



Reduced Night Noise Trial

RNN Data Report

Reporting Period: 11th – 25th January 2024

14th February 2024



LONDON GATWICK

POWERED BY VINCI AIRPORTS | GLOBAL INFRASTRUCTURE PARTNERS

Executive Summary

The RNN trial commenced 11 January 2024. In the first two weeks (11-25 Jan) there were 5 trial nights of which 7 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 less data than expected at this point of the trial due to impacts of southern runway works, Storm Isha and Noise Monitoring Terminals being offline. It is not possible to make conclusions on the trial outcomes at this early stage, these will emerge as more data becomes available.

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 the first two weeks of the trial (11 – 25 Jan 2024).
- Due to night-time closure of the southern runway for works, the first aircraft flew the trial on 14 Jan on a westerly approach.
- The southern runway was closed for 9 out of 14 nights, thus the trial procedure was implemented on **5 nights** in total: 14/01, 15/01, 21/01, 22/01 and 23/01.
- Storm Isha caused severe disruption on 22/01, resulting in impacted operation and inaccurate noise readings. For this reason, data captured on 22/01 has been removed from our analysis.
- Over the 4 remaining trial nights, it was reported that **7 aircraft** successfully participated in the trial. In addition, ATC informed that one pilot refusal occurred on 15/01 (not on the grounds of safety).
- Note that runway works are more common than expected; there is 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

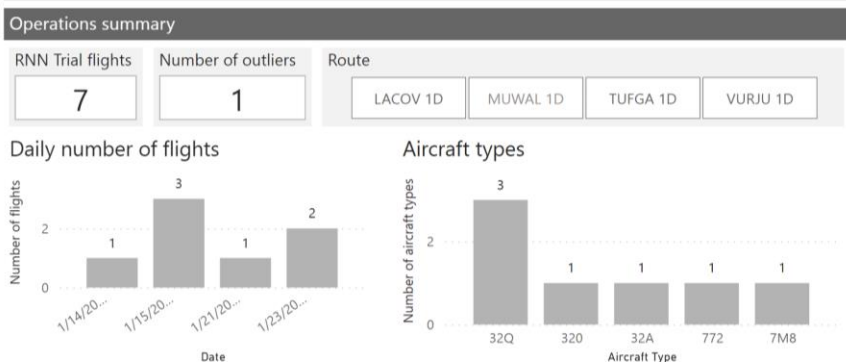


- The noise monitor terminals (NMTs) were placed under the routes that were expected to be most used.
- In total, 9 NMTs, with a noise threshold level of 50dB, were located under 3 trial routes.
- Lmax adjustments have been made to aircraft overflying the NMTs within the overflight cone. These adjustments 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 Chiddingstone NMT experienced an outage between 12-17 Jan due to a frozen fuel cell.

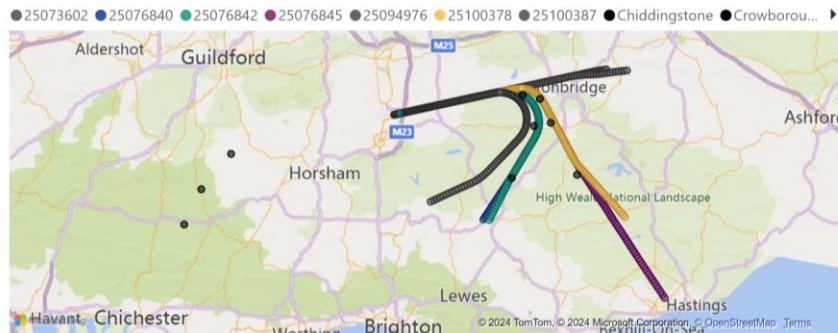
Data Analysis

Overview

Reduced Night Noise Trial Dashboard



Trajectories

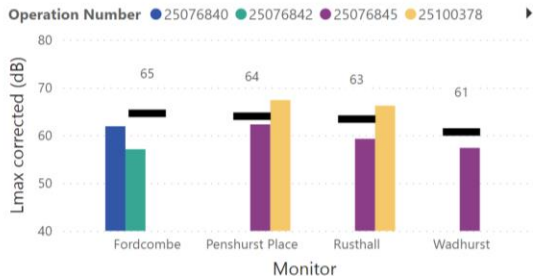


Data definition

- 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)

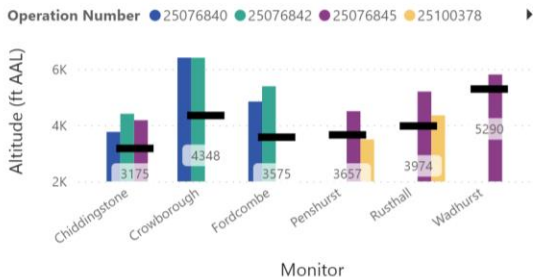
Noise analysis

Noise recordings and outlier thresholds



Altitude analysis

Altitude recordings and outlier thresholds



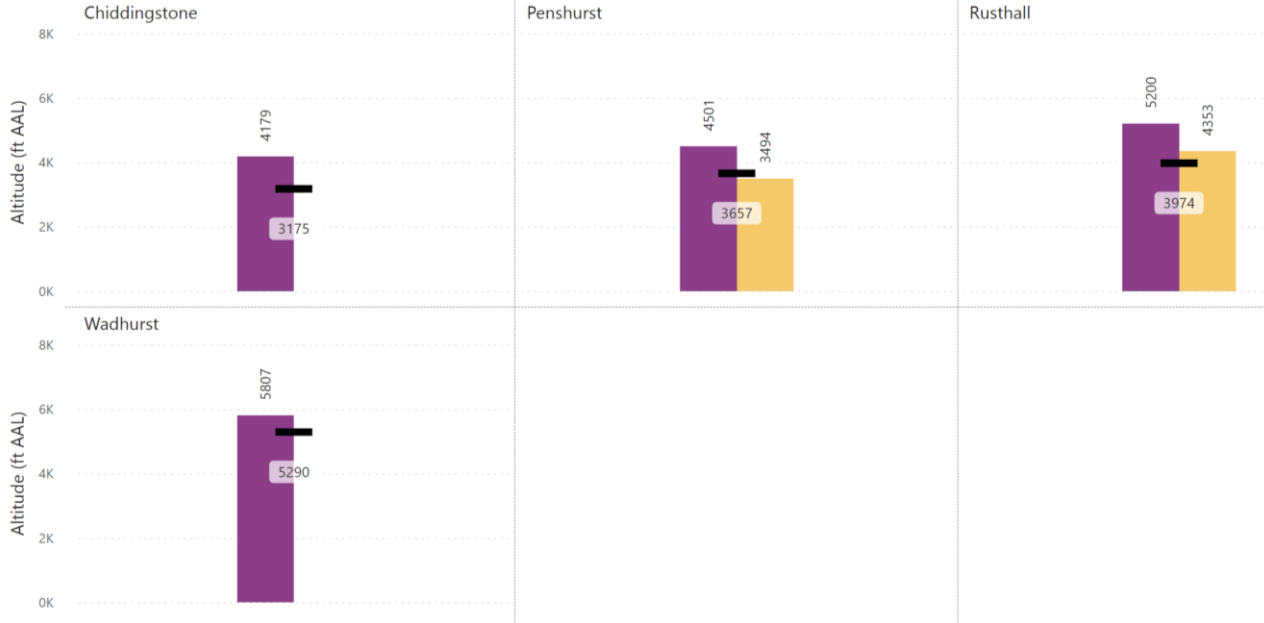
- 7 aircraft participated in the trial over 3 nights.
- All aircraft were westerly arrivals.
- 5 different aircraft types participated.
- 2 aircraft approached on LACOV; noise data was not captured for these aircraft (32Q on 14/01 and 32Q on 21/01).
- 1 aircraft approached on MUWAL; noise data was not captured for this aircraft (772 on 23/01).
- Of the remaining 4 aircraft, 1 aircraft was louder and lower than the noise and altitude outlier thresholds respectively.
- 3 aircraft were quieter and higher than the noise and altitude outlier thresholds respectively.

Data Analysis

TUFGA Route Altitude Analysis

Altitude recordings and outlier thresholds

Operation Number ● 25076845 ● 25100378 — Outlier threshold (Trial Night)



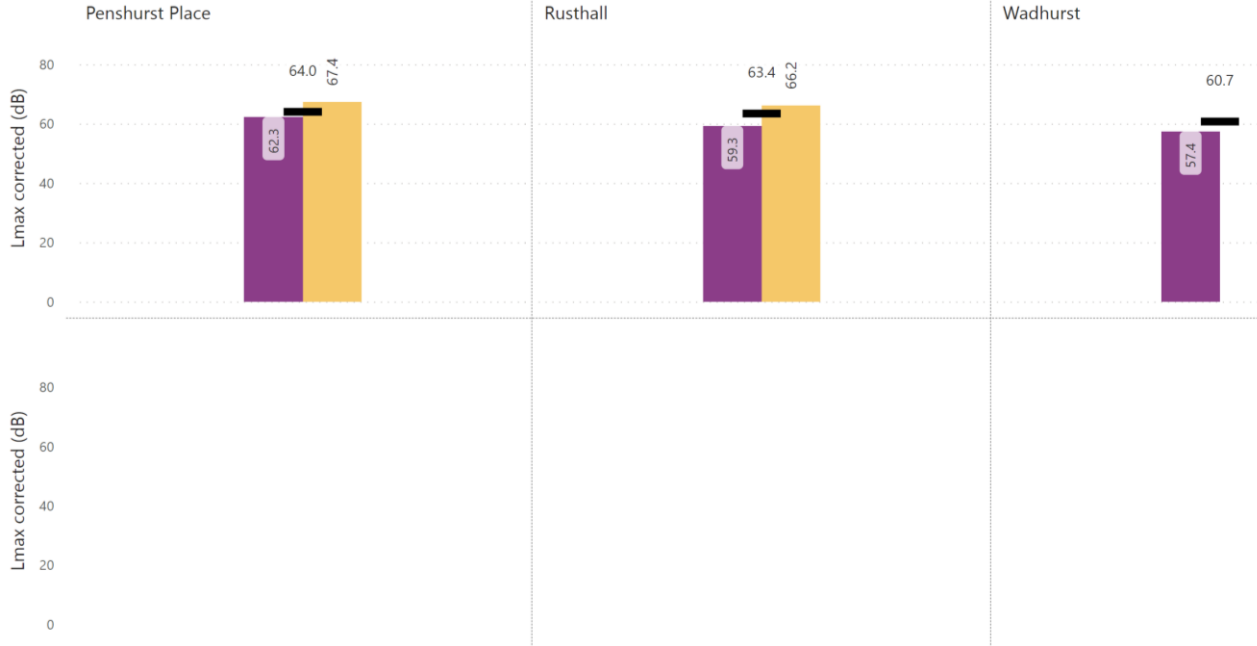
- 2 aircraft (320 and 32Q) on 15/01 and 23/01.
- 320 on 15/01:
 - Altitude recordings captured on 4 NMTs; Chiddingstone NMT sits within the overflight cone for this flight.
 - At all 4 NMTs the recorded altitude is higher than the altitude outlier threshold.
- 32Q on 23/01:
 - Altitude recordings captured on 2 NMTs; Wadhurst and Chiddingstone NMTs do not sit within the overflight cone for this flight.
 - The recorded altitude is lower than the outlier threshold at Penshurst, dropping below the level by 163ft.
 - This aircraft is therefore an altitude outlier. Further investigation is necessary to understand the reason for this.

Data Analysis

TUFGA Route Noise Analysis

Noise recordings and outlier thresholds

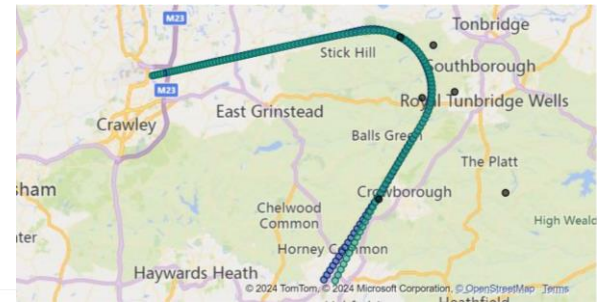
Operation Number ● 25076845 ● 25100378 — Outlier threshold (Trial Night)



- 2 aircraft (320 and 32Q) on 15/01 and 23/01.
- 320 on 15/01:
 - Noise recordings captured on 3 NMTs; Chiddingstone NMT sits within the overflight cone for this flight however no data was recorded due to the outage.
 - At all 3 NMT's the recorded noise is lower than the outlier threshold.
- 32Q on 23/01:
 - Noise recordings captured on 2 NMTs; Wadhurst and Chiddingstone NMTs do not sit within the overflight cone for this flight.
 - The recorded noise is higher than the outlier threshold at Penshurst and Rusthall, increasing above the level by 3.4dB and 2.8dB respectively.
 - This aircraft is therefore a noise outlier. Further investigation is necessary to understand the reason for this.

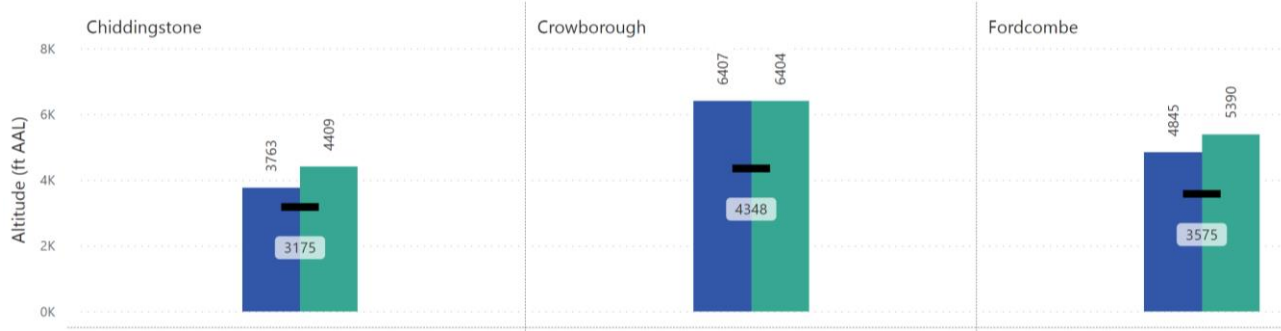
Data Analysis

VURJU Route Altitude Analysis



Altitude recordings and outlier thresholds

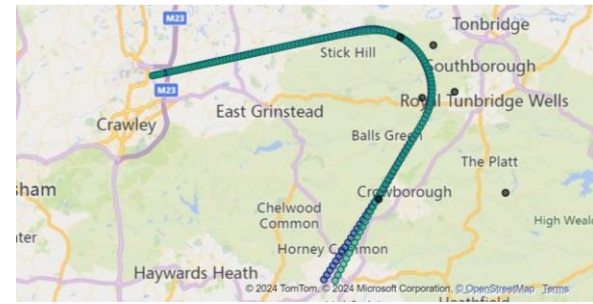
Operation Number ● 25076840 ● 25076842 — Outlier threshold (Trial Night)



- 2 aircraft (32A and 7M8) on 15/01.
- Altitude recordings captured on 3 NMTs.
- At all 3 NMT's the recorded altitude is higher than the altitude outlier threshold.
- At Crowborough, both aircraft are over 2000ft above the threshold.

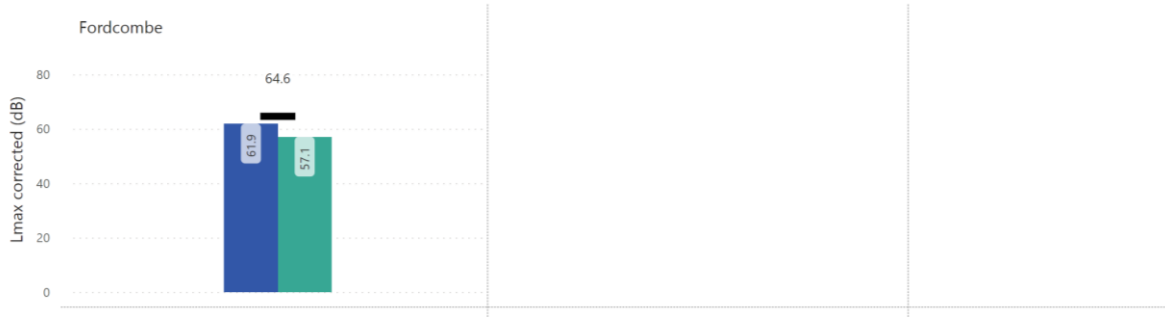
Data Analysis

VURJU Route Noise Analysis



Noise recordings and outlier thresholds

Operation Number ● 25076840 ● 25076842 — Outlier threshold (Trial Night)

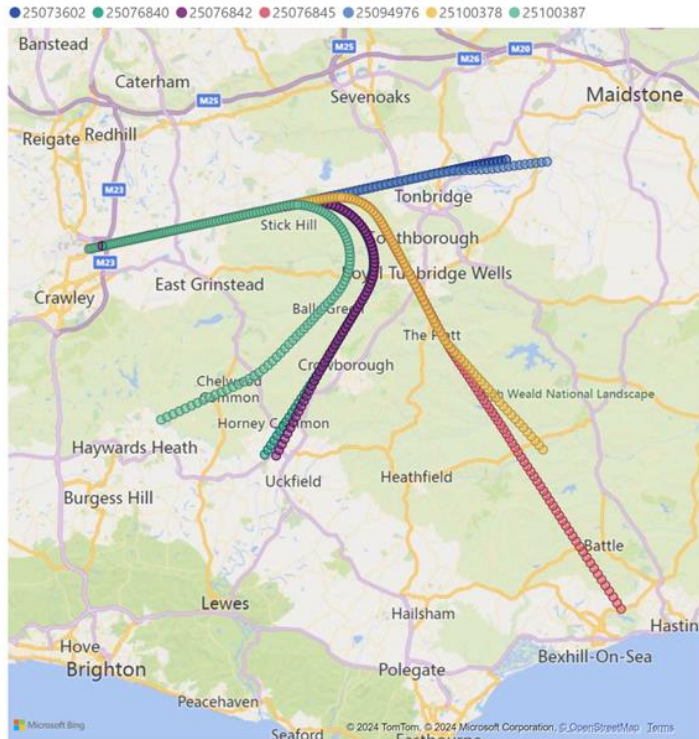


- 2 aircraft (32A and 7M8) on 15/01.
- Noise recordings captured on 1 NMT.
- No data was recorded at Chiddingstone NMT due to the outage.
- No data was recorded at Crowborough NMT. This could be because the aircraft were too quiet to be detected by the NMT (less than 50dB) given their altitude above the monitor (over 2,000ft above the threshold). Further investigation is underway.
- At Fordcombe NMT the recorded noise is lower than the outlier threshold for both aircraft.

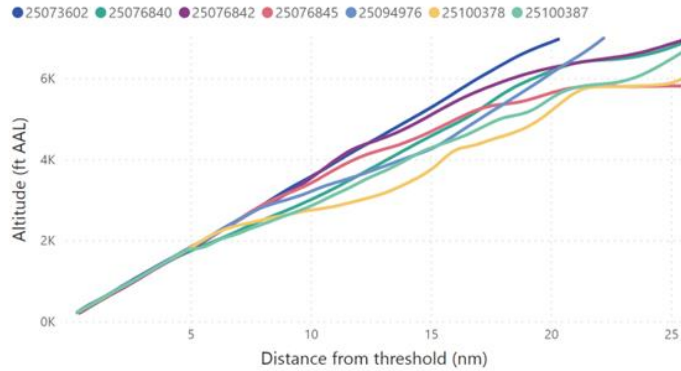
Data Analysis

Altitude profiles

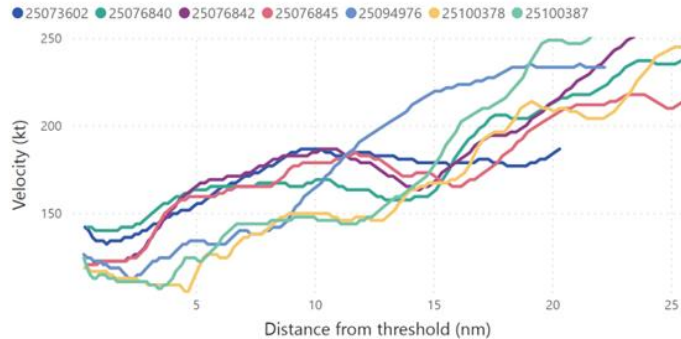
Trajectories



Altitude profiles



Speed profiles



- Altitude and speed profiles for all 7 aircraft participating in the trial.
- The yellow line is the outlier recorded on 23/01. It is apparent that it is low compared to other aircraft and this is being investigated.
- Next steps: These will be compared against non-PBN profiles to determine how/if the descent profile has changed.

Feedback and complaints

Feedback

- Feedback was received from a pilot participating in the trial on the night of Storm Isha - there were no safety concerns, and the procedure was successfully flown but there was challenge in achieving a CDA with a very strong tail-wind.
- ATC reported an incident of pilot refusal and commented that there is a general lack of awareness of the trial. Further investigation 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. Neither has there been specific comments made in relation to the RNN trial causing any disruption for local residents.

Lessons learned

- We know following Storm Isha that extreme winds can impact the procedures. Additionally, it is a challenge to capture accurate noise data under extreme wind conditions and this will be accounted for in the data validation process. New provision to monitor MET data to supplement our understanding of trial nights has been made within the team.
- Continued promotion of the trial is necessary to increase pilot awareness.

Next steps

1. Increase pilot awareness of the trial
2. Further analysis:
 - Investigate the cause of the outlier aircraft (slide 6/7)
 - Investigate the reason for no noise data recordings at Crowborough (slide 9)
 - Undertake further analysis of altitude profiles (slide 10)
3. Continue to record data and monitor trial progress
4. Prepare the next trial report summarising data for the period 26 Jan – 22 Feb

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.