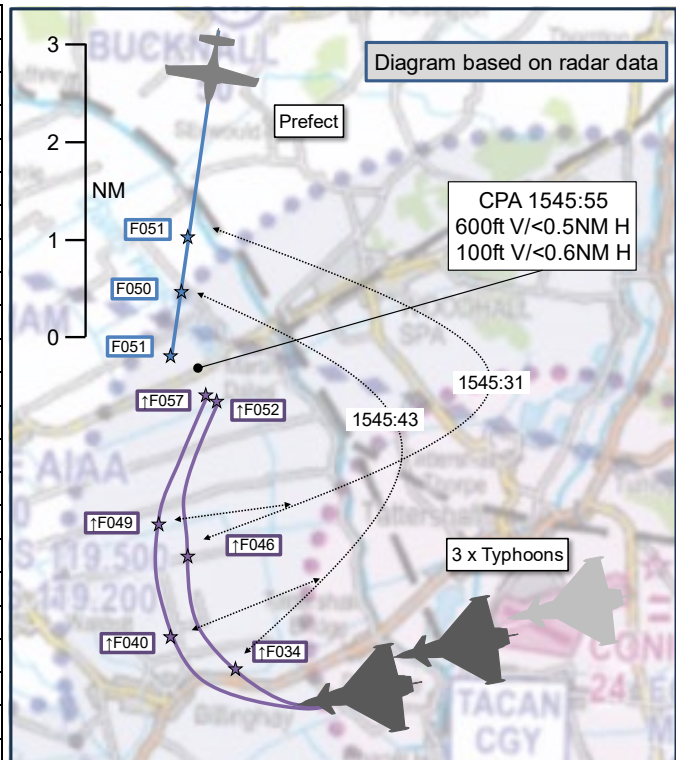


**AIRPROX REPORT No 2023249**

Date: 07 Nov 2023 Time: 1546Z Position: 5308N 00016W Location: 4NM NW Coningsby

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

Recorded	Aircraft 1	Aircraft 2
Aircraft	Prefect	Typhoon
Operator	HQ Air (Trg)	HQ Air (Ops)
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Traffic	Traffic
Provider	Waddington	Coningsby
Altitude/FL	FL051	FL057/FL052
Transponder	A, C, S+	A, C, S+
Reported		
Colours	White, Blue	Grey
Lighting	Strobes	NR
Conditions	VMC	VMC
Visibility	NR	NR
Altitude/FL	4500ft	4500ft
Altimeter	RPS	QFE
Heading	180°	360°
Speed	NR	300kt
ACAS/TAS	TAS	Not fitted
Alert	TA	N/A
Separation at CPA		
Reported	Not Seen	NR
Recorded	600ft V/<0.5NM and 100ft V/<0.6NM H	



**THE PREFECT PILOT** reports that they were conducting an IF sortie with a planned transit to return to Cranwell from the OTR beacon which was being conducted at 4500ft on the Barnsley RPS. During the transit a Traffic Service had been established with Waddington LARS having been handed over from Humberside. Approaching east abeam Scampton, ATC requested that they maintained their current heading due to the Waddington RA(T), which was agreed with. Shortly afterwards ATC contacted and informed them that Coningsby was due to launch a formation and requested that they maintained not below 4500ft, this was also agreed with. Shortly thereafter they were informed that the formation would be launched from Coningsby but that it was 'restricted below' them. A little while later they received several traffic alerts from the TAS; due to the speed of the Typhoon this was not something that appeared unusual and they remarked to the trainee that it would likely be the formation 'restricted below'. Given that they were confident that the formation would remain below their level there was no great urgency in the cockpit to resolve the conflict. Shortly after this, they became visual with a Typhoon (they estimated 1NM ahead) at their current level. It became apparent that the formation was not remaining below them and so [the Prefect pilot] began to visually look for the whole formation. They became visual with two aircraft both approximately at their level, both climbing. The closest aircraft passed down their left-hand side, slightly above, climbing. As the aircraft were passing, Waddington gave Traffic Information on the formation and asked if they were visual, to which they indicated they were, and also commented that the Typhoons were 'not restricted below'.

During discussion with the Waddington LARS post event, it became apparent that a third unseen aircraft went underneath them, they never got visual with this conflict and believed it to be a pair only. During the in-brief with the DOS the above conflict was reported and at the time a DASOR was suggested but to be completed post contact with the ATC Supervisor.

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

**THE TYPHOON PILOT** reports that they were the lead aircraft a formation of 3 Typhoons. Whilst on the ground at RAF Coningsby, they were given the departure clearance "MID N FL150". During departure the formation switched over to Coningsby Departures once the No3 was airborne. On initial contact, ATC said "Climb FL150 Traffic Service, traffic north 3NM, tracking south, 4500ft", which was provided when they were already passing through 4500ft QFE. [There was] a further call of "traffic north 2NM, tracking south, same level" when they were at 5000ft QFE. Due to having already climbed through the Prefect's level, they assessed this aircraft as no longer factor traffic.

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

**THE WADDINGTON CONTROLLER** reports that they were providing the Prefect pilot with a Traffic Service and also had an aircraft on a Basic Service. Following a request from the WAD RA controller, the Prefect pilot was asked to maintain their heading on recovery to Cranwell to prevent them straying closer to WAD as the RA(T) over WAD was active and the Red Arrows formation was close to the east/south east boundary. The Basic Service track was at 2500ft Cranwell QFE under an agreement with Cranwell, crossing the Cranwell stub south-to-north. The WAD Supervisor received a call from Coningsby asking for Traffic Information on the Prefect, they informed them it was 'Prefect shortly to recover to Cranwell, 4500ft Barnsley'. The Supervisor passed on the information to Coningsby and then asked "can he maintain 4500ft?" They transmitted "Prefect [C/S] for coordination with Coningsby are you able to maintain 4500ft", to which the pilot agreed, this information was passed on to Coningsby. The Supervisor then informed them about the [Typhoon] formation departing Coningsby to the north, restricted below, and they passed the information on to the Prefect pilot.

They were then told that the Helimed was on start, going to the north and were passed a flight strip from the WAD RA controller. They saw [Typhoon callsign] formation rolling and then received a free-call for a Basic Service track, which then divided their attention. Subsequently, an STCA then triggered between the Prefect and the departing Typhoons which they expected whilst the Typhoons climbed to the agreed level below. The alerts continued which was when they realised the Typhoons were in a continuous climb giving them a very short window to call traffic between transmissions.

They called the [Typhoon C/S] formation traffic to the Prefect pilot as 'south half a mile climbing, are you visual?' By this point they believed it impossible to make any safe meaningful intervention in the scenario. The Prefect pilot called visual and queried if the traffic was no longer restricted below; to the controller's knowledge they believed they were. The WAD Supervisor called CON Supervisor to discuss the incident.

At the closest point, they believed there was less than half a mile between the Prefect and the Typhoon formation leader with Prefect Mode C reading 051 and Typhoon reading 050 climbing. It appeared that the first two aircraft in the formation climbed above the Prefect, whereas the third aircraft in the formation stayed below and went underneath.

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

**THE WADDINGTON SUPERVISOR** reports that they received a call from CON DEPS requesting Traffic Information on traffic which was northeast of WAD 8NM tracking south. They informed the CON DEPS that it was a Prefect at 4500ft Barnsley QNH inbound to CWL, shortly descending. They were asked if the Prefect could maintain 4500ft QNH against traffic departing CON to the north. [The Supervisor] requested that the LARS controller ask the Prefect pilot if they could maintain 4500ft to facilitate departures from CON, this was agreed and the CON DEPS controller informed. CON informed them that there were 3 x Typhoons departing CON squawking 1741-1743, they then checked what the code callsign was assigned [Typhoon C/S]. Although no formal agreement of coordination was made, they were convinced that CON would be restricting their departing traffic below the Prefect, which was why they asked [Waddington] if they could maintain 4500ft. After they saw the Typhoons fly through the Prefect's level they called the CON SUP to check why this happened; there was no time to intervene.

**THE CONINGSBY DEPARTURES CONTROLLER** reports that they had a 3-ship prenoted for a MID N departure climbing to FL150. They observed a LARS transit northeast of Bardney, 4NM tracking south, working with Waddington LARS. They requested Traffic Information from the Waddington

controller who confirmed it was maintaining 4500ft Barnsley RPS. Co-ordination was not requested as they anticipated their traffic would be Traffic Service with the prevailing colour code being BLU. ADC requested release, which was approved, anticipating the departing traffic would climb above the LARS transit. As the Typhoons got airborne it became apparent the departure profile for MID N would take them close to the Waddington LARS traffic. As soon as they called on frequency they were quickly identified and Traffic Information was provided. A further update was given but there was no response from the pilot at any time. As soon as they were clear of the confliction a handover was completed to the next agency. The situation was uncomfortable for them as a controller and with hindsight, a better course of action would have been more appropriate.

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

**THE CONINGSBY SUPERVISOR** reports that they did not witness the incident as they were elsewhere in the Approach Room. They were made aware of the incident by the Waddington Radar Supervisor and after reviewing the radar replay, removed the controller from the Departures position.

## **Factual Background**

The weather at Coningsby was recorded as follows:

```
METAR EGXC 071520Z 27011KT 9999 FEW020CB SCT045 12/07 Q1005 NOSIG RMK BLU BLU=
```

## **Analysis and Investigation**

### **Military ATM**

An Airprox occurred on 7 Nov 23 at approximately 1546 UTC, approximately 5NM northwest of RAF Coningsby. The Prefect [pilot] was conducting a routine training sortie returning to RAF Cranwell in receipt of a Traffic Service from the RAF Waddington Lower Airspace Radar Service (LARS) controller. The Typhoon pilot, the lead of a three-ship Typhoon formation departing RAF Coningsby on a MID 2 North profile, in receipt of a Traffic Service from the Coningsby Departures controller.

Utilising occurrence reports and information from the local investigation, outlined below are the key events that preceded the Airprox. Where available they are supported by screenshots to indicate the positions of the relevant aircraft at each stage. With the exception of the CPA image, the screenshots are taken from Unit radar recordings and present the radar presentation of the Prefect and Typhoons available to the radar controllers and supervisors.

EG D324<sup>1</sup> at RAF Waddington was active in support of military display activity. The Prefect was transiting south at 4500ft Barnsley RPS, routeing via OTR, before being instructed by the Waddington LARS controller to maintain heading to remain west of EG D324.

### **Sequence of Events**

At 1542:16, the Coningsby Deps controller approved the release of the Typhoon formation following a request from the Coningsby Tower controller. The release was approved, subject to radar traffic at 2NM with intentions to join the visual circuit.

---

<sup>1</sup> 5NM radius centred on RAF Waddington's Aerodrome Reference Point, Surface to FL105.



Figure 1 (1542:16): Typhoon formation departure approved.

At 1543:30, as the formation was lined up for departure, the Coningsby Departure controller contacted the Waddington Radar Supervisor to request Traffic Information on the Prefect. The Waddington Supervisor provided the following Traffic Information *“Prefect, inbound to Cranwell currently at 4500ft on the Barnsley”*. The Coningsby Departures controller responded with *“4500, can you maintain that for the minute? I’ve just got a 3 ship about to roll, all going north bound?”* The Waddington Supervisor then engaged with the Waddington LARS controller, who confirmed the 4500ft altitude restriction with the Prefect, before confirming the agreement with the Coningsby Departure controller *“Yeah, he can, 4500ft on the Barnsley”*. Prior to ending the call at 1544:15, the Mode 3A and callsigns for the Typhoon formation were passed to the Waddington Supervisor.



Figure 2 (1543:30): Traffic Information on Prefect requested.

At 1544:32, the Waddington LARS controller informed the Prefect pilot of the Typhoon formation and their incorrect understanding of the intentions of the formation, *“4-ship of Typhoons shortly getting airborne from Coningsby, they are restricted below until 3 miles”*. This call was acknowledged by the Prefect pilot.

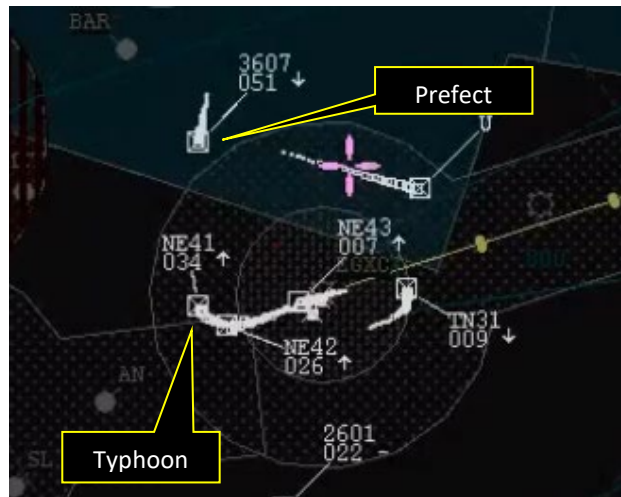


Figure 3 (15:45:20): Typhoon formation contacted Coningsby Departures controller. (Separation: 5.2NM and 2000ft)

At 1545:20, the Typhoon formation lead contacted Coningsby Departures controller passing FL40. The Coningsby Departures controller identified the Typhoon formation, issued a climb to FL150 and applied a Traffic Service. Traffic Information was then immediately passed on the Prefect *“Traffic, north 3 miles, tracking south, indicating 4500 feet.”* The Typhoon formation lead acknowledged the FL150 climb and Traffic Service, but not the Traffic Information.



Figure 4 (1545:26): Short-Term Conflict Alert for the Waddington Lower Airspace Radar Service controller. (Separation: 4.3NM and 1400ft)

At 1545:26, the LARS controller received a Short-Term Conflict Alert but, due to responding to a civil LARS transit, did not pass Traffic Information to the Prefect pilot on the Typhoon formation until 1545:48 *“Traffic south, half a mile, tracking north indicating similar level climbing, formation of Typhoons, are you visual?”* The Prefect pilot reported visual and queried that the Typhoon formation were not restricted below.





Figure 5 (1545:38): Updated Traffic Information on the Prefect to the Typhoon formation. (Separation: 3.1NM and 800ft)

At 1545:38, the Coningsby Departures controller passed updated Traffic Information to the Typhoon formation lead on the Prefect “Traffic, north 2 miles, tracking south, same level”. Again, the Traffic Information was not acknowledged by the Typhoon formation lead.



Figure 6 (1545:56): Short-Term Conflict Alert for the Coningsby Departures controller. (Separation: 0.5NM and 600ft)

At 1545:56, the Coningsby Departures controller ‘in-commed’<sup>2</sup> the Typhoon formation iaw BM Policy and the Traffic Service being provided. This action activated the Short-Term Conflict Alert, which immediately alerted due to the proximity of the Prefect and Typhoon formation.

<sup>2</sup> Selected the aircraft to inform the system that it was under their control.

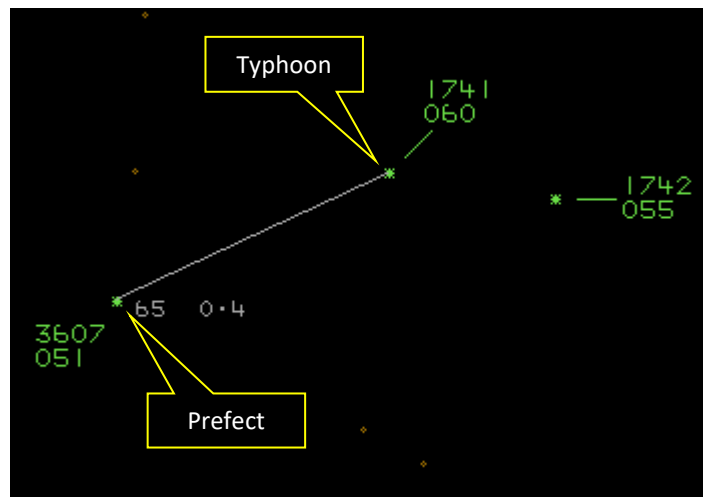


Figure 7 (1545:59). CPA.

CPA occurred at 15:45:59 and recorded as 0.4NM and 900ft separation.

### Local BM Investigation(s)

The local investigation conducted by RAF Coningsby<sup>3</sup> identified the event outcome as a loss of safe separation between two non-cooperating aircraft. Several BM related causal/aggravating factors were identified, with recommendations identified where suitable:

a. The Coningsby Departures controller identified the conflicting profile presented by the Prefect and attempted to plan for it. The expectation was that the Typhoon formation would climb to their cleared level of FL150 at a rate that would provide sufficient separation between them and the Prefect below. However, the radar assisted trail departure profile of the Typhoon formation delayed the climb and prevented the expected vertical separation from being achieved, ultimately resulting in the Typhoon formation climbing through the level of the Prefect.

i. Recommendation: Local unit standards and assurance action was taken to discuss the plan selected by the Coningsby Departures controller. Identifying alternative options such as a vertical height restriction below the Prefect for the Typhoon formation or a lateral routing change either through an alternate MID profile or heading change.

b. Through the Coningsby Departures controller requesting Traffic Information on the Prefect, an assumption was made by the Waddington LARS controller that coordination existed. This incorrect assumption led to the Waddington LARS controller expecting the Typhoon formation to climb and then maintain below the Prefect, an expectation that was relayed to the Prefect pilot. Assuming the confliction was resolved through coordination, the Waddington LARS controller was therefore late in providing Traffic Information to the Prefect pilot on the Typhoon formation.

i. Recommendation: Local unit standards and assurance action was taken to understand why the assumption was made, along with providing guidance to all Lincs TATCC controllers regarding co-ordination assumptions.

c. Whilst the Coningsby Departures controller provided Traffic Information to the Typhoon formation, it was passed late when the Prefect was north of the Typhoon formation lead by 3NM. The delay was first due to the Typhoon formation changing from Coningsby Tower to Coningsby Departures and then through the Coningsby Departures controller issuing a climb and Traffic Service before Traffic Information.

<sup>3</sup> Cranwell Radar is part of the Lincs TATCC located at RAF Coningsby and supported by the Coningsby Station Safety Cell.

## 2 Gp BM Analysis

The geographical positioning of Coningsby, Cranwell, Barkston Heath and Waddington results in the approach and departure profiles of the individual aerodromes regularly intercepting. The Coningsby Departures controller approved the release of the Typhoon formation based on an expectation that they would be Traffic Service and climb on a standard rate of climb to their intended level of FL150. What was not considered was the effect of the radar-assisted trail departure profile on the rate of climb, which decreased the anticipated separation between the Prefect and Typhoon formation. This decrease was exacerbated by the Typhoon formation being delayed for take-off due to instrument traffic completing their approach ahead. On initial contact, whilst the Coningsby Departures controller first identified the Typhoon formation, issued the climb to FL150, and provided a Traffic Service they also included Traffic Information within the initial call. The prioritisation of this information was based upon muscle memory and natural 'patter', however, the climb instruction was also essential to achieving the separation plan of the Typhoon formation climbing above the Prefect. Ultimately, at the point the Typhoon formation contacted the Coningsby Departures controller the Traffic Information was already late as the aircraft were within 5NM.

Whilst incorrect, the Waddington LARS controller's assumption that co-ordination existed between the Typhoon formation and Prefect was understandable given the conflicting profiles of the aircraft. Although Traffic Service provision leaves ultimate responsibility for collision avoidance with the aircrew, Air Traffic Control has a duty of care to not introduce a risk a collision through issuing of headings or levels. Therefore, in scenarios such as this it is commonplace for Traffic Information to be sought and then the departing aircraft to be step-climbed below, or laterally separated for a continual climb. When both aircraft are Traffic Service either option can be executed without formal coordination, but still requires Traffic Information to be passed as routine to both pilots. The incorrect assumption by the Waddington LARS controller that coordination existed resulted in them providing late Traffic Information that provided the Prefect pilot with little time to visually acquire the Typhoon formation and then resolve the conflict if required.

Overall, when considering the radar-assisted trail departure profile and initial take-off delay, a more suitable departure profile for the Typhoon formation would have been an alternate MID that achieved lateral separation, or a vertical height restriction to climb and maintain below the Prefect. Either would have ensured adequate separation until Traffic Information could have been provided to enable the aircrew to visually acquire the other aircraft and then continue the climb as required.

### UKAB Secretariat

The Prefect and Typhoon pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.<sup>4</sup> If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.<sup>5</sup> If the incident geometry is considered as converging then the Typhoon pilot was required to give way to the Prefect.<sup>6</sup>

## Comments

### HQ Air Command

The Typhoon formation was conducting a Radar Assisted Trail Departure (RATD), which is a standard profile. The lead aircraft flies the briefed departure profile and subordinate aircraft maintain separation on the aircraft ahead using the aircraft radar. Once visual with the lead and VMC is assured, the subordinate aircraft take their eyes off the head-down instruments and focus on a visual join with the lead into close formation, augmented by radar information through several sources. The Airprox occurred during that transition, and it is likely the subordinate pilots were primarily focussing on the visual formation join. Neither Typhoon #2 nor #3 became visual with the Prefect

<sup>4</sup> (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

<sup>5</sup> (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on. MAA RA 2307 paragraph 13.

<sup>6</sup> (UK) SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.



for that reason. The Traffic Information passed to the Typhoons was of little use due to the timing of that radio call. SA on the traffic could have been gained sooner by switching to the departure frequency on the runway, but this is not routine practice due to the requirement to maintain awareness on circuit traffic during each of the formation's line-up take-off roll. This procedure is unchanged but subject to continuous review and has been illustrated with this occurrence in Typhoon pilot training events. A better solution would have been coordinated height de-confliction measures as suggested by Waddington ATC, given the Typhoon pilots' reduced ability to maintain 'see and avoid,' hence the standard practice of obtaining a radar service even when VMC.

## Summary

An Airprox was reported when a Prefect and a formation of Typhoons flew into proximity 4NM northwest of Coningsby at 1546Z on Tuesday 7<sup>th</sup> November 2023. The Prefect pilot was operating under IFR in VMC, in receipt of a Traffic Service from Waddington and the Typhoon formation was operating under VFR in VMC, in receipt of a Traffic Service from Coningsby Departures.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers 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 discussed the actions of the air traffic controllers. The Waddington controller had the Prefect under their control, routing southbound above the Coningsby MATZ, and the Coningsby controller had been expecting the Typhoon formation departure and had known they wanted to climb to FL150. Members were told that this was an everyday occurrence at Coningsby and that normally the Typhoons could be expected to climb quickly to FL150, and so it had not been a flawed assumption that they would be able to do so on this occasion. However, the Typhoon departure had been delayed due to other traffic. Furthermore, the Typhoons had been conducting a trail departure, which meant that the aircraft would have launched separately and consequently remain on the Tower frequency longer than usual in order to allow the No3 to get airborne, remaining on the Tower frequency, before switching to the Departures frequency once all three aircraft had become airborne. The Departures controller had not anticipated how long this would take, and so by the time the Typhoons had arrived on frequency it had been much later than would normally be the case, with the Typhoons already in the climb (as approved by their departure clearance). Members thought that there had been other options available to the Coningsby controller and they could have adapted the clearance rather than allow the formation to launch directly at the Prefect (**CF1, CF5**). Furthermore, once airborne and on the Departures frequency, the controller had not given immediate Traffic Information, but instead had followed the normal format of identifying the aircraft and, because they had intended that the Typhoons would climb above the Prefect, confirming the clearance to climb, which in turn meant that by the time the pilots had received the Traffic Information on the Prefect, it had already been too late (**CF1, CF2**). The late arrival on frequency and the controlling instructions that had followed meant that the controller had not selected the Typhoons track on the screen ('in-commed'), and because the STCA would not have alerted until this action had taken place, the STCA had not alerted until the Typhoons had already been in close proximity to the Prefect and so had not provided the controller with any additional warning (**CF6**).

Members were then told that the controllers operating in the Lincolnshire area had noticed the effect of the RA(T) at Waddington, in place to allow display practice, had resulted in a knock-on effect of pushing the Prefects, and other transiting traffic, further east and closer to Coningsby. Members noted that the airspace in the area was congested, but thought that the old controlling adage 'control what you see' applied here, in that although the Prefect had been transiting through the area, there had been other options available to the Coningsby controller and that, whilst the initial plan had been sound, it had been apparent for some time that the elapsed time before the Typhoons had become airborne and had meant that the plan had needed updating.

Turning to Waddington ATC, members were told that the Supervisor had taken the call from Coningsby Departures and had been under the impression that, by asking if the Prefect could remain at 4500ft, the Coningsby Departures controller had effected coordination (CF3). Whilst controlling members were sympathetic to this assumption, nevertheless, they noted that standard phraseology for coordinating was in place for a reason; to ensure that there should be no ambiguity. This incorrect assumption had then been passed onto the Waddington controller, who had believed that the Typhoons would have levelled-off beneath the Prefect (CF6). Although the controller had previously passed Traffic Information on the Typhoons before they were airborne, and because of their inaccurate situational awareness that the formation would be stopping below the Prefect, the controller had not detected that the Typhoons had continued to climb (CF4) and therefore had not been able to pass updated Traffic Information until the Typhoons had been half a mile away (CF2), too late to allow the Prefect pilot to have taken any action. Although the STCA had alerted on the Waddington controller's screen (CF7), they would have expected that it would alert even had the Typhoons been levelling off, and so this had not primed the controller that anything had been amiss.

The Board then looked at the actions of the Prefect pilot. Having been told that the Typhoons were going to be stopped beneath them, the pilot had inaccurate situational awareness (CF8). Furthermore, this had meant that the pilot had not reacted when they had received TAS indications about the approaching traffic (CF9). They had received late Traffic Information from ATC, informing the pilot that the Typhoons had been indicating a similar level, by which time it had been too late to do anything, making this effectively a non-sighting (CF10).

The Typhoon pilots actions also had little bearing on the Airprox. They had conducted their departure as planned and switched to the Departures frequency unaware that there had been anything to inhibit their climb. They had received Traffic Information on the Prefect late (CF8), by which point they had already climbed through its level. It had not been clear from the Typhoon lead pilot's report whether they had ever become visual, but it was known that the No2 and No3 pilots had been focusing on catching up and joining formation with the lead aircraft and had not seen the Prefect at all (CF10).

When determining the risk, the Board considered the reports from the pilots and controllers together with the investigations and radar screenshots. They noted that the Prefect pilot saw the Typhoons at or about CPA and at least 2 pilots in the Typhoon formation had not seen the Prefect at all. The Board therefore quickly agreed that safety margins had been reduced below the norm and that there had been a risk of collision (CF11), however, they also agreed that fortuitous circumstances were such that there had been some lateral separation and for that reason they assigned risk category B.

## **PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

### Contributory Factors:

2023249				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Ground Elements</b>				
<b>• Regulations, Processes, Procedures and Compliance</b>				
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
<b>• Situational Awareness and Action</b>				
2	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
3	Human Factors	• ATM Coordination	Coordination related issues (external as well as internal)	
4	Human Factors	• Conflict Detection - Detected Late	An event involving the late detection of a conflict between aircraft	
5	Human Factors	• Inappropriate Clearance	An event involving the provision of an inappropriate clearance that led to an unsafe situation	
6	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness

• Electronic Warning System Operation and Compliance				
7	Technical	• STCA Warning	An event involving the triggering of a Short Term Conflict Alert (STCA) Warning	
Flight Elements				
• Situational Awareness of the Conflicting Aircraft and Action				
8	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
• Electronic Warning System Operation and Compliance				
9	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
• See and Avoid				
10	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
• Outcome Events				
11	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: B.

### Safety Barrier Assessment<sup>7</sup>

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 **ineffective** because the Typhoons had been released into conflict with the Prefect and had not been given timely Traffic Information to allow the pilots to become visual.

**Situational Awareness of the Confliction and Action** were assessed as **ineffective** because both controllers had provided late Traffic information. Additionally, the Waddington controller had had inaccurate situational awareness, because they had believed that the Typhoons had been co-ordinated below the Prefect.

#### Flight Elements:

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because the Prefect pilot had inaccurate situational awareness (they had been told that the Typhoons would stop the climb below), and the Typhoon pilots had received late situational awareness, through late Traffic Information.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because although the Prefect pilot had received TAS indications, they had believed that the Typhoons were going to stop the climb below them and therefore the pilot did not react to the TAS alert.

<sup>7</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

<b>Airprox Barrier Assessment: 2023249</b>		Outside Controlled Airspace						
<b>Barrier</b>		<b>Provision</b>	<b>Application</b>	<b>Effectiveness</b>				
				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	✓	✓					
<b>Key:</b>		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>		
Provision	✓	⦿	✗	●				
Application	✓	⦿	✗	●				
Effectiveness								