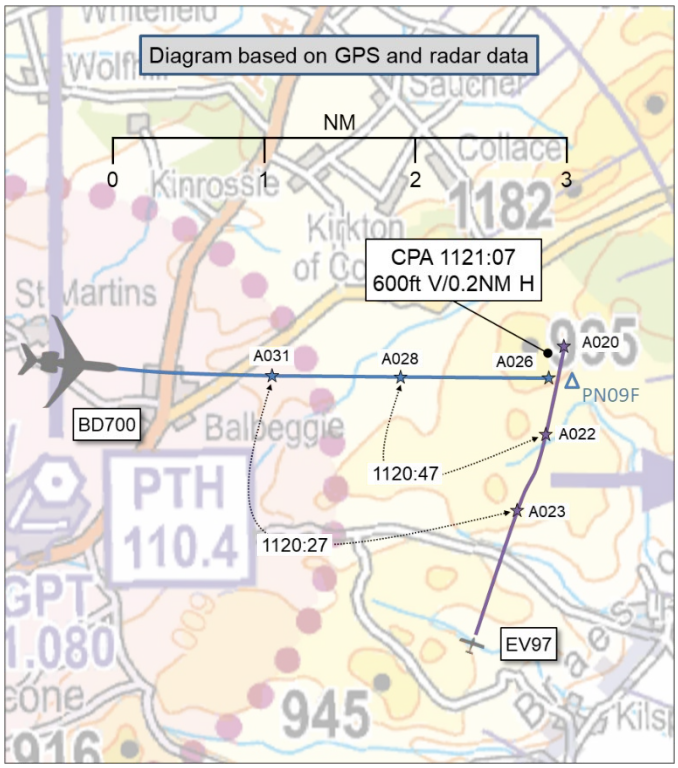
AIRPROX REPORT No 2024292

Date: 28 Nov 2024 Time: 1121Z Position: 5627N 00316W Location: 8NM W Dundee

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	BD700	EV97
Operator	Civ Comm	Civ FW
Airspace	Scottish FIR	Scottish FIR
Class	G	G
Rules	IFR	VFR
Service	Procedural	Basic
Provider	Dundee Tower	Scottish Information
Altitude/FL	2600ft	2000ft
Transponder	A, C, S+	A, C, S
Reported		
Colours	White, blue	Grey
Lighting	"*All lights on*"	None
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1600ft	2300ft
Altimeter	QNH (1027hPa)	QNH (1027hPa)
Heading	092°	010°
Speed	115kt	90kt
ACAS/TAS	TCAS II	PilotAware
Alert	RA	NR
Separation at CPA		
Reported	500ft V/0m H	1000ft V/1000m H
Recorded	600ft V/0.2NM H	



THE DUNDEE CONTROLLER reports that the pilot of [the BD700] reported a TCAS RA inbound to Dundee while carrying out an RNP approach to RW09, having been coordinated with Leuchars Radar and liaison with Perth Air/Ground. They had misunderstood the call from the pilot who appeared to be at PN09F, and cleared the aircraft to land. The [pilot of the BD700] levelled and then continued the descent to land safely at Dundee with no further incident.

Scanning the approach using binoculars, they had noticed a light-aircraft passing northbound through the instrument approach to RW09. This aircraft appeared to be at a similar level to the [BD700] however, they were sure that the aircraft was behind and to the north. A call was made to the Perth Air/Ground operator who stated that they were not working an aircraft in that position. Later, reference was made to FlightRadar24 and [the EV97] was noted as being in the same position, tracking north at the time [the BD700] had been on final approach. A call was made to the Scottish Information FISO who confirmed that they had been working [the EV97 pilot and they] had left the frequency to Safetycom [after the Airprox].

[The Dundee controller] spoke to the Captain of [the BD700] after landing who told them that the aircraft's TCAS had warned them of traffic 600ft below and the subsequent RA instructed the crew to level-off before continuing the descent to Dundee. They also said that the RNP procedure was being flown slightly higher than profile at the point of the TCAS RA.

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

THE BD700 PILOT reports that, during an approach into Dundee in uncontrolled airspace with quite a lot of VFR traffic around, they had planned for the ILS RW09. This was changed by ATC at the last minute to the RNP RW09 due to the dense VFR traffic and coverage during RNP procedures [they believe]. They commenced a descent from 3400ft to 2500ft (Final Approach Altitude).

Established on the approach at 1600ft AGL, they had a "TRAFFIC TRAFFIC" [annunciation]. Their response and crew coordination was as per [company] SOPs. They had their hands on the controls and ready to intervene. Shortly afterwards, they saw an aircraft penetrating their descent profile and they received a TCAS RA to "MONITOR VERTICAL SPEED" which had them levelling-off for a moment. They were in VMC and clear skies and, after they were Clear of Conflict, decided to continue the approach visually for a normal landing on RW09.

After landing, ATC called them up to the control tower. The traffic had taken-off from a VFR airfield called Perth [they believed], which is close by, but the airport was not staffed at that time and nobody had known that this aircraft was around.

[The pilot of the BD700 opined that,] flying in uncontrolled airspace with a Deconfliction Service[1] in VMC and with a lot of VFR traffic, always puts the crew of a commercial jet on alert. They were well aware that the traffic could be a factor as they could see the trajectory. The TCAS RA [actions] were very calm and organised and not conducted out of a surprise moment.

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

THE EV97 PILOT reports that the other aircraft was approximately 1000ft above them and first seen in their 10 o'clock with an opening bearing. They continued and landed at [their destination airfield]. [The pilot of the EV97 opined that] there was no danger to either aircraft.

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

Factual Background

The weather at Dundee was recorded as follows:

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METAR EGPN 281120Z 27001KT CAVOK M00/M02 Q1028
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Analysis and Investigation

Dundee Airport Unit Investigation

[The pilot of the BD700] was carrying out the RNP procedure to RW09 via IAF IVGEX. Soon after the flight crew reported established on the final approach track, they reported a TCAS RA against unknown traffic. The Dundee controller misheard this report and issued a landing clearance for the flight. The flight crew acknowledged the landing clearance and re-iterated the TCAS RA report. The controller did not acknowledge this on the RT but did attempt to observe the traffic that had caused the TCAS [alert] as there were no other aircraft in the vicinity on the Dundee frequency. The controller did notice a light aircraft to the west of the airport at a similar level to the BD700, but it appeared to be behind and to the north of the approach traffic.

The [BD700] landed on RW09 without further incident. The controller later referenced FlightRadar24 to attempt to identify the aircraft and it appeared to be an EV97. This was confirmed by Scottish Information who were in RT contact with [the pilot of the EV97] at the time of the incident and stated that the aircraft had departed [take-off airfield] to [their destination]. They also stated that the aircraft left their frequency at 1128 to the Safetycom frequency. The Dundee controller spoke to the captain of [the BD700] who stated that TCAS warned them of traffic 600ft below them and the subsequent RA instructed them to level-off before continuing descent to land at Dundee. The captain also stated that the procedure was being flown slightly higher than the published approach profile at the time of the TCAS RA.

[1] The pilot of the BD700 had been in receipt of a Procedural Service from the Dundee controller.

Sequence of events:

1059 Telephone call from Leuchars LARS to Dundee ATC co-ordinating arrival of [the BD700] via IVGEX.

1116 [The pilot of the BD700] established RT contact with Dundee Approach.

1116 [The pilot of the BD700] reported passing IVGEX.

1120 [The pilot of the BD700] reported established on the RNP for RW09.

1121 [The pilot of the BD700] reported a TCAS RA. The response from the controller was to issue landing clearance.

1121 Crew read back landing clearance and repeated that they had a TCAS RA. No response from the controller.

1125 [The pilot of the BD700] landed on RW09 and was instructed to vacate via holding point Alpha and park with the marshallers on stand one.

1212 Initial telephone call made to Scottish FIS by the Dundee controller. Scottish FISO was very busy and recommended to call back later.

1217 Telephone call to Dundee ATC from Scottish FISO confirming they had worked [the pilot of the EV97 who] had free-called the Safetycom frequency at 1128.

Analysis:

Prior to [the pilot of the BD700] establishing communications with Dundee ATC, the Dundee controller had completed a co-ordination call from Leuchars LARS for the aircraft to route to IVGEX for the RNP Approach to RW09. When the crew of [the BD700] established communication with Dundee Approach they were already over IVGEX and requested vectors for the approach. The Dundee controller stated that Dundee was a non-radar unit, offered the crew a Procedural Service and cleared the aircraft for an RNP approach to RW09. The crew acknowledged the clearance by stating that they had planned for an ILS approach but would then amend that plan for the RNP approach. The controller stated that they could not clear the flight for the ILS approach from the RNP IAF.

The duty runway at that time was RW27 but, as the surface wind was extremely light, the controller asked the crew if they could accept RW09 for landing with the light wind. The crew confirmed that they could accept RW09 for landing. After confirming a descent query from the crew, the controller requested a report of passing the final approach fix. Shortly after that request was acknowledged, the crew made a very short transmission stating they had received a TCAS RA. The controller misheard that report and, assuming that the aircraft was passing the final approach fix, issued landing clearance. The crew acknowledged the landing clearance and reiterated that they had had a TCAS RA. No acknowledgement was made by the controller. The next transmission from ATC was after [the BD700] had landed and the controller then issued taxy instructions for parking. The controller, in a subsequent statement, acknowledged that they had mis-heard the TCAS RA call and had assumed that the aircraft was passing the final approach fix. On receiving the second TCAS RA message included in the landing clearance acknowledgement, the controller used binoculars to scan the approach area and did observe an aircraft which appeared to be at a similar level to the [BD700], however, it was believed to be behind and to the north of the approach traffic. The controller telephoned Perth Air/Ground to request if they were working the traffic transiting to the north but they stated they were not.

As a note, the Perth Air/Ground Operator stated that they believed the unknown aircraft was [EV97 C/S], which they had ascertained by looking at an ADS-B flight tracking website. The controller, when away from the operational position, later referenced the website Flightradar24 and observed the track of [the EV97] flying northbound and passing ahead of [the BD700] on the approach. The controller telephoned Scottish FIS to ascertain if they were working [the EV97] and, after the second call to FIS (due to FIS being extremely busy) did receive confirmation that the aircraft was in communication with them at the time of the incident.

As per the Letter of Agreement (LoA) between Dundee ATC and Perth Air/Ground, it is Dundee ATC's responsibility to contact Perth ATC prior to an aircraft carrying out an instrument approach onto RW09 at Dundee, to ascertain if Perth have any aircraft in the vicinity that may be [relevant] traffic. On this occasion, this was completed by Dundee ATC and the Perth AGO stated that they had no traffic to affect.

When the crew [of the BD700] established communication with Dundee ATC, they were anticipating radar vectors to the ILS for Dundee rather than a purely procedural RNP approach. They did quickly convert to the standard RNP approach as published though did state on the RT the levels they would descend to at specific points as if to re-confirm they were following the correct descent procedure. In a conversation with the controller in the VCR after the incident, the commander of the aircraft stated that they had received a TCAS notification of traffic 600ft below them and subsequently a TCAS RA instructing the crew to level-off. The aircraft was quickly clear of the conflict and the crew continued their descent and landing at Dundee without further incident. The commander also stated that they were slightly higher than the standard approach profile at the time of the incident. As a final comment, the commander did not seem overly concerned by the TCAS RA, commenting that, as they regularly fly in the USA, they receive these warnings on a regular basis.

In a brief statement provided by the pilot [of the EV97], the flight had departed for a private site [due north of Dundee]. The pilot was in receipt of a Basic Service from Scottish FIS and, when passing to the east of the Perth ATZ, the pilot observed a jet-type aircraft in their 10 o'clock position at a higher level. This aircraft was crossing from west-to-east and the pilot assumed it was heading towards Dundee. The pilot considered that it was safe to continue their present course and observed the aircraft pass above and behind. At no point did the pilot consider that there was any danger to either aircraft.

As part of this investigation, a review of data from the ADSB-exchange website shows the closest position of [the EV97] to the threshold RW09 at Dundee was approximately 7.2NM. From the website, it can also be approximated that, at their closest point, [the BD700] and [the EV97] were 600ft vertically and 0.4NM horizontally apart. Dundee's instrument approaches are located outside controlled airspace. The RNP procedure for RW09 via IVGEX extends out to a point 12.9NM to the north-west of Dundee Airport and the procedure takes the aircraft just to the west and north of Perth Airport. At the approximate position of the Airprox, at around 7.5NM distance from Dundee, the approach level at that point is recommended as 2500ft.

CAA publication CAP1535 The Skyway Code states that:

> "VFR traffic operating near aerodromes outside controlled airspace should be aware that there may be IFR traffic using IAPs and should avoid crossing them at similar altitudes to that of the procedure, unless talking to the relevant ATSU. IAPs outside controlled airspace are indicated by 'feathered arrows'. Note the feathers only align with the main instrument runway. There may also be approaches to other runways. Pilots are recommended to contact the aerodrome ATSU if flying within 10 NM of an aerodrome marked with IAP feather".

The LoA between Dundee ATC and Perth Air/Ground states that one of the responsibilities of Dundee ATC is:

> "Whenever the Perth ATZ is notified as active, for the purposes of this agreement the published hours of operation constitute notification, the Dundee Duty ATCO will contact Perth A/G operator on [telephone number] to give warning of any traffic about to go out-bound from the DND with the intention of following an IAP or traffic intending to conduct an RNP procedure for RW09 at Dundee. This shall include the aircraft type and any other pertinent information".

The LoA also states that the Perth Air/Ground Operator is responsible for:

> "Upon receipt of a call from Dundee ATC regarding an imminent use of the Dundee IAP under the criteria outlined above, advise Dundee ATC of any traffic that may have direct relevance to the Dundee instrument

> traffic. Then make a general broadcast to any traffic in the vicinity of Perth operating on 121.080MHz notifying them of the Dundee traffic".

and:

> "Whenever the Perth A/G operator is aware of or has reason to believe that an aircraft may be pertinent traffic to aircraft carrying out the IAPs or RNP approaches into Dundee, with particular reference to aircraft known or suspected to be conducting the non-approved Perth IAP, then they should telephone Dundee ATC as a matter of operational urgency to advise them of the presence of that traffic so that deconfliction measures can be effected. Perth A/G will endeavour to confirm with aircraft operating on their frequency which may be transiting in close proximity to the Dundee ATZ or instrument approaches, that the aircraft has contacted Dundee ATC for any traffic information".

In this incident, the members of staff from both units followed the requirements of this LoA.

Dundee ATC is not provided with any form of electronic equipment that would enable the controller to observe the position of an aircraft in flight. The use of third-party websites such as 'Flightradar 24' and 'ADSB-Exchange' are not permitted to be used in an operational capacity by ATC. Several HIAL airports (including Dundee) are in the process of being equipped with a Flight Information Display System (FIDS) which utilises ADS-B signals from appropriately equipped aircraft and displays their position on a screen. This would not be a tool for the control of aircraft but to be used by the controller to improve their situational awareness of aircraft within the vicinity.

The [BD700] was equipped with ACAS and the crew received notification from this equipment of the potential threat posed by [the EV97]. The crew of [the BD700] stated that they received a TCAS RA which advised them to maintain level flight until they were clear of the conflict.

The only area of [regulated] airspace at Dundee is the Aerodrome Traffic Zone (ATZ). Much of the approach segment is flown in open FIR under Class G and therefore aircraft are generally operating under the "see and be seen rule" and are not obliged to contact any ATC unit.

Conclusion:

The Airprox was caused by the pilot of [the EV97] flying through the Dundee instrument approach procedure for RW09 and coming into close proximity with [the BD700] that was established on the final approach track of the RNP procedure for RW09. The pilot of [the EV97] was in RT communication with Scottish FIS and was being provided with a Basic Service at the time of the incident. Scottish FIS were extremely busy at that period, as was demonstrated by the fact that when the Dundee controller telephoned Scottish FIS to enquire about [the EV97], the line rang 11 times prior to being answered. Due to traffic, the operator was unable at that point to answer the Dundee controller's queries. The Scottish FIS operator would not have known about the existence of the traffic into Dundee nor would they have been able to prompt the pilot of [the EV97] to contact Dundee ATC prior to transiting. The Dundee controller could do little else in the situation as they were not aware of the presence of the transiting aircraft. The controller wrongly assumed that the crew of [the BD700] had passed the final approach fix when, in fact, they reported the TCAS RA, however, this had no bearing on the incident. There is a possibility that the Leuchars LARS controller could have observed the transiting aircraft but, as it was likely to be showing a Scottish FIS transponder code, it may well have been discounted. It is not known if the Leuchars LARS controller observed the traffic on radar.

It will be a recommendation that HIAL investigate the establishment of a larger area of controlled airspace in order to provide enhanced protection to aircraft carrying out instrument approach procedures at Dundee.

UKAB Secretariat

An analysis of the Dundee Approach frequency RT was undertaken. No declaration of an Airprox was made on frequency.

An analysis of the NATS radar replay was undertaken and both aircraft could be positively identified from Mode S data. The pilot of the EV97 kindly supplied GPS track data for their flight. It was by combining the various data sources that the diagram was constructed and the separation at CPA determined.

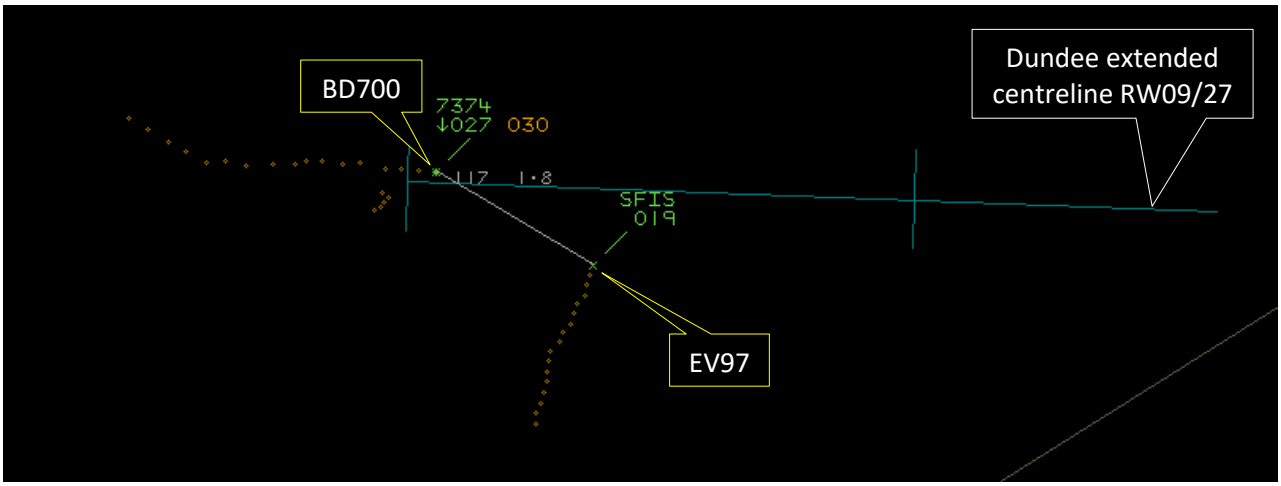

Figure 1 – 1120:27

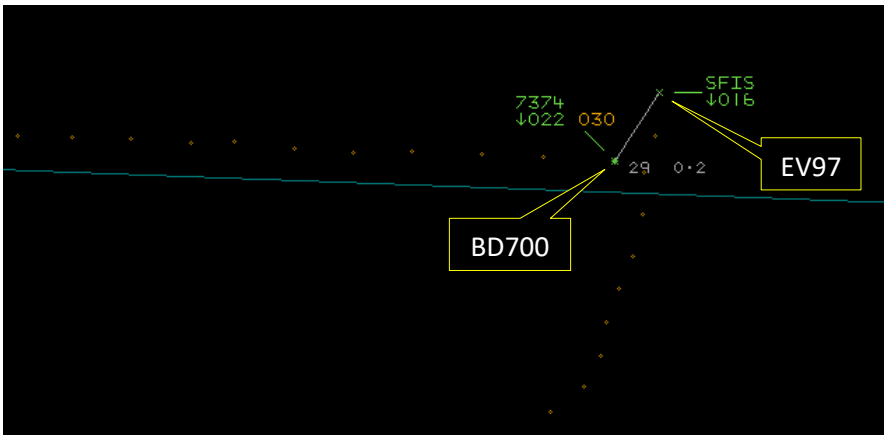

Figure 2 – CPA at 1121:07

The BD700 and EV97 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 BD700 pilot was required to give way to the EV97.[3]

Summary

An Airprox was reported when a BD700 and a EV97 flew into proximity 8NM west of Dundee at 1121Z on Thursday 28th November 2024. The BD700 pilot was operating under IFR in VMC in receipt of a Procedural Service from Dundee Approach, and the EV97 pilot was operating under VFR in VMC in receipt of a Basic Service from Scottish Information.

[2] (UK) SERA.3205 Proximity.
[3] (UK) SERA.3210 Right-of-way (c)(2) Converging.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, GPS track data for the flight of the EV97, a report from the Dundee controller involved and a report from the appropriate operating authority. 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 discussed the actions of the Dundee controller. Members noted that the flight of the BD700 had been coordinated with Leuchars Radar to route to IVGEX (13NM WNW of Dundee). It was also noted that, upon first contact with the Dundee controller, the pilot of the BD700 had requested radar vectors to the ILS for RW09. However, as Dundee is not radar-equipped, this had not been possible and members noted that the Dundee controller had offered an RNP approach to RW09 instead. Some members wondered why the Dundee controller had not suggested an RNP approach to RW27 given that the duty-runway had been RW27 at that time and that an approach from the east would have avoided the busier airspace to the west.

Members noted that the initial transmission made by the pilot of the BD700 to report the TCAS RA had been mis-heard and, indeed, noted from the RT recording that the transmission had seemed unintelligible. Nevertheless, when a second call had been made to inform the controller of the TCAS RA, the Dundee controller had used a pair of binoculars to scan the approach for traffic. Members agreed that the Dundee controller had not been aware of the presence of the EV97 until it had been visually acquired.

Turning their attention to the actions of the pilot of the BD700, members were in agreement that the TCAS fitted to the BD700 had detected the EV97 at distance and had subsequently provided a Resolution Advisory (RA) for collision avoidance. Nevertheless, members appreciated that to have received an RA during their approach had caused them concern.

Members next considered the actions of the Scottish Information FISO. Whilst it was noted that they had not been approached for a report on the incident, members agreed that they had not been required to have monitored the flight of the EV97 under the terms of a Basic Service and that there had been little that they could have done to have assisted matters.

Members next focussed on the actions of the pilot of the EV97. It was noted that the 'straight-line' track from their take-off airfield to their destination had taken them from south-to-north between the airfields of Perth and Dundee. Members noted that the pilot of the EV97 had been in receipt of a Basic Service from Scottish Information and recalled the guidance provided on VFR navigational charts that 'Pilots are strongly recommended to contact the aerodrome ATSU before flying within 10NM of any aerodrome marked with instrument approach feathers'. Members agreed that the pilot of the EV97 had therefore not contacted the most appropriate provider for their route. In consideration of the EC equipment fitted to the EV97, members agreed that the device would have been expected to have alerted to the presence of the BD700 but that no alert was reported. Consequently, members agreed that the pilot of the EV97 had not had situational awareness of the presence of the BD700 until it had been visually acquired.

Concluding their discussion, members were in agreement that, although the pilot of the EV97 had not contacted the Dundee controller when transiting through the area and had not been aware of the presence of the BD700 until sighted, other safety barriers had been present. Members agreed that the TCAS fitted to the BD700 had alerted the BD700 pilot in plenty of time to have visually acquired the EV97 and to have reacted to the TCAS RA. Members noted the separation between the aircraft at CPA, agreed that normal safety parameters for flight in Class G airspace had pertained and were satisfied that there had not been a risk of collision. The Board assigned Risk Category E to this event.

Members agreed on the following contributory factors:

CF1. The Scottish Information FISO had not been required to have monitored the flight of the EV97 under the terms of a Basic Service.

CF2. The Dundee controller had not had situational awareness of the presence of the EV97.

CF3. The pilot of the EV97 had not communicated with the Dundee controller when transiting within 10NM of the Dundee Instrument Approach Procedure 'feathers'.

CF4. The pilot of the EV97 had not had situational awareness of the presence of the BD700 until visually acquired.

CF5. The pilot of the BD700 had been concerned by the proximity of the EV97.

CF6. The TCAS equipment fitted to the BD700 had alerted to the presence of the EV97.

CF7. The EC device fitted to the EV97 would have been expected to have detected the presence of the BD700 but no alert was reported.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024292			
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	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			
	• Tactical Planning and Execution			
3	Human Factors	• Communications by Flight Crew with ANS	An event related to the communications between the flight crew and the air navigation service.	Pilot did not request appropriate ATS service or communicate with appropriate provider
	• Situational Awareness of the Conflicting Aircraft and Action			
4	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
5	Human Factors	• Unnecessary Action	Events involving flight crew performing an action that was not required	Pilot was concerned by the proximity of the other aircraft
	• 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	
7	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

Degree of Risk: E.

Safety Barrier Assessment[4]

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

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

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the Dundee controller had no situational awareness of the presence of the EV97 until after CPA.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because it had been strongly recommended for the pilot of the EV97 to have contacted the Dundee controller due to their proximity to the Instrument Approach Procedure 'feathers'.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the pilot of the EV97 had no situational awareness of the presence of the BD700 until it had been visually acquired.