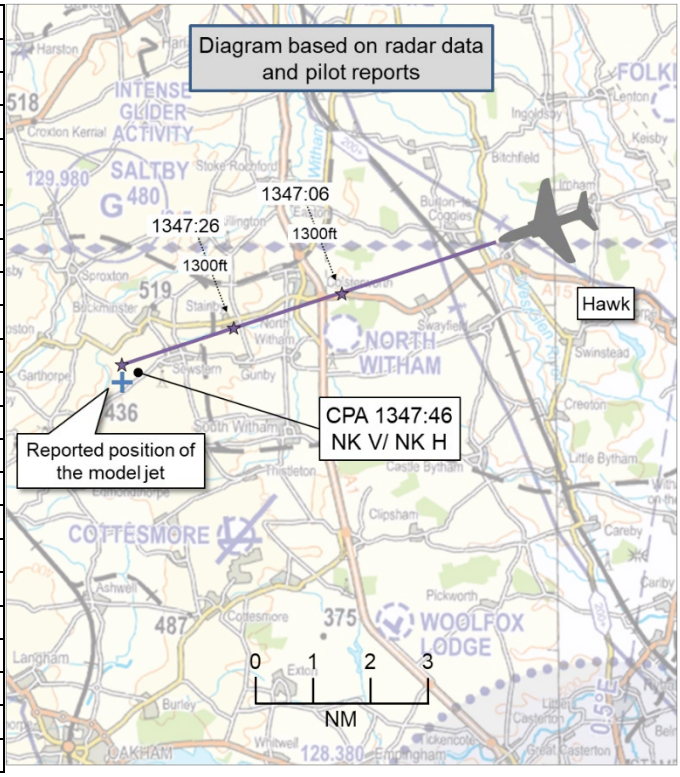
AIRPROX REPORT No 2023116

Date: 10 Jun 2023 Time: 1348Z Position: 5247N 00042W Location: 1NM W Sewstern

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Model jet	Hawk
Operator	Civ UAS	HQ Air (Ops)
Airspace	London FIR	London FIR
Class	G	G
Rules	VLOS	VFR
Service	None	Traffic
Provider	N/A	Waddington Radar
Altitude/FL	NK	1300ft
Transponder	Not fitted	A, C, S
Reported		
Colours	Red, white, black	Red, white
Lighting	None	Nav
Conditions	VMC	VMC
Visibility	<5km	>10km
Altitude/FL	1000ft	1000ft
Altimeter	AGL	NR
Heading	"*east*"	253°
Speed	NK	NR
ACAS/TAS	Not fitted	Not fitted
Separation at CPA		
Reported	100ft V/400m H	NK V/NK H
Recorded	NK V/NK H	



THE MODEL JET PILOT reports that they were the event organiser of a model aircraft fly-in held at the BMFA National Centre at Buckminster near Sewstern between Friday 9th and Sunday 11th June 2023. At approximately 1447 on Saturday 10th June, they were flying their model aeroplane at around 1000ft AGL in an easterly direction following completion of an 'Immelman-turn' aerobatic manoeuvre. Two other models were airborne in a circuit formation at differing altitudes. The model pilots had been briefed to be extra vigilant for the presence of full-size air traffic as no NOTAM was present advising full-size aviators to avoid the site when using the usual flight planning maps. They were informed that this is because the Buckminster model flying site is listed in the AIP. As they flew their model from west-to-east over the airfield, a shout of "*Full-size!*" was made, closely followed by "*It's [a Hawk formation], get down low*". They immediately complied, and dived their aircraft in a near vertical dive to a height of around 50ft AGL. The formation of aircraft appeared beyond the small copse to the east in an opposing direction to their own pass. Consequently, as they were flying in the opposite direction, their view of the [Hawk formation] was fleeting, but had been enough to register that their modified height, speed and line would not now cause a collision. As they made a left turn at the easterly end of the airfield, and turned to a westerly flight path, they observed the rearmost [Hawk of the formation] emit a short burst of smoke which was taken as an acknowledgment that they had been seen. One of [the model-aircraft] observers had the Flightradar24 app open on their mobile phone, and it showed the [Hawk formation] at a height of 900ft at a position just south of the nearest bend on the B676 immediately north of the pilot's position.

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

THE HAWK PILOT reports that, during the planning/briefing stage of a routine transit sortie, including multiple flypast events, several warning NOTAMS were noted near, or on, the planned route. One such included a standing 7-day warning for UAS [flights] with an associated contact number. The number was called by the lead nav but was not answered. The route was flown as planned without apparent incident. The Squadron has since been informed that an Airprox occurred with a model aircraft in the

vicinity of Buckminster. No NOTAM warning of model aircraft flying was evident on the day, one has since been appended with a start date of 24th June 2023. [They believe] the site was unmarked on the map or in the AIP.

The pilot perceived the severity of the incident as 'Low'.

THE WADDINGTON CONTROLLER reports that they were the Waddington Radar ATCO controlling a formation of [Hawks] departing from [takeoff airfield] to [destination airfield]. There was a planned outage for Lincs WAM and Cranwell STAR-NG, meaning that they were controlling Coningsby STAR-NG alone. They were retrospectively informed that there had been an Airprox with a model aircraft in the vicinity of Buckminster. They do not recall any traffic in confliction which would have led to an Airprox. There was traffic around the area which was called but nothing inside 3NM.

[The Waddington controller had been] listening to the [Hawk formation] intra-flight radio, and no mention of an Airprox was made on any frequency.

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

Factual Background

The British Model Flying Association (BMFA) National Centre operates under a BMFA flying site permit (within Article 16[1] authorisation) for the operation of model aircraft of over 7.5kg and up to a maximum of 25kg, above 400ft AGL and up to a maximum of 1500ft AGL. Additionally, the site has Large Model Association (LMA) permission for the operation of model aircraft 25-150kg, up to 1500ft AGL.

The entry in the AIP for model aircraft flying at Sewstern provides the following information:

SEWSTERN MODEL AIRCRAFT FLYING, LEICESTERSHIRE
524650N 0004242W
Upper limit: 1500 FT AGL
Lower limit: SFC
Phone: 0116-244 0028/ 07778-287350.
Site elevation: 450 FT AMSL.
Hours: HJ

The NOTAM for UAS activity at Sewstern:

H1755/23 NOTAMN
Q) EGTT/QWULW/IV/BO /W /000/011/5247N00042W001
A) EGTT B) 2304302301 C) 2307302259
E) UAS SWARM OPR WI 0.6NM RADIUS OF 524650N 0004227W (SEWSTERN, LEICESTERSHIRE). SWARM COMPRISED 500 UAS. MAX HGT 600FT AGL. FOR INFO 07929 523990. 2023-04-0349/AS2
F) SFC G) 1100FT AMSL

The NOTAM for the route of the Hawk:

H3057/23 NOTAMN
Q) EGTT/QWVLW/IV/M/W/000/030/5222N00117W059
A) EGTT B) 2306101335 C) 2306101431
E) FORMATION TRANSIT BY MULTIPLE ACFT ROUTING:
530958N 0003126W RAF WADDINGTON (EGXW) 1335
530717N 0002049W NW OF TIMBERLAND 1337
525213N 0001229W SW OF QUADRING 1339
524442N 0002444W N OF WITHAM ON THE HILL 1341
524921N 0003257W VCY OF BURTON LE COGGLES 1342

[1] Article 16 of UK Regulation (EU) 2019/947 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018.

525418N 0004004W FLY PAST AIR CADETS ATHLETICS 1343
525931N 0004659W W OF LONG BENNINGTON 1344
525946N 0004810W N OF STANTON IN THE VALE 1345
525707N 0005706W FLY PAST BINGHAM SF 1346
525643N 0005830W W OF BINGHAM 1347
524356N 0005618W W OF GREAT DALBY 1348
524109N 0004334W N OF OAKHAM 1349
522203N 0005953W NE OF GUILSBOROUGH 1353
515914N 0003839W W OF WOBURN 1357
515229N 0004125W VCY OF MENTMORE 1359
514645N 0004403W FLY PAST HALTON FD 1400
514455N 0004451W S OF WENDOVER 1401
513804N 0005730W E OF WATLINGTON HILL 1402
513548N 0005940W VCY PARK CORNER 1402:30
513037N 0010421W FLY PAST STOKE ROW STEAM 1403
512956N 0010458W N OF WHITCHURCH ON THAMES 1404
512457N 0012352W W OF STOCKCROSS 1405
513052N 0014259W VCY OF CHILSDON 1408
513338N 0015132W FLY PAST WILTSHIRE STEAM 1409
513447N 0015508W N OF LYDIARD PLAIN 1410
514527N 0020251W S OF SUNTISBORNE ABBOTS 1411
514855N 0013900W VCY OF BURFORD 1414
514958N 0012929W FLY PAST RAMSDEN VILLAGE FETE 1415
515021N 0012558W W OF COMBE 1416
515729N 0011943W N OF DUNS TEW 1417
521035N 0023528W N OF PENCOMBE 1424
522954N 0023946W W OF HOLDGATE 1428
524737N 0024005W RAF SHAWBURY (EGOS) 1431
ACFT EXPECTED TO TRANSIT BTN 250FT AGL-2000FT AGL. TIMINGS, HGT AND ROUTE ARE APRX AND SUBJ TO CHANGE. 2023-06-0339/AS1.
F) SFC G) 3000FT AMSL

The weather at Wittering was recorded as follows:

```
METAR EGXT 101350Z AUTO 11010KT 9999 FEW240/// 29/12 Q1013
```

Analysis and Investigation

Military ATM

An Airprox occurred on 10 Jun 23 at approximately 1347 in the vicinity of Buckminster, Grantham. The Hawk was part of [a] formation conducting a routine transit sortie in receipt of a Traffic Service from the Waddington Radar controller. The model aircraft was one of several operating at British Model Flying Association Buckminster as part of an organised event.

Utilising occurrence reports and information from the local investigation, outlined below are the key events that preceded the Airprox. The model aircraft was not displayed by either the NATS or Unit radars and hence radar screenshots are unavailable.

The Waddington Radar controller was providing an Air Traffic Service to the formation pilots only, following their weekend departure. Due to a planned outage, the WAM and Cranwell STAR-NG surveillance sensors were unserviceable, with the Coningsby STAR-NG alone being utilised throughout.

Both the Waddington Radar controller and [Hawk formation pilots] were unaware of the Airprox event occurring until it was retrospectively reported to them.

Sequence of Events:

The Waddington Radar controller did not recall any conflicting traffic within 3NM for the departure and onward transit of the [Hawk formation]. Additionally, they were also monitoring the internal formation frequency and heard no mention of conflicting Airprox traffic.

The [Hawk formation pilots] did not recall observing the model aircraft during their transit and were also unaware of the Airprox occurring.

Local BM Investigation:

As the model aircraft was not displayed on radar and the Waddington Radar controller was unaware of the model aircraft's location, no local BM investigation was conducted.

2 Gp BM Analysis:

Without display on radar, the Waddington Radar controller was unable to offer any form of assistance to the formation pilots regarding maintaining separation. The likelihood of the model aircraft being detected by the Coningsby STAR-NG is extremely low for several reasons: radar cross section of the model aircraft, distance from the radar head and height of model aircraft activity. Had the full array of surveillance sensors been available to the Waddington Radar controller, the likelihood of detection would have remained unchanged given that the model aircraft was not [reported as] operating any form of transponder or electronic conspicuity.

UKAB Secretariat

The UKAB Secretariat understands that the pilot of the Hawk (or representative thereof) had telephoned the number provided on NOTAM H1755/23, to enquire whether UAS swarm activities were to be taking place on the day in question. It is understood that the response had been that no UAS swarm activities were to take place that day, but the caller's attention was drawn to another NOTAM advising of the flying of model aircraft at the same location. However, that NOTAM, as reproduced below, had expired:

H0604/23 NOTAMN
Q) EGTT/QWULW/IV/BO /W /000/020/5247N00043W001
A) EGTT B) 2302170900 C) 2305162000
D) FEB 17-MAR 25 0900-2100, MAR 26-MAY 16 0800-2000
E) FLYING OF MODEL ACFT WI 0.5NM RADIUS 524650N 0004242W
(SEWSTERN, LEICESTERSHIRE). FOR INFO CONTACT 07778 287350.
2023-02-0232/AS2.
F) SFC G) 1950FT AMSL

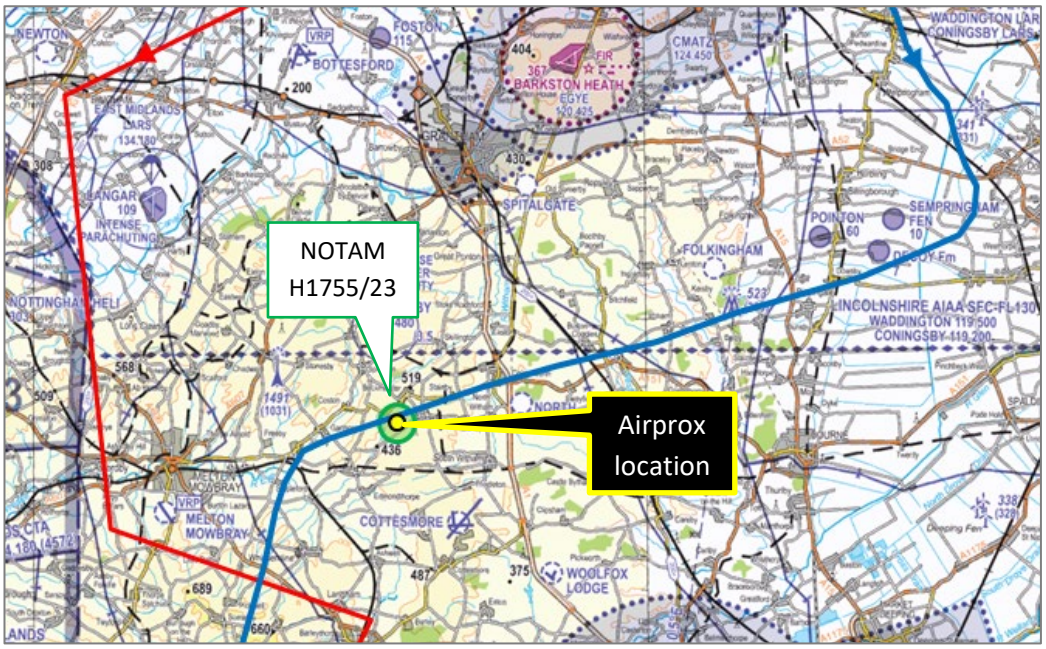


Figure 1 - The red line depicts the planned route of the Hawk as per NOTAM H3057/23. The blue line depicts the actual route flown by the pilot of the Hawk (MLAT data).

An analysis of the NATS radar replay was undertaken and the Hawk could be positively identified from Mode S data (see Figure 2) and was observed to have been at a Flight Level. An appropriate conversion factor was used to determine its altitude. The model jet was not observed on radar.

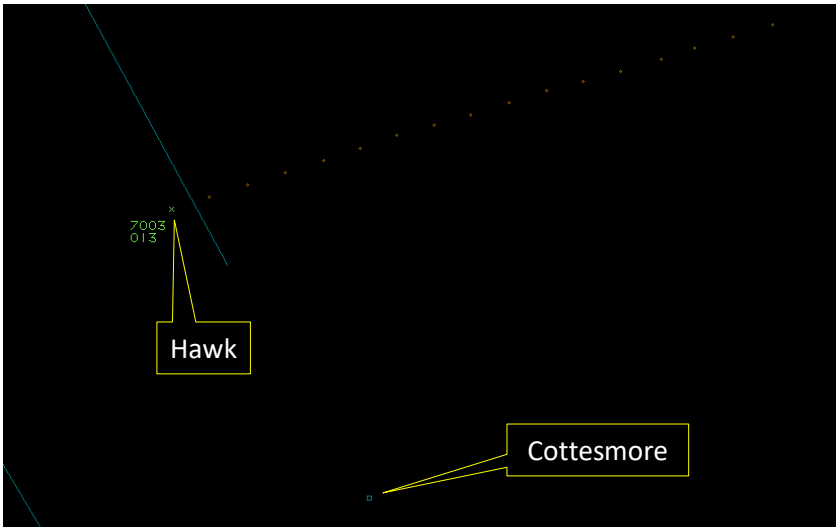


Figure 2 – CPA at 1347:46

The model jet and Hawk pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[2] The remote pilot of a model aircraft must maintain direct, unaided visual contact with the aircraft sufficient to monitor its flight path in relation to other aircraft, persons, vehicles, vessels and structures for the purpose of avoiding collisions, unless the aircraft is being flown in accordance with the 'First Person View'.[3]

[2] (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.
[3] BMFA Model Aircraft Article 16 authorisation.

Comments

HQ Air Command

The Hawk pilot was unaware of the Sewstern site, which is in fact listed in the UK AIP. Military pilots conduct their flight planning for operations below 2000ft AGL in accordance with the aeronautical charts produced by No.1 AIDU and the UK Military Low Flying Handbook. Sewstern was not present in either of those documents and the Hawk pilot was unaware of the model flying activity involved in the Airprox, as the AIP is not routinely used during military flight planning. The AIP includes detail of 23 sites where models exceeding 7.5kg (max. 25kg) operate, the flights of which can operate above 400ft AGL under an Article 16 exemption negotiated by the BMFA. A balance must be struck regarding map clutter on the military charts, as incorporation of all AIP information would be impractical. A review following this Airprox identified there is an overall benefit to incorporate the 23 sites into the military low flying documents. Once present, it will provide a better warning to pilots and opportunity for pre-flight coordination. It should also be noted that other sites may operate models above 400ft AGL and/or >7.5kg, but these should be notified by CANP.

Summary

An Airprox was reported when a model jet and a Hawk flew into proximity 1NM west of Sewstern at 1348Z on Saturday 10th June 2023. The model jet pilot had been operating under VLOS in VMC, not in receipt of an ATS. The Hawk pilot had been operating under VFR in VMC, in receipt of a Traffic Service from Waddington Radar.

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 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 considered the actions of the pilot of the model jet. It occurred to members that, even if the pilot of the model jet had checked NOTAMs before they had commenced flying at their model-aircraft event that day, they would not have known that the route taken by the Hawk pilot had changed from that provided in NOTAM H3057/23, and that the Hawk would pass as close to the Sewstern site as it had done. Consequently, it was agreed by members that the pilot of the model jet had not had any situational awareness of the presence of the Hawk until it had been sighted by an observer at the model aircraft event (**CF3**). Members were also in agreement that the observer had alerted the pilot of the model jet as soon as they could have done so, but that the Hawk was, essentially, already at the closest point of approach and, in the context of the time available to the pilot of the model jet to have taken avoiding action, that the alert had been provided late, and that the pilot of the model jet had subsequently sighted the Hawk late (**CF4**). Notwithstanding, members commended the quick reactions of the observer, and of the pilot of the model jet to have manoeuvred quickly to increase separation between the aircraft.

Members next considered the actions of the pilot of the Hawk, and wondered why the actual route taken on the day in question had differed from the planned route of the Hawk formation as provided in NOTAM H3057/23. Although there was no readily available answer to their question, members noted that the pilot of the Hawk had attended to their pre-flight planning by having contacted the telephone number provided in NOTAM H1755/23 concerning UAS swarm activities at Sewstern along their route. Once informed that UAS swarm activities were not scheduled for that day, NOTAM H0604/23 (concerning the operation of model aircraft) had been brought to their attention. Members understood that NOTAM H0604/23 had previously been regularly re-issued but had, at that time, expired.

Members referred to the Navigation Warning for Sewstern in the ENR 5.5 section of the UK AIP, and noted that the vertical limits had been from the surface to 1500ft AGL, but there had been no defined lateral limit. Given that the Hawk pilot's route had been recently re-planned, members wondered why

imprudent lateral separation had been afforded to the Sewstern site. Members' attention turned to the matter of the pre-flight preparation undertaken by the pilot of the Hawk.

A member with particular knowledge of military flight planning, explained that military pilots conduct their flight planning for operations below 2000ft AGL by reference to military aeronautical charts and in accordance with the UK Military Low Flying Handbook, and not by reference to the UK AIP (**CF2**). As the Sewstern site was not present in either of those military documents, it was agreed that the pilot of the Hawk had not been aware that their new route had passed in close proximity to the model aircraft operating at the Sewstern site.

Whilst it was acknowledged that the operator of the Sewstern site had shown diligence in highlighting their model-flying activities through an entry in the AIP and by regular NOTAMs, some members had researched a number of sites where large model aircraft were being operated through authorisations (by the CAA to the LMA) for which details were not widely publicised. Members would return to their thoughts on this later, and proceeded to next consider the actions of the Waddington Radar controller.

Members acknowledged that it had been very unlikely that the model jet would have provided a sufficient radar return that it would have been observed on radar. As such, members concluded that the Waddington Radar controller had not had situational awareness of the model jet to have been able to have passed Traffic Information to the pilot of the Hawk (**CF1**). Notwithstanding, members discussed the radar display and, in particular, the ground-based information available to a radar controller in the form of an electronic overlay to their screen. A member with particular knowledge of radar provision, explained that the Sewstern site would not have featured on this kind of overlay. Members were in agreement that information, such as the location of the Sewstern site, had been of significant importance and, had the Waddington Radar controller known about the site, a caution could have been passed to the pilot of the Hawk. Members also discussed the requirement to balance the amount of useful information presented to a radar controller with the potential that less important information might clutter their display and provide a distraction.

Members wished to explore this further and, in concurrence with comments made by HQ Air Command in relation to this Airprox, and to incorporate members' previous thoughts regarding the promulgation of activities by the LMA, the Board resolved to make the following recommendation, in three parts, that:

1. '*Defence considers the addition of radar overlays for model aircraft operating sites that are notified in the UK AIP ENR 5.5*';

2. '*Defence considers the addition of VFR chart symbols for model aircraft operating sites that are notified in the UK AIP ENR 5.5*' and that;

3.'*Large Model Association (LMA) considers listing all sites that operate under the 'Over 25kg Scheme' for flight testing, as listed on the LMA website, in the UK AIP*'.

Summarising their discussion, members agreed that the flight planning resources used by the pilot of the Hawk had not included an entry for the Sewstern site. Acknowledging that there had been no Traffic Information passed by the Waddington controller concerning the model jet, it was further agreed that the pilot of the Hawk had not had situational awareness of the presence of the model jet (**CF3**) and that the model jet had not been sighted at any point in their flight (**CF5**). It was concluded that normal safety margins had been degraded, and that it had been the last-minute alert by the model aircraft observer that had enabled the pilot of the model jet to make an avoiding manoeuvre that had increased separation between the aircraft. Members agreed that, consequently, a risk of a collision had been averted. As such, Risk Category C was assigned to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2023116			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Situational Awareness and Action			
1	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
	Flight Elements			
	• Tactical Planning and Execution			
2	Organisational	• Flight Planning Information Sources	An event involving incorrect flight planning sources during the preparation for a flight.	
	• Situational Awareness of the Conflicting Aircraft and Action			
3	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
	• See and Avoid			
4	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
5	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: C.

Recommendations:

1. Defence considers the addition of radar overlays for model aircraft operating sites that are notified in the UK AIP ENR 5.5.

2. Defence considers the addition of VFR chart symbols for model aircraft operating sites that are notified in the UK AIP ENR 5.5.

3.Large Model Association (LMA) considers listing all sites that operate under the 'Over 25kg Scheme' for flight testing, as listed on the LMA website, in the UK AIP.

Safety Barrier Assessment[4]

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

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the Waddington controller had not had any situational awareness of the presence of the model jet.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the Hawk pilot had not been aware of the entry in the UK AIP for model aircraft flying at Sewstern.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had had situational awareness of the presence of the other.

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

See and Avoid were assessed as **partially effective** because the pilot of the model jet had sighted the Hawk late.