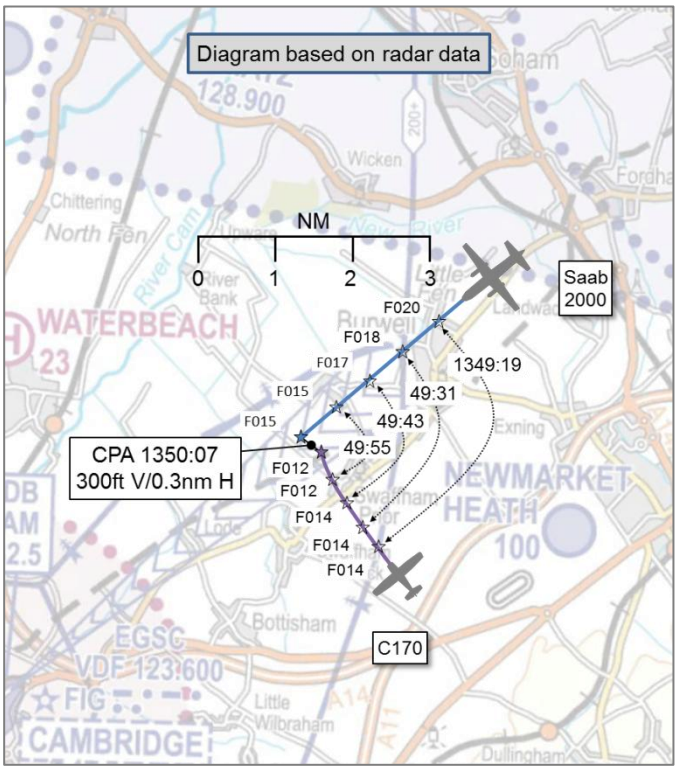
AIRPROX REPORT No 2014201

Date/Time:	27 Sep 2014 1350Z (Saturday)	
Position:	5216N 00017E (5nm NE Cambridge)	
Airspace:	London FIR	(*Class*: G)
	Aircraft *1*	*Aircraft 2*
Type:	Saab 2000	Cessna 170
Operator:	CAT	Civ Pte
Alt/FL:	1500ft QNH (1026hPa)	2000ft NK
Conditions:	VMC	VMC
Visibility:	>10km	'V Good'
Reported Separation:	300ft V/50m H	700ft V/3-4nm H
Recorded Separation:	200ft V/0.4nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SAAB PILOT reports conducting the ILS procedure for Cambridge RW23. The predominantly white aircraft had navigation, strobe and beacon lights selected on, as was the SSR transponder with Modes A, C and S. The aircraft was fitted with TCAS. The pilot was operating under IFR in VMC, in receipt of a Traffic Service from Cambridge Approach. Whilst fully configured on the ILS, at about 1500ft agl, he got Traffic Information from Cambridge Approach about traffic at 11 o'clock, about 5nm. The traffic was informed as well, he reported, and was told that a Saab 2000 was on final approach ILS RW23. Shortly after, he got a TCAS TA, showing traffic at 11 o'clock, 100-200 ft below their level, coming straight at them. He then got a TCAS RA with 'Climb, Climb' command. As he was then descending on the ILS, the autopilot was switched off and shallow climb established manually, in accordance with the RA. The aircraft configuration was left unchanged. A light aircraft was then seen at 10 o'clock, crossing left to right. It passed about 300ft below and 50 meters behind them. Once clear of conflict, descent was resumed and the final approach performed visually to a normal landing on RW23. ATC was informed of the Airprox.

He assessed the risk of collision as 'High'.

THE CESSNA 170 PILOT reports conducting a local flight. The green and cream aircraft had anti-collision and strobe lights selected on, as was the SSR transponder with Modes A and C. The aircraft was not fitted with a TAS. The pilot was operating under VFR in VMC in 'excellent conditions', not in receipt of an Air Traffic Service. He remarked that he regularly flies in the local area, on this occasion with a former airline Training Captain, and was aware of the Cambridge Zone 'and flight paths'. He was in constant visual contact with the other aircraft and descended and manoeuvred behind it to avoid confliction. The pilot stated that he was not in contact with Cambridge ATC as he was in Class G airspace in good VFR conditions and did not require an Air Traffic Service. He noted that he received a call from Cambridge ATC on return to his home airfield, having been tracked on radar, and was chastised for not 'calling his position on the radio'. He stated that at all times there was never any danger, that he operated properly in VFR conditions and that he could only assume that the commercial aircraft 'had a RA'; he did not consider there to have been an Airprox.

THE CAMBRIDGE RADAR CONTROLLER reports that the Saab 2000, under a Traffic Service, was vectored for the ILS RW23. Unknown traffic approached the 5nm point on final approach RW23 from the southeast. Traffic Information was passed to the Saab pilot on the approaching aircraft at about 2-

3nm range from the Saab, indicating 1700ft, that on present track they would pass approximately 1/4nm ahead of the unknown aircraft. The Saab pilot maintained 2000ft and did not descend with the glide path until clear of the conflict. When clear of the conflict, the Saab pilot was transferred to Tower frequency.

Factual Background

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METAR EGSC 271350Z VRB04KT 9999 SCT045 21/10 Q1026
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Analysis and Investigation

CAA ATSI

CAA ATSI had access to Cambridge RTF and NATS Ltd area radar recording, together with the written reports from the Cambridge Radar controller and both pilots. The Saab pilot was operating under IFR, inbound to Cambridge Airport from abroad and was in receipt of a Traffic Service from Cambridge Radar. The C170 pilot was operating on a local flight under VFR. The C170 pilot was not in receipt of an Air Traffic Service.

The Saab pilot contacted Cambridge at 1345:30 descending to 3000ft. The Saab was 7nm southeast of Cambridge Airport passing FL069. The controller informed the pilot to expect vectors for the ILS to RW23 and asked the pilot what service he required. The pilot did not state the service he required but instead requested RW23:

ATC "[Saab C/S] Cambridge radar roger, continue your present heading on a radar heading and provide you vectors for the I L S, what service do you require?"

Saab "Runway two three is required and may we descending on present heading er [Saab C/S]?"

With the Saab at 17nm from touchdown, the controller replied:

ATC "[Saab C/S] *it's a Traffic Service, reduced due to radar performance and continue descent to 2000ft, QNH one zero one six".*

At 1347:10 (Figure 1), the controller passed the Saab pilot Traffic Information on a helicopter which was departing from Newmarket (not involved in the Airprox). Area radar showed the C170 at a position 3.8nm south-southwest of Newmarket, displaying SSR code 7010, a conspicuity code used by aircraft operating in an aerodrome traffic pattern when instructed to do so by an ATS unit or local operating instructions. It was not clear why the pilot had selected this code.

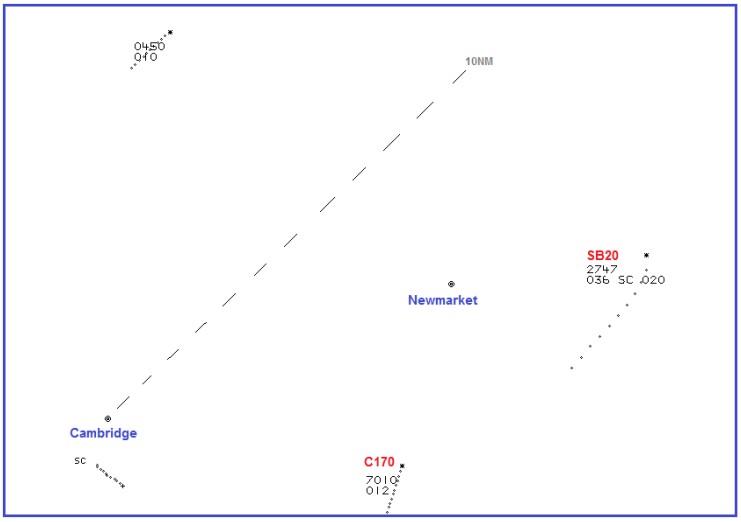

Figure 1 – Swanwick MRT at 1347:10

At 1347:50, the controller turned the Saab pilot onto a closing heading of 260° and cleared the him for the ILS approach. The C170 pilot had started a left turn onto a north-northwesterly track. At 1349:21 (Figure 2), the Saab pilot was 6.7nm from touchdown, indicating FL020; an altitude of 2351ft using the QNH of 1026hPa. The C170 was in the Saab pilot's 11 o'clock at a range of 1.8nm, crossing from left to right, indicating FL014 (altitude 1851ft).

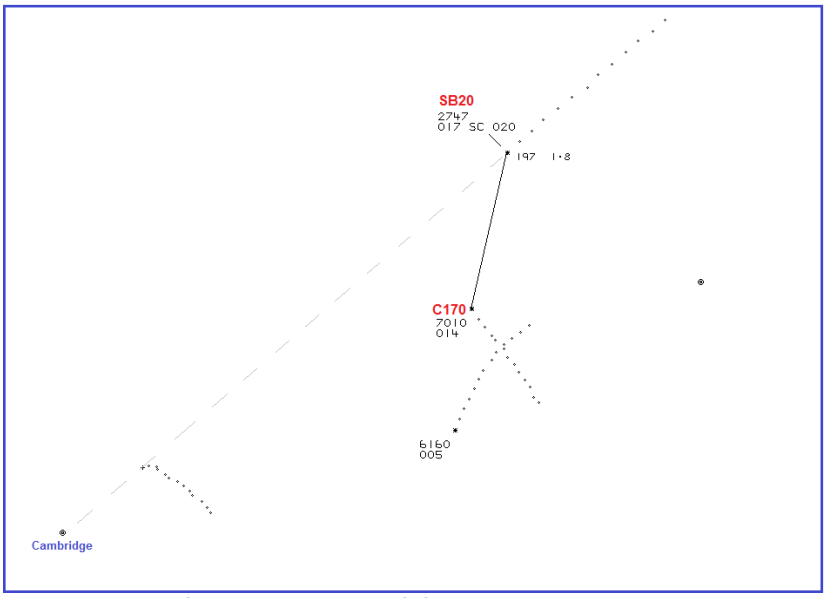

Figure 2 – Swanwick MRT at 1349:21

The controller passed further traffic information to the Saab pilot:

ATC *"*[Saab C/S] *you're six and a half miles from touchdown, radar service terminates, there is further traffic in your left eleven o'clock er indicating one thousand eight hundred feet, looks to be crossing the final approach at about five miles erm indicating one thousand one hundred feet, now descending"*

Saab *"Roger* [Saab C/S]*"*

ATC *"You'll be passing just ahead of that contact at the moment"*

ATC (1349:51 – Figure 3) *"You'll pass about quarter of a mile ahead of it as it er transits across the final approach"*

Saab "TCAS RA [Saab C/S]*"*

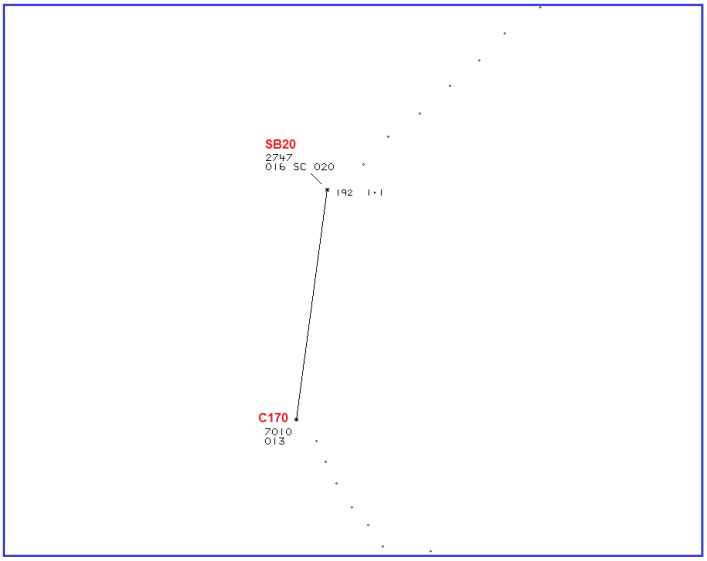

Figure 3 – Swanwick MRT at 1349:51

At 1350:03 (Figure 4), the distance between the two aircraft was 0.4nm and 200ft.

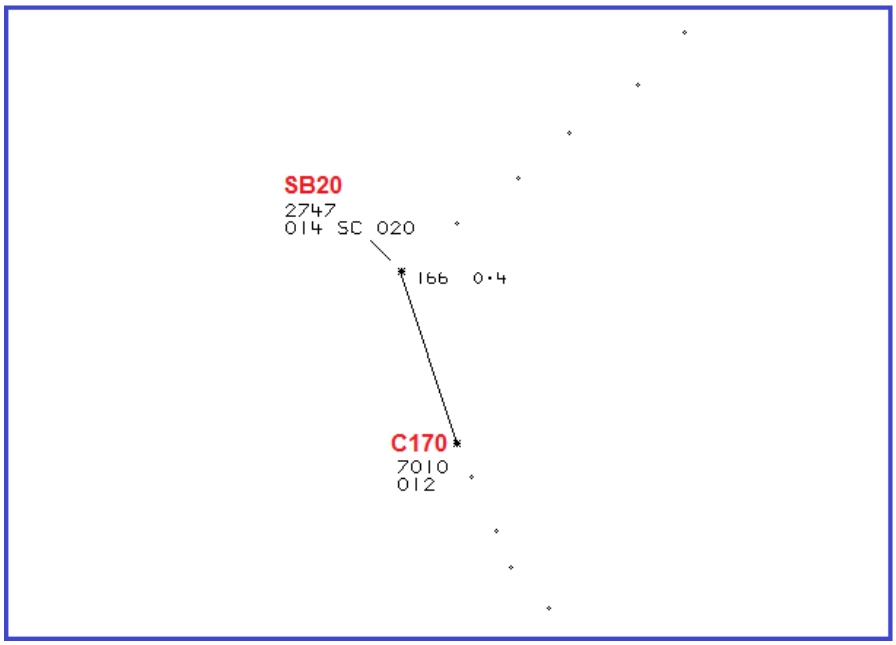

Figure 4 – Swanwick MRT at 1350:03

ATC (1350:05) *"*[Saab C/S] *roger that traffic should now be passing behind you"*
Saab "Affirm [Saab C/S]*"*

At 1350:07 (Figure 5), the two aircraft passed abeam at a range of 0.3nm. The Saab pilot had climbed to FL015 (altitude 1851ft) and the C170 pilot was maintaining FL012 (altitude 1531ft).

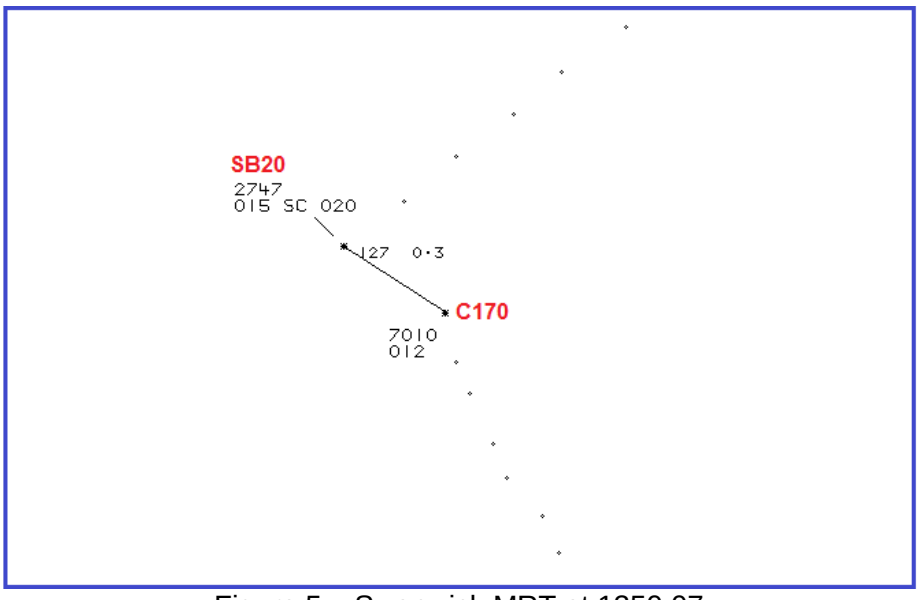

Figure 5 – Swanwick MRT at 1350:07

ATC "[Saab C/S] roger er contact Tower now one two five decimal niner"

Saab "One two five decimal niner [Saab C/S]".

The Saab pilot continued without further incident and subsequently advised ATC of his intention to file an Airprox.

In subsequent discussion with the controller, he was asked why he had initiated a Traffic Service when the Saab pilot had not responded to the type of service required. The controller's recollection of events on the day was unclear but he believed that some foreign pilots were unsure of the service options and that they often needed to be asked two or three times. On this occasion the controller had agreed to provide a Traffic Service. The controller would have upgraded the service to a Deconfliction Service if asked, but indicated that due to the unpredictable airspace environment, this often meant delaying and holding off aircraft; pilots would usually opt for a Traffic Service.

When asked, the controller's recollection of the event was unclear but he indicated that the unpredictable manoeuvring of unknown aircraft in the area often made it difficult to judge their intentions. The unknown aircraft was displaying a 7010 squawk and initially looked as though it may have been inbound to Newmarket. The controller turned the Saab pilot onto a closing heading and cleared it for the ILS approach. The controller recalled that the C170 turned onto a north-northwesterly track and the controller believed he gave Traffic Information regarding the unknown contact descending to pass behind the Saab pilot. The controller recognised that the Saab pilot had not reported, nor had the controller asked, if he had the unknown aircraft (the C170) in sight or if he wanted to break off the approach. The Saab pilot's written report indicated that after receiving the TCAS RA he sighted the light aircraft in his 10 o'clock crossing left to right.

The Saab pilot was in receipt of a Traffic Service. CAP774, Chapter 3, at the following paragraphs states:

Paragraph 1.7:

> 'Agreement to provide an ATS and acknowledgement of that level of ATS by a controller/FISO and pilot respectively, establishes an accord whereby both parties will abide with the definitions of that ATS as stated herein. Once an accord has been reached the controller/FISO shall apply that ATS as defined.'

Paragraph 1.8:

> 'A pilot shall determine the appropriate ATS for the various phases and conditions of flight and request that ATS from the controller. If a pilot fails to request a ATS, the controller should normally ask the pilot to specify the ATS required.'

Paragraph 3.1:

> 'A Traffic Service is a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance-derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the pilot remains responsible for collision avoidance...'

Paragraph 3.5:

> 'The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot ...
> Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting aircraft's observed flight profile indicates that it will pass within 3 NM and, where level information is available, 3,000 ft of the aircraft in receipt of the Traffic Service or its level-band if manoeuvring within a level block.'

Paragraph 3.6:

> 'Deconfliction is not provided under a Traffic Service and if a pilot requires deconfliction advice a Deconfliction Service shall be requested and the controller shall make all reasonable endeavours to accommodate this request as soon as practicable.

> When providing headings/levels for the purpose of positioning and/or sequencing or as navigational assistance, the controller should take into account traffic in the immediate vicinity based on the aircraft's relative speeds and closure rates, so that a risk of collision is not knowingly introduced by the instructions passed. However, the controller is not required to achieve defined deconfliction minima and pilots remain responsible for collision avoidance even when being provided with headings/levels by ATC.'

The controller vectored the Saab pilot onto the ILS and likely did not consider the C170 was a factor. The controller observed the C170 pilot had turned onto a more northerly track and Traffic Information was passed to the Saab pilot. It was likely too late for the controller to tactically plan ahead and, believing that the C170 was descending and would pass behind, the controller updated the Traffic Information.

Radar replay showed that the C170 pilot descended by 200ft and turned slightly to the right as the two aircraft came into proximity and the Saab pilot received a TCAS RA and climbed 100ft. CAP 774, Chapter 3, Paragraph 3.10, states:

> 'Pilots remain responsible for collision avoidance even when in receipt of ATC headings and shall advise the controller in the event that they need to deviate from a heading in order to comply with the Rules of the Air with regard to collision avoidance.'

ATSI note that a similar Airprox (2014033) occurred at Cambridge on 27 Mar 2014.

It is recommended that the CAA SARG Principal Inspector, in consultation with Cambridge ATSU, ensure that the ATSU undertake the following:

The ATSU remind controllers to take all reasonable endeavours to provide the ATS that a pilot requests and where there is doubt to seek clarification.

The ATSU review MATS Part 2 procedures in circumstances when inbound aircraft on the instrument approach and under a Traffic Service are in potential conflict with unknown traffic, in order to establish if the pilot is visual with the other traffic and if not, whether the pilot wishes to continue or break off the approach or upgrade to a higher level of service.

UKAB Secretariat

The Saab and C170 pilots shared an equal responsibility for collision avoidance and not to fly into such proximity as to create a danger of collision[1]. The incident geometry is converging and the C170 pilot was required to give way to the Saab[2]…

Summary

An Airprox was reported when a Saab 2000 and a Cessna 170 flew into proximity at 1350 on Saturday 27th September 2014. Both pilots were operating in VMC, the Saab 2000 pilot under IFR and previously in receipt of a Traffic Service from Cambridge Approach and the Cessna 170 pilot under VFR, not in receipt of an Air Traffic Service.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first considered the pilots' actions. The Saab 2000 pilot was operating under IFR, initially in receipt of a Traffic Service with radar vectors for the ILS. His response to the Cambridge

[1] Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions).
[2] ibid., Rule 9 (Converging).

controller's request for which service he required was to request the in-use runway, which may have been indicative either of mishearing 'service' as 'surface', or of unfamiliarity with UK FIS terminology. The Board noted that, once established on the ILS localiser he was in receipt of both Traffic Information from the Cambridge controller and TCAS information on the C170 but continued on his flight path to the point that he had to respond to a TCAS RA. Members agreed that his actions amounted to a strong indication that he did not understand the provisions of UK FIS (ATSOCAS) and his associated responsibilities for collision avoidance. The Board recalled that the CAA had rejected two previous UKAB recommendations (Airprox 2014145 and 2014150) regarding education of foreign crews in this respect (namely that "the CAA reviews the required content of airfield briefs with specific emphasis on informing foreign visiting pilots of their responsibilities under ATSOCAS.").

For his part, the C170 pilot was enjoying a local area flight in fine weather conditions and under VFR without the aid of an Air Traffic Service. Although members agreed that under normal circumstances in Class G airspace this was entirely acceptable for many GA flights, they also agreed that flying within 300ft and 0.3nm of a 22 ton, 50 seat passenger airliner, on the approach path to an airfield that was clearly marked on the chart and causing a TCAS RA, was not. With the Saab 2000 visible on his right, he continued to converge with only minimal action to give way, descending as the Saab 2000 pilot also started his descent on the ILS glide path. It was felt that the C170 pilot, having been 'in constant visual contact', could easily have turned right earlier and avoided the Saab by a more appropriate margin. The CAA VFR chart contains a note that 'Pilots intending to fly within 10nm of any part of the IAP symbol [the 'feathers' marking at some aerodromes] are strongly urged to contact the aerodrome ATSU'; that the C170 pilot chose not to do so was of considerable concern to the Board, especially given the presence of a former Training Captain which should also have been sufficient to impart some understanding of the likelihood of a TCAS generated response in the Saab. Members noted that the C170 pilot's planned flight path and height took him right across the Cambridge ILS centreline at 5nm, coincident with the glide slope; although he was operating in Class G airspace, they agreed that in doing so with the Saab 2000 inbound, and without contacting Cambridge ATC, it had been contributory to the Airprox.

Turning to the Cambridge controller, he was providing the Saab pilot with radar vectors to the ILS for RW23 and, in reply to the Saab 2000 pilot's incorrect response to type of service required, had unilaterally applied a Traffic Service. Members queried why this had been applied so quickly without challenging the Saab 2000 pilot's response, and were presented with anecdotal evidence that foreign pilots often did not correctly respond to a service request. It had therefore proven more practical to apply what the controllers considered to be an appropriate Air Traffic Service than to enter into a prolonged discussion as to the service required. Members agreed that, although well-meaning, this was not a satisfactory solution to what appeared to be some pilots' lack of understanding of the provisions of UK FIS. Having vectored the Saab 2000 pilot onto the ILS localiser, the Cambridge controller cancelled the Traffic Service and only then passed Traffic Information on the C170 at a range of 1.8nm converging on the Saab 2000 from the left. Members agreed that the C170's track had been present on radar for some time before CPA, and they felt that lack of timely Traffic Information of it to the Saab pilot had also been contributory to the Airprox. Overall, in discussing the Cambridge controller's actions, members felt that events had conspired somewhat against him; nevertheless, and after much debate, it was agreed that the cause of the Airprox had been that the Cambridge controller had vectored the Saab 2000 pilot into conflict with the C170.

Regarding risk, members agreed that although effective and timely action had been taken to prevent collision, this incident embodied a disappointing lack of consideration, communication and understanding; all of which were necessary in order to conduct flight safely, especially with differing user requirements in Class G airspace. In particular, members noted that had the C170 pilot contacted Cambridge, this wholly avoidable incident could have been prevented.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Cambridge controller vectored the Saab 2000 pilot into conflict with the C170.

Contributory Factor(s): 1. The C170 pilot flew through the ILS approach glide-slope without contacting Cambridge ATC.
2. Traffic Information was not provided in a timely fashion.

Degree of Risk: C.

ERC Score[3]: 50.

[3] Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.