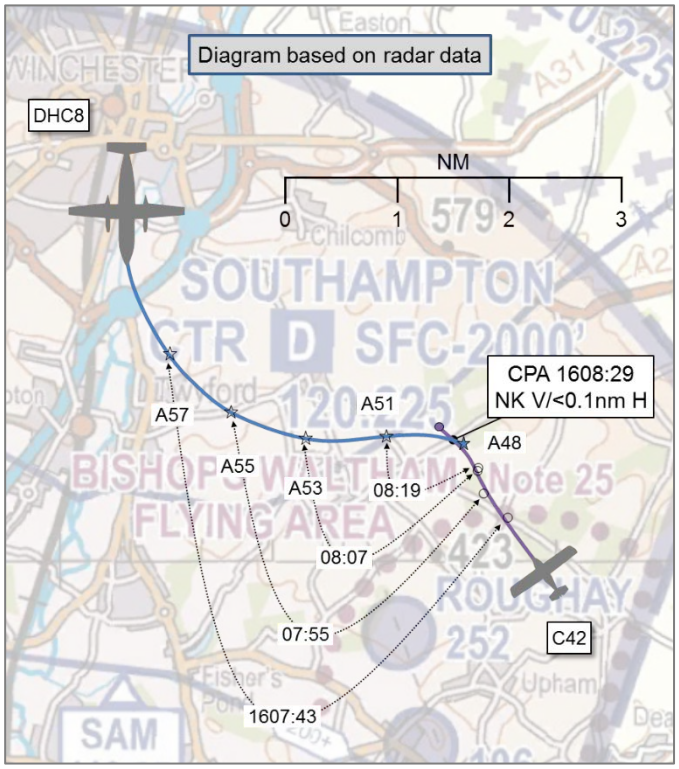
AIRPROX REPORT No 2017261

Date: 01 Nov 2017 Time: 1608Z Position: 5101N 00115W Location: Southampton CTA/CTR

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DHC8	C42
Operator	CAT	Civ Pte
Airspace	Solent CTA	NK[1]
Class	D	D
Rules	IFR	VFR
Service	Radar Control	Listening Out
Provider	Solent	Solent
Altitude/FL	5000ft	NK
Transponder	A, C, S	Not fitted
Reported		
Colours	Company	White, green
Lighting	All on	NK
Conditions	VMC	VMC
Visibility	NK	NK
Altitude/FL	4500ft	NK
Altimeter	NK	NK
Heading	080°	NK
Speed	200kt	NK
ACAS/TAS	TCAS II	Not fitted
Alert	None	None
Separation		
Reported	1000ft V/NK H	NK
Recorded	NK V/<0.1nm H	



THE DHC8 PILOT reports that Solent Radar gave them a heading of 010° for downwind. When passing through heading 080°, ATC then gave them an avoiding action turn to the right. The autopilot was disconnected and a right hand turn was immediately actioned. ATC told them a light-aircraft had entered controlled airspace and, eventually, they became visual with a single-engine aircraft which they estimated to be 1000ft below.

The DHC8 pilot did not make an assessment of risk of collision.

THE C42 PILOT reports that he did not remember any detail from that day because he had been notified 3 months after the event[2]. However, he acknowledged that he had flown adjacent to the Southampton CTR on many occasions. He commented that he would probably have been monitoring the 'Solent frequency' in that area but that he was not in receipt of a Basic Service. The C42 pilot also noted that, having been advised of the Airprox, he had subsequently discussed his route planning with an Instructor and would ensure that he 'obtained a LARS service' in future.

The C42 pilot did not make an assessment of risk of collision.

THE SOLENT CONTROLLER reports that he was vectoring the DHC8 for a left-hand pattern for ILS RW20. [DHC8 C/S] had been issued, and was complying with, a heading of 090° and descent to altitude 3000ft. A primary contact had been observed to the southeast, flying in the Bishops Waltham flying area and he believed the contact to be positioning to land within the area. The primary contact continued northwest-bound and become obscured by the label of [DHC8 C/S]. The contact was then observed to be on the edge of leaving the delegated Bishops Waltham flying area. The controller issued avoiding action to the [DHC8 C/S] and gave a heading of 180° but the proximity of the two

[1] Either the Solent CTR if the C42 was below altitude 2000ft or the Solent CTA if above.
[2] UKAB tracing action was protracted due to the difficulty of identifying and establishing contact with the C42 pilot.

contacts was such that the rate of turn of the DHC8 was not sufficient to avoid the contacts merging. The controller tried to raise the other aircraft on frequency but with no response. He gave the DHC8 pilot a further turn onto 270° and updated him with the position and track of the unknown aircraft. They stated that they had the aircraft in sight 1000ft below. The controller noted that he believed separation was restored as quickly as possible and remained until the DHC8 landed.

Factual Background

The weather at Southampton was recorded as follows:

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METAR EGHI 011620Z VRB02KT CAVOK 12/07 Q1016=
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Analysis and Investigation

CAA ATSI

An Airprox was reported by the DHC8 pilot as a result of the aircraft coming into proximity with what is believed to be a C42 microlight in the vicinity of Southampton Airport. The DHC8 was on an IFR flight to Southampton and was in receipt of a Radar Control Service from Solent Radar. The aircraft was being vectored for the ILS RW20 (a left-hand pattern). The microlight could not be formally identified via the area radar replay due to it displaying as a primary-only radar contact. However, the track observed on the radar replay matched the description in the controller report. Tracing action established that the aircraft landed at Membury Airfield. A report was subsequently received from the pilot who confirmed that the microlight had been flown under VFR from Membury to Sandown and return on the day in question.

The Solent Radar controller was providing both Approach Radar and Final Director services, with several aircraft on frequency, including inbounds, outbounds and CTR transits. At 1555:00 the primary only radar contact was observed in the Bembridge area tracking north. The contact continued northbound and coasted in southeast of Southampton. The contact was then constantly visible on the radar replay until 1603:00 when it faded and re-appeared at 1605:39. It should be noted that this is not necessarily representative of the picture that the Solent Radar controller would have been observing on the day utilising Solent Radar. Technical issues were experienced when obtaining the Solent Radar replay and as such the recording could not be produced.

The DHC8 pilot made initial R/T contact with Solent Radar at 1601:30 and was advised to expect vectors for the ILS RW20, left-hand. The pilot was then given heading and descent instructions to position for the ILS. The primary-only radar contact was not visible at this time. At 1605:39, the primary radar contact re-appeared on the eastern edge of the CTR (Figure 1).

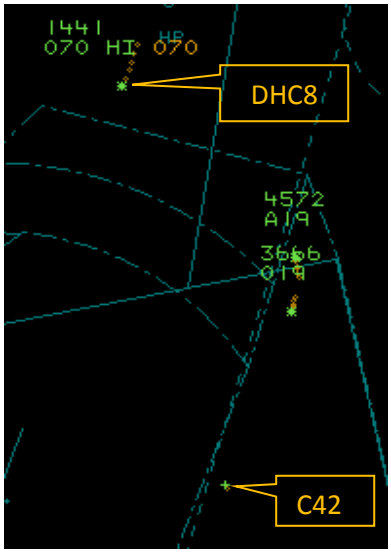

Figure 1 - 1605:39

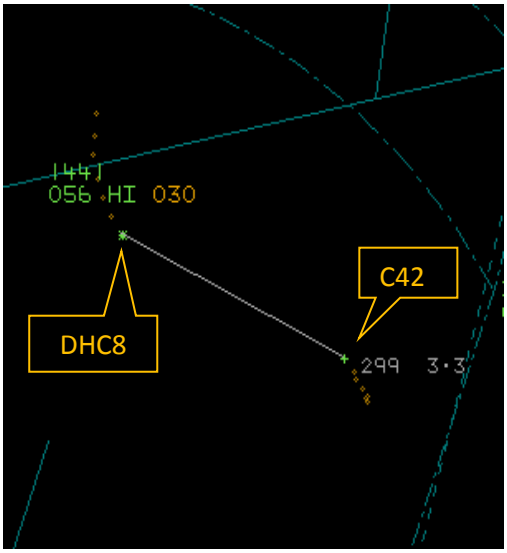

Figure 2 - 1607:43

At 1607:43, the controller instructed the DHC8 pilot to turn left heading 090° and descend to altitude 3000ft (Figure 2). The controller then turned his attention to other inbound, transiting and free-calling pilots.

At 1608:10, the controller issued the DHC8 pilot with an avoiding action right turn onto 180° and passed Traffic Information on the conflicting aircraft. The pilot read back the avoiding action instruction and initiated the turn. The controller then made blind calls to establish whether the conflicting aircraft was listening out on the Solent Radar frequency. There was no response.

CPA occurred at 1608:28 with the aircraft separated laterally by 0.2nm (Figure 3).

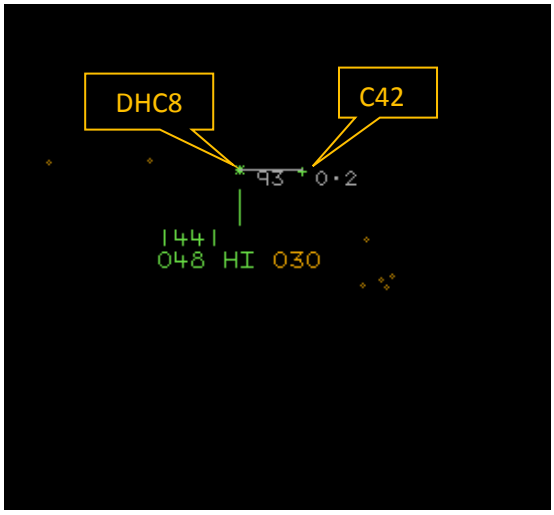

Figure 3 – 1608:28

At 1610:00, the DHC8 pilot reported having the conflicting aircraft in sight.

CAP 493 states that a position symbol which cannot be associated with an aircraft known by the controller to be operating within the airspace concerned shall be considered to represent an unknown aircraft. The action to be taken by controllers when they observe an unknown aircraft, which they consider to be in unsafe proximity to traffic under their control within Class D Airspace is as follows:

> 'If radar derived, or other information, indicates that an aircraft is making an unauthorised penetration of the airspace, is lost, or has experienced radio failure:
> IFR flights shall be given traffic avoidance advice and traffic information shall be passed.'

The CAP 493 entry goes on to say:

> 'It is recognised that it may not always be possible for controllers to achieve the required separation minima against unknown traffic infringing controlled airspace due to the potential for their sudden appearance and/or unpredictable manoeuvres; however, controllers shall apply all reasonable endeavours (SERA.7002(a)).'

The Solent Radar controller discharged his CAP 493 responsibilities by giving traffic avoidance advice followed by Traffic Information to the DHC8 pilot when he saw the infringing aircraft. Whilst it is recognised that standard separation minima was not achieved, ATSI are satisfied that the controller applied all reasonable endeavours.

UKAB Secretariat

The DHC8 and C42 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]. The UK AIP specifies the conditions of use of the Bishops Waltham Flying Area as follows[4]:

> 'Provided that the following requirements are complied with, the provisions of SERA Section 4 Flight Plans and CAP 694 The UK Flight Planning Guide are deemed to have been met in respect of aircraft arriving and departing at unlicensed aerodromes Lower Upham (505817.00N 0011508.00W) or Roughay (505920.40N 0011513.20W), without a requirement to establish RTF contact with [Solent Radar].
>
> Aircraft are to remain within the Bishops Waltham Flying Area (BWFA). Lateral limits of which are that part of the Southampton CTR within a circle radius 1.75 nm centred on 505839.60N 0011331.92W. Upper/lower limits 1500 ft ALT/SFC.
>
> Hours of operation of the BWFA are SR/SS during notified hours of Southampton CTR operation when the reported visibility at Southampton International Airport is 5000 m or greater. Use of Lower Upham and Roughay aerodromes is subject to prior permission from the respective aerodrome operator. Such permission must have been received prior to commencement of a particular flight.'

The C42 pilot was not entitled to enter the Southampton CTA/CTR without the approval of the Solent controller.

NATS Ltd Unit Investigation

16:06:00 [DHC8 C/S] is Bearing 014 degrees at a range of 11NM from SAM. ATCO issues [DHC8 C/S] with descent to A050 on the QNH 1017, this is read back correctly. At this point the primary contact is overhead Bishops Waltham which is 081 degrees at 5.6NM from the SAM. Primary contact is tracking as if they are inbound to Roughay Farm, which is one of the two farm strips that make use of the Bishops Waltham flying area.

16:07:04 [DHC8 C/S] is issued a left turn heading 090 degrees and descent to A030 which is read back correctly. [DHC8 C/S] is bearing 013 degrees at 6.7NM from SAM and the primary contact is bearing 066 degrees at 5.4NM from SAM tracking North West inside the Bishops Waltham flying area. Primary contact is bearing 14. degrees at 5.NM from [DHC8 C/S].

16:07:54 (Figure 4): Primary contact leaves the confines of the Bishops Waltham flying area tracking North West bearing 052 degrees at 5.3NM from SAM and 2.4NM from [DHC8 C/S] on converging tracks. On the ATCO's screen the [DHC8 C/S] label obscures the view of the primary contact.

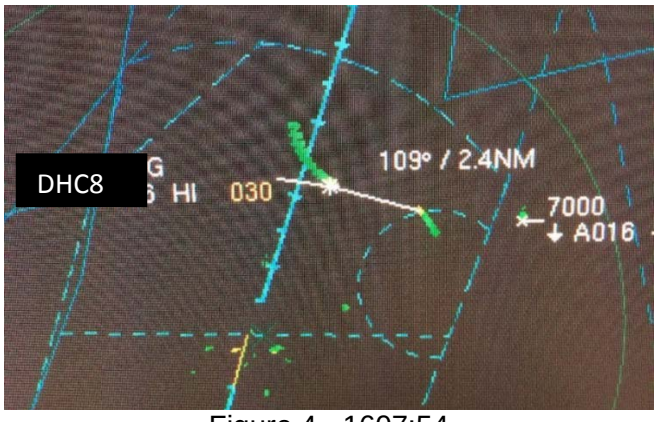

Figure 4 - 1607:54

[3] SERA.3205 Proximity.
[4] UK AIP AD.EGHI-7

16:08:10 ATCO moves the label of the [DHC8 C/S] and spots the primary contact infringing the CTR and issues the [DHC8 C/S] with avoiding action turn right heading 180 degrees and gives traffic information on the infringing aircraft this is read back correctly by [DHC8 C/S]. At this point there is 1.4NM between [DHC8 C/S] and the infringing aircraft and tracks are converging.

16:08:24 (Figure 5): Radar contacts of [DHC8 C/S] and infringing aircraft merge at this point.

Figure 5 - 1608:24

16:08:34 [DHC8 C/S] observed in the right turn, with the infringing aircraft's contact now behind them still tracking northwest bound.

16:10:16 [DHC8 C/S] is given an update on the infringing traffic's position and reports they believe they have the traffic in sight. ATCO asks if they are aware of the type of aircraft and any idea of altitude. [DHC8 C/S] reports aircraft is approximately 1000ft below, possibly altitude 2500ft.

From this point, the primary contact continues tracking northwest bound and the [DHC8 C/S] is given vectors remaining well clear. The primary contact leaves CAS at 16:14:37. This infringement resulted in causing the [DHC8 C/S] approximately an extra 20 track miles and a 7.5 minute delay.

There was nothing to indicate that the primary contact wasn't joining the circuit for Roughay farm within the Bishops Waltham flying area and unfortunately due to location of the boundary of the BWFA once it had left the area there was not a lot of options for the ATCO. Minimum separation height has been judged using the report of approximate height of the infringing aircraft from [DHC8 C/S] at 16:10:38.

Solent ATCO spotted the infringement within 20 seconds of it occurring and issued avoiding action unfortunately due to proximity of the infringing aircraft to the [DHC8 C/S] the contacts merged briefly, this would have happened regardless of what heading was given in the avoiding action instruction.

[The unit] have recommended that the LOA agreement for the Bishops Waltham flying area is reviewed to see if there is any way we could prevent a similar event occurring in the future.

Summary

An Airprox was reported when a DHC8 and a C42 flew into proximity at 1608 on Wednesday 1st November 2017. Both pilots were operating in VMC, the DHC8 under IFR in receipt of a Radar Control Service from Solent Radar and the C42 pilot under VFR, not in receipt of a Service.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, a report from the air traffic controller involved and reports from the appropriate ATC authorities.

Members quickly agreed that the Airprox concerned the potential risk due to penetration of CAS without clearance, and that, in the event, the aircraft appeared to be vertically separated by about 1000ft. The Board commented on the design of the BWFA and noted that a Solent controller could only ever have minimal warning of CAS penetration without clearance due to the fact that the BWFA was embedded within the Solent CTR. Members recognised that the CTR had to be available in its entirety for the use of aircraft under Solent control, but wondered whether it would be prudent to vector aircraft routinely to the west of the CTR, thereby maximising the time available to detect any aircraft leaving the BWFA and into the Solent CTR. It was acknowledged that the possibility of aircraft entering the Solent CTR/CTA without clearance also existed around the entire perimeter of the zones, but members thought that the BWFA presented a known area of higher-density usage within the CTR that could be valuably mitigated to greater effect.

Ultimately, the Board agreed that the Solent controller was faced with a primary only contact inside the lateral limits of the CTR with little time to effect avoiding action. Some members felt that it was fortunate that the C42 pilot was not at a greater altitude, whilst others felt that most microlight pilots would not transit above 2000ft or so and that the aircraft would always have been separated in the vertical sense at that position. However, all members agreed that the purpose of Class D airspace was to provide a known environment for Air Traffic Management and that, by entering the Solent CTR without clearance, the C42 pilot had flown into conflict with the DHC8. The Board noted that there was no impediment *per se* to non-transponder equipped aircraft entering Class D airspace, but in order to preserve the known environment it is imperative that pilots request clearance before entering. In considering the risk, members agreed that although the presence of the uncleared and primary-only C42 within Solent CAS was highly undesirable, in the event, the aircraft passed with about 1000ft vertical separation and there was no risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The C42 pilot flew into CAS without clearance from ATC and into conflict with the DHC8.

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:

ANSP:

Situational Awareness and Action were assessed as **partially effective** because the location of the BWFA is such that the Solent controller could only ever have minimal warning of aircraft infringing the Solent CTR from within it.

Warning System Operation and Compliance were assessed as **ineffective** because the C42 was not equipped with a system compatible with the Solent surveillance warning systems.

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

Flight Crew:

Regulations, Processes, Procedures, Instructions and Compliance were assessed as **ineffective** because the C42 pilot did not comply with the requirement to obtain permission from the controlling ATSU to enter active Class D airspace.

Tactical Planning was assessed as **ineffective** because the C42 pilot routed through a promulgated and active area of Class D airspace without a clearance.

Warning System Operation and Compliance were assessed as **ineffective** because the C42 was not equipped with any systems which were compatible with the DHC8 TCAS II.

See and Avoid were assessed as **not used** because the aircraft were sufficiently separated vertically that the barrier was not employed save for after the aircraft had passed when the DHC8 pilot observed the C42.