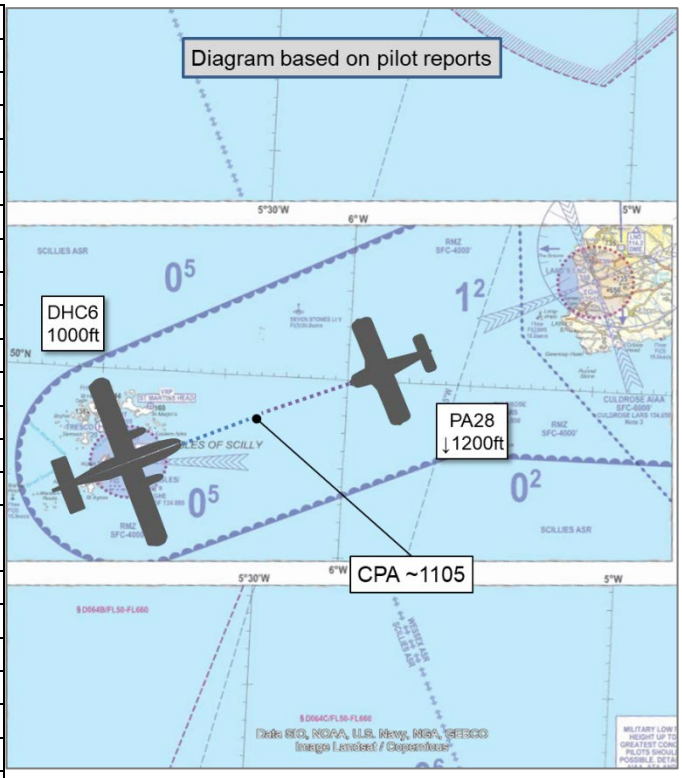
AIRPROX REPORT No 2021141

Date: 09 Aug 2021 Time: 1105Z Position: 4959N 00609W Location: 8NM E St Mary's, Scilly Isles

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DHC6	PA28
Operator	Civ Comm	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic
Provider	Scillies Approach	Scillies Approach
Altitude/FL	NK	NK
Transponder	NK[1]	NK[2]
Reported		
Colours	White	White, Blue, Red
Lighting	Anti-col, Nav	Beacon
Conditions	VMC	VMC
Visibility	5-10km	5-10km
Altitude/FL	1000ft	'descending from1500ft'
Altimeter	QNH (1013hPa)	QNH (1013hPa)
Heading	065°	245°
Speed	140kt	105kt
ACAS/TAS	TAS	Not fitted
Alert	None	N/A
Separation at CPA		
Reported	50ft V/0.25NM H	200ft V/0.1NM H
Recorded	NK	



THE DHC6 PILOT reports they had departed St Mary's and were routing at standard corridor altitude eastbound of 1000ft. They were aware of opposite traffic at the westbound standard altitude of 1500ft. There was a scattered cloud base just above 1000ft. The opposite aircraft requested descent and ATC asked both to confirm DME, they reported 22D LND at 1000ft and the PA28 pilot gave 17D LND. ATC told the other pilot that the DHC6 was the only traffic to affect their descent and they descended anyway without confirming that they were leaving 1500ft. The other aircraft was not transponding so was not showing on the TAS. They both saw each other very late due to cloud at similar altitude between them and took evasive action. The DHC6 pilot reported it immediately to ATC who stated they thought the opposite aircraft had reported 22D also. The pilot opined that they clearly heard the PA28 pilot report 17D. The opposite aircraft must have taken the ATC advice that they were the only traffic to affect as clearance to descend anyway. They judged the risk of collision as extremely high especially with the late sighting.

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

THE PA28 PILOT reports they were at 1500ft on 1013 QNH. They followed the 245° radial on their VOR from the LND to navigate to the islands. Two to three miles after the "midpoint" (17 DME from LND) they were approaching cloud with an estimated base of 1200ft, so they called ATC on Scilly to request a descent to 1200ft to maintain VFR. ATC Scilly requested the DME of the opposite direction Twin Otter traffic, who they recalled confirmed 22 DME. ATC Scilly approved their request and they descended to 1200ft QNH as directed. Upon reaching 1200ft they saw the opposite direction Otter traffic below them and slightly to their left hand side, and they turned to the right to increase the distance between the aircraft. They called ATC Scilly to confirm they had become visual with the Otter. Because

[1] A, C, S reported but not seen on the NATS radars.
[2] A, C reported but not seen on the NATS radars.

of cloud between them and the Otter they were not visual with the other aircraft until they had reached the lower altitude. The other pilot called ATC Scilly to confirm they would be "calling it in", stating that the two aircraft had been very close. ATC Scilly asked them to confirm they were transponder-equipped. They confirmed that they were and checked it was set to ALT mode. It was. To their knowledge the transponder was operational (they had squawked 1747 for Newquay Radar earlier that day and were not advised there had been a problem), but understand that they were not registering on the Twin Otter's collision avoidance system.

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

THE SCILLIES APPROACH CONTROLLER reports they arrived in the control tower around 1050z to take over the watch. The handover went smoothly. A PA28 was inbound VFR at altitude 1500ft for RW27 and just through 10 DME under a Basic Service. At 1100z the outgoing controller issued take-off clearance from RW32 to a departing DHC6 turning right eastbound to altitude 1000ft VFR; the aircraft departed. The outgoing controller mentioned that both pilots were aware of each other due to Traffic Information they had passed and the flight progress strips indicated this also. They both signed the watch log and the outgoing controller left the tower for their break. The DHC6 reported level at 1000ft and was given a Basic Service. A short time later the PA28 pilot requested to descend to 1200ft, the controller told the pilot to standby and asked the DHC6 pilot for their DME and they replied 22DME, they told [PA28 C/S] that that was the traffic and that there was no other traffic to affect a descent to altitude 1200ft. A short time later the DHC6 pilot reported seeing the PA28 in their 12 o'clock and had passed by very close. [PA28 C/S] landed RW27 a few minutes later without comment. [DHC6 C/S] continued en-route.

Factual Background

The weather at St Mary's was recorded as follows:

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EGHE 091050Z 23013KT 9999 FEW010 SCT020 18/16 Q1013=
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Analysis and Investigation

CAA ATSI

ATSI had access to initial occurrence reports from the pilots of both aircraft and the St Mary's controller, as well as an investigation report from St Mary's ATC. The Area Radar recordings were reviewed for the period, however due to the level of the aircraft and the poor low-level radar cover in the area of the Airprox, the aircraft did not display on the area radar. The St Mary's RTF was reviewed for the period. The RTF loading in the lead up to the event was low.

At 1048:50 the DHC6 pilot called the controller for engine start and departure to [destination] at 1000ft, with 16 passengers plus 2 crew onboard. The controller responded, *"start with the ground crew, RW27 in use, surface wind 240 degrees at 13 knots, temp plus 18, QNH 1013."* The pilot read back*, "start approved with the ground crew, request RW32 and 1013."* The controller acknowledged the request for RW32.

At 1052:30 the DHC6 pilot requested taxi instructions for RW32 and was instructed to taxi to holding point Alpha initially due to landing traffic. At 1055:30 the DHC6 was instructed to line up RW32.

At 1055:40 the DHC6 pilot was instructed to taxi to the holding point for RW27. At 1056:50 the DHC6 pilot was given clearance to cross RW27 and backtrack and line up RW32.

At 1058:10 the PA28 pilot made initial RT contact with the controller using just their callsign, and the controller responded with, *"Basic Service, RW27 in use, surface wind 230 degrees 13 knots, QNH 1013."* The pilot read back, *"RW27, 17 DME next and Basic Service."*

At 1058:50 the controller passed the QNH of 1013 again to the PA28 pilot and instructed the pilot to *"report before any change in altitude from 1500 feet."* The pilot responded, *"report before changing altitude."* The QNH was then passed again and read back by the pilot.

At 1059:00 the DHC6 pilot reported ready for departure. The controller responded with, *"opposite direction traffic just through 10 DME, a PA28 altitude 1500 feet."* The pilot advised that they'd copied the traffic and the controller responded, *"climbing to altitude 1000 feet, RW32 surface wind 230 degrees 13 knots, cleared for take-off."* The pilot read back, *"cleared for take-off RW32 climbing altitude 1000 feet."*

At 1059:40 the controller passed Traffic Information to the PA28 pilot, *"opposite direction traffic shortly departing from St Mary's a Twin Otter climbing to altitude 1000 feet."* The pilot responded, *"copied the opposite direction traffic thank you."*

Controller changeover took place.

At 1101:10 the DHC6 pilot reported *"maintaining 1000 feet, 17 DME next."* The controller responded, *"roger Basic Service."* The pilot read back the service.

At 1102:40 the PA28 pilot reported, *"now 17 DME."* The controller responded*, "roger 25 next" and the pilot repeated "25 next."*

At 1104:00 the PA28 pilot requested to *"descend to altitude 1200 feet to maintain VFR."* The controller responded, *"roger just the opposite direction Twin Otter, standby for the DME."* The controller then requested the DME of the DHC6 and the DHC6 pilot responded, *"we're at 22 DME at 1000 feet."* The controller then returned to the PA28 pilot and said, *"that's the traffic at 1000 feet, nothing else known to affect your descent to altitude 1200 feet."* The PA28 pilot responded*, "to 1200 thanks."*

At 1104:30 the PA28 pilot reported, *"visual with the Otter traffic",* and the controller responded, *"roger 25 DME next, for RW27, you'll be number one."*

At 1105:00 the DHC6 pilot reported, *"that was really not OK (name) we were almost head-to-head, we had to make quite a radical manoeuvre to avoid him."* The controller responded, *"ah roger I thought he said that he was at 22 and you said you were at 22."* The pilot responded, *"yeah we're going to have to file that I'm afraid."* The controller responded, *"OK."*

At 1107:10 the controller requested the DME of the PA28 pilot and they responded, *"23.3 DME."*

At 1108:50 the DHC6 pilot reported 10 DME and changing to the Land's End frequency. The controller acknowledged and before they went off frequency, the pilot asked if the PA28 was transponder equipped, and went on to explain that they were getting nothing on their TAS equipment, and that if the aircraft had been transponding they might have seen them but had no idea what the aircraft was doing *"descending through us like that."* The controller advised that the PA28 was descending to 1200 feet and not down to the 1000 feet that the DHC6 was at. The pilot responded, *"yeah it looked really, really, really close."* The controller responded*, "OK"* and then asked the PA28 pilot if they were transponder equipped and if so, was it switched on. The pilot confirmed that they were transponder equipped and that it was on the altitude setting. The controller acknowledged this and requested the pilot's DME. There was no response initially and the controller repeated the question. The pilot responded *"26.4 DME."*

Relevant extracts from St Mary's MATS Part 2:

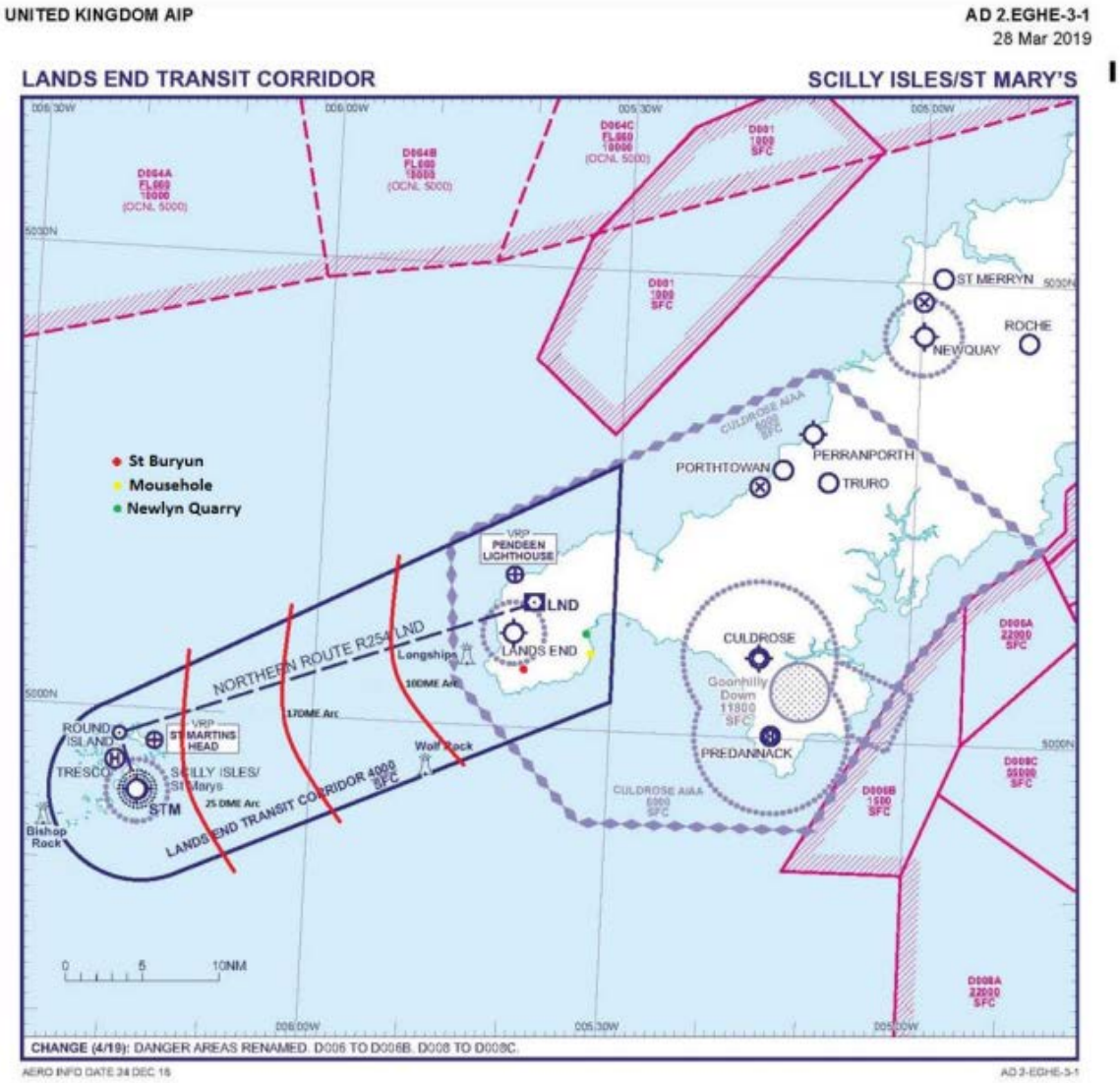
3 Inbound Routes

3.1 Local Operators will when operating VFR in the LETC use the co-located LND VOR/DME to make the following position reports which are based on a DME arc:

1) 10 DME SW LND 2) 17 DME SW LND 3) 25DME SW LND or Eastern Isles

LETC Letter of Agreement

LETC Chart & Routine Position Reporting:



Relevant extracts from the Land's End Transit Corridor Letter of Agreement:

The following is a record of the agreement between the representatives of the Air Traffic Service providers at St. Mary's Airport, Land's End Airport, RNAS Culdrose, Penzance Heliport, the aircraft operator Penzance Helicopters and the aircraft operator Isles of Scilly Skybus.

Achieving an Expeditious Flow of Traffic consistent with safety within the LETC

1. The participants to this agreement will achieve a safe and expeditious flow of traffic by:

a) Whenever possible, Land's End and St. Mary's ATC will allocate the following levels, with agreement, to participating VFR flights

i) Land's End and Penzance to St. Mary's or Tresco flights - generally flown at altitude 1500ft.

ii) St. Mary's or Tresco to Land's End or Penzance flights - generally flown at altitude 1000ft.

iii) Transit flights - generally at altitude 2000ft and above.

b) Where appropriate, segregating participating flights within the LETC; (See segregated route below)

c) Endeavour to agree routes and/or levels with the pilots of other aircraft receiving an ATS within the LETC.

d) Aiming to achieve a Deconfliction Minima between flights participating in a Procedural Service.

e) Ensuring appropriate and timely co-ordination between local ATSU's.

f) Reducing communications workload for both ATCO's and Pilots.

Flight Rules

1. All Scheduled Public Transport flights within the LETC will be conducted under VFR unless precluded by Meteorological Conditions

2. St. Mary's ATC is responsible for:

a) Routinely providing a BASIC Service for participating VFR & IFR flights within the LETC, WEST of 10 DME LND VOR

Both pilots were in receipt of a Basic Service from the St Mary's controller and were initially at the standard eastbound and westbound altitudes expected within the corridor. In their initial communications with the controller the PA28 pilot was requested to report before any change of altitude. The pilot complied with this request when they asked to descend to 1200ft to enable them to maintain VFR.

The DHC6 pilot was passed Traffic Information on the inbound PA28 at 1500ft, prior to them departing St Mary's. The PA28 pilot was then passed Traffic Information on the DHC6 at 1000ft. Both pilots acknowledged the Traffic Information. There was a change of controller after the above Traffic Information was passed.

When the PA28 pilot requested descent to altitude 1200ft the controller checked the DME of the DHC6 and the pilot advised that they were at 22 DME. The DME range of the PA28 was not requested. The PA28 pilot had reported at 17 DME, one minute and 20 seconds prior to the request for descent being received and is likely to have been at around 19 DME when the request was made.

A DME range of 22NM and the altitude on the DHC6 was provided to the PA28 pilot and confirmation given that there was nothing else known to affect the descent.

The PA28 pilot was aware that they themselves had not yet reached 22 DME when they commenced the descent. However, they reported that they needed to descend to maintain VFR. The PA28 pilot reported that they became visual with the DHC6 upon reaching 1200ft.

The controller reported that they believed that the PA28 had also reported at 22 DME and that the two aircraft had passed each other. The belief that the two aircraft had already passed each other prior to the descent clearance being issued, may explain why the DME on the PA28 was not requested and reciprocal Traffic Information was not updated to the DHC6 pilot, to warn them of the descent of the PA28. The descent should have resulted in 200ft of vertical separation between the two aircraft. In the absence of a radar picture the actual separation could not be confirmed.

The PA28 pilot confirmed that they were transponder equipped and that the transponder was switched on and ALT selected. The DHC6 pilot confirmed that the PA28 did not display on their TAS.

Conclusion

The DHC6 pilot was aware of the general presence and initial altitude of the PA28. They were not aware of the exact position of the PA28 and that the PA28 was descending toward them.

The transponder in the PA28 did not trigger the TAS in the DHC6, resulting in failure of this safety barrier.

Under the terms of a Basic Service the avoidance of other traffic is solely the responsibility of the pilot. If a controller considers that a definite risk of collision exists, a warning shall be issued to the pilot (SERA.9005(b)(2) and GM1 SERA.9005(b)(2)).

The controller believed that both pilots had reported at 22 DME and had passed each other prior to the descent of the PA28 and that the descent would result in 200ft of separation remaining between the two aircraft. As such no DME check was requested of the PA28 pilot and no warning was issued to the DHC6 pilot.

UKAB Secretariat

The DHC6 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.[3] If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.[4]

Summary

An Airprox was reported when a DHC6 and a PA28 flew into proximity at approximately 8NM east of St Mary's at around 1105Z on Monday 9th August 2021. Both pilots were operating under VFR in VMC, both were in receipt of a Basic Service from Scillies Approach.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots and a report from the air traffic controller involved. 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.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments.

The Board first looked at the actions of the St Mary's controller. They noted that the LOA in place for use of the Land's End transit corridor only covered the DHC6, as commercial traffic, not the PA28 which was transit traffic. Both pilots were only receiving a Basic Service, although the DHC6 pilot would be expecting to receive Traffic Information on other traffic, in accordance with the LOA. Without a radar, the St Mary's controller did not have any knowledge about the exact positioning of the two aircraft and therefore was wholly reliant on receiving position reports, in the form of DME ranges from LND, from the pilots. Traffic Information was passed to the DHC6 pilot on the PA28 prior to their departure, at that point the PA28 was at 1500ft and the DHC6 due to climb to 1000ft as per the LOA. Once the PA28 pilot announced their decision to descend to 1200ft the controller asked the DHC6 pilot for their DME from Land's End and passed that information to the PA28 pilot. However, they believed the PA28 had already passed the DHC6 and so did not request their DME (**CF3**, **CF4**), consequently, they did not pass updated Traffic Information to the DHC6 pilot (**CF1**, **CF2**). When discussing the procedures, some members wondered whether routing inbound and outbound traffic along the same radial was a good idea, given that the controllers were not providing a procedural Service and therefore required the pilots to maintain their own separation. However, they were told that the corridor also had helicopter routes to the north and south and could become quite busy at times which was why height was used to deconflict the inbound and outbound traffic, but that ultimately, the corridor was Class G airspace.

Turning to the DHC6 pilot, they were receiving a Basic Service with additional Traffic Information, as set out in the conditions of the LOA. Members noted the unusual situation, but opined that the service provided was not a Procedural Service and wondered whether the DHC6 pilot was fully cognisant of their responsibility to maintain their own separation in Class G airspace. They had been given generic Traffic Information about the PA28 prior to departure (**CF6**), which at that stage was at 1500ft and therefore no confliction. They were on the same frequency as the PA28 and so should have heard the

[3] (UK) SERA.3205 Proximity.
[4] (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.

other pilot requesting a descent, and members wondered whether they had not fully assimilated that the PA28 was ahead of them and descending and so were surprised when they saw it (**CF7**). The TAS on the DHC6 did not detect the PA28 (**CF8**), whether that was because the PA28's transponder was unserviceable, or for some other reason was not known, but this probably contributed to the DHC6 pilot not expecting to see the PA28 in such close proximity. The cloud between the two aircraft also obscured them from each other (**CF12**), so that when the DHC6 pilot saw the PA28, they were concerned by the proximity and took avoiding action (**CF9**, **CF11**).

Looking at the actions of the PA28 pilot, they were at 1500ft and needed to descend to keep clear of cloud. They requested a descent to 1200ft and were told by the controller that the DHC6 was the only traffic to affect them. Although the pilot received only generic Traffic Information on the DHC6 (**CF6**) some members wondered why, knowing that the DHC6 was still ahead of them, the PA28 pilot descended to only 200ft above it (**CF5, CF10**). Whilst the pilot may have been content with the separation, they did not know the exact position of the DHC6 as it was obscured by cloud as they descended (**CF12**) and the PA28 pilot did not see the DHC6 until they had levelled at 1200ft (**CF9**). Commenting briefly on the PA28's transponder, members thought it was unfortunate that the NATS radars did not show the incident, but that it was confirmed that the PA28 had received a service from Newquay earlier in the day, and they thought that the Newquay controllers would have told the PA28 if their transponder was unserviceable at that time.

In determining the risk, members considered the reports from the pilots and controller and the action taken by all parties. The DHC6 pilot estimated the PA28 to be only 50ft away, but members thought that the element of surprise may well have meant the pilot perceived the 'threat' to be much closer than it was and that notwithstanding normal deviations from level flying, with the PA28 at 1200ft there was likely to have been 200ft separation. Additionally, both pilots reported taking action to increase the separation and so members agreed that although safety had been degraded, there had been no risk of collision; Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021141			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Regulations, Processes, Procedures and Compliance			
1	Human Factors	• ATM Regulatory Deviation	An event involving a deviation from an Air Traffic Management Regulation.	Regulations and/or procedures not fully complied with
	• Situational Awareness and Action			
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	Human Factors	• Expectation/Assumption	Events involving an individual or a crew/ team acting on the basis of expectation or assumptions of a situation that is different from the reality	
	Flight Elements			
	• Tactical Planning and Execution			
5	Human Factors	• Insufficient Decision/Plan	Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation	Inadequate plan adaption
	• Situational Awareness of the Conflicting Aircraft and Action			

6	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late or only generic, Situational Awareness
7	Human Factors	• Understanding/Comprehension	Events involving flight crew that did not understand or comprehend a situation or instruction	Pilot did not assimilate conflict information
	• Electronic Warning System Operation and Compliance			
8	Human Factors	• Response to Warning System	An event involving the incorrect response of flight crew following the operation of an aircraft warning system	CWS misinterpreted, not optimally actioned or CWS alert expected but none reported
	• See and Avoid			
9	Human Factors	• Identification/Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots
10	Human Factors	• Lack of Individual Risk Perception	Events involving flight crew not fully appreciating the risk of a particular course of action	Pilot flew close enough to cause concern
11	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
12	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	One or both aircraft were obscured from the other

Degree of Risk: C.

Safety Barrier Assessment[5]

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

Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the controller did not pass Traffic Information to the DHC6 on the PA28, in accordance with the LOA with the DHC6 company.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the controller thought that the PA28 had already passed the DHC6, so did not pass Traffic Information.

Flight Elements:

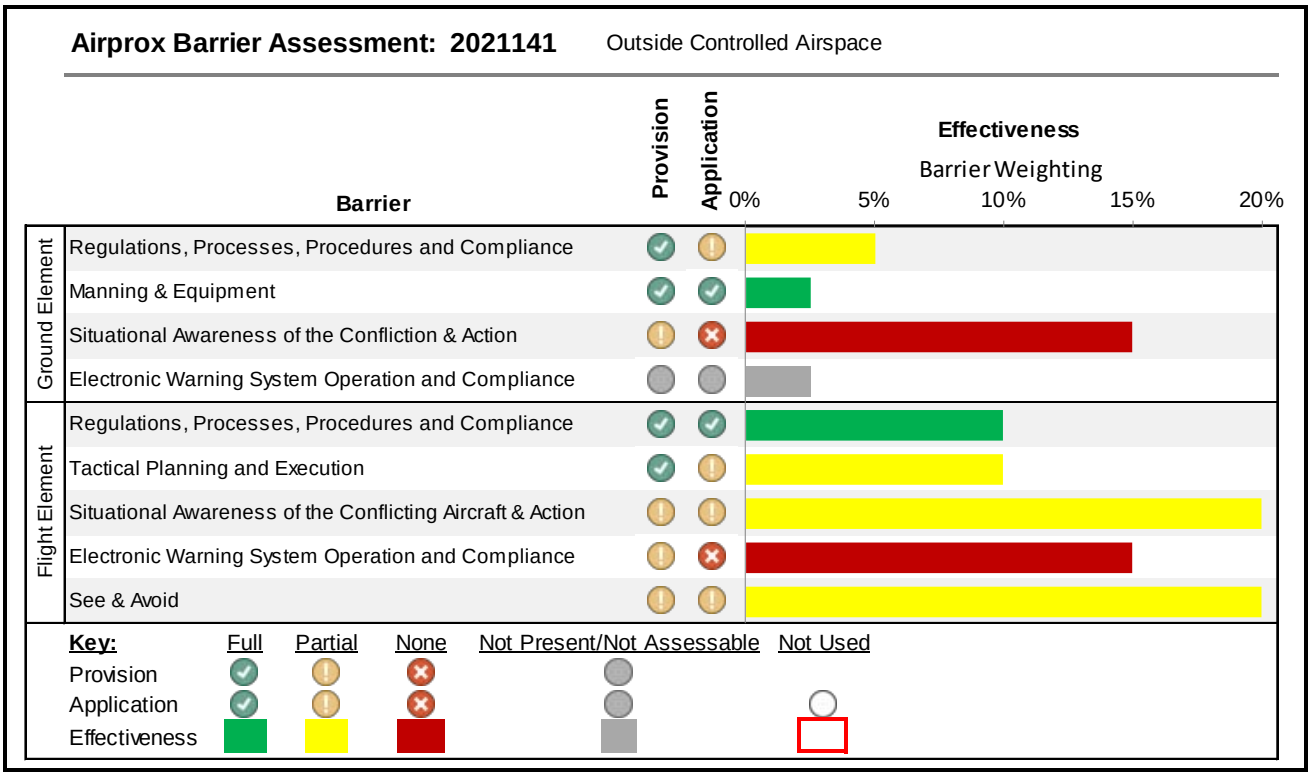
Tactical Planning and Execution was assessed as **partially effective** because neither pilot adapted their plan when they knew the PA28 was about to descend; the PA28 pilot heard the position of the DHC6 to be 22DME and knew that they had not yet passed that range and the DHC6 pilot also heard the other pilot's request for descent on the frequency.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because both pilots only had generic situational awareness about the other.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TAS on the DHC6 did not detect the PA28.

See and Avoid were assessed as **partially effective** because cloud caused some obscuration and so both pilots saw the other aircraft late.

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


Airprox Barrier Assessment: 2021141
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