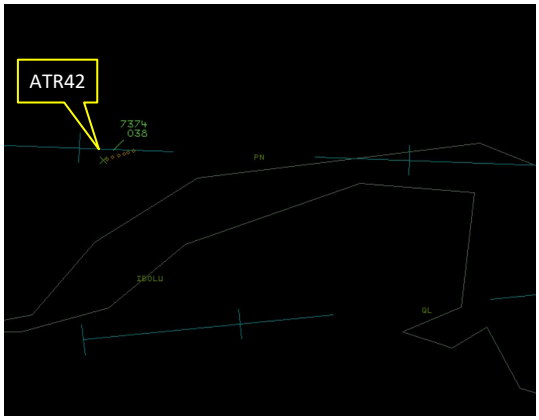


Figure 3 – 0958:48 – ATR42 4.8NM west of Dundee

The controller replied "*cleared for visual approach Runway 27 and report lefthand downwind, initially not below 2000ft*" which was readback by the pilot. At 0959:19 the ATR42 contact disappeared from the area radar replay.

At 0959:35 the controller advised the ATR42 pilot that they were number two, following a "*Warrior late downwind to land*".

At 0959:40 the Dundee Approach controller initiated a landline call to Leuchars Radar to pre-note an IFR departure. During that conversation the Leuchars controller asked what level the ATR42 was descending to, to which the Dundee controller advised that they would keep it separated from the outbound. The Leuchars controller then advised the Dundee controller that they had traffic just to the south of the ATR42, 200ft below. The Dundee controller immediately (at 1000:10) advised the ATR42 pilot that they had "*traffic in your vicinity*". The controller received no reply, but then at 1000:28 the ATR42 pilot reported a TCAS RA which was acknowledged by the controller.

The ATR42 pilot reported clear of conflict at 1000:43.

After the ATR42 had landed, the controller, at 1005:32, called the pilot of the PA28 and requested their position and altitude. The pilot reported being at Newburgh (ringed in Figure 4 below) at 1500ft. This was the first call to or from the PA28 during this period.

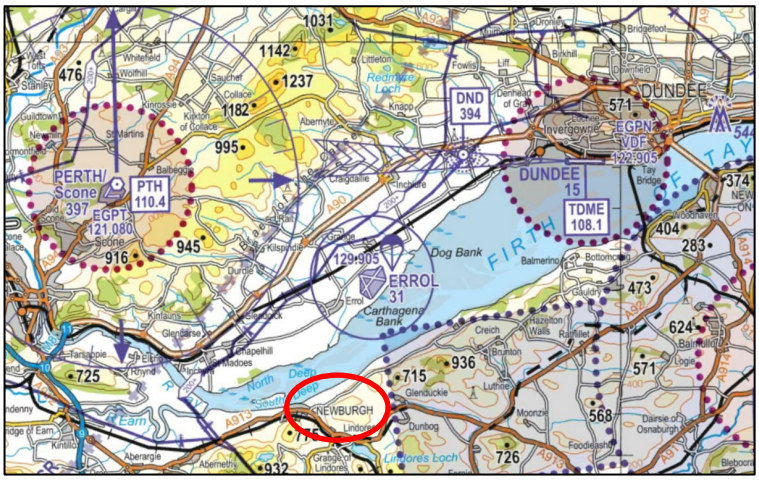


Figure 4

ATSI reviewed reports from both pilots and the Dundee controller. An investigation report was received from Dundee ATC and also a short summary from the Leuchars controller. The area radar replay and Dundee RTF were both also reviewed.

The ATR42 pilot reported that it had always been their intention to not complete the full procedural ILS approach to RW09 before breaking-off for visual manoeuvring to RW27, and that they anticipated going visual on the outbound leg as "*this seemed the safest option due to a large number of TCAS returns within the vicinity of EGPT [Perth]*". Having been cleared for the visual approach they reported receiving the TCAS RA whilst they were in the left turn. They reported becoming visual with an aircraft "*at the 11 o clock position. It seemed to be above us*". However, the subsequent TCAS RA gave the crew an instruction to "Climb Climb".

The pilot of the PA28 in their report remembered hearing the ATR42 being cleared "*for the ILS approach RW09*," and so they "*remained over the river between Errol and Newburgh at around 2000ft to stay away from the instrument approach*". They went on to state: "*At one point, while recovering from a left spiral descent (climbing at 80kt + banking at 15°) and with a NW heading, we spotted the ATR head to head tracking towards the SE to join a visual left hand circuit RW27. Separation at the time we spotted would be +2NM approx. We stopped climbing immediately and as we were recovering from the left spiral descent previously mentioned, we kept turning to the left to set a SW heading (240°) to fly away from the ATR. I guesstimate the closest we got would be about 0.5NM, with the ATR always higher than us, and with the traffic in sight at all times. The ATR never flew right over us but to the north of our position*".

Tellingly, the PA28 pilot then went on to state: "*We might missed some of the (ATR42 callsign) radio calls (?), but both me as the PIC and the three students onboard were expecting the [ATR42 callsign] to fly the ILS approach and break right to join the visual circuit on short final RW09. Nevertheless, once we spotted the aircraft and following the actions taken, we never had the feeling to be in danger, neither us nor the ATR*".

Dundee is a non-surveillance unit and has no Flight Information Display System.

The Dundee controller's report confirmed that they were expecting the ATR42 to go visual early and cleared them for the visual approach for a downwind left-hand join to RW27 when the pilot reported visual. When they were advised, during the phone-call with Leuchars, that there was traffic in the vicinity of the ATR42, they discounted the PA28 as it was marked on the flight progress strip as being to the north, and so generic Traffic Information was only passed to the ATR42. It was only later when they requested a position and level from the pilot of that PA28 that it became apparent that the PA28 had been in the vicinity of the ATR42 at the time of the TCAS RA.

The controller's report also highlighted the omission of "beacon outbound" call from the pilot of the ATR42, surmising that it was likely due to the frequency being busy. A review of the radar replay

and RTF recording actually evidences that when the ATR42 pilot reported visual and requested the visual approach, they were just passing the DND NDB and so could have included that position report in their transmission.

A brief summary from the controller at RAF Leuchars confirmed the presence of a second aircraft in the vicinity of the ATR42 which was receiving a Basic Service from them. Their report then confirmed that both the PA28 working Dundee and their own aircraft were in the vicinity of the ATR42 at the time of the TCAS RA.

Without a clearer picture from the area radar replay, based on pilot reports alone, it cannot be determined which of the two aircraft was the cause of the TCAS RA. The ATR42 pilot said they saw the PA28 above them and then received a TCAS RA instruction to climb. ATSI believes that there is a possibility that the TCAS RA was against the Leuchars traffic and that the ATR42 pilot only saw the Dundee traffic. However, the Airprox report from the ATR42 pilot does appear to be against the Dundee PA28.

Unofficial and unverified data sources suggested that the traffic receiving a Basic Service from Leuchars was another PA28. The same source suggested that the ATR42 completed a wide left-hand turn to then track up the south bank of the Tay, to position downwind lefthand for RW27 passing between the Dundee PA28 positioned to their north, and the Leuchars PA28 to their south. This cannot be substantiated other than by referencing the Leuchars controller's report which stated that the ATR42 passed between both contacts and within 500ft of each.

According to the Dundee investigation report, the LoA between Dundee and Leuchars requires the Leuchars controllers "*if time and workload permits*" to pass Traffic Information to Dundee controllers on any traffic likely to be routing through areas where Dundee aircraft are operating.

The Dundee investigation report indicated that the ATR42 manoeuvred as expected, and there was no requirement to coordinate with Leuchars, but a recommendation has been made that the LoA between the two units be amended so that Leuchars controllers are aware of the potential for such a manoeuvre.

The report also made a recommendation that the operator of the ATR42 equip all their aircraft to enable them to complete the RNP approach to RW27 as some have to complete the RW09 ILS and visual manoeuvre to RW27.

Since the Airprox, the operating company of the PA28 has issued an OPNOT with guidance on the location of VFR joining/reporting points in relation to the Instrument Approaches at Dundee, in order to minimise the risk of conflicting with instrument traffic. It did not say whether it included a warning to pilots that some aircraft completing visual manoeuvring from the procedural 09 ILS to RW27 may pass to the south of Errol.

In accordance with CAP774 UK Flight Information Services:

> *The controller shall provide traffic information, if it is considered that a confliction may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however, there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance.*
>
> *The controller may, subject to workload, also provide traffic information on other aircraft participating in the Procedural Service, in order to improve the pilot's situational awareness.*
>
> *Under a Procedural Service, the controller has no ability to pass traffic information on any aircraft that they are not in communication with, unless they have been passed traffic information by another ATS unit.*
>
> *Traffic information provided under a Procedural Service is unlikely to be as accurate as that provided by controllers using surveillance equipment. Therefore, pilots should be alert to the potential to incorrectly correlate the traffic information to other aircraft that they have in sight that are actually unknown to the controller.*

Conclusion

Without updated position reports from both the pilot of the ATR42 and the PA28, situational awareness for both pilots and the Dundee controller was incomplete.

The PA28 was not where the controller expected it to be and there was no reason for the controller to pass the pilot Traffic Information on the ATR42 or vice versa. They did provide generic Traffic Information to the pilot of the ATR42 immediately after having been given it by the Leuchars controller.

The pilot of the PA28 was not expecting the ATR42 to be positioning to the south of Errol.

Both the pilot of the ATR42 and the PA28 were responsible for their own collision avoidance in Class G airspace.

Dundee Occurrence Investigation

Portions of the Dundee investigation are reproduced below:

Dundee ATC provides a combined aerodrome and approach procedural service (ADI/APP) outside CAS, supplying Basic and Procedural Services. The traffic situation was busy, with several IFR flights inbound, and VFR traffic operating in the vicinity of the aerodrome. Three inbound IFR aircraft flew the Dundee RW27 RNP procedure without incident ahead of [ATR42 C/S]. The Initial Approach Fixes (IAF) for the RW27 RNP are located to the east and southeast of Dundee. [Company] ATRs are not equipped to fly RNP approaches. The cloud conditions dictated that [ATR42 C/S] could only utilise the Dundee ILS/DME RW09 with Visual Manoeuvring (circling) for RW27. A handover of watch between ATCOs occurred approximately twenty minutes before the Airprox. Information provided by the ATCO handing-over watch to the ATCO taking-over watch includes details of all current and pending airborne traffic.

Sequence of events:

Time	Description
0847	[PA28 C/S], requests taxi for a 1hr 30min departure to the west via Longforgan, QNH 1020, squawking 7376, 2 POB. ATCO1 instructs [PA28] to taxi to the south side of the main apron for pre-departure checks. Correct readback received
0852	[PA28 C/S] reports ready for departure ATCO1 issues instructions: after departure, report passing Longforgan VFR to expect Basic Service. Correct readback received. ATCO1 instructs [PA28 C/S] to taxi holding point Alpha
0854	ATCO1 issues take-off clearance to [PA28 C/S]. Correct readback received.
0857	[PA28 C/S] reports Longforgan. ATCO1 provides Basic Service and issues Traffic Information on company traffic, following, routing northwest. [PA28 C/S] confirms Basic Service and traffic copied.
0930	Coordination phone call between Leuchars Radar and ATCO1: 2 IFR inbound. [ATR 42 C/S] coordinated altitude 5000ft DND(L) NDB on QNH1020

Time	Description
0941	Handover watch ATCO1;Takeover watch ATCO2
0951	Initial call from [ATR42 C/S], south of the airfield altitude 5000ft, QNH 1020, routing DND(L) NDB ATCO2 issues PRO and clears [ATR42 C/S] to DND altitude 4000ft on QNH 1020. Correct readback received. ATCO2 instructs [ATR42 C/S] to report taking up the hold, Estimated Approach Time (EAT) of time 58.
0955	[ATR42 C/S] crew report in the hold at altitude 4000ft. ATCO2 asks if crew can commence the ILS procedure from altitude 4000ft [rather than descending to the Minimum Holding Altitude of 3000ft first] [ATR42 C/S] crew confirm this can be done and advise that they intend to descend on the procedure on the outbound leg, only, then continue for a visual approach, joining downwind left-hand.
0956	ATCO2 clears [ATR42 C/S] for ILS DME approach RW09, for visual manoeuvring RW27, to report beacon outbound and report visual.
0957	[ATR42 C/S] crew apologises: missed the call, say again. ATCO2 repeats [ATR42 C/S] cleared for a visual approach RW27 to join and report downwind left-hand, initially not below altitude 2000ft. Correct readback received from [ATR42 C/S] crew
0958	No beacon outbound call received from [ATR42 C/S]. Crew reports “visual” just to the north of Errol, 3400ft, happy to position downwind from their current position. ATCO2 clears [ATR42 C/S] for a visual approach RW27 to join and report downwind left-hand, initially not below altitude 2000ft.
0959	Coordination call by ATCO2 to Leuchars Radar reference an IFR departure. Leuchars ATCO requests, before coordination, what level the [ATR42 C/S] is descending to. ATCO2 states that [Dundee] visual separation will be applied between the aircraft (departing IFR and [ATR42 C/S]) Leuchars ATCO reports traffic on a Basic Service [with Leuchars] 2 miles south of [ATR42 C/S], 200ft below
1000	ATCO2 passes generic Traffic Information to [ATR42 C/S] 16sec later, [ATR42 C/S] reports TCAS RA ATCO2 responds as per MATS Part 1 and continues coordination with Leuchars ATCO 14sec after TCAS RA, [ATR42 C/S] reports clear of conflict

Time	Description
	Dundee ATCO instructs [ATR42 C/S] to report final, No2 to the Warrior turning final. [ATR42 C/S] crew confirm report final, No2
1007	[ATR42 C/S] lands RW27

[PA28 C/S] crew requested taxi instructions for pre-take-off checks, stating they were departing to the west via Longforgan. ATCO1 initially wrote "W" on the strip to indicate a departure to the west, then amended it to "NW" when [PA28 C/S] stated "via Longforgan".

Dundee MATS Part 2, Section 2, Chapter 3, Para 2.1 states that VFR departures to the north or northwest will route via Longforgan. Additionally, the Letter of Agreement (LOA) between Dundee ATC and [PA28 Company] states "*Aircraft departing to the west will be expected to route VFR towards and report abeam Errol*" and "*Aircraft departing to the north will be expected to route VFR via and report over Longforgan*". ATCO1's supposition that [PA28 C/S] was routing northwest via Longforgan is, therefore, a logical one. Furthermore, a substitution test with 6 other Dundee ATCOs indicated that most would make a similar assumption. Only 1 ATCO stated that they would request clarification from the flight crew.

The Dundee ATC/[PA28 Company] LOA should be reviewed and amended to reflect the information detailed in the Dundee MATS Part 2. Additionally, the "Standard Departure" abbreviations suggested for use in the LOA should be implemented as standard procedure. Whilst a request to "depart to the west via Longforgan" could still be made, Dundee ATC would be alerted to the non-standard routing and could seek clarification.

ATCO1 issued VFR departure instructions as detailed in Dundee MATS Part 1. ATCO1 subsequently provided a Basic Service and issued Traffic Information on another [PA28 Company] aircraft, following [PA28 C/S], routing west/northwest, VFR. The [PA28 C/S] crew confirmed receipt of a Basic Service and of the Traffic Information. ATCO1 handed-over watch (HOW) to ATCO2. The HOW includes details of all airborne aircraft. From the HOW briefing, ATCO2 believed [PA28 C/S] to be operating to the northwest of Dundee. ATCO2 did not, therefore, issue Traffic Information about [PA28 C/S] and [ATR42 C/S].

[ATR42 C/S] was under a Procedural Service. [PA28 C/S] was under a Basic Service.

CAP774 states that:

> *Under a Basic Service, the avoidance of other traffic is solely the pilot's responsibility and, whether traffic information has been provided or not, the pilot remains responsible for collision avoidance without assistance from the controller;*
>
> *Pilots in receipt of a Procedural Service should be aware of the high likelihood of encountering traffic without warnings, Traffic Information or deconfliction advice being provided by ATC, therefore the pilot is wholly responsible for collision avoidance;*

[ATR42 C/S] was the fourth aircraft to fly an instrument procedure for Dundee, following [PA28 C/S]'s departure. The preceding three aircraft flew the Dundee RW27 RNP procedure. The Initial Approach Fixes (IAF) for the RW27 RNP are located to the east and southeast of Dundee. Operating in the Errol area, [PA28 C/S] was not [conflicting] traffic to the three aircraft who flew the RW27 RNP. [Company] ATRs are unable to fly RNP procedures. [PA28 C/S] and [the Leuchars Basic Service aircraft] would not have conflicted with [ATR42 C/S], had [company] ATR aircraft been equipped to fly RNP approaches. The [ATR42 C/S] crew advised ATCO2 of their intention to fly the Dundee ILS/DME RW09 procedure until they broke cloud then, once visual (reference to the surface was obtained), position downwind, left-hand for RW27.

The Dundee ILS/DME procedure routes aircraft overhead the DND(L) NDB, approximately 3NM to the west of Dundee. From the DND, aircraft fly outbound to the southwest, descending to altitude 2200ft. The outbound flightpath routes to the north of Errol. ATCO2 cleared [ATR42 C/S] for the Dundee ILS/DME RW09 procedure for Visual Manoeuvring (Circling) RW27, instructing the crew to report "Beacon Outbound" and to report when "Visual". ATCO2 repeated the instruction at the [ATR42 C/S] crew's request. Correct readback was received from the crew.

[ATR42 C/S] did not make a Beacon Outbound call. However the Dundee frequency was extremely busy and it is possible that the crew were unable to get the call in. The crew did report visual, to the north of Errol, descending through 3400ft, and requested to position downwind. ATCO2 cleared [ATR42 C/S] for the visual approach for RW27, to join and report downwind. ATCO2 also placed a height restriction of not below altitude 2000ft, in accordance with the instructions in MATS Part 2: Integration into the Circuit of IFR Traffic Carrying Out Visual Approaches. Correct readback was received from [ATR42 C/S].

ATCO2 initiated a coordination call with Leuchars Radar regarding an outbound IFR departure, in accordance with the LOA between RAF Leuchars and Dundee Airport. Before effecting coordination, the Leuchars ATCO asked ATCO2 what level the [ATR42] was descending to. ATCO2 confirmed that visual separation would be applied between the [ATR42 C/S] and the departing aircraft. The Leuchars ATCO gave ATCO2 Traffic Information on an aircraft receiving a Basic Service from Leuchars, 2 miles to the south of [ATR42 C/S], 200ft below. ATCO2 immediately issued [ATR42 C/S] with generic "traffic in your vicinity" information. [ATR42 C/S] crew did not respond. Sixteeen seconds after the generic Traffic Information, [ATR42 C/S] crew reported a TCAS RA.

The TCAS RA could have been triggered by [PA28 C/S] and/or the Leuchars Basic Service traffic. ATCO2 was unable to pass timely Traffic Information to [ATR42 C/S] on [the Leuchars traffic] as the ATCO received late Traffic Information from the Leuchars ATCO. CAP774 states that, under a PRO, the controller has no ability to pass Traffic Information on any aircraft that they are not in communication with, unless they have been passed Traffic Information by another ATS unit. The LOA between RAF Leuchars and Dundee Airport states:

> *Leuchars ATC will endeavour to pass traffic information to Dundee ATC on ac receiving a service from Leuchars that may conflict with traffic on the Dundee instrument approaches (RNP, ILS, NDB) or the MAP.*

The flightpath of the ILS/DME approach for RW09 is to the north of Errol. There was, therefore, no requirement for the Leuchars ATCO to pass Traffic Information to ATCO2 about [their traffic]. Additionally, the LOA states "*If time and workload permits, Leuchars Radar Controllers are aware of traffic routing through areas where Dundee ac are operating, will endeavour to pass T.I.*". The timing of the TCAS RA suggests that the Leuchars ATCO passed Traffic Information to ATCO2 on [their traffic] as soon it was observed that [ATR42 C/S] was manoeuvring to the south of Errol. The RAF Leuchars/Dundee ATC LOA should be amended to inform ATC Leuchars of the potential for aircraft on the Dundee ILS/DME RW09 procedure to Visually Manoeuvre to the south of Errol to join downwind when RW27 is in use.

There is no requirement in the LOA between RAF Leuchars and Dundee Airport for Dundee ATC to pass Traffic Information about inbound IFR flights once aircraft have commenced an instrument approach, unless a MAP is initiated. There was, therefore, no requirement for ATCO2 to inform the Leuchars ATCO that [ATR42 C/S] intended to visually manoeuvre to the south of Errol to join downwind for RW27.

[ATR42 C/S] crew requested a visual approach. [ATR42 C/S] was cleared for a visual approach in accordance with CAP493: the crew reported that they were visual, and the reported cloud ceiling was above the level of the initial approach segment. [PA28 C/S] crew's statement indicates that they heard [ATR42 C/S] being cleared for the ILS approach RW09. Believing [ATR42 C/S] to be carrying out ILS/DME RW09, [PA28 C/S] positioned to the south of the ILS/DME outbound track, over the River Tay. [PA28 C/S] crew did not say if they heard [ATR42 C/S] reporting visual and being cleared for the visual approach. When [PA28 C/S] saw [ATR42 C/S], the ATR was above them, tracking

southeast. [PA28 C/S] stated that they remained south of [ATR42 C/S] at all times, and they did not believe the aircraft was in close enough proximity to raise an Airprox.

The [PA28 C/S] crew do not say if they heard [ATR42 C/S] crew report the TCAS RA. The statement from [the Leuchars aircraft]'s crew indicates that they did not see [ATR42 C/S] at any point, and that the Leuchars ATCO did not issue Traffic Information on [ATR42 C/S].

[ATR42 C/S] crew's Air Safety Report states that they became visual with a white and blue PA28 as the ATR turned through south [for downwind RW27]. The PA28 was in their 11 o'clock position, high. Almost immediately afterwards, the TCAS RA instructed them to "Climb Climb". Radar images of the Airprox were not available.

Dundee ATC provides a combined Aerodrome and Approach Procedural Service (ADI/APP) outside controlled airspace. Dundee ATC can only provide Basic Service and Procedural Services. CAP774 states that traffic information provided under a Procedural Service is unlikely to be as accurate as that provided by controllers using surveillance equipment. In this instance, the more accurate information derived from an approach surveillance service (APS) may have mitigated the Airprox:

- A Dundee APS ATCO could have provided a service to [PA28 C/S] in the Errol area, or would have seen the 7376 squawk in the Errol area and requested coordination with the Dundee ADI ATCO;

- A Dundee APS ATCO would have seen the Leuchars VFR squawk and could have requested coordination with the Leuchars ATCO; and

- Surveillance-derived guidance supplied to [ATR42 C/S] to establish on RW09 ILS from the west, would have negated the requirement for [ATR42 C/S] to fly the outbound leg of the ILS/DME approach from overhead the DND.

There is no regulation requiring pilots to maintain a continuous watch on the radio frequency outside the Aerodrome Traffic Zone. Following the Airprox, [PA28 Company] published an Operation Notice to all [PA28 Company] instructors and renters at all [PA28 Company] bases, issuing guidance on the location of VFR joining/reporting points in relation to the Instrument Approaches at Dundee in order to minimise the risk of conflicting with instrument traffic. The OPNOT also recommended listening-out on the appropriate frequency.

UKAB Secretariat

The ATR42 and PA28 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]

Summary

An Airprox was reported when an ATR42 and a PA28 flew into proximity in the vicinity of Errol at 1000Z on Monday 13th June 2022. Both pilots were operating under VFR in VMC, the ATR42 pilot in receipt of a Procedural Service from Dundee and the PA28 pilot in receipt of a Basic Service also from Dundee.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, limited radar video data, 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 looked at the actions of the ATR42 pilot. They had been under a Procedural Service with Dundee and had been conducting an NDB to ILS to RW09, in order to get beneath the cloud and

[1] (UK) SERA.3205 Proximity.

then circle to land on RW27. Members discussed that when conducting an NBD to ILS at Dundee, the usual route would be an outbound heading of 240° with a right turn onto the ILS, however, once beneath the cloud the ATR42 crew turned left to route back towards the visual circuit. Members briefly wondered whether this had caught out both the controller and the PA28 pilot. However, they noted that the pilot had stated on the RT that they would position downwind left-hand on more than one occasion, and had reported when they were ready to turn and asked the controller whether they could do so. Therefore, the Board concluded that this left-hand turn had not contributed to the Airprox. The controller had not known the position of the PA28 and so had not been able to pass Traffic Information to the ATR42 pilot, consequently the ATR42 pilot had not been aware of the presence of the PA28 until they received the generic 'traffic in the vicinity' call (**CF5**). This call came at a similar time to the TCAS warnings and once the crew received the TCAS RA, they had been required to act upon it (**CF6**). The Board noted that TCAS had been designed for flight in controlled airspace, and not to protect against aircraft manoeuvring in Class G airspace, and the manoeuvring of the PA28 as it turned towards the ATR42, even though at some distance, would have caused a TCAS alert. The TCAS alerting had concerned the ATR42 crew, who, although visual with the PA28, could not be certain that it had been the traffic the TCAS was warning against (**CF7**).

For their part, the PA28 pilot reported being aware of the positioning of the ATR42 in the area, but also reported that they had perhaps missed some of the RT calls, because they had not expected it to turn left into the visual circuit from that position (**CF5**). Nevertheless, once visual, the PA28 pilot turned away in order to keep well out of the way and did not consider the two aircraft to be at risk of collision.

Turning to the role of ATC, the Board noted that without a radar, the Dundee controller could only pass Traffic Information based on known traffic and therefore had been relying on the airborne reports from other pilots on frequency to maintain situational awareness. The PA28 pilot was receiving a Basic Service and therefore the controller was not required to keep a track of its position (**CF1**). That being said, due to the calls made when the PA28 had been taxying, the controller had an incorrect mental model that it had been manoeuvring to the northwest of the airfield (**CF4**). Consequently, they had not known that both aircraft were operating in a similar area (**CF3**) and therefore could not pass accurate Traffic Information to the ATR42 pilot (**CF2**). As soon as the controller had been told about the traffic in the vicinity of the ATR42 by the Leuchars controller, they then passed generic Traffic Information to the pilot. The Board noted that it had been because of the Leuchars controller that the Dundee controller had become aware of the situation and they commended the Leuchars controller for their actions. Some members wondered whether aircraft inbound to Dundee would receive a more comprehensive service from Leuchars, given that they had a radar, but noted that the status of Leuchars, as a relief landing ground for the RAF, probably meant that they did not have the resources to provide such a service.

When determining the risk, without any radar data at or around reported CPA the Board did not have any hard evidence to help with their deliberations. However, they considered the reports from all parties and noted that the PA28 pilot had been visual throughout and had assessed the risk of collision as none, and that Leuchars controller, who had seen the event unfold on the radar, had described the ATR42 as going between the two radar returns. They therefore concluded that there had been no risk of collision. Furthermore, although the ATR42 crew had received a TCAS RA, the Board thought that normal safety parameters had pertained; Risk Category E. However, having made that decision, they were keen to point out that many useful lessons had been drawn from the incident and they thanked the ATR42 pilot for reporting the Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022103			
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
2	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
3	Human Factors	• Conflict Detection - Not Detected	An event involving Air Navigation Services conflict not being detected.	
4	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
	Flight Elements			
	• Situational Awareness of the Conflicting Aircraft and Action			
5	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			
6	Contextual	• ACAS/TCAS RA	An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system resolution advisory warning triggered	
	• See and Avoid			
7	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: E.

Safety Barrier Assessment[2]

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

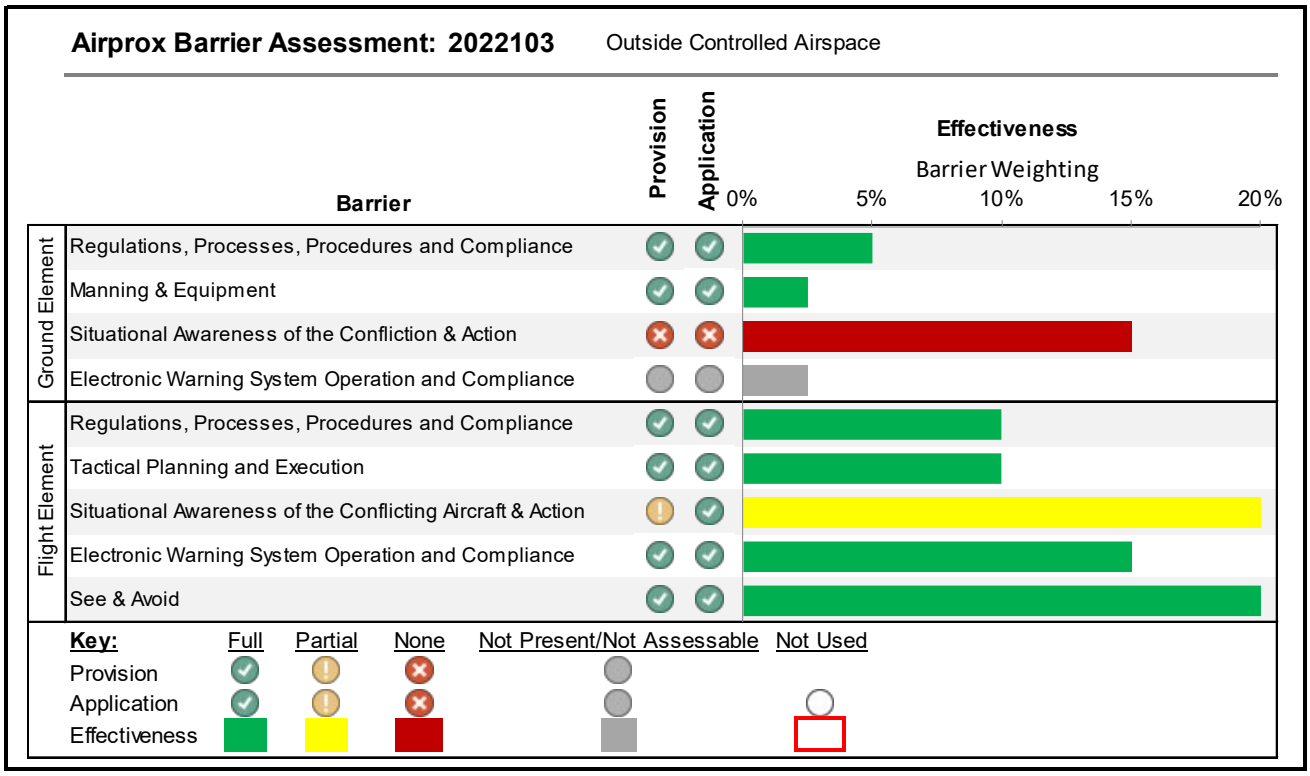
Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the Dundee controller was not aware that the PA28 was in the vicinity of the ATR42 and so could not pass accurate Traffic Information.

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the PA28 pilot only had generic information that the ATR42 was in the vicinity and the ATR42 pilot had received late Traffic Information about the PA28.

[2] 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: 2022103
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