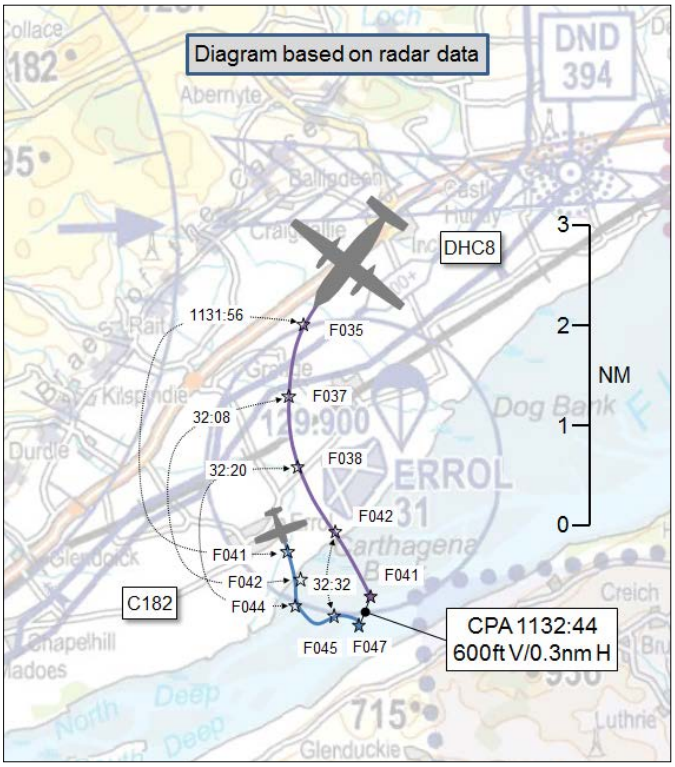
AIRPROX REPORT No 2016212

Date: 02 Oct 2016 Time: 1132Z Position: 5623N 00310W Location: 14nm SSW Dundee airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DHC8	C182
Operator	CAT	Civ Club
Airspace	Scottish FIR	Scottish FIR
Class	G	G
Rules	IFR	VFR
Service	None	Basic
Provider	(Scot ACC)	Dundee
Altitude/FL	FL41	FL47
Transponder	A,C,S	A,C
Reported		
Colours	Company	NK
Lighting	Strobes, nav, position	NK
Conditions	VMC	VMC
Visibility	10nm	>10km
Altitude/FL	6000ft	3500ft
Altimeter	QNH	NK
Heading	090°	NK
Speed	190kt	NK
ACAS/TAS	TCAS II	Not fitted
Alert	RA	N/A
Separation		
Reported	500ft V/4nm H	1000ft V/NK H
Recorded	600ft V/0.3nm H	



THE DHC8 PILOT reports that on departure from Dundee, whilst in a left turn to NATEB [overhead Newcastle Airport]; Traffic Information was passed from the Aerodrome controller about a parachuting aircraft. The First Officer maintained visual contact with the traffic at all times. After a frequency change to Scottish control while passing 6000ft climbing to FL250, TCAS indicated "Traffic Traffic" followed by "level off". Airspeed was reduced to avoid convergence and the left turn was tightened. ATC were advised when the conflict was cleared.

He assessed the risk of collision as 'Medium'.

THE CESSNA 182 PILOT reports that the Errol Parachute Site was reported active in a NOTAM and on the Dundee ATIS. A DHC8 was departing IFR from Dundee RW27. The C182 parachute aircraft had just dropped a parachutist overhead the Errol Drop Zone (DZ) at 3500ft and was in the climb to 9000ft for a further drop, remaining to the south-west of the DZ for spacing from the Dundee IFR departure. Dundee cleared the DHC8 for take-off, having advised of parachute activity with a request to remain clear of the Errol DZ. On climb-out from Dundee, both the DHC8 and the C182 pilots reported visual with each other. The DHC8 pilot then proceeded to turn left in accordance with his departure routeing and flew through the parachute zone at approximately 3500ft, directly over the parachutist who was still descending under canopy. While the DHC8 and the C182 pilots remained visual and well clear of each other, the DHC8's flight-path suggested a lack of awareness of the position of the parachutist. He opined that this Airprox highlights the importance of avoiding flight through active parachute areas (in the case of Errol, SFC to FL104) without two-way contact and permission of the parachute site operator because there may be a parachutist in free-fall or under canopy in the zone. He commented that VFR/IFR departure clearances or instrument approach clearances from nearby airports do not imply permission to fly through the parachute 'ATZ', especially as it is outside a controller's area of responsibility.

THE PARACHUTE CLUB'S CHIEF INSTRUCTOR reports that he was the parachutist involved. He exited the aircraft at 3500ft above Errol airfield. The jump was uneventful. On landing, he was informed that when under canopy at 2000ft an airliner passed directly over him. He did not hear or see the aircraft due to wind rushing past him and him concentrating on his landing. He reported this to Dundee ATC and informed them that he would be filing an Airprox report.

THE DUNDEE SENIOR AIR TRAFFIC CONTROLLER reports that at the time of the incident, the Dundee ADI/APP controller was not aware that there had been any form of airborne conflict; they had agreed with the parachute aircraft (in accordance with the terms of their Letter of Agreement with them) that it would climb to the south-west of the parachute DZ to remain clear of the departure track of the DHC8 heading towards NATEB (a left turn after departure from RWY27). Traffic Information was passed to both pilots, the parachute-drop pilot reported the departure in sight as the DHC8 rolled. The controller noted that the DHC8 was slower to turn left than expected so further Traffic Information was passed and, once the crew of the DHC8 reported the parachute aircraft in sight, a transfer to Tay Sector was effected. He subsequently received a telephone call from the Watch Supervisor at Prestwick Centre later that afternoon to advise him that the departing DHC8 pilot had reported a TCAS RA shortly after transfer to the Tay Sector frequency. However, in his opinion the crew were apparently unconcerned, as they had had the parachute aircraft in sight throughout. As the TCAS event had apparently occurred whilst the aircraft was under the control of the Tay Sector and they would be submitting a report, it was not considered necessary for additional reporting action to be taken at the Dundee end. This was supported by the ASR submitted to him by the DHC8's operating company on 4th October, which indicated that the incident had occurred whilst on the Tay Sector frequency and not on Dundee's. This, together with the fact that the controller concerned was on their SRATCOH rest period and their return to work would have been after the 72 hours required for an ECCAIRs report to be filed, was the reason that no report was forthcoming from Dundee.

Factual Background

The weather at Dundee was recorded as follows:

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EGPN 021120Z 22003KT 9999 FEW010 13/08 Q1019=
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The Errol parachuting site is designated by a circle of radius of 1.5nm centred on Errol airfield in Class G airspace. It has an upper limit of FL104 and the parachute club informs Scottish Control, RAF Leuchars and Dundee ATC when it is active.[1] Although the site is notified in the UK AIP, there is no regulatory requirement for other aircraft to remain clear.

Analysis and Investigation

CAA ATSI

ATSI had access to reports from the pilots of the DHC8 and the C182, the TAY Sector controller, the area radar recordings and the R/T transcript of both the Dundee Tower/Approach and TAY Sector positions. ATSI also had access to the NATS Unit Investigation Report and spoke with the Dundee controller. Screenshots in the report are taken from the area radar recording. The DHC8 pilot was on an IFR flight from Dundee. At the time of CPA the pilot had just been transferred by the Dundee Aerodrome/Approach controller and was on the Scottish Area Control Centre (TAY Sector) frequency, but had not formally established communications and no ATC service had been agreed. The C182 was a parachute aircraft airborne from Errol Airfield climbing to a jump altitude of 9000ft; the pilot was in receipt of a Basic Service from Dundee Tower/Approach. Dundee ATC is not equipped with radar.

[1] UK AIP Page ENR 5.5-3.

The DHC8 pilot had called for start at 1111:05, acknowledging the ATIS information, but then had to wait for a clearance to be received by the Dundee controller from Scottish Control, before finally taxiing out at 1123:55.

The C182 pilot had completed a previous 'paradrop', and, at 1115:12, was passed Traffic Information on the upcoming departure of the DHC8 prior to landing back at Errol. The pilot reported airborne again at 1124:40, reporting that he intended to drop at 3500ft and then at 9000ft. The pilot reported being aware of another aircraft working Dundee in the vicinity of Errol, and traffic (the DHC8) due to depart Dundee. A Basic Service was agreed with the Dundee controller who was providing both an Aerodrome and Approach service on a single frequency.

At 1127:55, the DHC8 pilot was issued with an airways joining clearance by the Dundee controller, which was to track to NATEB, (a reporting point overhead Newcastle), in the climb to FL250. The pilot was given the transponder code and frequency for Scottish Control and, after confirming the readback, the Dundee controller cleared the DHC8 pilot to line-up and wait on the runway, requesting that he report ready for departure.

At 1129:10, the DHC8 pilot reported ready. The Dundee controller passed Traffic Information on two aircraft, which were orbiting in the downwind position, and then cleared the DHC8 pilot for take-off at 1129:20.

At 1129:25, the Dundee controller passed Traffic Information to the C182 pilot (transponding 0033), on the departing DHC8 which was acknowledged by the pilot. (Figure 1).

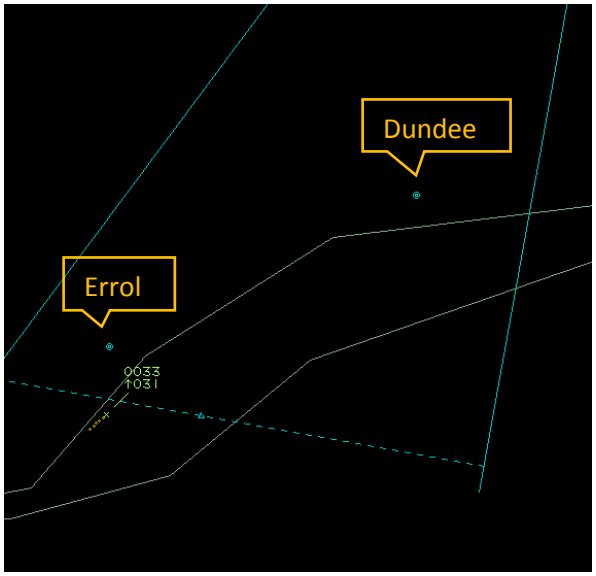


Figure 1 – Prestwick MRT – 1129:25.

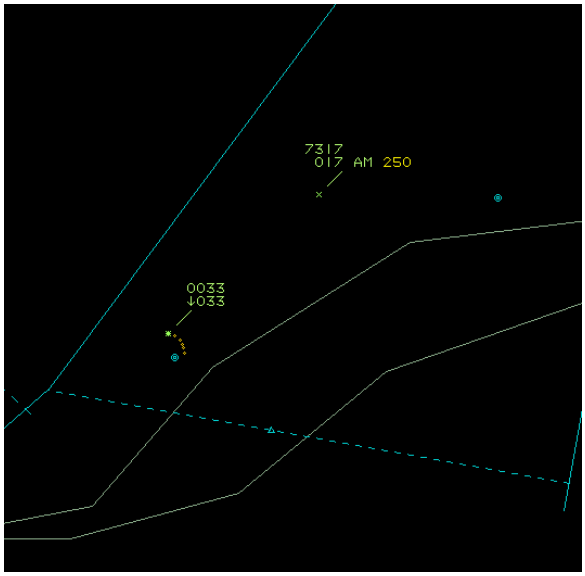


Figure 2 – Prestwick MRT – 1131:02.

At 1129:40, the C182 pilot again made reference to 3500ft and then 9000ft, but it was not possible to discern exactly what he said. The Dundee controller asked for his passing level, (reported as 3500ft) and to confirm that they were west of the Errol parachute zone. The pilot confirmed that they were south-west of the Drop-Zone (DZ).

The Dundee controller then went back to the aircraft holding in the circuit, advising its pilot of a delay due to wake turbulence from the DHC8 departure.

At 1130:45, the Dundee controller advised the DHC8 pilot *"further traffic, C182, southwest, 3500ft climbing 9000ft"* which was acknowledged by the pilot.

At 1130:58, the C182 pilot reported visual with the DHC8 and at 1131:02 the DHC8 became visible on the area radar replay, (transponding 7317) (Figure 2).

At 1132:00, (Figure 3**)** the Dundee controller asked the DHC8 pilot if they were visual with the C182, which the DHC8 pilot reported that they were not.

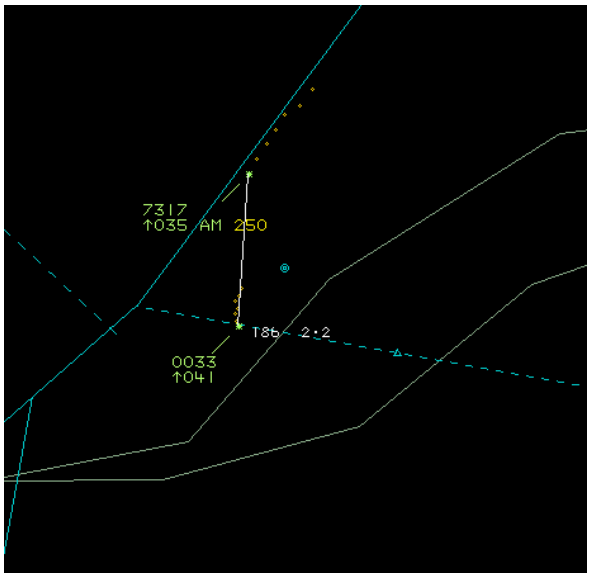


Figure 3 – Prestwick MRT – 1132:00.

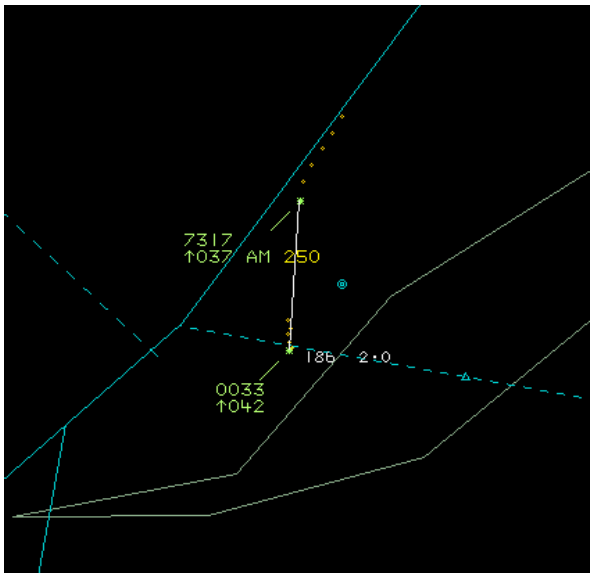


Figure 4 – Prestwick MRT – 1132:07.

At 1132:07, the DHC8 pilot confirmed visual with the C182 (Figure 4).

At 1132:15, the Dundee controller instructed the DHC8 pilot to maintain visual contact with the C182 and to contact Scottish Control which was acknowledged by the pilot.

At 1132:28 the DHC8 pilot advised the Tay Sector controller *"er Scottish er [DHC8 C/S] TCAS RA"*. The TAY controller replied *"[DHC8 C/S] sorry I didn't realise you were on frequency, erm yes, there's a contact er squawking paradrop er which is in your er 2 o'clock now range of about half a mile, indicating flight level 47, unverified"* (Figure 5).

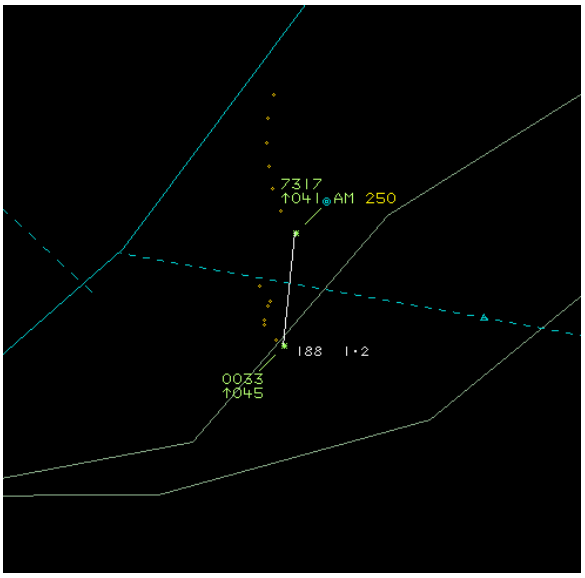


Figure 5 - Prestwick MRT – 1132:28.

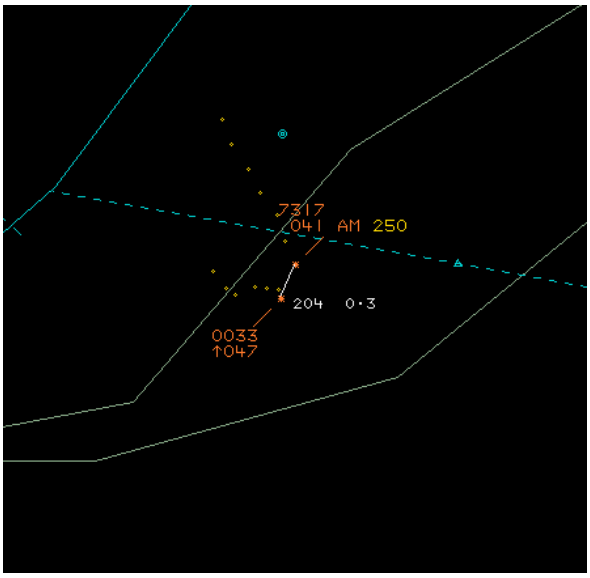


Figure 6 - Prestwick MRT – 1132:44.

CPA took place at 1132:44 with the aircraft separated by 0.3nm laterally and 600ft vertically (Figure 6)

At 1132:47, the DHC8 pilot reported *"we were visual with the traffic throughout and er we are now clear of conflict resuming climb FL250 en route NATEB".*

The Dundee controller had been providing both Approach and Aerodrome Control services, without surveillance equipment, to a number of pilots during this period. Traffic Information on the parachuting activity at Errol was being passed to the pilots of both inbound and outbound aircraft. The parachuting activity *"Errol Active"* was also being broadcast on the Dundee ATIS.

The Dundee controller had pre-warned the C182 pilot about the imminent departure of the DHC8 and Traffic Information was passed again after the DHC8 pilot had been cleared for take-off. The C182 pilot reported visual with the DHC8 approximately one minute after it became airborne.

The Dundee controller passed Traffic Information to the DHC8 pilot on two light aircraft holding in the circuit to allow the DHC8 to depart, but did not pass traffic on the C182 until the DHC8 was already airborne and no mention of it being a parachute aircraft was made. The controller also did not remind the DHC8 pilot that the parachute site at Errol was active.

According to the DHC8 pilot's report, the Traffic Information on the C182 was passed to them when they were, *"already in the left turn".* The DHC8 pilot confirmed in their written report that *"the First Officer maintained visual contact with the traffic (parachute dropping) at all times"*. This was also confirmed verbally when in communication with the TAY Sector controller.

According to the statement from the pilot of the C182, they had dropped one parachutist at 3500ft and were in the climb to 9000ft for a further drop. They stated that they remained to the south-west of the DZ *"for spacing from the Dundee IFR departure".* They also reported that they had heard the Dundee controller request that the DHC8 pilot remain clear of the DZ, however this was not evidenced from the R/T transcript. The C182 reported seeing the DHC8 fly through the DZ, and *"directly over the parachutist who was still descending under canopy".*

From the transcript of the R/T, it was not clear that the second transmission by the C182 pilot at 1129:40 was reporting having already dropped the parachutist at 3500ft or that it was their intention, and no mention of this was made by the controller to the DHC8 pilot.

The track of the DHC8 through the DZ was plotted and is reproduced in Figure 7. Figure 8 depicts both the C182's and the DHC8's tracks as they closed at CPA.

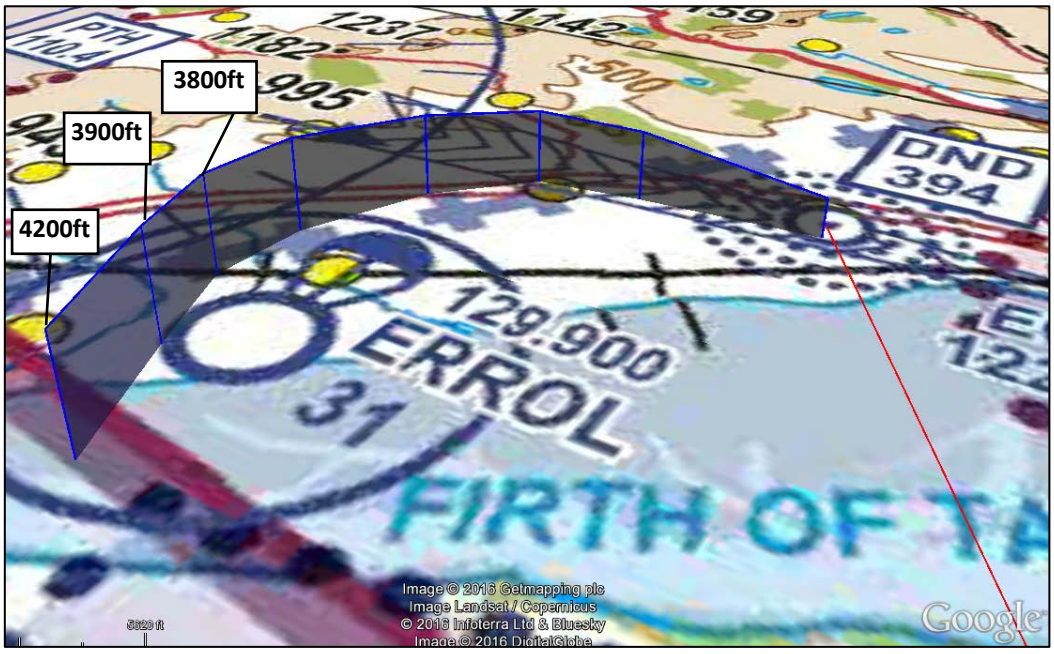


Figure 7 – Track of DHC8.

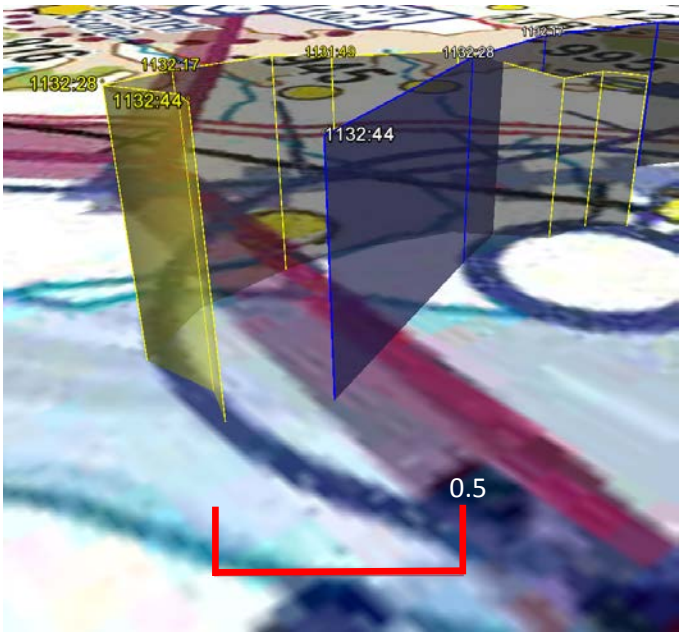


Figure 8 – DHC8 & C182 tracks.

It is not clear at exactly what time the DHC8 pilot responded to the TCAS RA.

Dundee has no surveillance equipment but there is a Letter of Agreement (LoA) with Leuchars LARS under the terms of which Dundee is to pre-note IFR departures to Leuchars. If Leuchars has traffic to affect, then they will request a "Line-Up call", but Leuchars is under instructions that Dundee traffic is not to be held due to the presence of known or unknown traffic. On this occasion, the DHC8 was pre-noted to Leuchars but they declined to work it. [UKAB note: The incident occurred on a Sunday and Leuchars LARS was not in operation].

The TAY controller reported seeing the C182, but had assumed that the DHC8 would be retained either by Dundee or Leuchars until clear of the traffic. They were not aware that the DHC8 would be coming direct to them from Dundee.

The DHC8 pilot had not established communications with the TAY controller in the normal manner, and on first contact advised the controller of the TCAS. In such circumstances, and especially as the controller was not aware that the DHC8 pilot was on frequency, there was no action to be taken by the TAY controller until he reported clear of the conflict.

There are no procedures at Dundee, which require the Dundee controller to advise TAY if the IFR departure will not be working Leuchars LARS.

There are no published procedures for Dundee or Scottish Control regarding the handling of traffic into and out of Dundee when Errol parachute site is active.

In the NATS Investigation report a reference is made to a previous Airprox involving a Dundee outbound and a parachute aircraft at Errol. (Airprox 2012062 - 6th May 2012). It had been stated to UKAB that *"an agreement has been reached between the respective ATSUs and henceforth Leuchars will provide an ATS to para-dropping flights operating at Errol".* When contacted by CAA ATSI, the Dundee Deputy SATCO advised that at subsequent meetings between Dundee, Errol and Leuchars, the Errol parachute club requested to remain on the Dundee frequency to be better informed of the Dundee traffic situation. The DSATCO also commented that for IFR traffic departing to the south-west, a clearance is requested which includes a routing that will keep the aircraft to the north of Errol. This is not possible for NATEB departures, but when the parachute site is notified as active, it is the norm for aircraft to turn early and remain to the east of the site.

The DHC8 was IFR, the C182 VFR. In accordance with the Dundee MATS Part 2[2]:

'A combined Aerodrome and Approach Control service applying standard separation between IFR traffic will be applied as follows:

c) Departing aircraft call for taxi instructions until:

They are transferred to another ATSU; or they no longer wish to receive a service, or are 10 minutes flying time from the aerodrome, whichever is the sooner.'

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 he is not in communication with, unless he has 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.

Traffic Information on the C182 was passed by the Dundee controller to the DHC8 pilot, but not until the DHC8 was airborne. This did not include the information that either the C182 was a parachute aircraft or that a drop from 3500ft was about to, or had, already taken place.

The DHC8 pilot flew through/over a notified parachute site despite the fact that the site was active was transmitted on the Dundee ATIS, (the pilot had acknowledged the ATIS information letter when they first called for start).

The C182 pilot reported visual with the DHC8 shortly after it had departed Dundee. The DHC8 pilot reported visual with the C182 37 seconds before CPA, and reported maintaining visual contact throughout.

UKAB Secretariat

The DHC8 and C182 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[3]. If the incident geometry is considered as converging then the DHC8 pilot was required to give way to the C182[4]. The notification circle depicted around a parachute site on VFR charts, commonly referred to as the parachute DZ, does not denote any form of controlled or regulated airspace. There is no 'zone' or ATZ for parachute operations per se, unless the airfield at which the operation is conducted has an associated ATZ, in which case this regulated airspace will extend to 2000ft above the airfield. In Class G airspace, permission is not required to fly in the vicinity of parachuting activity or to fly within the bounds of the notification circle or 'drop zone'. However, the UK AIP[5] states:

[2] Section 5 Approach Control.
[3] SERA.3205 Proximity.
[4] SERA.3210 Right-of-way (c)(2) Converging.
[5] ENR 1.1-40, Paragraph 5.5.4.3.

'Visual sighting of free-falling bodies is virtually impossible and the presence of an aircraft within the Drop Zone may be similarly difficult to detect from the parachutists' point of view. Parachute dropping aircraft and, on occasions, parachutists may be encountered outside the notified portion of airspace. Pilots are strongly advised to give a wide berth to all such Drop Zones where parachuting may be taking place.'

Summary

An Airprox was reported when a DHC8 and a C182 flew into proximity at 1133 on Sunday 2nd October 2016. The DHC8 pilot had departed Dundee RWY27 on an IFR flight under VMC with a left turn out towards NATEB (overhead Newcastle airport). The C182 was under VFR in VMC and carrying out a parachute drop over Errol which is situated approximately 6nm south-west of Dundee airport. The DHC8 pilot was in the process of changing frequencies from Dundee to the Scottish Tay Sector when he received a TCAS RA. The C182 pilot was in receipt of a Basic Service from Dundee. Both pilots had visual contact.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from both pilots, Dundee ATC, area radar and RTF recordings and reports from the appropriate ATC and operating authorities.

Looking first at the actions of the Dundee controller, the Board noted that he was performing the combined duties of an Aerodrome and Approach controller and that Dundee is not equipped with surveillance equipment. The DHC8 pilot requested to start at 1111, acknowledging receipt of the ATIS information, which warned that Errol parachute site was operating. The controller informed the C182 pilot about the proposed departure of the DHC8 and the DHC8 pilot was subsequently cleared for take-off at 1129. The pilot of the C182, who had reported that he would be parachute dropping at 3500ft and 9000ft, was then issued with Traffic Information on the DHC8. Although realising that the DHC8 pilot should have been aware of Errol's activity from the ATIS, Civil ATC members were surprised that the controller had not also warned him about this activity prior to clearing him for take-off. This would have reinforced the need for the crew to brief themselves about their route in order to avoid the parachute site. Shortly after departure, the controller advised the DHC8 pilot about the C182 operating south-west at 3500ft. climbing to 9000ft. The Board noted that no mention was made that the C182 would be dropping parachutists. ATC members opined that this was another lost opportunity to warn the DHC8 pilot of Errol's activity, and not specifically mentioning Errol's status to the DHC8 pilot was considered to be a contributory factor. After both pilots had reported visual with each other, the controller could reasonably expect them to conduct their own collision avoidance in accordance with Class G rules of the air and the DHC8 pilot was instructed to maintain visual contact with the C182 and to contact Scottish Control; on first contact with Scottish he reported a TCAS RA.

The Board then turned to the actions of the DHC8 pilot. The Dundee ATIS had informed him that Errol parachute site was active but some members wondered whether the DHC pilot would have been aware of Errol's exact location. Recognising that the DHC8 was operating an IFR flight, Airline Pilot members confirmed that the crew would not have been utilising a VFR chart, which would have shown its location. That being said, an Airline Pilot member who was familiar with the Company's Ops Manual was able to brief the Board that it did warn of a parachuting site 6nm south-west of Dundee airport; notwithstanding, it was not known if this information had been discussed by the crew in their briefing prior to departure. The Board noted that although the Errol parachute site was notified in the UK AIP, the Dundee instrument charts did not show the presence of Errol, although other local airfields were displayed, or make mention of it in their UK AIP entry. Accordingly, the Board decided to make a recommendation that Dundee ATC include Errol airfield parachuting site details in their AIP entry and on their instrument procedure plates in order to alert pilots flying under IFR to its presence. Nevertheless, the Board opined that, having been warned about it on the ATIS, if the crew were still not aware of Errol's location, it would have been prudent to have asked ATC or their handling agents for its position. Notwithstanding the potential uncertainty about Errol's location, the Board noted that the DHC8 crew was visual with the C182 throughout, but that they seemed task-focused on maintaining their track towards NATEB rather than taking timely and effective action to

avoid the C182 which was on their right as they effectively overtook during their left-hand turn; irrespective of their IFR clearance, in Class G airspace they were required to give way to the C182.

For his part, the C182 pilot was conducting parachute dropping operations and was climbing near the Errol DZ to release his next task. The Board noted that he also had the DHC8 in sight, and some members wondered whether he also should have taken steps to reduce the risk of collision irrespective of the fact that the DHC8 pilot was required to give way to him. It appeared to the Board that the C182 pilot may have thought that, having promulgated the parachuting operation, he was therefore afforded a degree of protection that he did not in fact have. Although good airmanship would include the avoidance of active parachuting sites, there was no 'zone' as such and so the DHC8 was not required to avoid Errol per se.

The Board noted that the parachutist, who had exited the C182 at 3500ft, had been concerned that the DHC8 had passed over the parachute site when he had been dropping through 2000-3000ft. He reported that he had had not seen the DHC8 but had been informed of its presence after landing. Radar recordings show that at the time the DHC8 was passing about 4000ft. Fortuitously, there was no risk of a collision between the DHC8 and the parachutist.

The Board then looked at the barriers that were relevant to this Airprox and decided that the following were key contributory factors:

- **Airspace Design and Procedures** was considered **ineffective** because there was no standard IFR departure route to the south-east that would ensure that outbound aircraft avoided the Errol parachute site. Also the location of Errol is not included on the Dundee instrument charts.

- **Flight Crew Pre-Flight Planning** was considered to be **partially available** and **partially effective.** The crew were informed that Errol parachute site was active but on the charts available to them its location was not displayed. The crew did not appear to have pre-flight planned their routeing to avoid the site.

- **Flight Crew Situational Awareness** was only **partially effective** because although the DHC8 crew were aware of the presence of the C182, they had not been informed that it was carrying out parachute dropping and would be circling in the Errol area.

- **Onboard Warning/Collision Avoidance Equipment** was **partially available** because only the DHC8 was equipped with TCAS. Nevertheless, it was **fully effective** because it provided the DHC8 pilot with a TCAS RA against the C182.

- **See and Avoid** was only **partially effective** because, although both pilots saw each other, the DHC8 pilot did not act to avoid the C182 by a sufficient margin.

The Board then turned its attention to the cause and risk of the Airprox. The Board noted that the DHC8 crew had flown close to a promulgated and active parachuting site and this was considered to be a contributory factor; although they had been informed about the presence of the C182, they had not been warned that it was carrying out a parachute flight and would likely be circling in that location. Notwithstanding, Board members agreed that when they had achieved a visual sighting of the C182, they should have discontinued their routeing to NATEB and should have taken up a track to avoid the C182. Accordingly, the Board agreed that the cause of the Airprox was that the DHC8 pilot flew into conflict with the C182. Nevertheless, turning to the risk, and bearing in mind that both pilots had visual contact with the other aircraft and the DHC8 pilot had received a TCAS RA, the Board considered that there had been no risk of a collision. Accordingly, they therefore assessed the risk as Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The DHC8 pilot flew into conflict with the C182.

Contributory Factors: 1. The DHC8 pilot flew close to a promulgated and active parachute site.

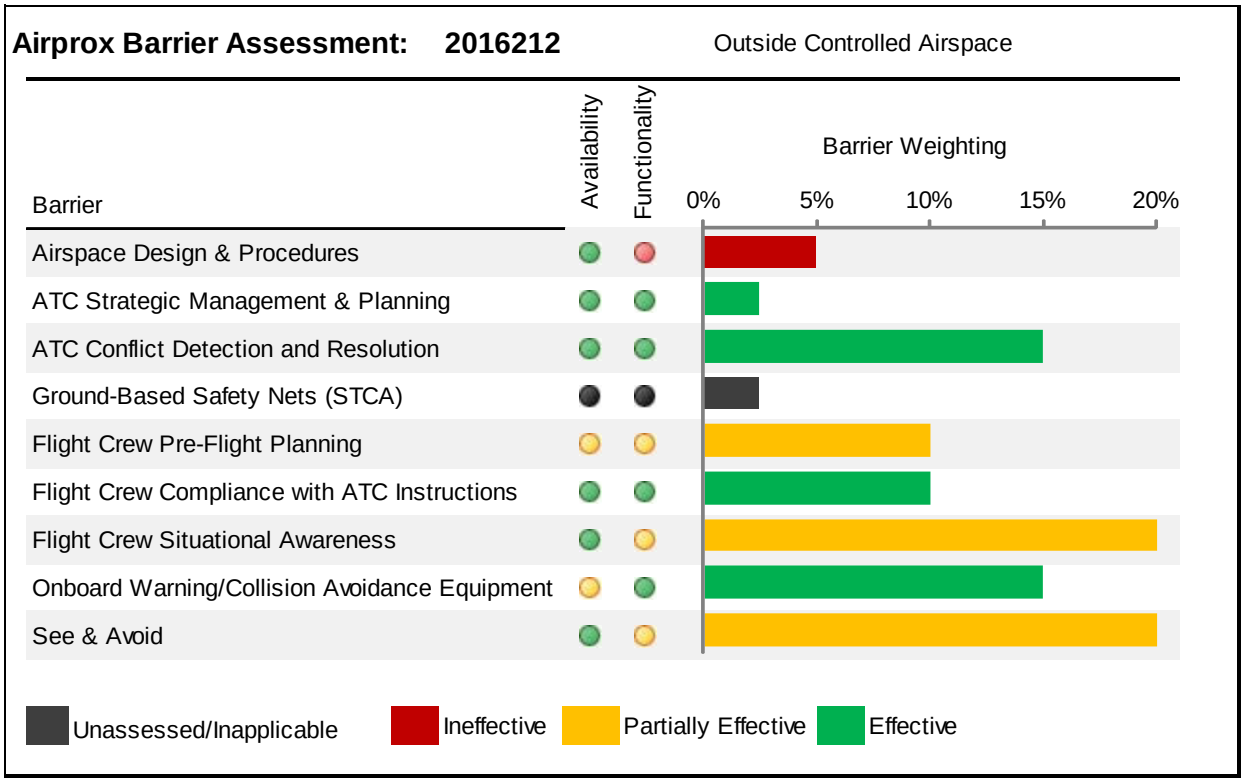
2. ATC did not specifically mention Errol's status to the DHC8 pilot.

Degree of Risk: C.

Recommendation: Dundee ATC include Errol airfield parachuting site details in their AIP entry and on their instrument procedure plates.

Barrier assessment:

Modern safety management processes employ the concept of safety barriers that prevent contributory factors or human errors from developing into accidents. Based on work by EASA, CAA, MAA and UKAB, the following table depicts the barriers associated with preventing mid-air-collisions. The length of each bar represents the barrier's weighting or importance (out of a total of 100%) for the type of airspace in which the Airprox occurred (i.e. Controlled Airspace or Uncontrolled Airspace).[6] The colour of each bar represents the Board's assessment of the effectiveness of the associated barrier in this incident (either Fully Effective, Partially Effective, Ineffective, or Unassessed/Inapplicable). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident.



[6] Barrier weighting is subjective and is based on the judgement of a subject matter expert panel of aviators and air traffic controllers who conducted a workshop for the UKAB and CAA on barrier weighting in each designation of airspace.