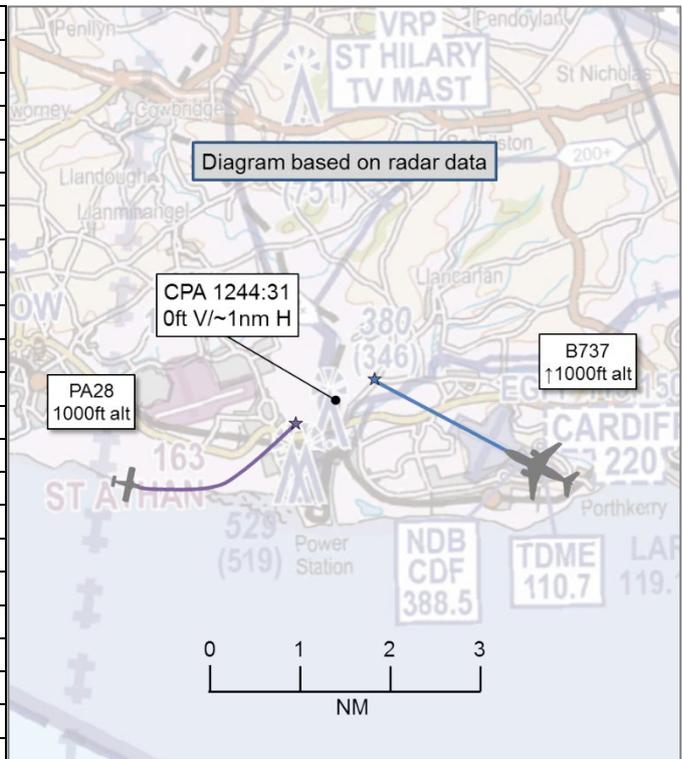


AIRPROX REPORT No 2019191

Date: 09 Jul 2019 Time: 1245Z Position: 5124N 00321W Location: Cardiff Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	B737	PA28
Operator	CAT	Civ FW
Airspace	Cardiff CTR	Cardiff CTR
Class	D	D
Rules	IFR	VFR
Service	ACS	ACS
Provider	Cardiff	Cardiff
Altitude/FL	1000ft	1000ft
Transponder	A,C,S	A,C,S
Reported		
Colours	Company	Red, white
Lighting		Strobes, nav
Conditions	VMC	VMC
Visibility	10km	
Altitude/FL	800ft	1000ft
Altimeter	QNH (1021hPa)	QFE (1013hPa)
Heading	298°	110°
Speed	180kt	90kt
ACAS/TAS	TCAS II	Not fitted
Alert	TA	N/A
Separation		
Reported	'Very close'	Not reported
Recorded	0ft V/~1nm H	



THE BOEING 737 PILOT reports that they were on a normal departure from Cardiff RW30. They heard the pilot of a light-aircraft [the PA28] on the R/T. He recalled hearing an aircraft being cleared to join left-hand downwind. As they went through approximately 800ft to commence flap retraction, they received a TA warning. He immediately looked out of his left window to see a PA28 very close, taking avoiding action. It was assumed that the pilot misheard Cardiff Tower and joined right-hand downwind. This would have resulted in him joining on crosswind, directly into their flightpath.

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

THE PIPER PA28 PILOT reports that he was re-joining the circuit via Nash Point due to poor visibility elsewhere. He was unfamiliar with the use of the deadside of the airport. He spotted traffic departing from RW30 and reported to the Tower that he had the traffic in sight. He was advised to turn right which he did immediately onto the deadside. He then conducted a standard left-hand circuit to land. He added that he conducted his PPL training at Cardiff, therefore he was used to being in the circuit with both civil and private traffic.

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

THE CARDIFF AERODROME CONTROLLER reports that the PA28 was inbound via Nash Point and working St Athan. A clearance was issued to St Athan for the aircraft to join downwind left-hand for RW30. The B737 was departing RW30. The PA28 was still inside the confines of the LFZ [Local Flying Zone] and no confliction existed. When the PA28 pilot was transferred to Cardiff the aircraft flew initially towards the climb-out of RW30. The PA28 pilot reported seeing the departing B737 'on the nose'.

THE ST ATHAN AERODROME CONTROLLER reports that the Cardiff Radar Controller called to coordinate the PA28 eastbound from Nash Point VRP along the coast inbound to Cardiff. (If he

recollected correctly he had a pending departure, so he elected to work the PA28). The Cardiff Radar controller gave the impression of being a little busy and asked that he gave the PA28 pilot his zone entry clearance which he did once the pilot came on the St Athan Tower frequency, this included to report passing south-abeam St Athan. When the pilot reported south-abeam St Athan he then coordinated the flight with the Cardiff Aerodrome Controller who, if he recollected correctly, accepted the flight without a requirement to hold. The Cardiff controller subsequently, in the same conversation following the acceptance of the PA28, gave a departure warning on a B737. As the PA28 had been coordinated to leave the LFZ and enter Cardiff ATC's airspace (and was effectively going to be operating in contravention of the LoA which requires aircraft operating under St Athan control to be operating south and west of the RW25/07 midpoint when an IFR aircraft is departing from RW30), he asked if he could clear the aircraft to join left-hand downwind for RW30 and was given approval to do so. This joining instruction was given to the pilot and, if memory served him correctly, the readback was incomplete and therefore he clarified that the instruction was to join left-hand downwind for RW30, to which he obtained a correct readback. He also recollected giving Traffic Information on the impending RW30 departure to the PA28 pilot. The pilot was then transferred to the Cardiff Tower frequency. Following this frequency transfer, he then observed the PA28 appear to turn, unusually for a RW30 joiner via Nash towards Cardiff airport and, not seeing what he would have expected to see, a following right turn to position downwind left-hand, he telephoned the Aerodrome controller to alert him to the PA28's position as the B737 became airborne.

Factual Background

The weather at Cardiff was recorded as follows:

METAR EGFF 091220Z AUTO 27010KT 9999 NCD 20/15 Q1021=

UKAB Secretariat

The B737 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 hazard¹. An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation².

St Athan Tower frequency recording

12:39:37 Aircraft – St. Athan Tower, [PA28 C/S], request inbound Cardiff, published VFR arrival via Nash Point for re-join.
ADC – [PA28 C/S], St. Athan, cleared published Nash Point arrival not above altitude 1500ft on the QNH 1021, report passing south-abeam St. Athan
Aircraft – Cleared for the published VFR arrival via Nash Point, not above altitude 1500ft, report abeam St. Athan [PA28 C/S]
ADC – [PA28 C/S]
ADC – And [PA28 C/S] report passing Nash
Aircraft – Reporting Nash [PA28 C/S]

12:40:41 Aircraft – [PA28 C/S] passing Nash Point
ADC – [PA28 C/S] Roger

12:42:38 Aircraft – [PA28 C/S] abeam St. Athan airfield
ADC – [PA28 C/S] roger (after co-ordination with Cardiff ADC)

12:42:50 ADC – [PA28 C/S] join downwind left-hand for runway 30 at Cardiff
Aircraft – Join downwind left-hand runway 30, [PA28 C/S]
ADC – [PA28 C/S] that's correct

12:43:34 Aircraft – [PA28 C/S] request frequency change to Cardiff Tower
ADC – [PA28 C/S] roger, traffic just about to depart from runway 30 at Cardiff is a Boeing 737, join downwind left-hand and contact Cardiff Tower 133.1

¹ SERA.3205 Proximity.

² SERA.3225 Operation on and in the Vicinity of an Aerodrome.

Aircraft – Contact Cardiff 133.1, roger the traffic [PA28 C/S]

NATS Cardiff Airport Investigation Report

The PA28 was operating a VFR 'local' flight, from Cardiff. The aircraft departed Cardiff at 1201 and was operating VFR to the west of Cardiff before returning to the airport. The B737 was an IFR flight operating from Cardiff.

ATCO 1 is the Cardiff Radar Controller.

ATCO 2 is the Cardiff Aerodrome Controller.

ATCO 3 is the St Athan Aerodrome Controller.

12:35:32 Cardiff Radar make a blind transmission to the PA28 pilot - ATCO 1: "[PA28 C/S], Cardiff"
 12:35:34 PA28: "Inbound, Request published VFR arrival via Nash Point, for rejoin."
 12:35:39 ATCO 1: " [PA28C/S] Roger, hold in your present position please, St Athan is active you needed to make that request way back. Orbit right please in present position."
 12:35:47 ATCO1: [PA28 C/S] Traffic information is an outbound [from St Athan] Cessna One Fifty just to the east of Nash Point 1200 feet. Orbit right now please.
 12:35:39 B737 "Tower, [B737 C/S], Stand 9, QNH 1021 Request push and start.
 ATCO 2: "[B737 C/S] <Unintelligible> Push and Start Approved.
 An incoming call is received by ATCO1 relating to different traffic and ATCO1 instructs the caller to standby.
 12:36:04 ATCO 1: [C150 [C/S] Traffic Information, 12 o clock, 1 mile, PA twenty eight same level.
 12:36:56 PA28 Traffic in sight [PA28 C/S].
 12:37:03 ATCO 1 telephones ATCO 3
 ATCO 1 "<General discussion about the prevailing traffic situation> and a PA28 orbiting at Nash.
 <General discussion relating to the 3642 Squawk> [They] would like to come along the coast, do you wish to work?
 ATCO 3 " I better because a Tutor pilot is about to call me for departure.
 ATCO 1 " OK, [PA28 C/S], PA Twenty Eight, Cardiff to Cardiff 3642 squawk"
 ATCO 3 "Ok to me, cleared through the LFZ eastbound."
 ATCO 1 "What I'll do is leave him in the orbit and give him to you to clear along"
 12:37:51 ATCO 1 "[PA28 C/S] remain outside Controlled Airspace, come further to the west, right on the edge there, to arrange your clearance contact St Athan one two two decimal 865.
 PA28 "[PA28 C/S] Roger one one two decimal one five"
 ATCO 1: "No, one two two decimal eight six five
 PA28: one two two decimal eight six five.
 12:38:52 ATCO 2 telephones ATCO 2
 ATCO 1 "[PA28 C/S <Situational Awareness Update> is going to come to you via Nash Point, but from St Athan."
 ATCO 2 "Right, I See, Cheers"
 12:39:37 [PA28 C/S "St. Athan Tower, [PA28 C/S] request inbound Cardiff, published VFR arrival via Nash Point for re-join.
 ATCO 3 "[PA28 C/S] St. Athan, cleared published Nash Point arrival not above altitude 1500ft on the QNH 1021, report passing south-abeam St. Athan
 PA28 "Cleared for the published VFR arrival via Nash Point, not above altitude 1500ft, report abeam St. Athan [PA28 C/S]
 ATCO 3 "[PA28 C/S] report passing Nash"
 PA28 "Reporting Nash [PA28 C/S]"



Figure 1 - 12:40:11.

- 12:40:12 B737 “[B737 C/S] request Taxi
ATCO 2 “ [B737 C/S] taxi holding point Alpha two
B737 “Holding Point Alpha [B737 C/S]
- 12:40:41 PA28 “[PA28 C/S] passing Nash Point
ATCO 3 “[PA28 C/S] Roger
- 12:40:51 ATCO3 Telephones ATCO 2
ATCO 2 “Cardiff Tower”
ATCO 3 “Request co-ordination, inbound to you, just reported passing Nash, [PA28 C/S], PA28 inbound to you.”
ATCO 2 “[PA28 C/S], yeah, co-ordinated
ATCO 3 “ Co-ordinated, I’ll give him to you South Abeam
ATCO 2 “Yeah Thanks, <ATCO 3s Name>
- 12:41:15 ATCO 2 telephones ATCO 1
ATCO 1 “Radar”
ATCO 2 “Tower, Checking [B737 C/S], EXMOR one Alpha
ATCO 1 “[B737 C/S] released
ATCO 2 “Released”



Figure 2 - 12:41:36.

- 12:41:36 ATCO 2 “[B737 C/S], Via Alpha one, Line up and Wait Three Zero
B737 “Via Alpha One line up and wait runway three zero, [B737 C/S].



Figure 3- 12:42:29.

- 12:42:29 ATCO 2 telephones ATCO 3
 ATCO 3 "St Athan Tower"
 ATCO 2 "Cardiff, Departure Warning Boeing seven three seven"
 ATCO 3 "We are secure, can I give this guy a joining clearance to join downwind left hand runway three zero"
 ATCO 2 "Yep, [PA28 C/S] join downwind left-hand and you're secure"
 ATCO 3 "OK, Cheers"
- 12:42:29 B737 "[B737 C/S] ready for departure"
 ATCO 2 "[B737 C/S], runway three zero, cleared for take off, surface wind two eight zero degree, nine knots.
 B737 "Cleared for take off [B737 C/S]."
- 12:42:38 [PA28 C/S] abeam St. Athan airfield
 ATCO 3 "[PA28 C/S] roger"
- 12:42:50 ATCO 3 "[PA28 C/S] join downwind left-hand for runway three zero at Cardiff"
 PA28 "Join downwind left-hand runway 30, [PA28 C/S]"
 ATCO 3 "[PA28 C/S]"



Figure 4 - 12:42:53.

12:43:34 PA28 “[PA28 C/S] request frequency change to Cardiff tower
 ATCO 3 “[PA28 C/S] roger, traffic just about to depart from runway three zero at Cardiff is a Boeing seven three seven, join downwind left-hand and contact Cardiff tower one three three decimal one.
 PA28 “Contact Cardiff One Three Three decimal one, roger the traffic [PA28 C/S]”



Figure 5 - 12:43:53.

12:44:01 ATCO 3 Telephones ATCO 2
 ATCO 2 “Cardiff Tower”
 ATCO 3 “ Just have a look, [PA28 C/S] I’ve just put him to you but can you <
 [PA28 C/S] contacts ATCO 2 on VHF>
 ATCO 2 “Yeah I’ll sort him out, I don’t know where he is going



Figure 6 - 12:44:06.

- 12:44:07 (During the previous telephone call) PA28: "Cardiff Tower, [PA28 C/S], inbound, published VFR arrival via Nash Point, request rejoin.
12:44:11 ATCO 2 "[PA28 C/S], report downwind left-hand Runway Three Zero QFE One Zero One



Figure 7 - 12:44:11.

- 12:44:21 PA28 "One Zero One Three, left-hand downwind and traffic in sight on the nose.



Figure 8 - 12:44:31.

- 12:44:29 ATCO 2 " [PA28 C/S], it shouldn't be on the nose, you should be joining the circuit at Cardiff downwind left-hand"
12:44:33 PA28 "Roger, downwind left-hand [PA28 C/S]"



Figure 9 - 12:44:51

- 12:44:52 ATCO 2 “[B737 C/S] Contact Cardiff Radar One two five decimal eight five five.
B737 “Cardiff Radar one two five decimal eight five five, [B737 C/S]”
- 12:45:00 B737 “And Cardiff Tower [B737 C/S]”
ATCO 2 “Yes, Pass your message”
B737 “On the left-hand side we got a Traffic Advisory we will be reporting an Airprox just for your information.”

The Cardiff Aerodrome controller reported that his plan was always for the PA28 to join left-hand downwind and this had been adequately co-ordinated with St Athan. This plan was considered to be a good plan, and when discussed with the OCA at Cardiff was considered to be a standard practice. Interestingly, the St Athan controller suggested that this co-ordination may have been in contravention of the Letter of Agreement between Cardiff and St Athan. The Letter of agreement states: “A.2.5.1.1 'St Athan Secure' is defined as when there is no traffic operating within the LFZ North or East of the runway 07/25 mid-point.” ATCO 2 did not consider that the aircraft would be operating any “tighter” than that and the St Athan ATCO conducted a coordination so as to ensure that the procedure was complied with.

ATCO 2 was also asked why Traffic Information was never passed. He stated that, “I never thought there would be a need, these aircraft were never traffic to each other. Even when he [PA28 pilot] turned towards the climb-out I could clearly see the aircraft out of the window and they were never going to get anywhere near each other.” The ATCO also stated that “These type of occurrences always look worse on radar, I was visual with these aircraft all the way through the incident and there was never any risk to either aircraft”.

In these circumstances, a minimum separation distance was not required as the Airprox was reported within Class D airspace. The requirement was for Traffic Information to be passed. (MATS 1 Section 1 Chapter 2). The actions of the pilot were unexpected by the ATCO. The MOAT was interviewed following the event because he had discussions with both the ATCO and the pilot after the event. The MOAT relayed that ATCO 2 had thought the pilot was positioning for a very tight downwind left-hand.

The MOAT relayed that the PA28 pilot's CFI had conducted a post incident review with the pilot immediately after landing. In this review, the CFI had ascertained that the pilot had never re-joined controlled airspace on this route before, nor had they ever re-joined to Cardiff RW30 from a left-hand circuit. The pilot reported that he did not even know you could, his plan was always to join right-hand downwind, somewhere between Cardiff and St Athan and, even though he may have readback “left-hand downwind” (he could not recall the readback) his plan was always to cross the climb out lane to join right-hand downwind for RW30.

The pilot of the PA28, attempted to join the RW30 circuit at the right-hand downwind position despite accepting a clearance of left-hand downwind. The pilot had planned to join right-hand downwind and to cross to the north of the airport somewhere between Cardiff and St Athan. The PA28 pilot's CFI considered that the pilot was of low-hours experience and this low level of experience or a training gap may have had an impact on the decision to cross the climb-out.

Whilst not contributory to the proximity of the two aircraft, there is a requirement, according to MATS 1, Section 1, Chapter 2, for Traffic Information to have been passed³. This was carried out by ATCO 3 about the B737 to the PA28 pilot but not by ATCO 2 about the PA28 to the B737 pilot. This was part of the plan of ATCO 2 because he did not consider they would be traffic. ATCO 2 reports that he was able to maintain visual reference with the two aircraft at all times throughout the incident, and that their relative trajectories were always such that the PA28 would pass behind the B737. The ATCO always felt as though he had further recovery options available to him if required.

St Athan Local Flying Zone (LFZ)⁴

'A portion of Cardiff CTR is delegated to St Athan ATC during certain VMC weather criteria to enable St Athan to operate autonomously within the St Athan Local Flying Zone (LFZ), (Figure 10) provided: aircraft are to be in communication with and comply with instructions from St Athan ATC. All aircraft are to conduct their flights within the weather criteria specified for VFR flights within Class D Airspace.

Maximum Altitude 1700ft Cardiff QNH (1500ft St Athan QFE).

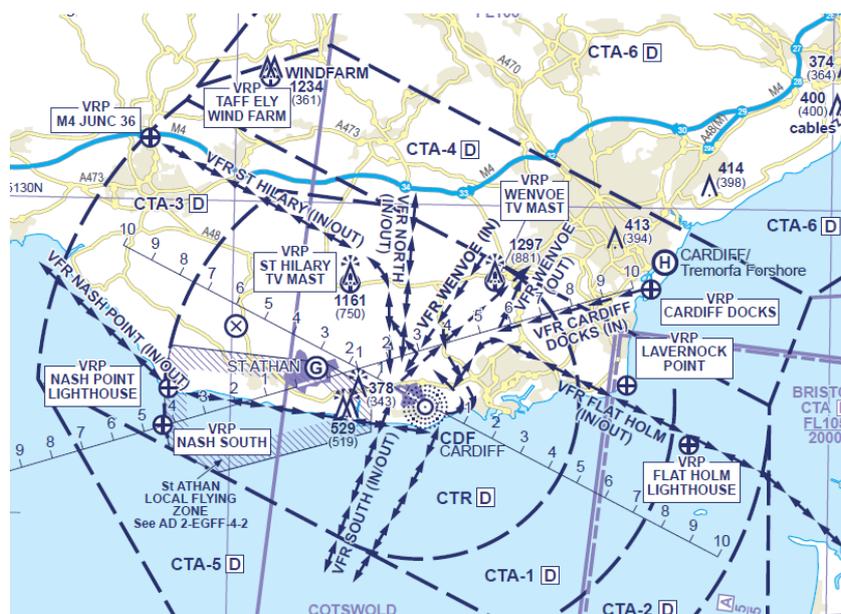


Figure 10. Cardiff Local Flying and Entry/Exit Points.⁵

Summary

An Airprox was reported when a B737 and a PA28 flew into proximity at Cardiff Airport at 1245hrs on Tuesday 9th July 2019. The B737 pilot, departing from Cardiff airport, was operating under IFR in VMC, the PA28 pilot, inbound to Cardiff, was operating under VFR in VMC. Both pilots were in receipt of an Aerodrome Control Service from Cardiff.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

³ Traffic information means information issued by an Air Traffic Services unit to alert a pilot to other known or observed air traffic which may be in proximity to the position or intended route of flight and to help the pilot avoid a collision; EU No 923/2012 Article-2 (132).

⁴ UKAIP Page EGSY AD 2.22.

⁵ UK AIP Page AD 2-EGFF-4-1.

Information available included reports from the pilots, the St Athan and Cardiff Aerodrome controllers, local radar and RTF recordings and reports from the appropriate ATC and operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

The Board first turned their attention to the actions of the PA28 pilot. He was inbound from the west to land at Cardiff airport and his route was the published VFR arrival via Nash Point because the weather elsewhere precluded using any other VFR inbound route. He had initially contacted Cardiff Radar but, because St Athan was active, the PA28 pilot was instructed to hold whilst coordination was agreed with St Athan Tower. Once his details had been passed, the PA28 pilot was then instructed to contact St Athan. The Cardiff Radar controller then advised the Aerodrome controller about the PA28, which would be approaching from Nash Point, initially with St Athan. On contact with St Athan the PA28 pilot was cleared for the VFR arrival routeing and was requested to report passing Nash Point and abeam St Athan airfield, where it had been agreed that he would be transferred to Cardiff.

Meanwhile the B737 was taxiing to Cardiff's RW30. In accordance with local procedures, Cardiff telephoned St Athan to warn them about the departing B737. During this call St Athan requested if they could issue the PA28 pilot with a clearance to join left-hand downwind to RW30. This was agreed. Controller members noted that the B737 pilot had been cleared for take-off before this join clearance had been passed to the PA28 pilot, and that the controller had reported that he considered that it was not necessary to pass Traffic Information because the clearance issued to the PA28 pilot should have ensured that the aircraft would not conflict with the B737. Although they understood why the controller might have come to this conclusion, the Board agreed that Traffic Information should have subsequently been passed to the B737 pilot concerning the PA28, as required in MATS Part 1 (**CF1/CF4**), both to allow for any potential mis-routing (as had happened in this case) and to reduce or eliminate any surprise to the B737 crew even if the PA28 had correctly followed his clearance.

When the PA28 pilot reported abeam St Athan airfield he was cleared to join downwind left-hand for RW30 at Cardiff, which was read-back correctly by the pilot. The PA28 pilot was advised about the B737 departing and was then transferred to Cardiff Tower, acknowledging the traffic. Shortly afterwards the St Athan controller becoming aware that the PA28 was not routeing as normal for left-hand downwind telephoned a warning to the Cardiff Aerodrome controller. The Board commended the St Athan controller for monitoring the PA28's progress after transferring it and then warning Cardiff. During the telephone call the PA28 pilot contacted Cardiff and was instructed to report left-hand downwind to RW30. Despite the warning from St Athan, it would appear that the Cardiff controller did not realise that the PA28 was not complying with his clearance and would be conflicting with the B737 (**CF2**). The PA28 pilot acknowledged the left-hand downwind and then reported having the B737 in sight 'on the nose'. The controller replied that it should not be on the nose because he should be joining downwind left-hand and, once again the PA28 pilot acknowledged the left-hand downwind. Members noted that the PA28 pilot reported that ATC had then instructed him to turn right, which he immediately did onto the 'deadside', but no such instruction was recorded on the frequency (**CF3**).

The Board then noted the comments made by the PA28 pilot's CFI to Cardiff ATC. He had conducted an interview with the PA28 pilot immediately after he had landed. The PA28 pilot had reported that he had never previously re-joined using the Nash Point arrival, nor had he joined RW30 from a left-hand circuit. He confirmed that his plan was always to join right-hand downwind somewhere between Cardiff and St Athan, and that his plan was to cross the RW30 climb-out lane for a right-hand circuit. The CFI added that the pilot was of low-hours experience and that this may have had an impact on his performance. It was apparent to the Board that the PA28 pilot had become so task-focused on a right-hand downwind join that, even though he had acknowledged the left-hand downwind join instructions he had not assimilated them. As a result, he had not followed ATC instructions as required in Class D airspace (**CF5/6/7**); did not conform with the pattern of traffic already formed (**CF8/11**); and had not communicated his intentions to join right-hand downwind as he approached the airfield (**CF9**). Ultimately, although being advised about the departing B737, he did not assimilate the conflict information and continued towards its departure path (**CF10**), thereby flying close enough to the B737 to trigger a TCAS TA (**CF12**) which cause its pilot concern (**CF13**).

Turning to the risk, members noted that at CPA the aircraft were at the same level and about 1nm apart. Although closer than desirable, members noted that the PA28 pilot had seen the B737 departing and that, although the B737 pilot reported that he had only seen the PA28 late, he believed that its pilot was taking avoiding action at the time. Because the PA28 pilot had visual contact with the B737, the Board judged that although safety had been degraded by the close proximity of the aircraft, there had been no risk of a collision. Accordingly, the Airprox was assessed as risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2019191		
CF	Factor	Description	Amplification
	Ground Elements		
	• Regulations, Processes, Procedures and Compliance		
1	Human Factors	• ATM Regulatory Deviation	Regulations and/or procedures not complied with
	• Situational Awareness and Action		
2	Human Factors	• Conflict Detection - Detected Late	
3	Human Factors	• Conflict Resolution - Provided Late	
4	Human Factors	• Traffic Management Information Provision	Not provided, inaccurate, inadequate, or late
	Flight Elements		
	• Regulations, Processes, Procedures and Compliance		
5	Human Factors	• Flight Crew ATM Procedure Deviation	Regulations/procedures not complied with
	• Tactical Planning and Execution		
6	Human Factors	• Action Performed Incorrectly	Incorrect or ineffective execution
7	Human Factors	• Action Performed Incorrectly	Did not follow instructions
8	Human Factors	• Aircraft Navigation	Did not avoid/conform with the pattern of traffic already formed
9	Human Factors	• Accuracy of Communication	Ineffective communication of intentions
	• Situational Awareness of the Conflicting Aircraft and Action		
10	Human Factors	• Understanding/Comprehension	Pilot did not assimilate conflict information
11	Human Factors	• Monitoring of Other Aircraft	Pilot did not sufficiently integrate with the other aircraft
	• Electronic Warning System Operation and Compliance		
12	Contextual	• ACAS/TCAS TA	TCAS TA / CWS indication
	• See and Avoid		
13	Human Factors	• Lack of Action	Pilot flew close enough to cause the other pilot concern

Degree of Risk:

C

Safety Barrier Assessment⁶

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

Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the Cardiff controller did not pass Traffic Information about the PA28 to the B737 pilot.

Situational Awareness of the Confliction and Action were assessed as **partially effective** because the Cardiff controller detected and resolved the conflict late, and also did not pass Traffic Information about the PA28 to the B737 pilot.

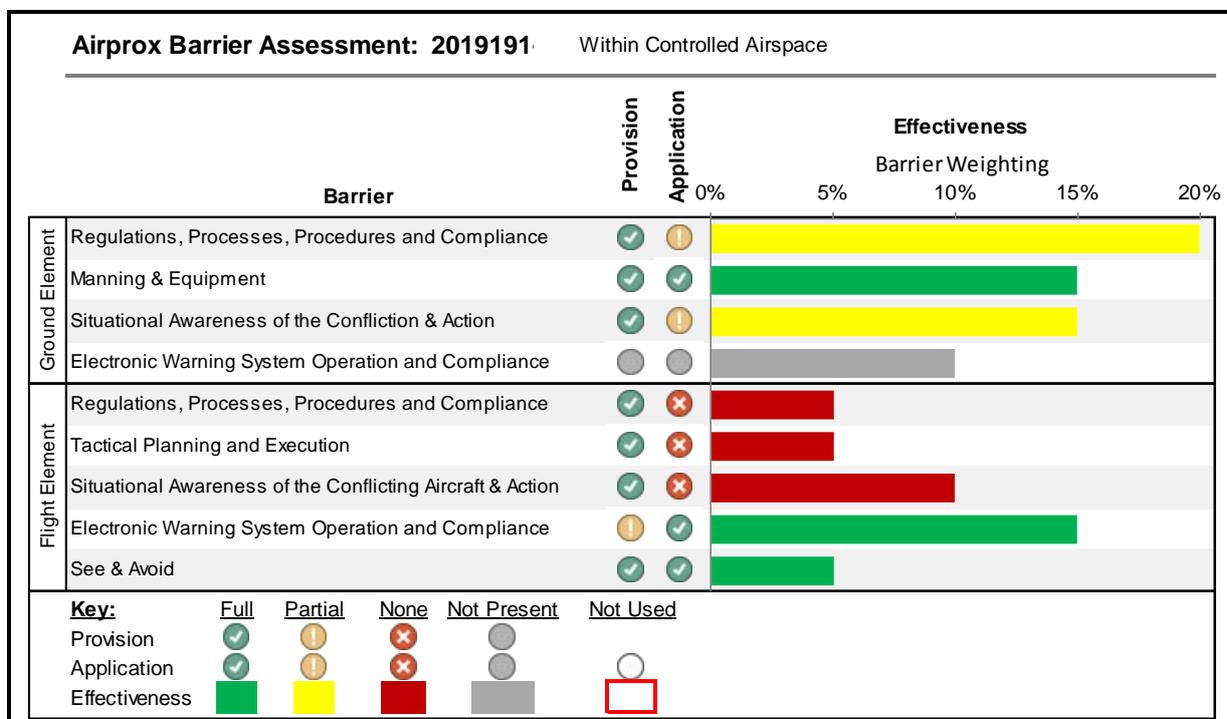
Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the PA28 pilot did not comply with his ATC clearance, as required within Class D airspace.

Tactical Planning and Execution was assessed as **ineffective** because the PA28 pilot was not aware of the correct VFR routeing from Nash point inbound to Cardiff airport to join a left-hand circuit to RW30.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the PA28 pilot, although being aware of the B737 departing, did not act upon the information. Also, the B737 pilot was not informed about the presence of the PA28.

Electronic Warning System Operation and Compliance were assessed as **partially available** because only the B737 was equipped with an electronic warning system.



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