



# Reduced Night Noise Trial

RNN Data Report 2

Reporting Period: *26 January – 22 February 2024*

14 March 2024



**LONDON GATWICK**

POWERED BY **VINCI** AIRPORTS   GLOBAL INFRASTRUCTURE PARTNERS

# Executive Summary

The RNN trial commenced 11 January 2024. In the second reporting period (26 Jan – 22 Feb) there were 25 trial nights of which 22 aircraft were participants with 1 being an outlier. Whilst most trial flights were within the trial thresholds, the outlier is unexpected and is being investigated. There is fewer data than expected at this point of the trial due to impacts of Southern runway works and Noise Monitoring Terminals being offline. Further engagement with airlines will be undertaken to understand the cause of the outlier and to determine if it was a result of operational procedures.

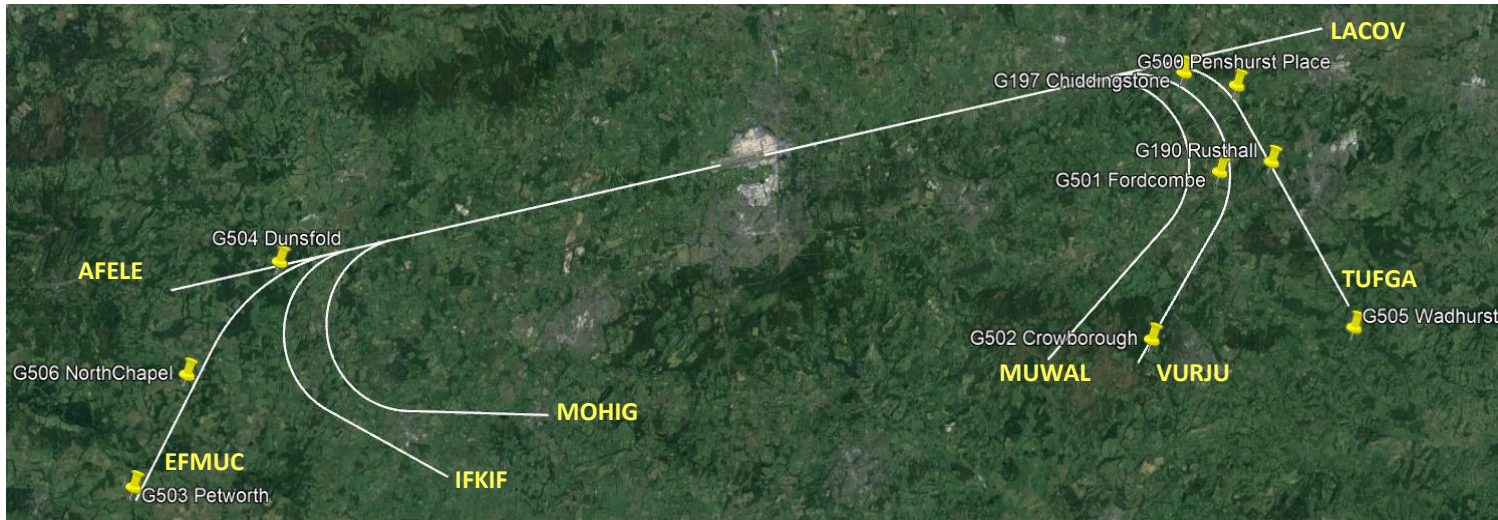
# Table of Contents

1. Trial stats
2. Noise monitors
3. Data analysis
4. Feedback and complaints
5. Next steps

# Trial Stats

- The RNN trial commenced on **11 Jan 2024**, running between the hours 0130-0500. The data presented within this report includes 4 weeks of the trial (26 Jan – 22 Feb 2024).
- The trial procedure was available (Southern runway operations) on **25 nights** in total.
- Over the trial nights, it was reported that **22 flights** successfully participated in the trial.
- Note that runway works are more common than expected; there has been a significant runway works programme at Gatwick Airport in Q1 2024. Depending on the frequency of data capture, we may need to apply to extend the trial dates. This decision will be made at a later date.

# Noise Monitor locations



NMT distance to threshold
Wadhurst – 41 km
Rusthall – 32 km
Penshurst Place – 26 km
Crowborough – 40 km
Fordcombe – 31 km
Chiddingstone – 24 km
Petworth – 40 km
North Chapel – 33 km
Dunsfold – 25 km

- The noise monitor terminals (NMTs) were placed under the routes that were expected to be most used.
- In total, 9 NMTs, with a noise threshold level of 50dB, were located under 3 trial routes.
- Lmax adjustments have been made to aircraft overflying the NMTs within the overflight cone. These adjustments are dependent on the distance from monitor and can be up to 3dB.
- Only NMTs within the overflight cone for an aircraft participating in the trial are included in the analysis. Noise data picked up by NMTs outside of the overflight cone is discarded.
- Any unusual noise events are assessed on a case-by-case basis and are discarded if the source is found to be non-aviation.
- The NMT G505 Wadhurst had an outage resulting in no recorded data here for trial days 16/02 – 21/02.

# Data Analysis

## Overview

### Reduced Night Noise Trial Dashboard

#### Operations summary

Number of PBN flights

22

Number of outliers

1

Route

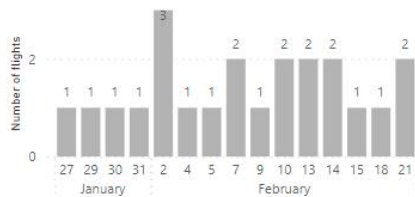
IFKIF 1A

LACOV 1D

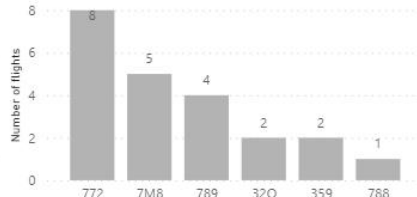
MUWAL 1D

TUFGA 1D

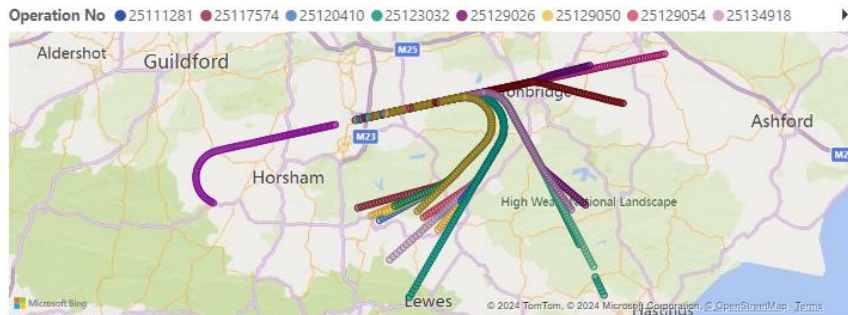
#### Daily number of PBN flights



#### Aircraft types



#### Trajectories



#### Data definition

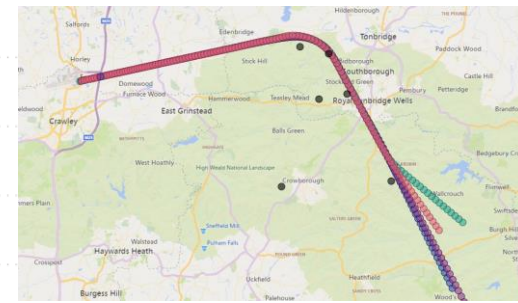
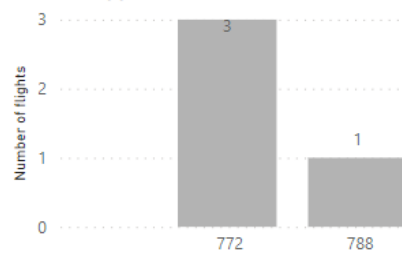
- Altitude is measured above aerodrome level (AAL).
- The noisiest 5 % of flights (based on baseline data) are above the noise outlier threshold
- The lowest 5 % of flights (based on baseline data) are below the altitude outlier threshold
- Threshold values are based on data in the equivalent baseline trial period (0130-0500)

- 22 flights participated in the trial.
- Majority of flights were westerly arrivals, with 1 easterly arrival.
- Lateral track keeping of trial aircraft was good.
- 6 different aircraft types participated.
- 4 approaches on LACOV.
- 4 approaches on TUFGA.
- 7 approaches VURJU.
- 6 approaches on MUWAL.
- 1 approach on IFKIF.
- NMTs are placed under TUFGA & VURJU, therefore, there is data captured for 11 PBN arrivals.
- 1 aircraft was louder than the noise outlier threshold, however, was not lower than the altitude threshold.

# Data Analysis

## TUFGA Route Altitude Analysis

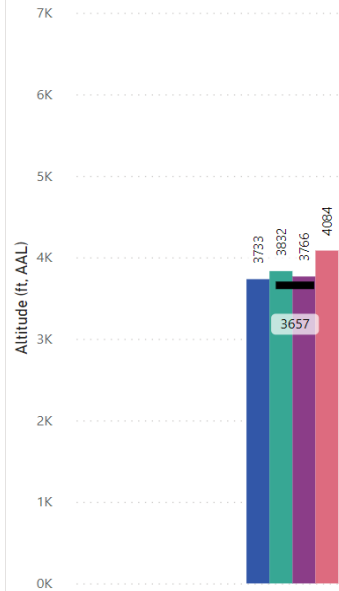
### Aircraft types



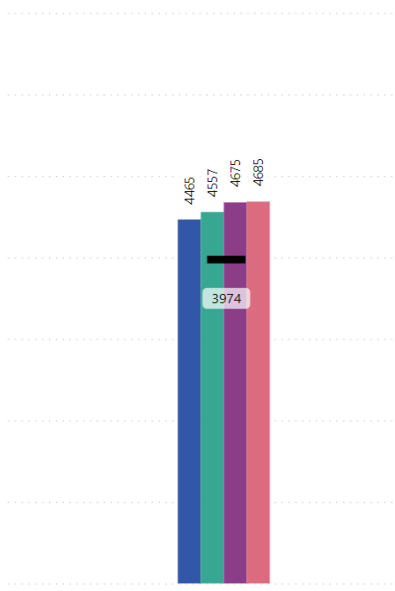
### Altitude recordings and outlier thresholds

Operation Number ● 25123032 ● 25129026 ● 25149034 ● 25188266 — Outlier Threshold (Trial Night, ft)

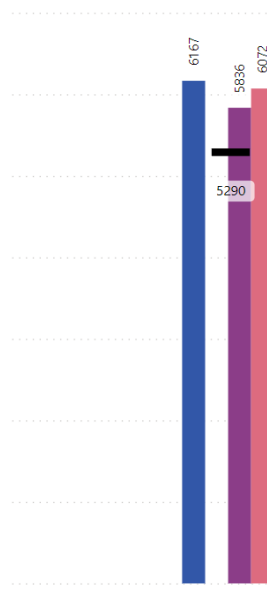
#### Penshurst Place



#### Rusthall



#### Wadhurst



### Observations

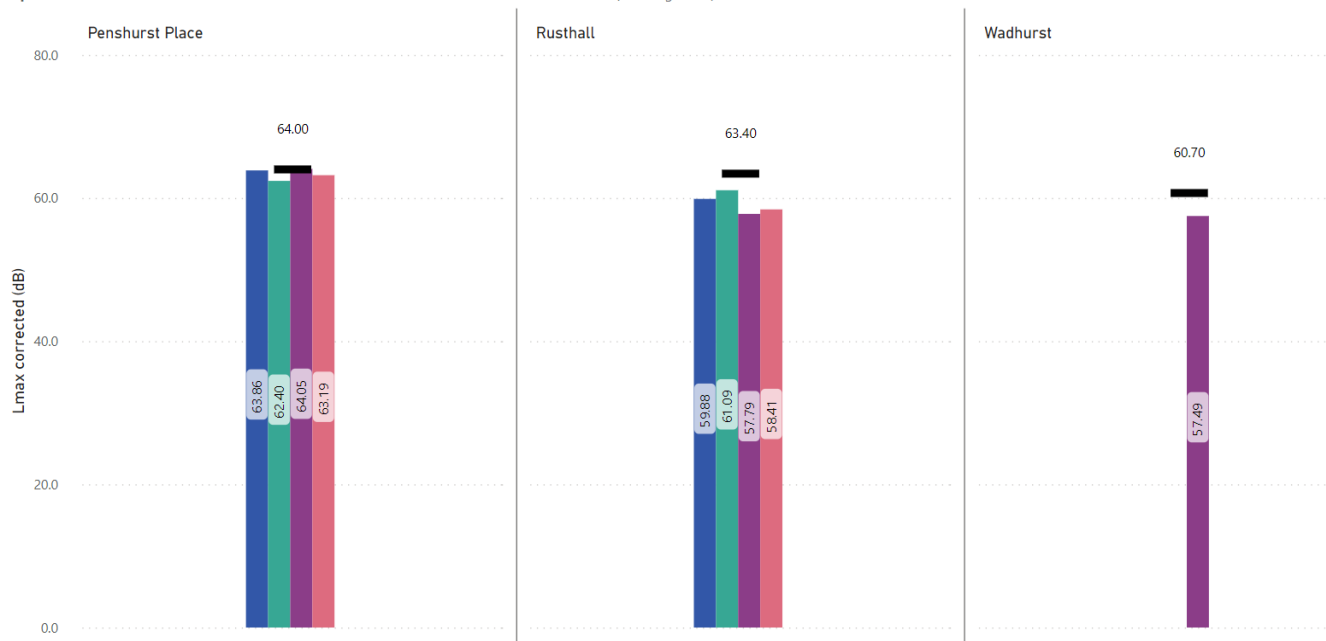
- 4 approaches on TUFGA 1D.
- 3 x 772, 1 x 788.
- There is a missing value at Wadhurst for op number 25129026 as the NMT is outside of the overflight cone for this flight.
- All recorded altitudes are above the trial night outlier thresholds.
- There are **no altitude outliers** on TUFGA 1D for this reporting period.

# Data Analysis

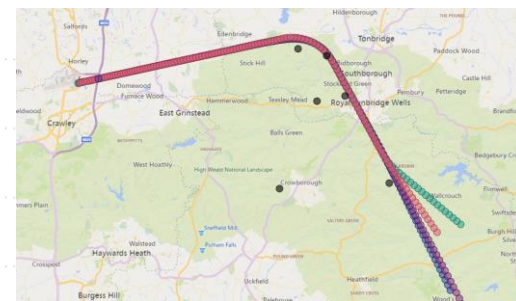
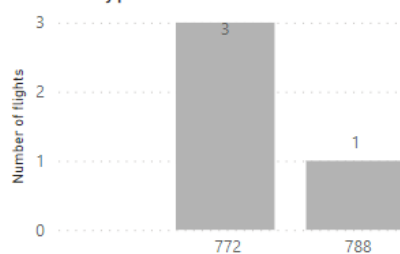
## TUFGA Route Noise Analysis

### Noise recordings and outlier thresholds

Operation Number ● 25123032 ● 25129026 ● 25149034 ● 25188266 — Outlier Threshold (Trial Night, dB)



### Aircraft types



### Observations

- 4 approaches on TUFGA 1D.
- 3 x 772, 1 x 788.
- Missing values at Wadhurst are due to:
  - NMT outages
  - The NMT being outside of the overflight cone
- The recorded noise for op number 25149034 is 0.05dB louder than the trial night outlier threshold at Penshurst (shown in chart). However, is quieter than the 8hr night threshold of 64.8dB.
- This aircraft is therefore a **noise outlier** when compared to the trial night threshold. Further investigation is necessary to understand the reason for this.
- All other flights are quieter than the stricter trial night outlier threshold.



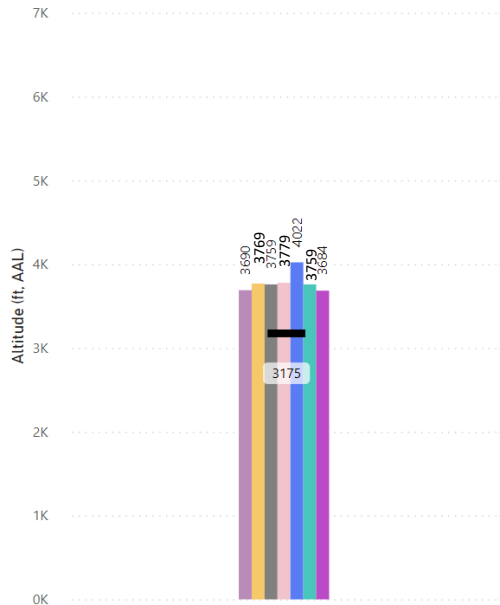
# Data Analysis

## VURJU Route Altitude Analysis

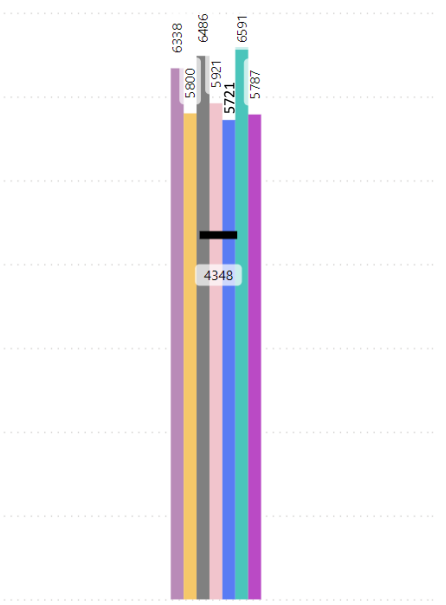
### Altitude recordings and outlier thresholds

Operation Number ● 25111281 ● 25129054 ● 25137986 ● 25143611 ● 25152542 ● 25165450 ● 25165457 — Outlier Threshold (Trial Night, ft)

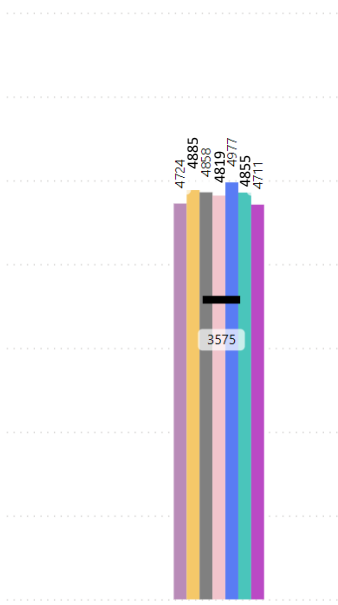
Chiddingstone



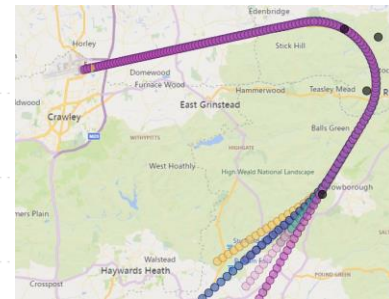
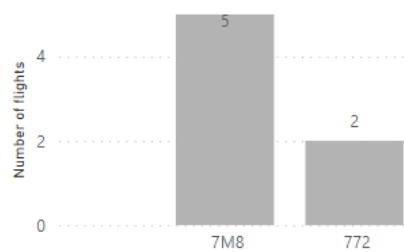
Crowborough



Fordcombe



### Aircraft types



### Observations

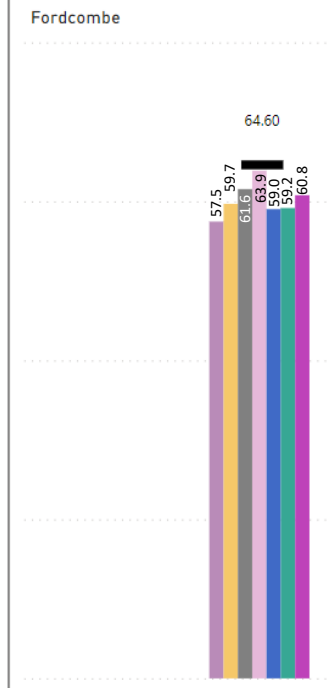
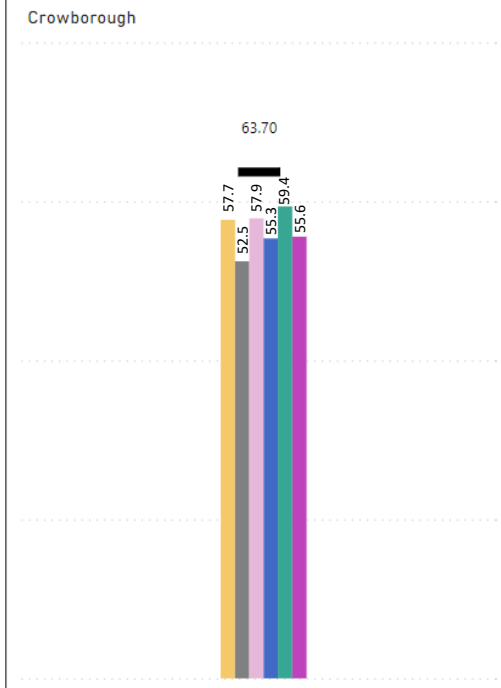
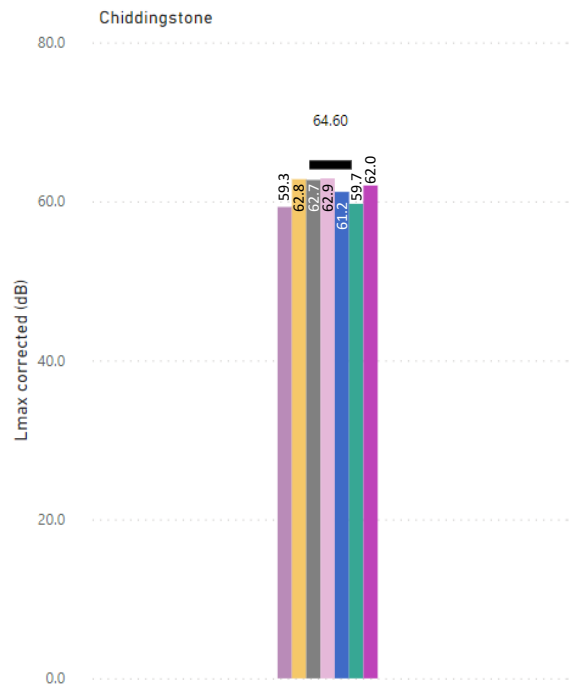
- 7 approaches on VURJU 1D.
- 5 x 7M8, 2 x 772.
- Altitude recordings captured on all 3 NMTs for each aircraft.
- All recorded altitudes are at least 500ft above the trial night outlier thresholds.
- There are **no altitude outliers** on VURJU 1D for this reporting period.

# Data Analysis

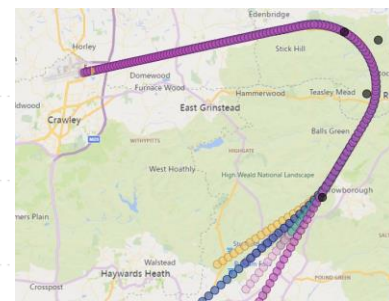
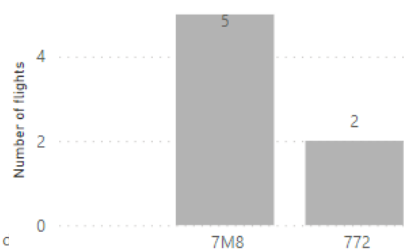
## VURJU Route Noise Analysis

### Noise recordings and outlier thresholds

Operation Number ● 25111281 ● 25129054 ● 25137986 ● 25143611 ● 25152542 ● 25165450 ● 25165457 — Outlier Threshold (Trial Night, c



### Aircraft types



### Observations

- 7 approaches on VURJU 1D.
- 5 x 7M8, 2 x 772.
- Noise recordings captured on all 3 NMTs for majority of aircraft.
- 1 noise reading at Crowborough for op number 25111281 wasn't captured by the NMT. This could be due to the aircraft being too quiet to be detected (less than 50dB), given its altitude above the monitor (over 1900ft above the threshold).
- All recorded noise values are quieter than the trial night outlier thresholds.
- There are **no noise outliers** on VURJU 1D for this reporting period.

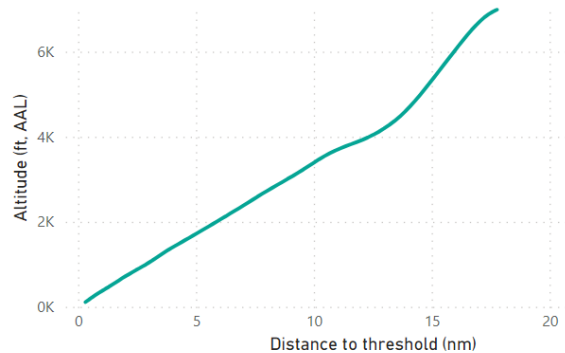
# Data Analysis

## Altitude Profiles per route

### IFKIF

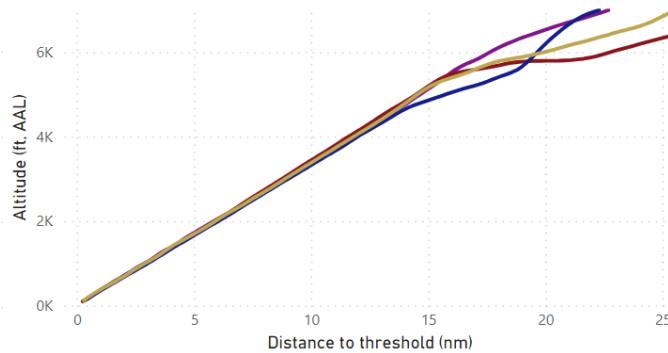
1A

Operation No ● 25143616



### LACOV 1D

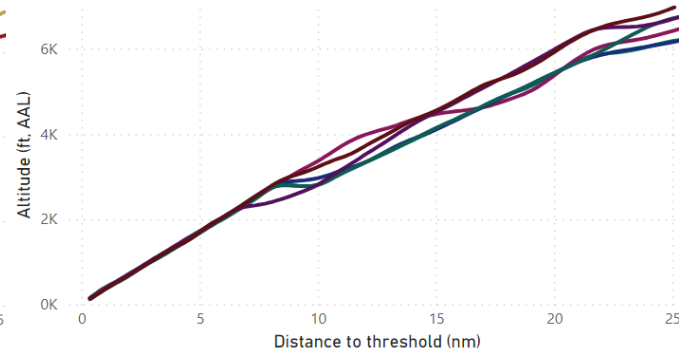
Operation No ● 25134918 ● 25162748 ● 25168106 ● 25178478



### MUWAL

1D

Operation No ● 25117574 ● 25120410 ● 25129050 ● 25152549 ● 25162730 ● 25188271



- Altitude profile for participating aircraft on IFKIF 1A.

- Altitude profile for participating aircraft on LACOV 1D.

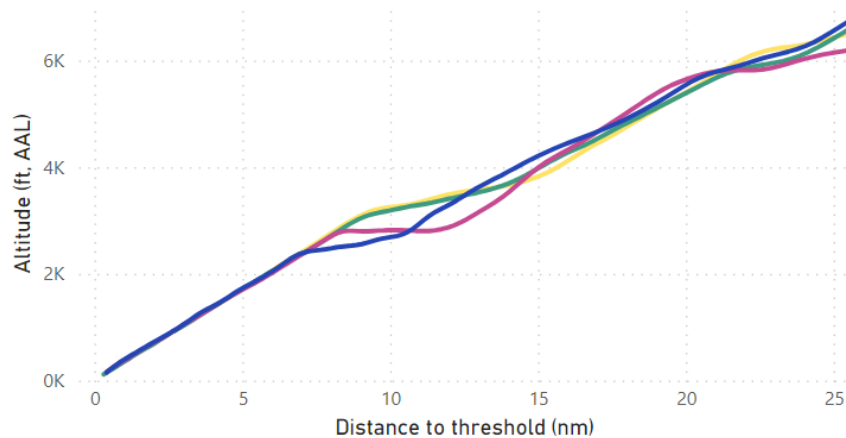
- Altitude profile for participating aircraft on MUWAL 1D.

# Data Analysis

## Altitude Profiles per route

### TUFGA 1D

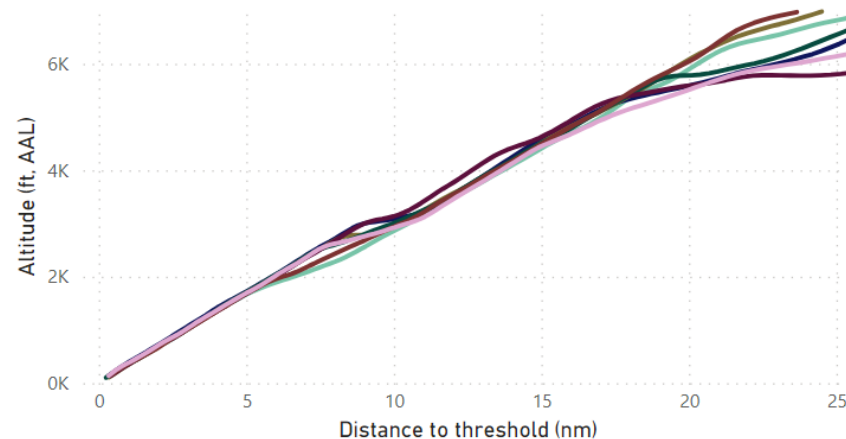
Operation No ● 25123032 ● 25129026 ● 25149034 ● 25188266



- Altitude profile for participating aircraft on TUFGA 1D.
- Op number ending 034 (pink line above) is a noise outlier.
- It is apparent that it is showing a different trajectory to others on the same procedure; low and long level segment.

### VURJU 1D

Operation No ● 25111281 ● 25129054 ● 25137986 ● 25143611 ● 25152542

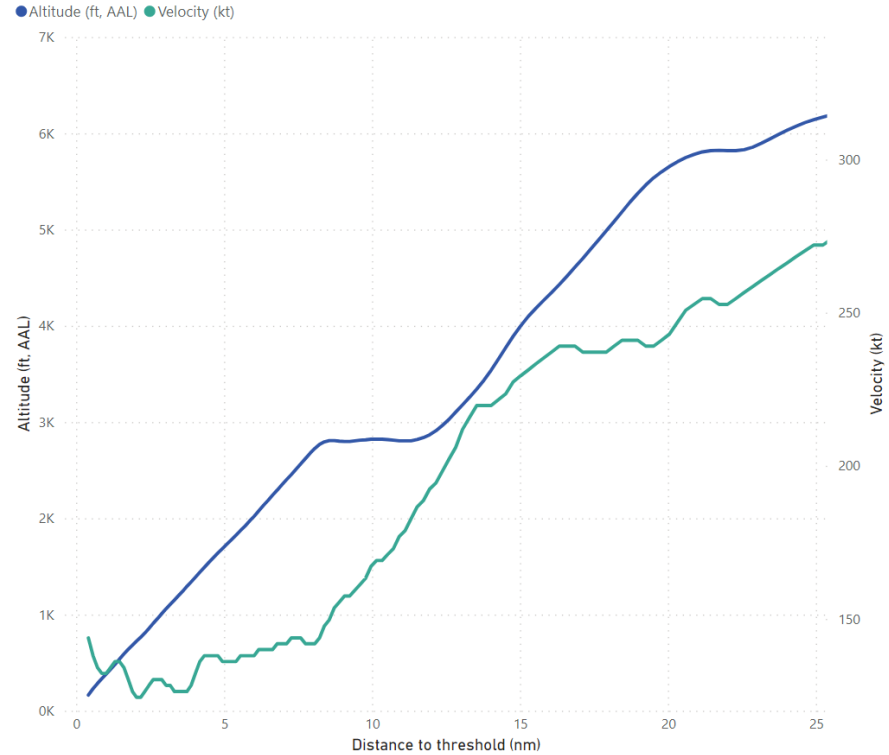


- Altitude profile for participating aircraft on VURJU 1D.
- All non-outlier participants.

### TUFGA 1D

#### Trajectory and velocity profiles

- Altitude and velocity profile for noise outlier aircraft on TUFGA 1D.
- Next steps:
  - These will be compared against non-PBN profiles to determine how/if the descent profile has changed.
  - A deeper dive into outliers will be conducted to improve understanding of causes.



# Feedback and complaints

## Feedback

- No pilot feedback was received during reporting period 2.
- ATC reported some events of pilot refusal, for example on the grounds of training, and commented that there may be some lack of awareness of the trial. Further engagement is required, including continued promotion of the trial through formal channels (i.e. FLOPSC meetings, etc).
- No safety concerns have been raised by pilots or ATCOs.

## Complaints

- There has been no change observed in the trend of complaints through Gatwick's complaints system.

## Lessons learned

- Continued promotion of the trial is necessary to maintain pilot awareness and capture newly scheduled pilots.

# Next steps

1. Increase pilot awareness of the trial – via workshop, individual airline engagement and wider FLOPSC forum.
2. Further analysis:
  - Investigate the cause of the outlier aircraft and if it was caused by specific operational procedures (slide 8/12/13)
  - Undertake further analysis of altitude and velocity profiles (slide 13)
3. Continue to record data and monitor trial progress.
4. Prepare the next trial report summarising data for the period 23 Feb – 21 Mar.

## Key point

- At this early stage in the trial, it is not possible to comment on any trial outcomes – this will emerge in time when more data becomes available.