

Farnborough Airport
Airspace Change Post Implementation Review
CAA Reference ACP-2013-07
Annex C Safety and Infringements Items 19 and 28

Record of revisions

Issue	Date	Reason for Change
1.0	2023-05-15	Published

Contents

1	About this document	3
1.1	Introduction.....	3
2	Recurring instances of IFPs not being flown correctly (19a).....	3
2.1	Airspace and Instrument Flight Procedures introduced at Farnborough	3
2.2	Recurrence.....	3
3	Mandatory Occurrence Reports MORs (19b)	4
3.1	What is an MOR?	4
4	AIRPROX Reports (19c)	6
4.1	What is an AIRPROX?	6
5	Air Safety Reports ASRs (19d).....	6
5.1	What is an ASR?	6
6	Infringements (28a).....	7
6.1	What is an infringement?.....	7
7	Conclusion.....	8
7.1	Aviation safety has been enhanced.....	8
8	Appendix: Summary list of events	9

1 About this document

1.1 Introduction

- 1.1.1 This document is part of the Farnborough Airport airspace change post-implementation review (ACP PIR). It should be read in conjunction with the main PIR document which provides the structure, the majority of the evidence, and details the regulatory requirements for the PIR.
- 1.1.2 This document summarises safety data relating to the PIR period.
- 1.1.3 It covers Item 19 (Safety) and Item 28 (Infringement Statistics) from the CAA's list of PIR requirements.
- 1.1.4 The topics required by the CAA are:
 - 19a Data concerning any recurring instances of Instrument Flight Procedures (IFPs) including IAPs, SIDs, STARs, Holds not being flown correctly.
 - 19b Reports concerning any known Mandatory Occurrence Reports (MORs).
 - 19c Reports concerning any known AIRPROX reports.
 - 19d Reports concerning any known Air Safety Reports (ASR).
 - 28a Data on the % change in infringements, compared on a monthly basis before and after the change.
- 1.1.5 Due to the nature of aviation safety reporting, the summaries below have been anonymised. The original data and reports have been sent to the CAA for independent scrutiny.

2 Recurring instances of IFPs not being flown correctly (19a)

2.1 Airspace and Instrument Flight Procedures introduced at Farnborough

- 2.1.1 Prior to the airspace change, Farnborough Airport did not have SIDs or STARs, and had one contingency hold, relying on well-practised but ultimately tactically-delivered departures and arrivals. Upon implementation Farnborough Airport became integrated with the air route network via systemised connectivity to the air navigation standard known as RNAV1.
- 2.1.2 Arrival connectivity is also provided for the lesser standard known as RNAV5 to primarily accommodate arrivals to Wessex Group aerodromes¹ in the vicinity of Farnborough.

2.2 Recurrence

- 2.2.1 Recurring instances, in this context, means regular and replicating cases as identified from operational data, safety reports and stakeholder feedback.
- 2.2.2 We have checked our operational data and safety system and there are no reports relating to recurring instances of Farnborough Instrument Flight Procedures not being flown correctly within the reporting period April 2022 to March 2023.
- 2.2.3 However, NERL feedback (see separate document 'Annex B Operational Feedback Engagement') has identified one area which relates to the potential for the wrong STAR to be flown.
- 2.2.4 The CPT 1P and CPT 1V STARs have similar designations which is likely to be a contributing factor, the former is RNAV5, the latter RNAV1.

¹ The Wessex Group is a list of aerodromes which share Farnborough's STARs: Blackbushe, Fair Oaks, Dunsfold, Lasham and RAF Odiham. Farnborough air traffic accepts responsibility for arrivals to these aerodromes from the main route network, controls them locally and releases them to join the appropriate arrival route via their respective air traffic services unit outside controlled airspace.

- 2.2.5 The scenario relates to the management of RNAV1 / RNAV5 traffic to Farnborough and adjacent airfields. While STARs exist to accommodate both specifications, prior to transition only RNAV1 traffic was permitted into Farnborough (though Wessex Group airfields in the vicinity were expected to – and did – utilise the RNAV5 procedures). Post-implementation, a very small minority of RNAV1 Farnborough crews did not plan for the RNAV1 arrival, which has resulted in some instances of an unexpected lateral trajectory being flown.
- 2.2.6 Whilst this is not a common occurrence – in the reporting period April 2022 to March 2023, one instance of the incorrect CPT STAR being flown is recorded, see report ID 163070 – it remains a topic for both NERL and Farnborough to monitor and work together to ensure aircrews and controllers are properly briefed on the importance of flight planning the correct STAR and ensure the correct STARs are being issued. Additionally, options are being considered regarding the evolution of STARs to mitigate RNAV1/5 confusion and to further minimise the risk of the wrong STAR being flight planned or flown.

3 Mandatory Occurrence Reports MORs (19b)

3.1 What is an MOR?

- 3.1.1 Organisations within the aviation industry are required to submit Mandatory Occurrence Reports (MORs) to the CAA.
- 3.1.2 These reports cover any safety-related event which endangers or which, if left uncorrected, could endanger an aircraft, its occupants, or any other person.
- 3.1.3 Excluding AIRPROXs (which are discussed separately in Section 4 from page 6), there were 60 MORs relating to Farnborough Airspace within the reporting period April 2022 to March 2023.
- 3.1.4 The MORs have been summarised into 5 categories describing the nature of the event being reported:
1. Procedure/Clearance Deviation (non-compliance with an ATC clearance or procedure)
 2. CAS excursion (an unplanned departure from controlled airspace)
 3. Airspace Infringement (the unauthorised entry of an aircraft into controlled airspace, discussed in more detail in Section 6 from page 7)
 4. Separation Minima Loss (a breach of separation minima inside controlled airspace)
 5. Loss of Deconfliction Minima (LoDM – a breach of minima outside controlled airspace)
- 3.1.5 The majority of MORs related to Airspace Infringement (45%), followed by Separation Minima Loss (18%), CAS Excursion (18%), Procedure/Clearance Deviation (15%) and Loss of Deconfliction Minima (3%), see Figure 1.

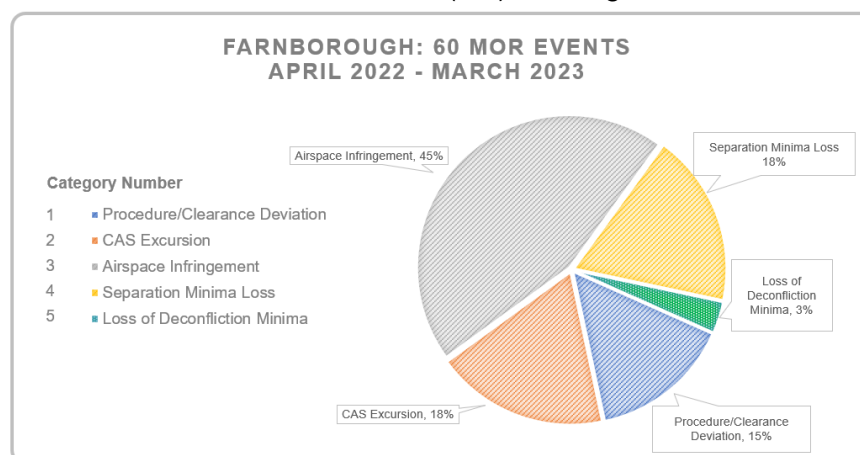


Figure 1 Farnborough MORs within the reporting period April 2022 to March 2023 by category of event (rounded)

- 3.1.6 Note that Categories 2, 3, 4 and to a great extent Category 1 relate primarily to breaches of controlled airspace and instrument flight procedure rules; before the ACP, Farnborough had neither.
- 3.1.7 Therefore, these categories of event could not exist in the previous Farnborough operation and there can be no meaningful comparison of pre and post ACP data.
- 3.1.8 Category 5 events relate to a breach of deconfliction minima outside controlled airspace. Following introduction of the ACP a reduction in these events has taken place (as anticipated), as the introduction of Farnborough CAS means that flights previously worked in Class G airspace are now within CAS, thereby reducing the potential for a Loss of Deconfliction Minima event to take place.
- Pre-ACP, from January 2019 to December 2019, there were 5 Loss of Deconfliction Minima MORs.
 - Post-ACP, within the reporting period April 2022 to March 2023, there were 2 Loss of Deconfliction Minima MORs.

See Table 1 below:

Analysis Period	Date	Incident ID
Pre-ACP LoDM MORs Jan 2019 – Dec 2019	22/04/2019	143615
	16/05/2019	144374
	25/06/2019	145971
	08/08/2019	147641
	30/08/2019	148086
Post-ACP LoDM MORs April 2022 – March 2023	02/06/2022	164282
	23/12/2022	169786

Table 1 Loss of Deconfliction Minima MORs, Pre and Post ACP

- 3.1.9 For each MOR that has been filed, the following outcomes have been identified:
1. Engagement follow up through the London Control interface group (for those events involving London Terminal Control and Farnborough)
 2. Incident reported to the CAA (for those events that require the CAA to follow due process)
 3. Incident reported to the CAA and direct engagement with the stakeholder(s) involved (for those events where the stakeholder, for example: pilot, operator, Air Traffic Service Unit, is known to Farnborough)
 4. Investigation conducted with evidence gathering from stakeholders in accordance with the loss of separation minima process (for those events in which a breach of separation minima has occurred).

4 AIRPROX Reports (19c)

4.1 What is an AIRPROX?

4.1.1 Aircraft Proximity (AIRPROX) is a situation which, in the opinion of a pilot or air traffic services personnel, the distance between aircraft as well as their relative positions and speed was such that the safety of the aircraft involved may have been compromised².

4.1.2 There are 11 Airprox reports referencing Farnborough within the reporting period April 2022 to March 2023, see Table 2 below.

Date	UK Airprox Board (UKAB) reference	Incident ID
15-Apr 2022	2022052	163933
27-Apr 2022	2022060	163775
12-May 2022	2022081	164091
22-May 2022	2022089	164455
03-Jun 2022	2022098	164136
10-June 2022	2022101	164964
22-June 2022	2022114	165576
26-June 2022	2022116	165057
09-Jul 2022	2022136	165747
12-Aug 2022	2022171	166230
17-Dec 2022	2022276	169699

Table 2 Farnborough-related Airprox reports April 2022-March 2023

4.1.3 When notified of an Airprox, Farnborough has submitted the required MORs and continues to work with the UK Airprox Board on incidents as they occur.

4.1.4 Airprox report [2022086](#) dated 22nd May 2022 provides details regarding an Airprox in the Blackbushe Aerodrome Traffic Zone (ATZ) – and specifically relates to the capacity of the airspace and the traffic demand/traffic management of aircraft in the Blackbushe circuit.

Note this is not a Farnborough Airport Airprox and as such is not included in the Farnborough Airprox table above. A busy circuit, similar aircraft, similar full callsigns and identical abbreviated callsigns, similar aircraft liveries and airspace constraining the circuit are all mentioned as contributing factors.

Work is in progress to assist Blackbushe Flight Information Service Officers (FISOs) if, to maintain circuit occupancy, aircraft need to extend beyond the confines of the Blackbushe ATZ.

5 Air Safety Reports ASRs (19d)

5.1 What is an ASR?

5.1.1 Airspace Safety Reports (ASRs) are externally reported events that come to the attention of Farnborough Air Traffic Control (ATC) via submission of a request from external agencies (such as operators) to NATS Safety Performance & Investigations.

5.1.2 We have checked our safety system for ASRs and there are none relating to Farnborough within the reporting period April 2022 to March 2023.

² As defined in ICAO Doc 4444: PANS-ATM

6 Infringements (28a)

6.1 What is an infringement?

6.1.1 Infringements, in this context, means the unauthorised entry of an aircraft into airspace controlled by Farnborough ATC.

6.1.2 As noted above, until its implementation Farnborough did not have CAS therefore it was technically not possible for there to be any infringements at all, there being no CAS to infringe.

6.1.3 Thus, there is no previous data against which to compare. Only absolute numbers can be provided, see Table 3 below.

	2022										2023	
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
No of infr.	1	6	3	2	4	0	1	2	2	1	3	2
% of 12-mth total (27)	4%	22%	11%	7%	15%	0%	4%	7%	7%	4%	11%	7%
Report IDs	163099	163836 163931 163275 163570 163914 163586	164453 164834 164913	165813 165450	165899 166451 166452 166877	-	168576	168817 169158	169627 169628	170480	171069 170737 170602	171543 171453

Table 3 Farnborough CAS infringements from April 2022 to March 2023.

The total number of infringements is shown on a monthly basis, alongside a percentage of the 12-month total and the identification numbers for each report.

6.1.4 From April 2022 to March 2023, there were 27 safety reports concerning airspace infringements in Farnborough CAS. For each airspace infringement a MOR has been raised. In addition, the following outcomes have been identified:

1. Incident reported to the CAA (for those events that require the CAA to follow due process)
2. Incident reported to the CAA and direct engagement with the stakeholder(s) involved (for those events where the stakeholder is known to Farnborough, for example a pilot, operator, Air Traffic Service Unit)
3. Investigation conducted with evidence gathering from stakeholders in accordance with the loss of separation minima process (for those events in which a breach of separation minima has occurred).

7 Conclusion

7.1 Aviation safety has been enhanced

7.1.1 We contend that aviation safety has been enhanced by this implementation.

Farnborough ATC no longer operates high intensity fast jet traffic in an environment where identity and intentions of General Aviation (GA) is unknown. This safety enhancement does not exclude these GA from CAS; the vast majority of GA flights wishing to transit CAS are immediately cleared through (see PIR item 40a in the main document).

Infringements do occur but controllers are trained to be vigilant for these and manage the situation appropriately. A combination of engagement with airspace users, working with the CAA and an intense focus on safety by NATS has reduced the infringement risk over time since the implementation of CAS.

Arrivals from, and departures to, the air route network do so wholly contained within CAS using predictable, efficient end-to-end instrument flight procedures. This gives consistency for pilots and controllers reducing workload and risk. Direct feedback from aircrew operating into and out of Farnborough is that they feel safer, this is also highlighted by neighbouring (Wessex group) airfields providing feedback that their IFR airways traffic is better protected by the introduction of CAS than when operating in the previous wholly Class G environment.

The region is as safe, or safer, than before.

7.1.2 The data and information presented here tells two stories.

The first is the presence of these MORs, of all types. Some would not necessarily occur at all if there had been no new infrastructure, because most are breaches of infrastructure safety rules. This demonstrates that the rules are effective, because, pre-ACP, similar scenarios would not have led to formal breaches requiring MOR action and subsequent investigation.

The second is that, while overall safety has been enhanced, infringements are Farnborough's main target for improvement as per the pie chart Figure 1 on page 4. As above, infringements cannot exist without CAS. Farnborough is actively trying to help reduce the number of infringements by working with local airspace users through activities like hosting safety days on unit and inviting pilots to visit the tower. Controllers are taking part in familiarisation flights with GA users to experience the airspace from the pilot viewpoint, Farnborough is also working with the Wessex LAIT (Local Airspace Infringement Team) and CAA infringement groups to help identify and action improvement plans in line with industry standards.

7.1.3 Farnborough re-states its commitment to continuously improving safety through investigating, reporting, and communicating. Since delivery of the ACP Farnborough have continued to work with all stakeholders to evolve the airspace and enhance the safety performance of the operation. This is an improving picture with a reduction in safety events over the period and more airspace users now engaged in operational safety activities. Controlled Airspace has reduced the safety risk by transforming an unknown high intensity air traffic environment into a predictable and managed highly efficient airspace structure with access for all airspace users.

8 Appendix: Summary list of events

Copies of the original reports for the 5 MOR categories, in addition to the Airprox reports, have been provided directly to the CAA. A summary, in date order, is provided in Table 4 below.

Month/Year	Incident ID	Code	Category of Event	Follow up action
Apr-22	162777	1	Procedure/Clearance Deviation	MOR filed, engagement follow up through London Control interface group
Apr-22	163035	2	CAS Excursion	MOR filed, engagement follow up through London Control interface group
Apr-22	163099	3	Airspace Infringement	MOR filed, incident reported to CAA
Apr-22	162775	4	Separation Minima Loss	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
Apr-22	162585	4	Separation Minima Loss	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
Apr-22	162576	1	Procedure/Clearance Deviation	MOR filed, engagement follow up through London Control interface group
Apr-22	163070	1	Procedure/Clearance Deviation	MOR filed, engagement follow up through London Control interface group
Apr-22	163139	2	CAS Excursion	MOR filed, engagement follow up through London Control interface group
Apr-22	163775	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.
Apr-22	163933	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.
May-22	163886	2	CAS Excursion	MOR filed, incident reported to CAA, direct engagement with stakeholder
May-22	163836	3	Airspace Infringement	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
May-22	163931	3	Airspace Infringement	MOR filed, incident reported to CAA
May-22	163275	3	Airspace Infringement	MOR filed, incident reported to CAA
May-22	163570	3	Airspace Infringement	MOR filed, incident reported to CAA
May-22	163914	3	Airspace Infringement	MOR filed, incident reported to CAA
May-22	163586	3	Airspace Infringement	MOR filed, incident reported to CAA
May-22	163581	1	Procedure/Clearance Deviation	MOR filed, incident reported to CAA, direct engagement with stakeholder
May-22	164091	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.
May-22	164455	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.

Jun-22	164326	4	Separation Minima Loss	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
Jun-22	164136	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.
Jun-22	164138	2	CAS Excursion	MOR filed, incident reported to CAA
Jun-22	164453	3	Airspace Infringement	MOR filed, incident reported to CAA
Jun-22	164834	3	Airspace Infringement	MOR filed, incident reported to CAA
Jun-22	164813	1	Procedure/Clearance Deviation	MOR filed, incident reported to CAA, direct engagement with stakeholder
Jun-22	164913	3	Airspace Infringement	MOR filed, incident reported to CAA
Jun-22	164964	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.
Jun-22	164140	1	Procedure/Clearance Deviation	MOR filed, incident reported to CAA
Jun-22	164282	5	Loss of Deconfliction Minima	MOR filed, incident reported to CAA
Jun-22	164353	2	CAS Excursion	MOR filed, engagement follow up through London Control interface group
Jun-22	164073	2	CAS Excursion	MOR filed, engagement follow up through London Control interface group
Jun-22	165057	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.
Jun-22	165576	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.
Jul-22	165574	2	CAS Excursion	MOR filed, incident reported to CAA, direct engagement with stakeholder
Jul-22	164962	4	Separation Minima Loss	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
Jul-22	165747	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.
Jul-22	165813	3	Airspace Infringement	MOR filed, incident reported to CAA
Jul-22	165450	3	Airspace Infringement	MOR filed, incident reported to CAA
Jul-22	165122	4	Separation Minima Loss	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
Aug-22	166763	2	CAS Excursion	MOR filed, incident reported to CAA, direct engagement with stakeholder
Aug-22	165899	3	Airspace Infringement	MOR filed, incident reported to CAA, direct engagement with stakeholder
Aug-22	166451	3	Airspace Infringement	MOR filed, incident reported to CAA, direct engagement with stakeholder
Aug-22	166192	4	Separation Minima Loss	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process

Aug-22	166230	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.
Aug-22	166452	3	Airspace Infringement	MOR filed, incident reported to CAA
Aug-22	166877	3	Airspace Infringement	MOR filed, incident reported to CAA
Sep-22	167792	1	Procedure/Clearance Deviation	MOR filed, incident reported to CAA, direct engagement with stakeholder
Sep-22	167494	4	Separation Minima Loss	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
Sep-22	167390	4	Separation Minima Loss	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
Oct-22	168304	1	Procedure/Clearance Deviation	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
Oct-22	168576	3	Airspace Infringement	MOR filed, incident reported to CAA
Oct-22	168499	4	Separation Minima Loss	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
Nov-22	168756	2	CAS Excursion	MOR filed, incident reported to CAA, direct engagement with stakeholder
Nov-22	168817	3	Airspace Infringement	MOR filed, incident reported to CAA
Nov-22	169158	3	Airspace Infringement	MOR filed, incident reported to CAA
Dec-22	169786	5	Loss of Deconfliction Minima	MOR filed, incident reported to CAA, direct engagement with stakeholder
Dec-22	169627	3	Airspace Infringement	MOR filed, incident reported to CAA, direct engagement with stakeholder
Dec-22	169628	3	Airspace Infringement	MOR filed, incident reported to CAA
Dec-22	169699	AP	AIRPROX	Farnborough has submitted the required MOR when notified of the Airprox and worked with the UKAB on the incident.
Jan-23	170136	2	CAS Excursion	MOR filed, incident reported to CAA, direct engagement with stakeholder
Jan-23	170562	4	Separation Minima Loss	MOR filed, incident reported to CAA, direct engagement with stakeholder
Jan-23	170480	3	Airspace Infringement	MOR filed, incident reported to CAA, direct engagement with stakeholder
Jan-23	170027	4	Separation Minima Loss	MOR filed, investigation conducted with evidence gathering from stakeholders in accordance with loss of separation minima process
Feb-23	171069	3	Airspace Infringement	MOR filed, incident reported to CAA, direct engagement with stakeholder
Feb-23	170737	3	Airspace Infringement	MOR filed, incident reported to CAA
Feb-23	170602	3	Airspace Infringement	MOR filed, incident reported to CAA, direct engagement with stakeholder

Mar-23	171893	2	CAS Excursion	MOR filed, engagement follow up through London Control interface group
Mar-23	171543	3	Airspace Infringement	MOR filed, incident reported to CAA, direct engagement with stakeholder
Mar-23	171453	3	Airspace Infringement	MOR filed, incident reported to CAA, direct engagement with stakeholder
Mar-23	171539	1	Procedure/Clearance Deviation	MOR filed, incident reported to CAA

Table 4 All Farnborough-related MORs in the PIR period 1st April 2022-31st March 2023

Internal data source reference: Extracted at 1130 on 10th May 2023 from Farnborough Safety Monitoring Events system

End of document