Airspace Infringement Prevention
Jersey Aero Club

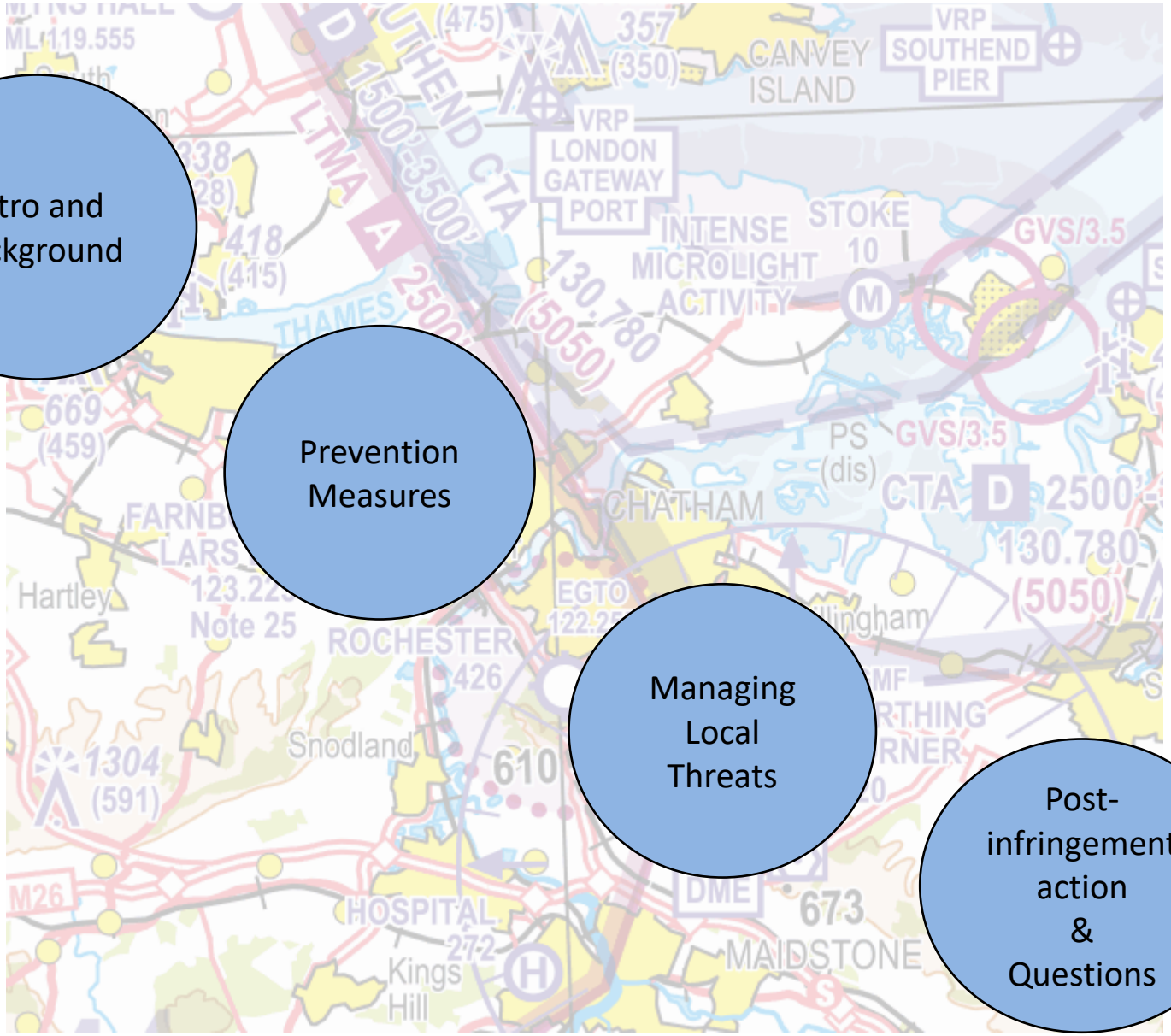
28 October 2026



Rob Gratton & Gianni Grando

CAA Airspace Infringements Team

Scope


Intro and Background
Prevention Measures
Managing Local Threats
Post-infringement action & Questions
UK Civil Aviation Authority
LONDON GATEWAY PORT
INTENSE MICROLIGHT ACTIVITY
CANVEY ISLAND
SOUTHEND PIER
CHATHAM
ROCHESTER
Hartley
Snodland
MAIDSTONE
Kings Hill
THAMES
LTMA A
CTA D 2500
130.780
(5050)
GVS/3.5
HOSPITAL
M26

Background



- SAFETY - Risk of mid-air collision

31 August 1986

Aeroméxico Flight 498 collision with Piper PA-28
Suburbs of Los Angeles

Fatalities - DC-9 58/6
- PA-28 3
- Ground 15

Injuries - Ground 8

Piper PA-28 entered CAS without a clearance; ATC had been distracted by another airspace infringement, a Grumman AA-5B Tiger, entering CAS without a clearance.

In 2025, 30% of all UK infringements resulted in a safety risk.

Background

- SAFETY - Risk of mid-air collision





- Impact on airspace efficiency

  2025

  72 occurrences involved the issuing of avoiding action to one or more CAT aircraft;
  117 occurrences involved the issuing of radar vectors to one or more CAT aircraft.

Background

- SAFETY - Risk of mid-air collision



- Impact on airspace efficiency



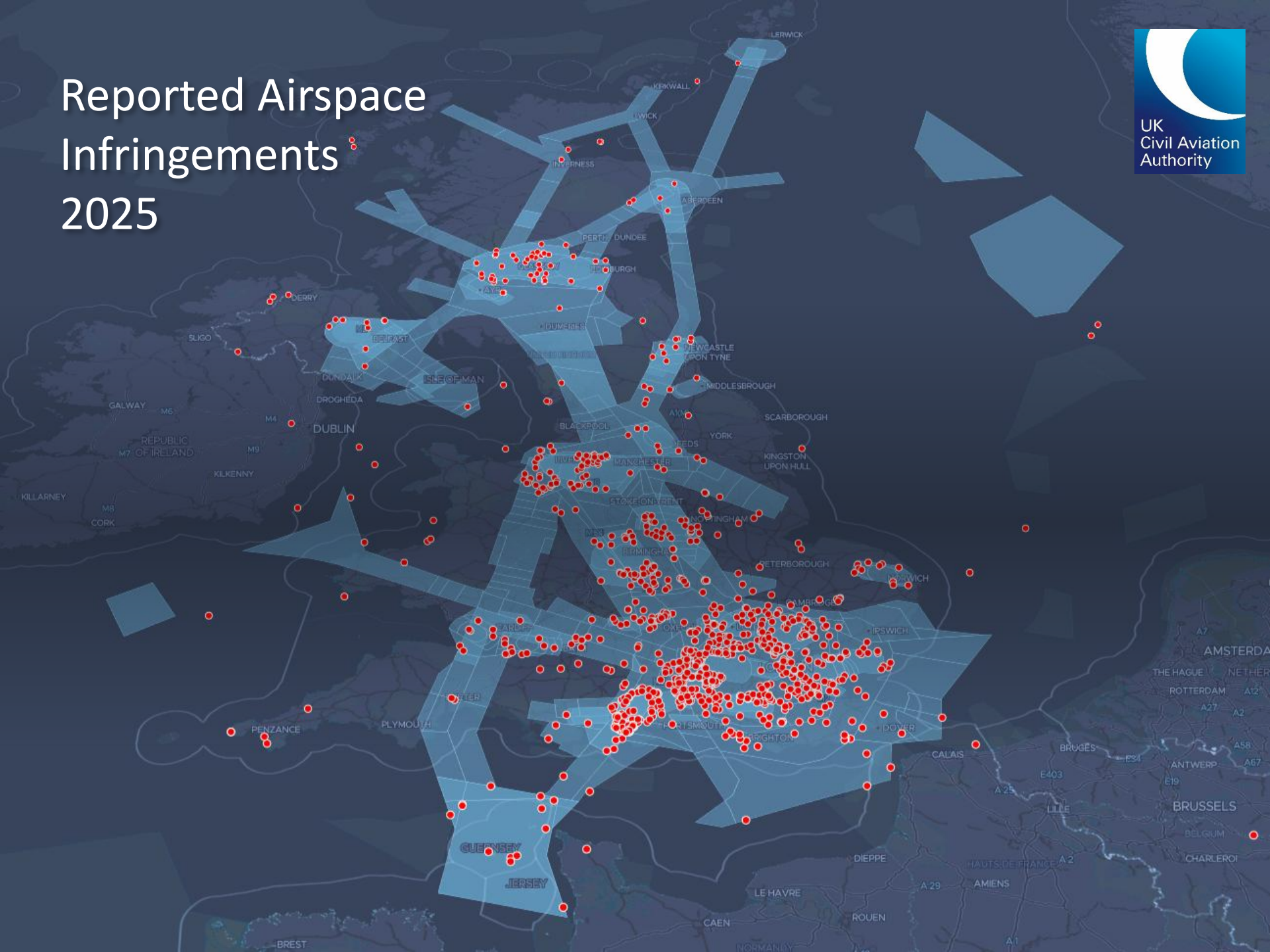
- Impact on airport efficiency/capacity



2025

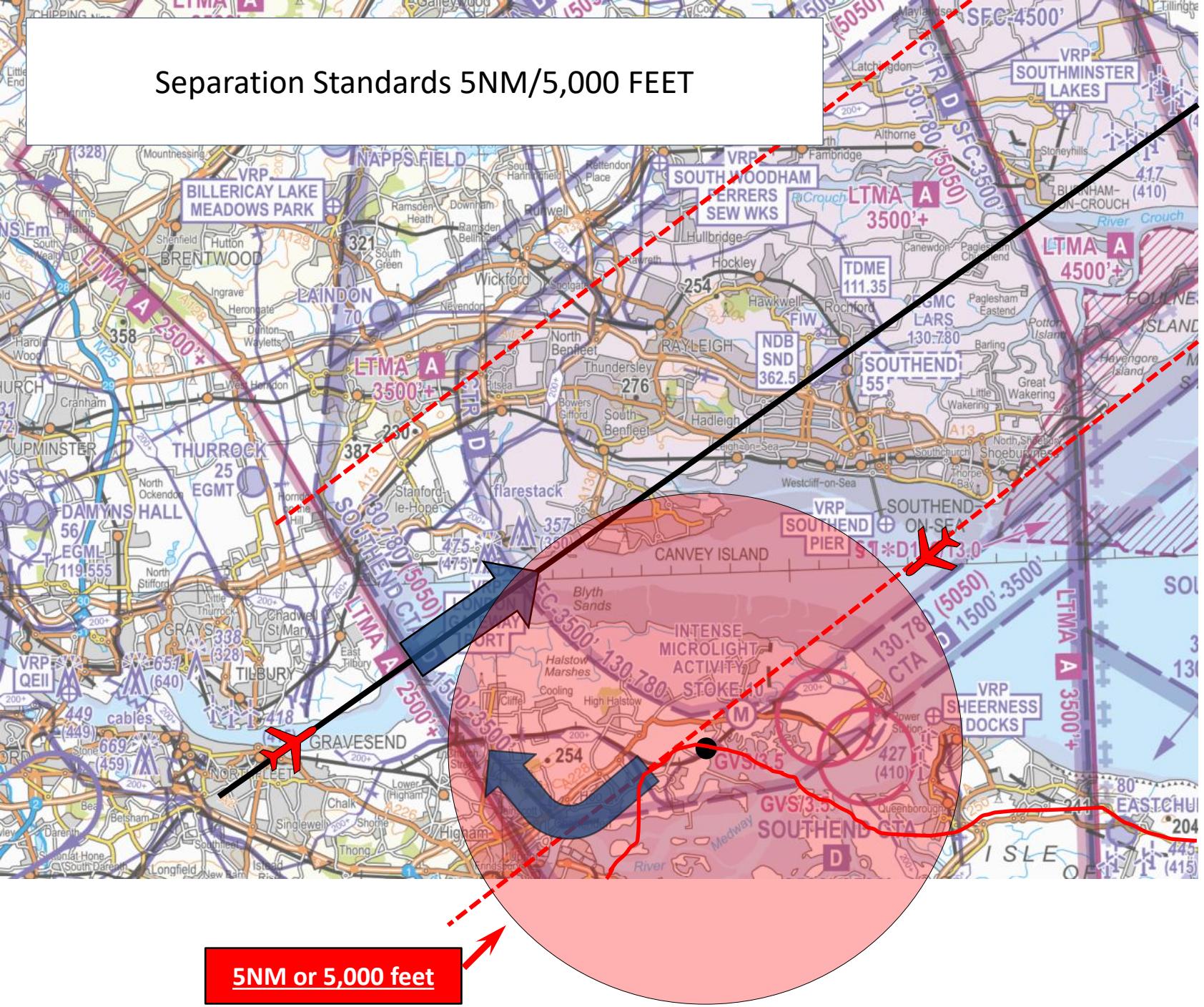
- 30 occurrences involved suspending airport departures;
- 94 occurrences involved suspending ‘free-flow’ airport departures (‘Check’).

Reported Airspace Infringements 2025



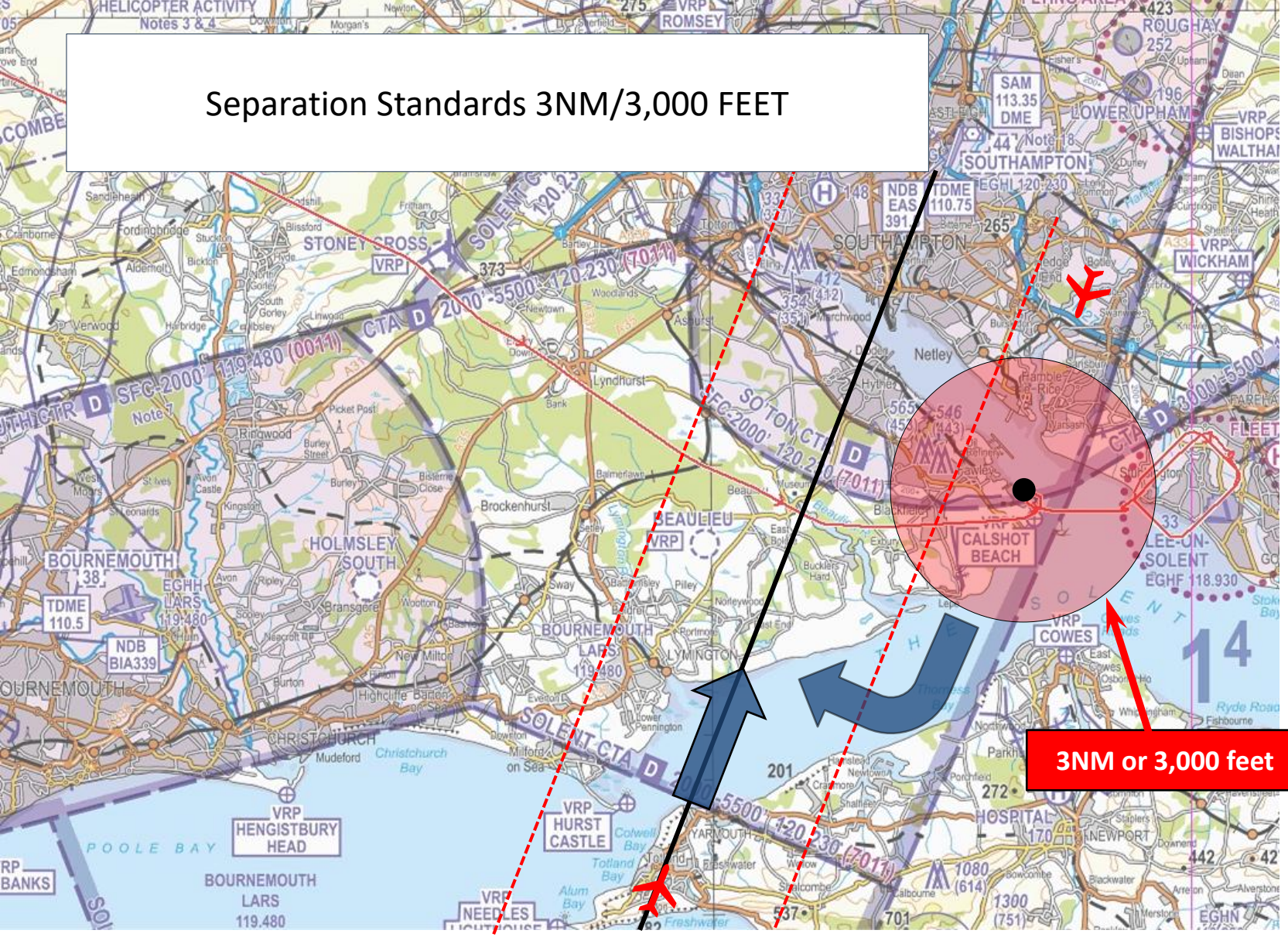
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Separation Standards 5NM/5,000 FEET



UK Civil Aviation Authority

Separation Standards 3NM/3,000 FEET



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Airspace Infringement Prevention



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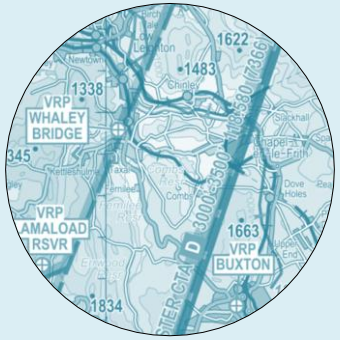
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Pre-flight Planning and Preparation

Threat & Error Management (TEM)





Navigation

Prevention Measures - Planning

Lack of detailed planning is a factor in many Airspace Infringements.
Route selection
Meteorology (including altimetry)
Personal – Licence and medical

Consider how to depart the aerodrome, the en-route phase and correct procedures to be flown when arriving at the aerodrome.

Plan your route/exercise area to remain clear of airspace – '**TAKE 2'**
Who will you communicate with & where?
What will you squawk & where?
What altimeter setting will you use?

Plan descent and climb points
Consider winds aloft and the effects on your ground speed/track
Mark them on paper chart and create waypoints on VFR Moving Map
Incorporate 'TAKE 2' guidance

Use regulated information and backed up with local information
NATS AIS & UK Met Office Aeronautical Visualisation Service (MAVIS)

Apply TEM for each part of the route

Make a Plan B

Prevention Measures
Take 2

UK Civil Aviation Authority

Guidance is to, **where able**, plan to remain at least 2NM from the edge or 200 feet below the base (or above ceiling) of the subject airspace.

To prevent inadvertent climbs into controlled airspace the 200 feet distance may need to be increased :

- In turbulent or thermic conditions
- Following periods of skill fade
- Student inexperience
- Air exercises where recovery from stalls etc risk excessive 'handling'



Prevention Measures
En-route Planning
Communications & Air Traffic Services

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Air Traffic Control is there to **help** – use them

Know what you are getting and your responsibilities under **UK Flight Information Services: -** (UK AIP ENR 1.1)

- Basic Service
- Traffic Service
- Deconfliction Service
- Procedural Service

Lower Airspace Radar Service (LARS) - (UK AIP ENR 1.6)

- **Know which Radar Unit are LARS Units** (24 Units in the UK)
- Plan the 'where/when' – check the DOC and Frequency
- Prepare the squawk – Check the UK Codes first 2 digits

London & Scottish Information are **NON-RADAR** units

Avoid using these when:

- Close to controlled airspace
- When LARS is available

Prevention Measures
En-route Planning
Frequency Monitoring Codes

UK Civil Aviation Authority

26 codes available in UK (plus some in The Netherlands)

Know which one to use and when it can be used. UK AIC Y 089/2026

Select the radar controller's radio frequency **BEFORE** selecting the appropriate FMC

Ensure the radio volume is turned up and audible

Select the FMC using ALT (Mode C) if the transponder is so equipped

Listen out for any transmissions with the aircraft's callsign/position

Can you not hear the controller? DOC
Consider line of sight.

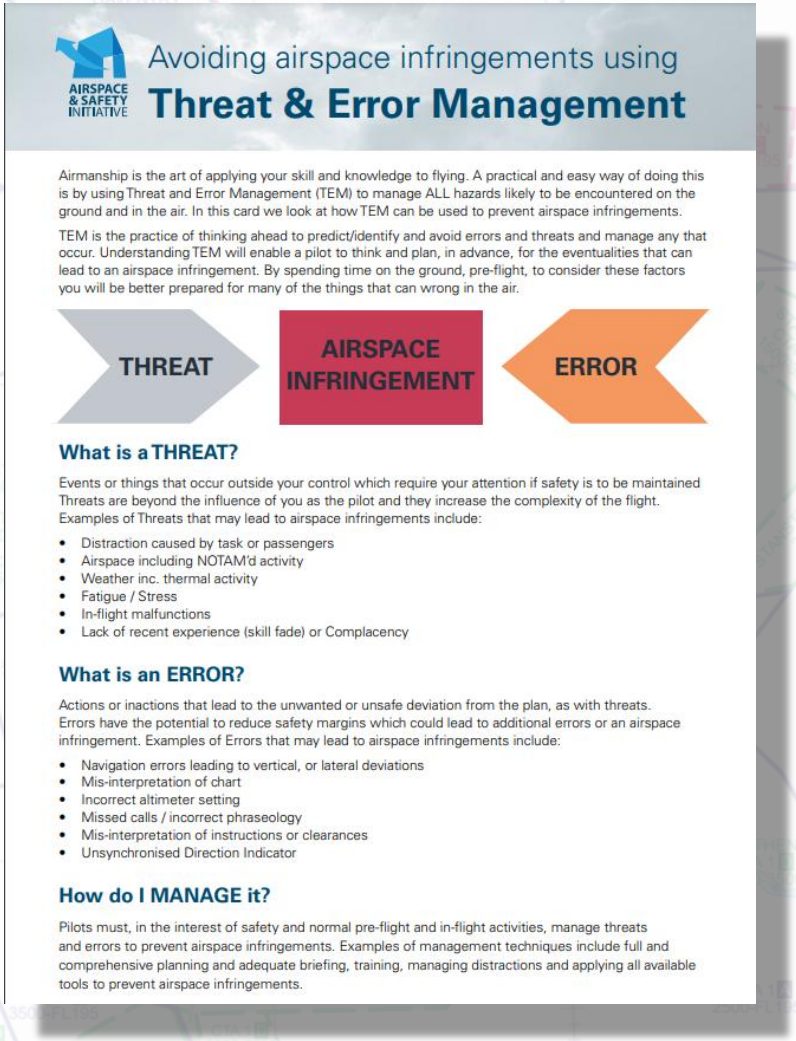
Prevention Measures
Threat and Error Management

UK Civil Aviation Authority

TEM

Underpins every aspect of the flight and needs to be incorporated in every aspect of every flight from planning to personal factors

It is NOT a new term for Airmanship



AIRSPACE & SAFETY INITIATIVE

Avoiding airspace infringements using Threat & Error Management

Airmanship is the art of applying your skill and knowledge to flying. A practical and easy way of doing this is by using Threat and Error Management (TEM) to manage ALL hazards likely to be encountered on the ground and in the air. In this card we look at how TEM can be used to prevent airspace infringements.

TEM is the practice of thinking ahead to predict/identify and avoid errors and threats and manage any that occur. Understanding TEM will enable a pilot to think and plan, in advance, for the eventualities that can lead to an airspace infringement. By spending time on the ground, pre-flight, to consider these factors you will be better prepared for many of the things that can wrong in the air.

THREAT → AIRSPACE INFRINGEMENT ← ERROR

What is a THREAT?

Events or things that occur outside your control which require your attention if safety is to be maintained Threats are beyond the influence of you as the pilot and they increase the complexity of the flight. Examples of Threats that may lead to airspace infringements include:

- Distraction caused by task or passengers
- Airspace including NOTAM'd activity
- Weather inc. thermal activity
- Fatigue / Stress
- In-flight malfunctions
- Lack of recent experience (skill fade) or Complacency

What is an ERROR?

Actions or inactions that lead to the unwanted or unsafe deviation from the plan, as with threats. Errors have the potential to reduce safety margins which could lead to additional errors or an airspace infringement. Examples of Errors that may lead to airspace infringements include:

- Navigation errors leading to vertical, or lateral deviations
- Mis-interpretation of chart
- Incorrect altimeter setting
- Missed calls / incorrect phraseology
- Mis-interpretation of instructions or clearances
- Unsynchronised Direction Indicator

How do I MANAGE it?

Pilots must, in the interest of safety and normal pre-flight and in-flight activities, manage threats and errors to prevent airspace infringements. Examples of management techniques include full and comprehensive planning and adequate briefing, training, managing distractions and applying all available tools to prevent airspace infringements.

Prevention Measures
Threat and Error Management

UK Civil Aviation Authority

Threats are events or things that occur **outside your control** which require your attention if safety is to be maintained.
They are beyond your influence as the pilot, and they increase the complexity of the flight:

Notified airspace e.g. CTA/CTR/TMA
Weather
Distraction – Passengers, FI task etc
Other Traffic

Errors are **actions or inactions** that lead to the unwanted or unsafe deviation from the plan:

Insufficient planning – route, weather, comms
Flying too close to the boundaries of notified airspace
Incorrect altimeter setting
Not operating a transponder/checking prior to entering TMZ

Navigation

(and the "*Children of the Magenta Line*"*)

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Core navigation skills remain essential:

Map, Compass, Timer and PLOG.

VFR Moving Map use:

- Needs to be a blend
- Over-reliance.
  - Emerging skill fade is leading to an inability to:
    - Recognise surface features;
    - Recognise a changing environment.
- Should never be the only source of information.
- Must know how to Configure.

***1997 American Airlines safety lecture by Captain Warren VanderBurgh,**

Prevention Measures
VFR Moving Maps

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Increase situational awareness.
Provide warnings (when configured correctly).
Can reduce confirmation bias.
Good for post-flight analysis – but also use them in flight.
Avoid Overreliance
Know how to optimise the settings

Be aware of Threats and Errors e.g.
- Overheating – device shutdown
- Positioning in cockpit (inc. EC device) – reduced lookout
- Magenta line following – navigation skill fade
- Connection to Wi-Fi during planning/briefing
- Avoid use of IFR waypoints

They are not regulated by the CAA
Depiction of aeronautical information on VFR Moving Maps may be different to the UK Aeronautical Information products

Managing Local Threats



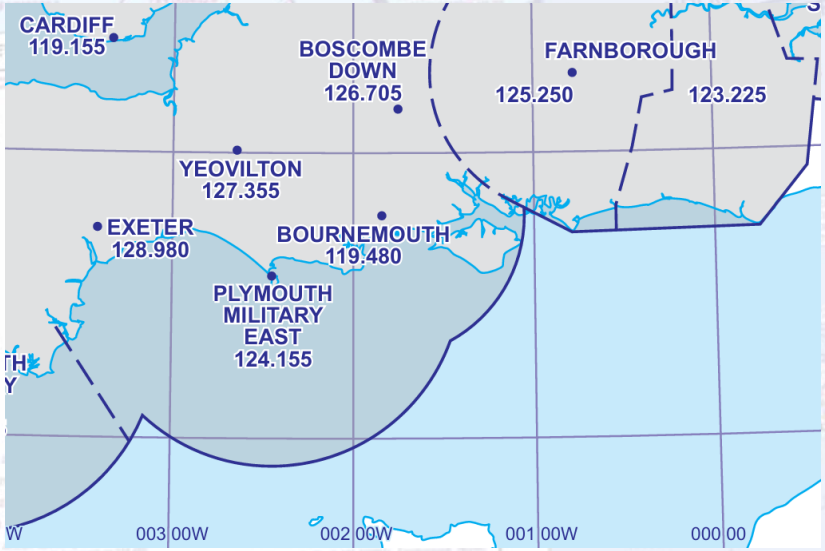
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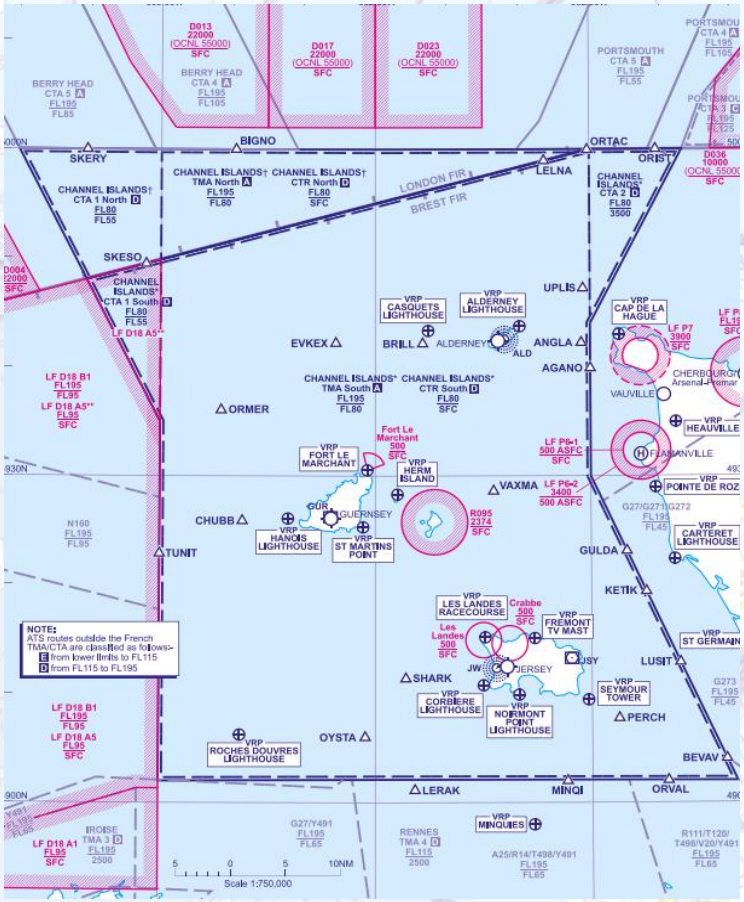
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Reported 'Local' Airspace Infringements

Channel Islands Considerations

- Route laterally vs CAS/Danger Areas
- Route vertically vs CAS inc. altimetry
- GPS use (back-ups)
- Weather and sea state
- Communications
- Provision of service (LFIS no radar)
- IFR to VFR and vice versa





Airspace Infringement Review Process



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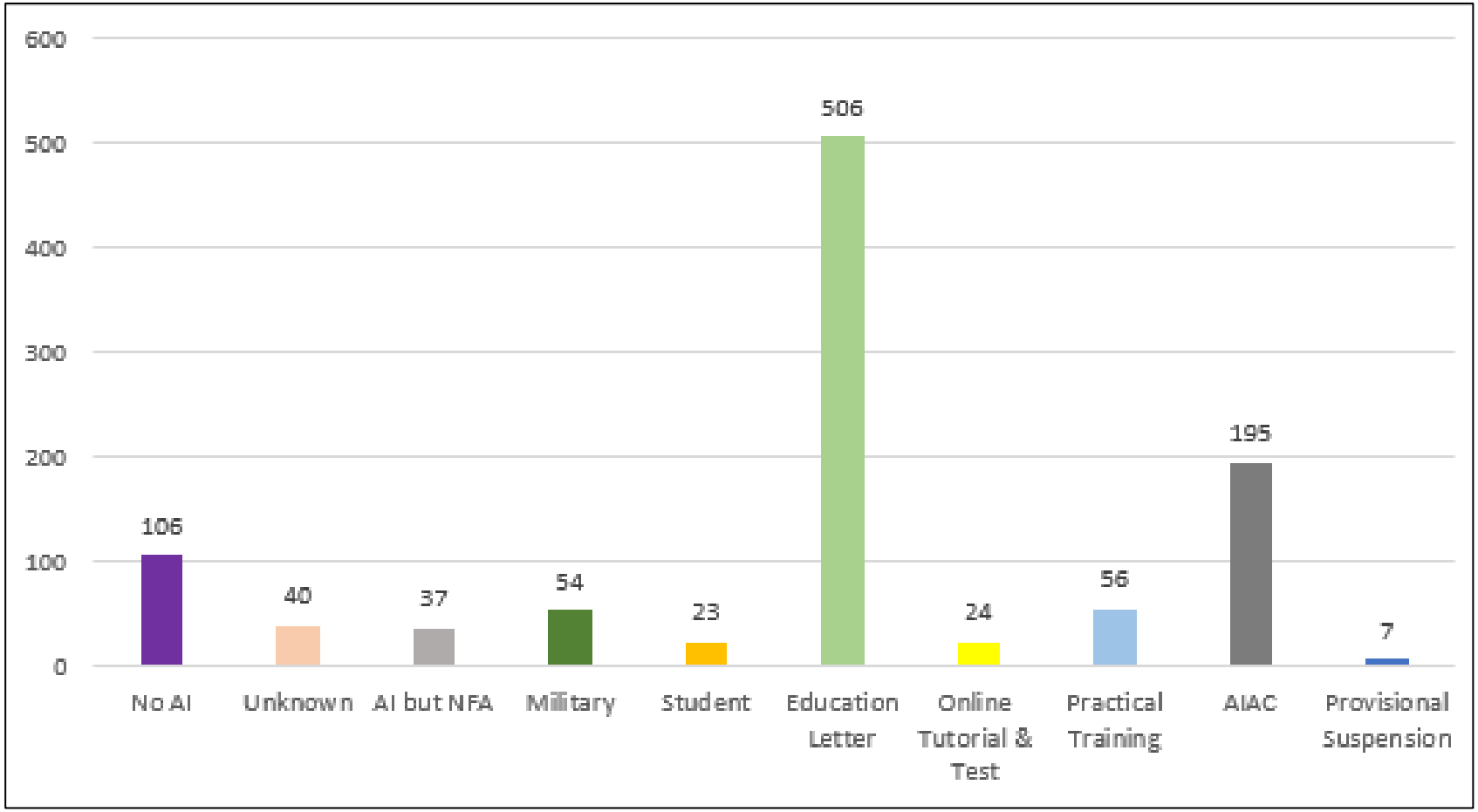
CAP1404

Airspace Infringements: review and actions process

- First issued in 2016 based on an extant process.
- Applies a Just Culture.
- Relies on accurate and honest reporting.
- All occurrences are reviewed.
- Focusses on Lessons Identified.
- Identifies remedial actions to:
  - Prevent recurrence; and
  - Assure competence; through
  - Improving knowledge and skills.



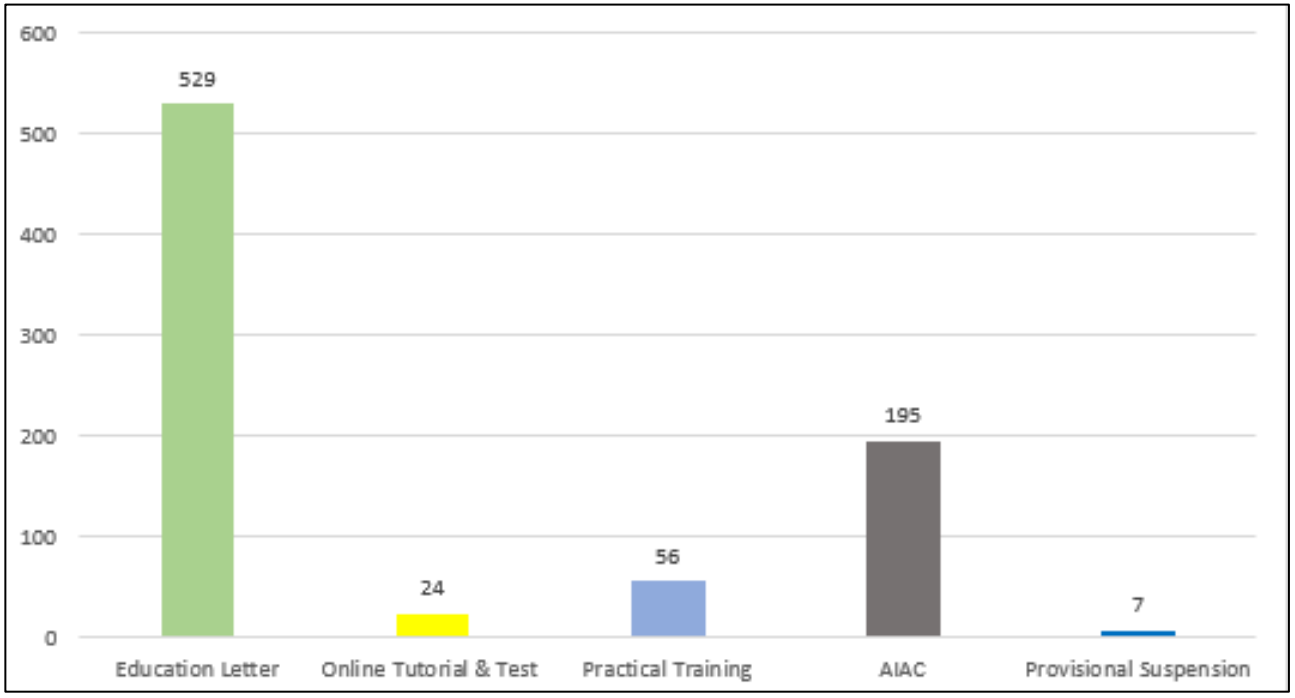
CAA Post-infringement Action 2025 – 1,048 cases reviewed



CAA Post-infringement Action

1048 cases reviewed

In 811 (77.4%) cases Pilot Action/Inaction identified as Root Cause



Not all AI result from pilot action/inaction:

- Discuss with Airspace Classification Team and/or Airspace Regulation;
- Refer to Air Traffic Management Regulation;
- Refer to Aeronautical Information Management Regulation;
- Refer to Aerodrome Inspectors;
- Engage with VFR Moving Map companies.

Questions?



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Stay Informed

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Review Airspace Safety Initiative Website

Guidance and resources online:
airspacesafety.com

A joint CAA, NATS, AOA, GA and MoD initiative to tackle major safety risks in UK airspace.

Sign-up for SkyWise alerts



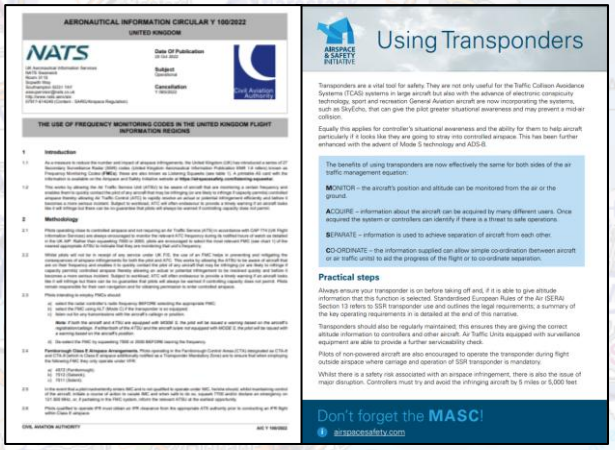
- Airspace Modernisation Strategy
- Modernised Lower Airspace PDF



NATS Aeronautical Information Service
(AIP, SUP, AIC, NOTAM)

CAP 1404

Met Office Aeronautical Visualisation Service



Review Airspace Infringement Online Tutorial



Continue to develop your knowledge

Email us: infringements@caa.co.uk