Community Noise Report

Flamstead
August – October 2024

London Luton Airport

Introduction

As part of the ongoing noise monitoring programme, London Luton Airport deployed a portable noise monitoring terminal in Flamstead.

The purpose of the monitoring programme is to understand the typical noise levels created in the local community. **For Flamstead it specifically related to westerly departures. The departure flightpaths are shown on the map.** The noise monitor was located at a residential property on Wood End Ln, at an altitude of 490 feet above sea level. The red pinpoint on the map shows the noise monitor location.

The noise monitor in Flamstead was in place between the 6th August 2023 and 30th October 2024. However, noise data is only available from 6th August- 23rd September. Runway and gate analysis sections were studied for the full monitoring period.

Aircraft noise and tracks recorded were extracted from LLA's noise and track-keeping system. This document evaluates the lateral and vertical positioning of aircraft near the monitor as well as the noise recorded at ground level.
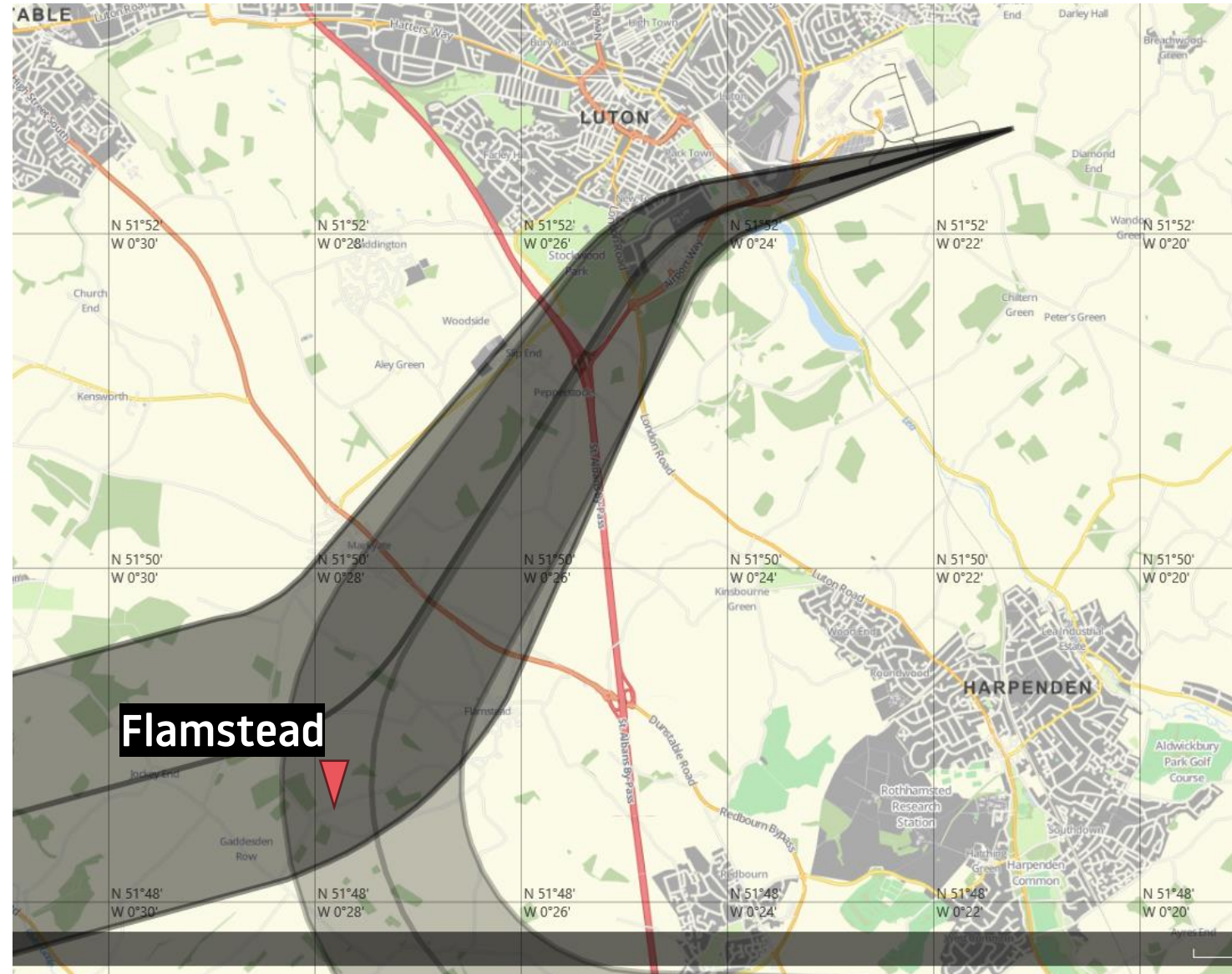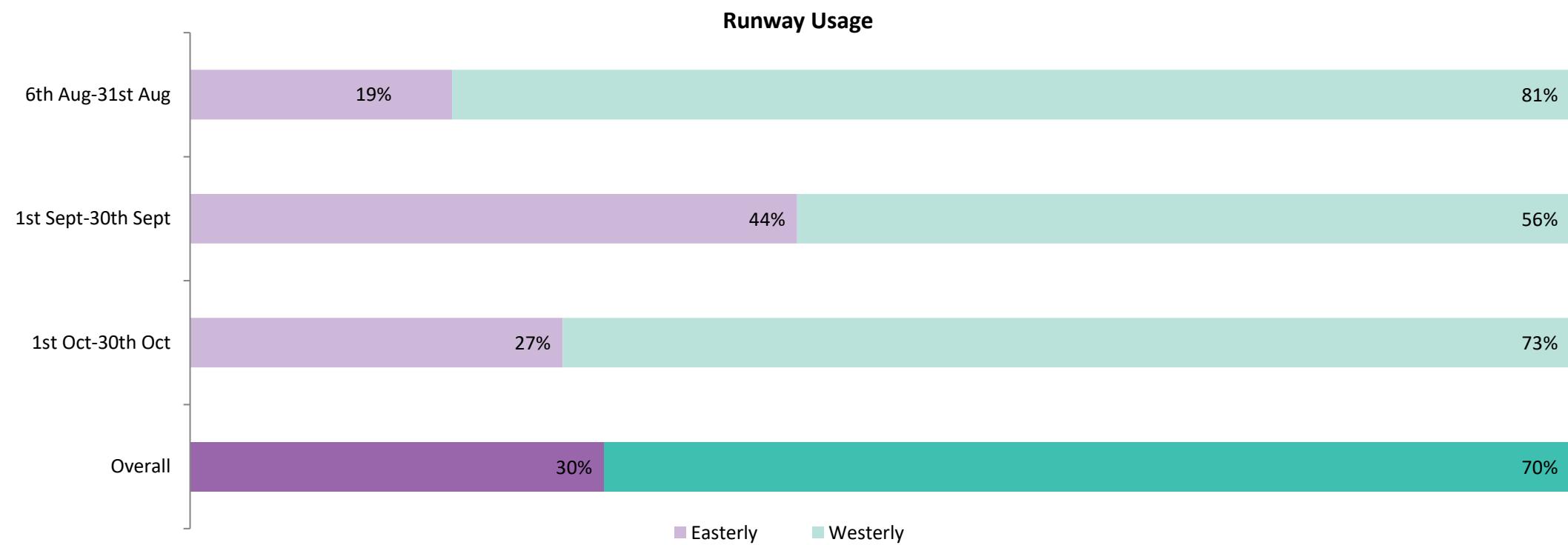
LLA operations during the monitoring period

There are two operating directions at LLA. The operating direction depends on the wind direction as aircraft are required to take off and land into the wind for aircraft performance and safety reasons. These are known as easterly operations and westerly operations and can change the aircraft tracks nearby specific areas. The split in operating direction varies from year to year and month to month. The amount of time that the runway operates in one direction depends on the wind direction.
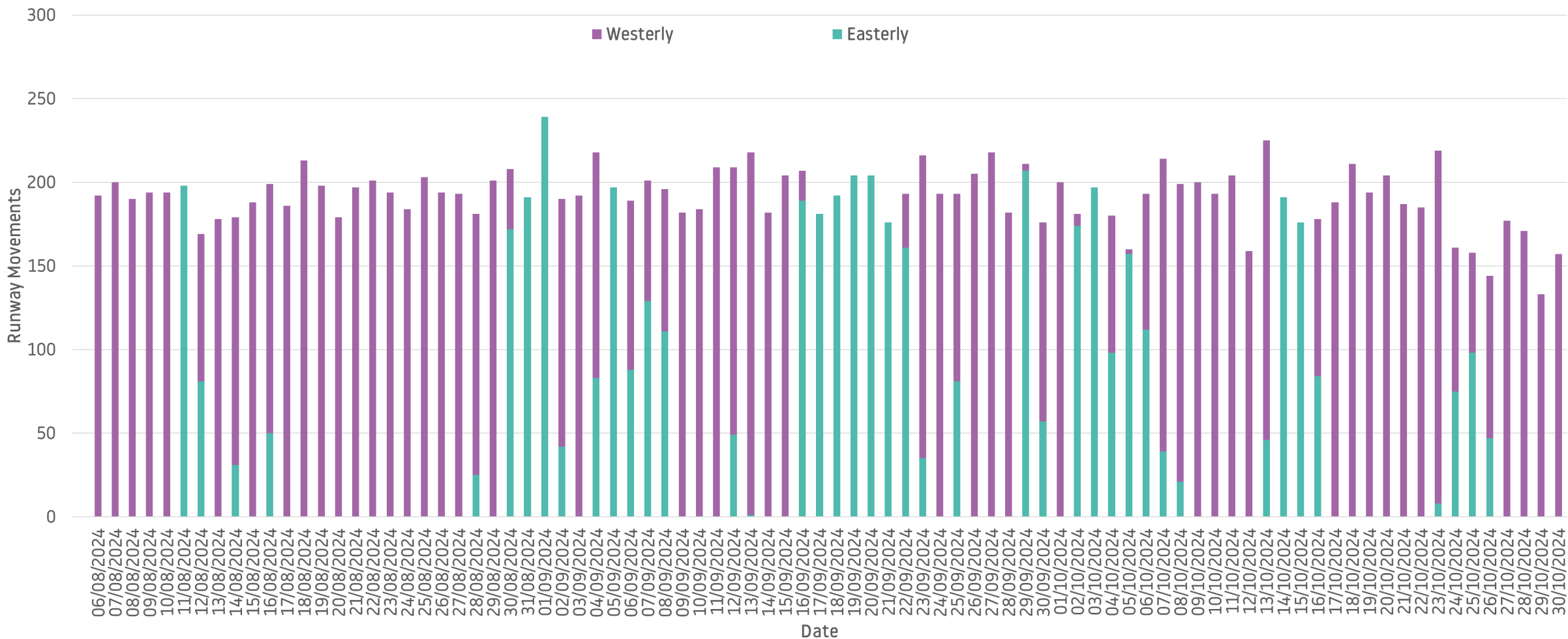
During the period of monitoring, the direction of operation was 30% Easterly and 70% Westerly. The 5-year average for this time of year is 29% easterly vs 71% westerly.

There were 13,384 aircraft departing on the westerly route in Q3 2023.

Runway Usage

| Period	Easterly	Westerly
6th Aug-31st Aug	19%	81%
1st Sept-30th Sept	44%	56%
1st Oct-30th Oct	27%	73%
Overall	30%	70%

■ Easterly   ■ Westerly

Daily Movements during monitoring period

The chart below shows the number of daily easterly and westerly operations. Due to the location, all flights that departed from our westerly runway would have flown above the noise monitor terminal. The graph shows the westerly operations (purple) as well as easterly operations (green) on the other side.

Operations during monitoring period

The graph below represents the average aircraft movement by hours during the monitoring period. Depending on the operating direction on the day, residents in Flamstead may experience different flight patterns. During the peak periods, residents of Flamstead may notice more frequent aircraft movements. In general, the morning peak starts at 7am on the days of departure operations and more noticeable as the dwellings at this location are under the westerly departure flightpath. During the night period of 23:00 – 06:00 in the monitoring period, there were an average of 25 departures.
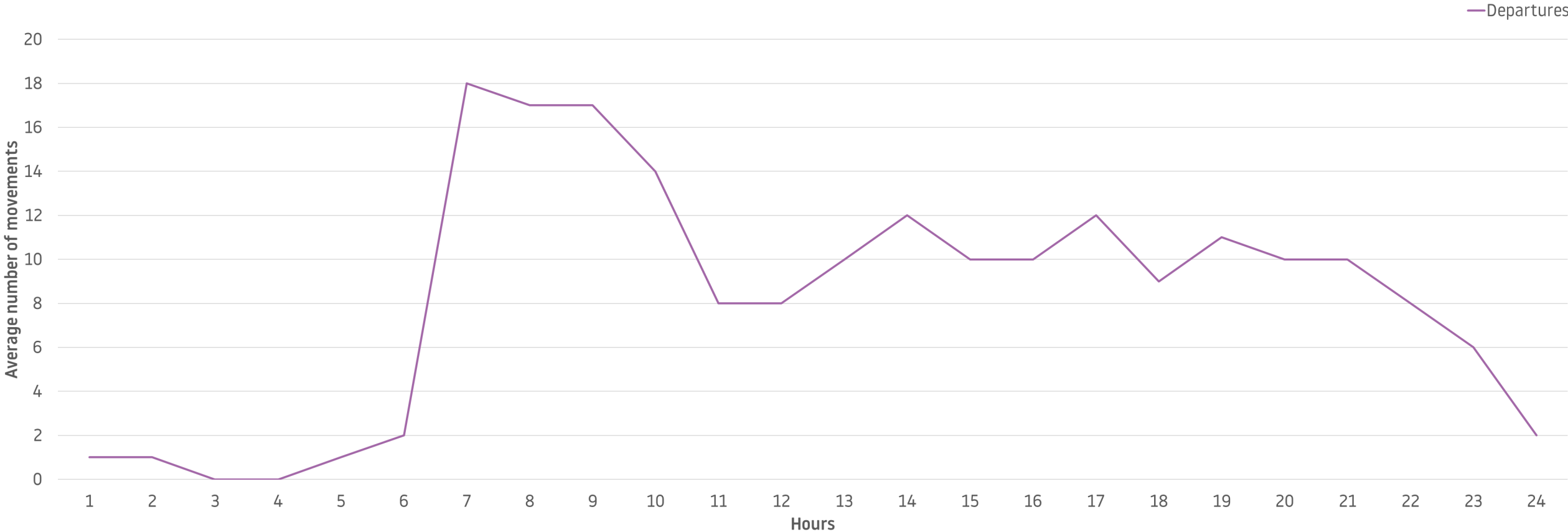
Aircraft Tracks

The heat map below show the representative flight tracks that passed near the noise monitor terminals during the monitoring period. The red pinpoint indicates the location of the noise monitor in Flamstead. This map shows the path of westerly departures.
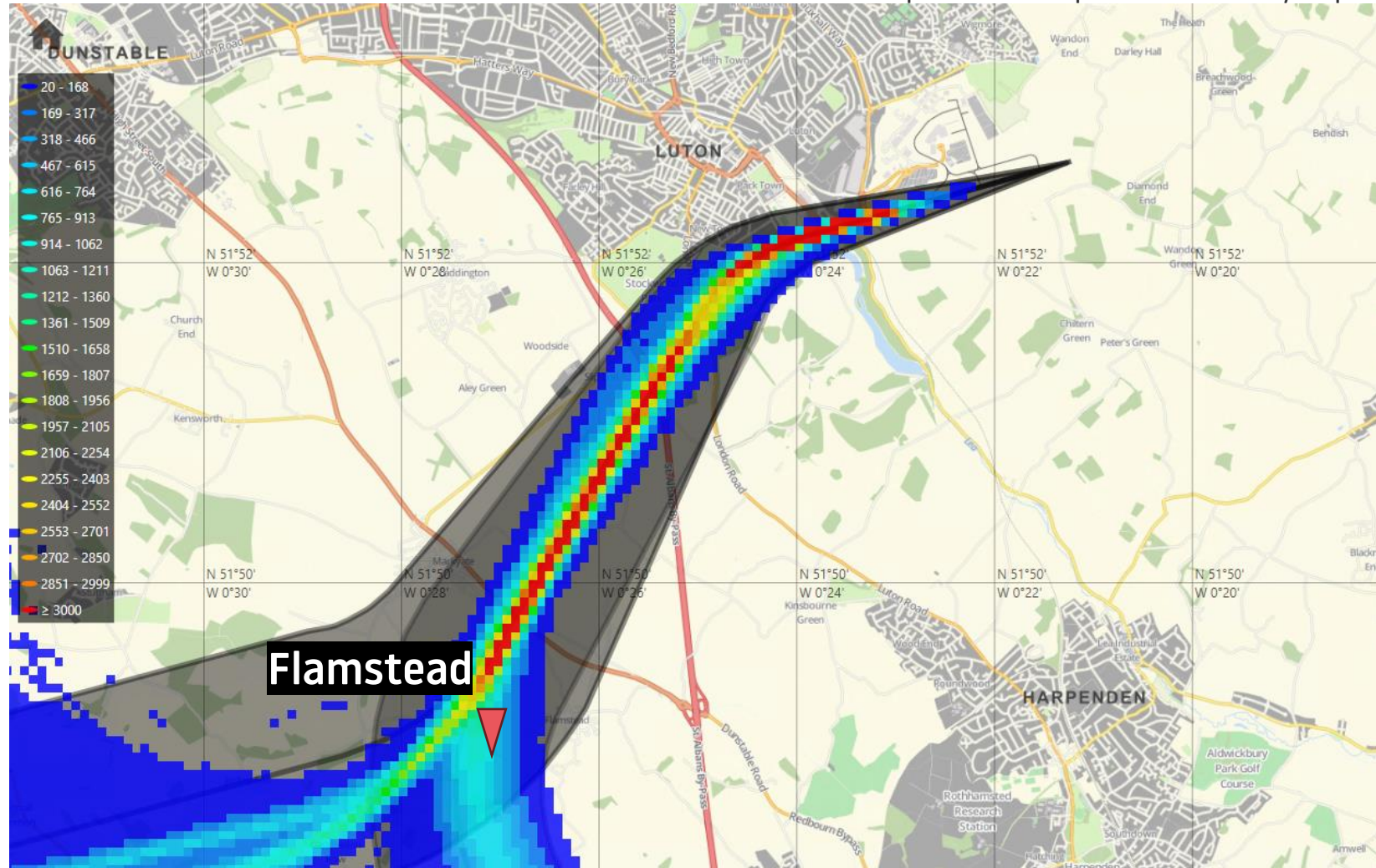
Altitude Gate Analysis

The altitude analysis for Flamstead, shows the vertical and lateral dispersion of aircraft 2.5km either side of the noise monitor. The map below shows the 5km gate (blue line) which is drawn perpendicular to the NPR from northwest to southeast and it gathered information of every aircraft passing through the gate area. The scatter graph below shows the distance and altitude of aircraft from the noise monitor during the monitoring period. The NPR is overlayed on the graph, tracks outside of this area are investigated and may result in a fine to the operator.
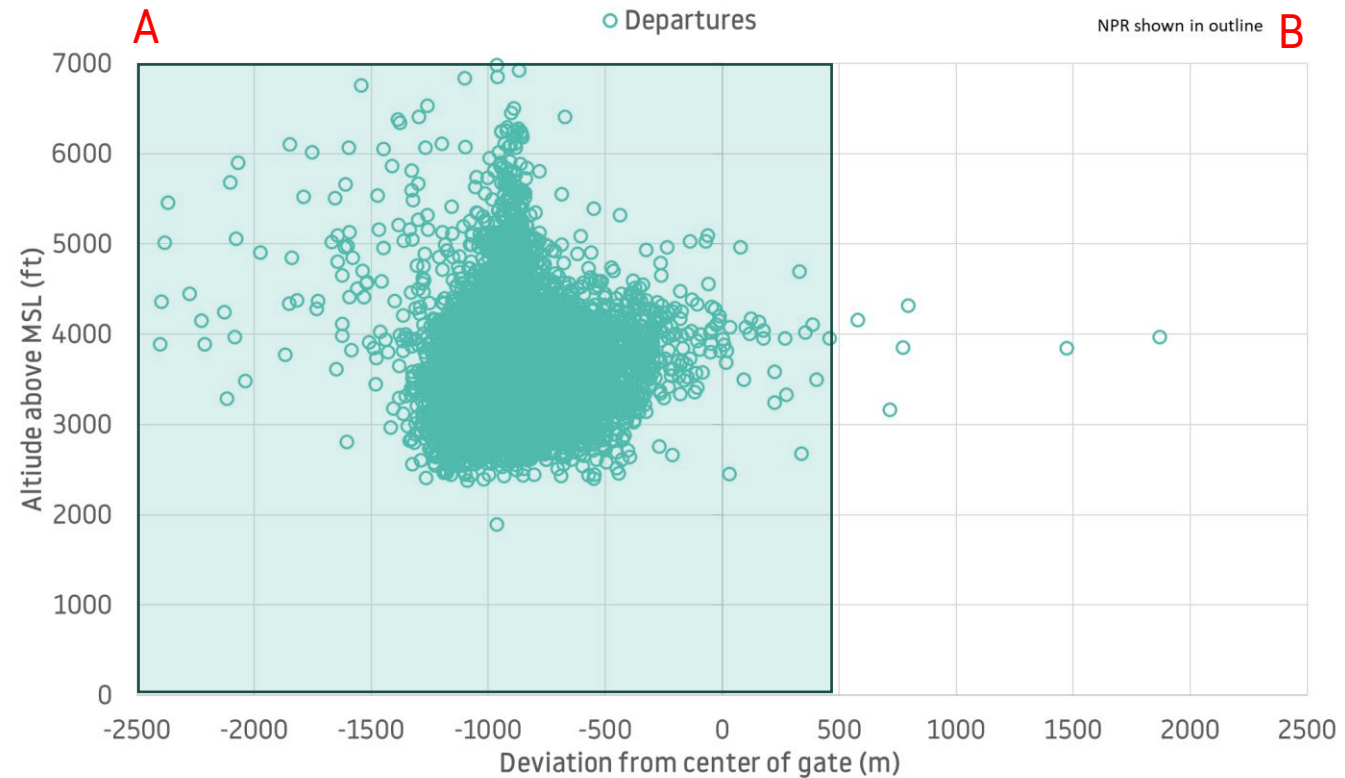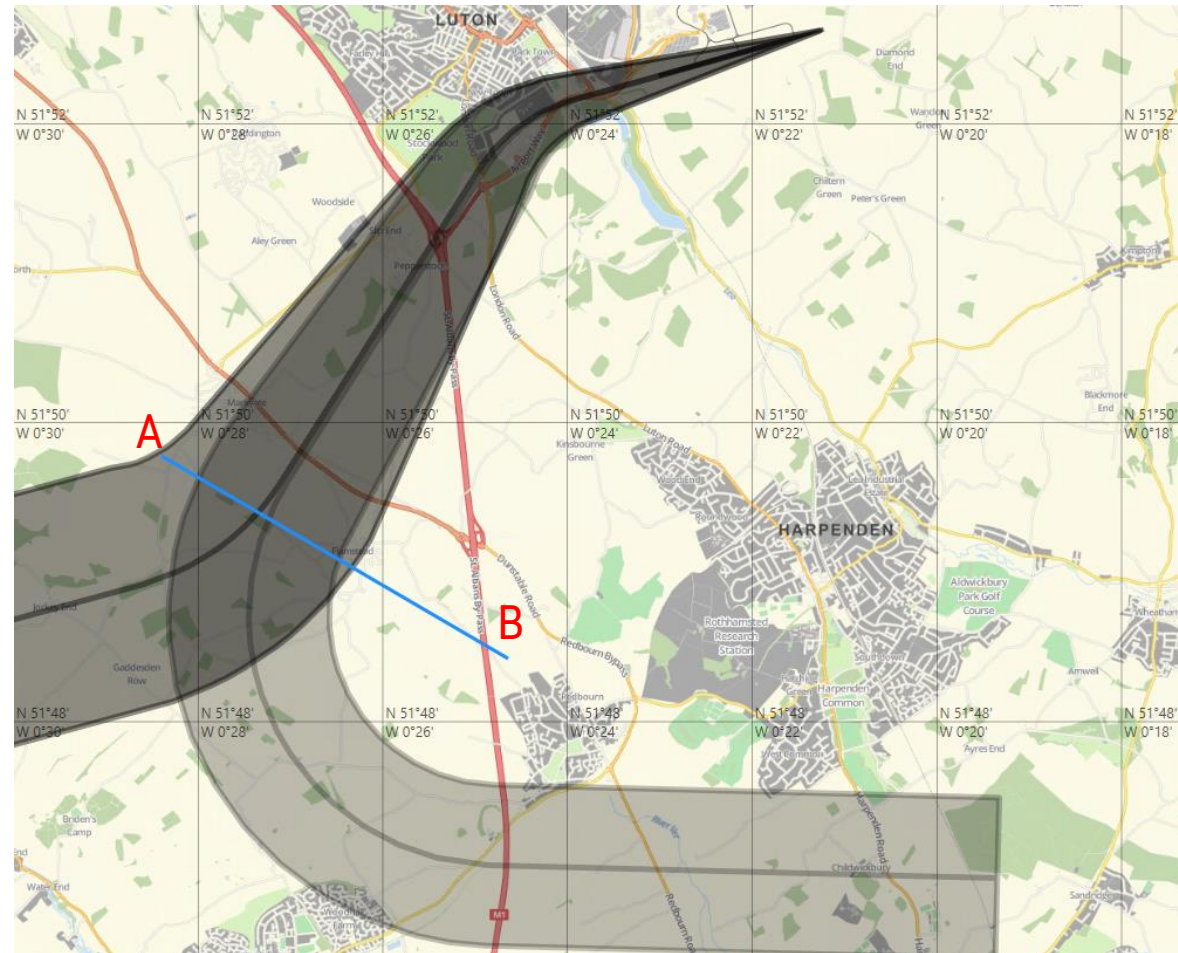
Altitude Gate Analysis – Departures

The average altitude of aircraft was 3,686 feet AMSL (3,196 feet AGL) when they reach above the noise monitor above Flamstead. The bar chart on the below shows the percentage rate and altitude of aircraft arriving.
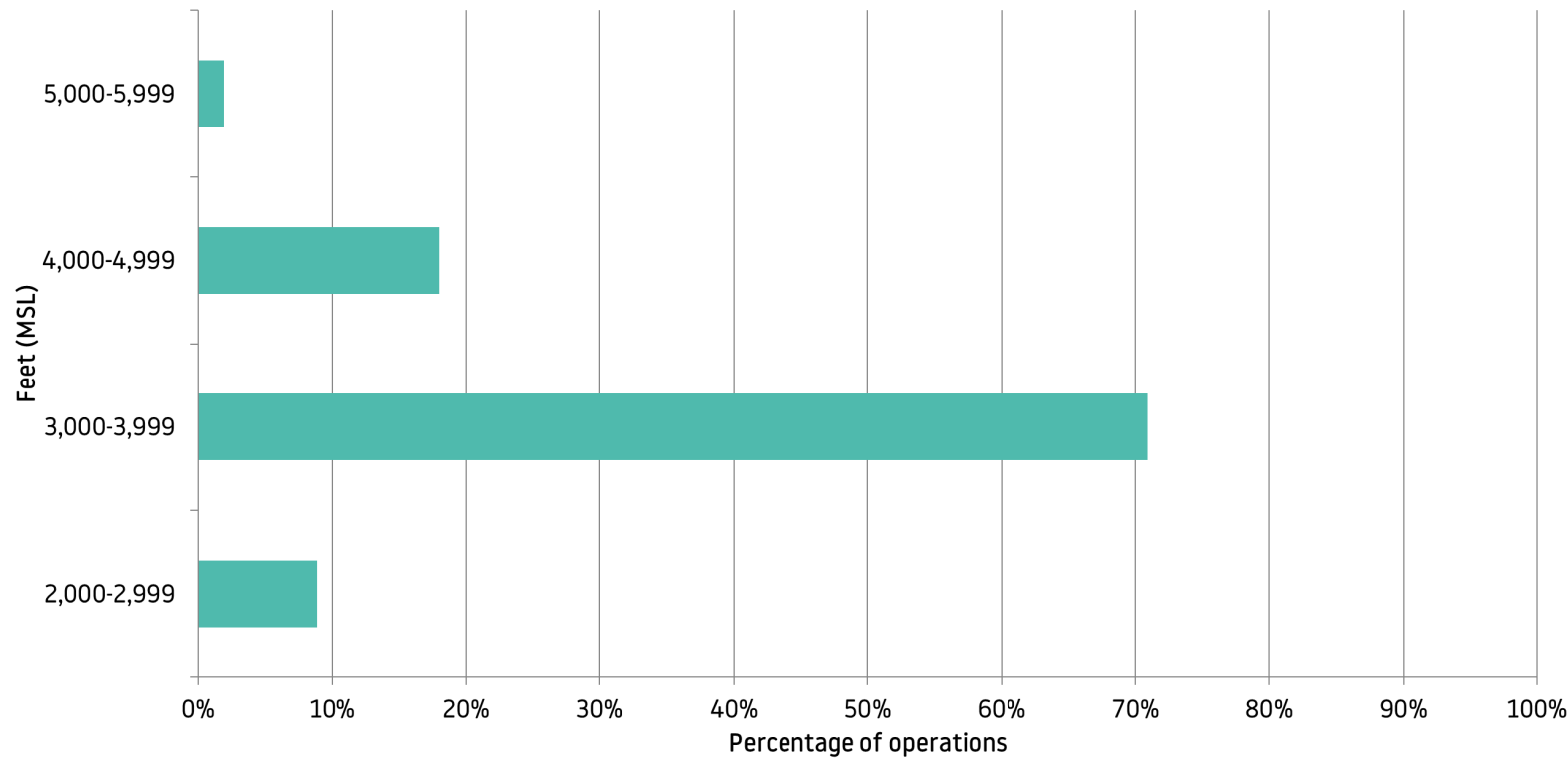
| Aircraft Type	Number of movements detected	Average Altitude (AMSL in ft)
A306	84	3,871
A319	1,730	3,540
A320 CEO	1,630	3,183
A320 NEO (A20N)	1,525	3,697
A321 CEO	441	3,411
A321 NEO (A21N)	2,065	3,382
B737-800 NG (B738)	882	3,841
B737 Max 8 (B38M)	615	3,623
Global Express (GLEX)	281	4,082
Cessna 560X (C56X)	177	4,227
All	9,430	3,686

How we analyse the noise data

- Following the noise monitoring period, we collate the data taken from our Noise and Track Keeping system and analyse the noise reading samples.

- During the monitoring period in Flamstead, the noise monitoring terminal collected 4,209 readings. Due to technical reasons this is only recorded results from 6th August- 23rd September. During the full monitoring period 6th August- 30th October, there were 11,764 westerly departures

- It is noteworthy that the noise monitor may not be able to record every aircraft noise event if the aircraft noise level is below ambient background noise or aircraft following a different route and not through the gate selected. Therefore, there may be a difference between the number of actual air transport movements and number of aircraft noise events collected during the monitoring period.

- The weather also plays a big part in the data recorded and in periods of extreme weather i.e (very strong winds) the equipment can record noise incorrectly, so we exclude samples from the analysis during these weather conditions. When analysing the samples, the first thing we do is to ensure that there is no unusual noise event present which might not be caused by aircraft (i.e. vehicles or wildlife). A total of 1,494 recordings were excluded from the analysis for the above reasons.

Noise Results – Westerly departures

During the monitoring period, the noise recording samples were gathered from the most popular aircraft types at London Luton Airport*. The summary of the noise results is shown in this section. The tables show the average noise by aircraft type and the bar chart shows the uncertainty caused by the spread in readings and the sample size (95% confidence interval).

Aircraft Type	Number of movements	Average Noise (dB)
A306	26	65.2
A319	616	65.6
A320 CEO	562	65.3
A320 NEO (A20N)	478	62.5
A321 CEO	129	65.8
A321 NEO (A21N)	714	66.0
B737-800 NG (B738)	307	65.6
B737 Max 8 (B38M)	174	61.9
GLEX	74	64.5
All	3,080	64.7
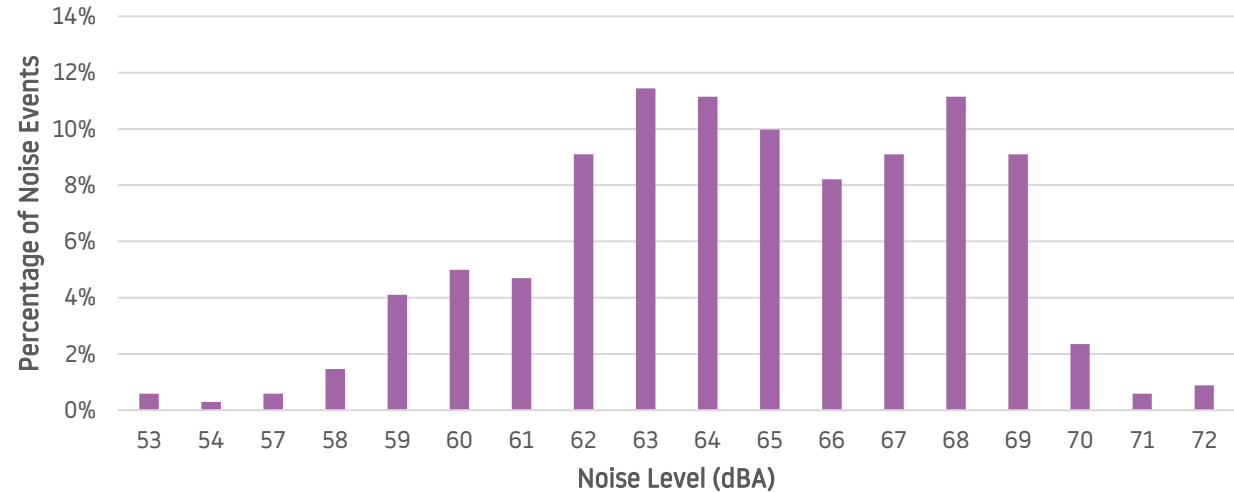
*The noise results shown in the analysis are only for those aircraft types that recorded more than 50 events per aircraft.

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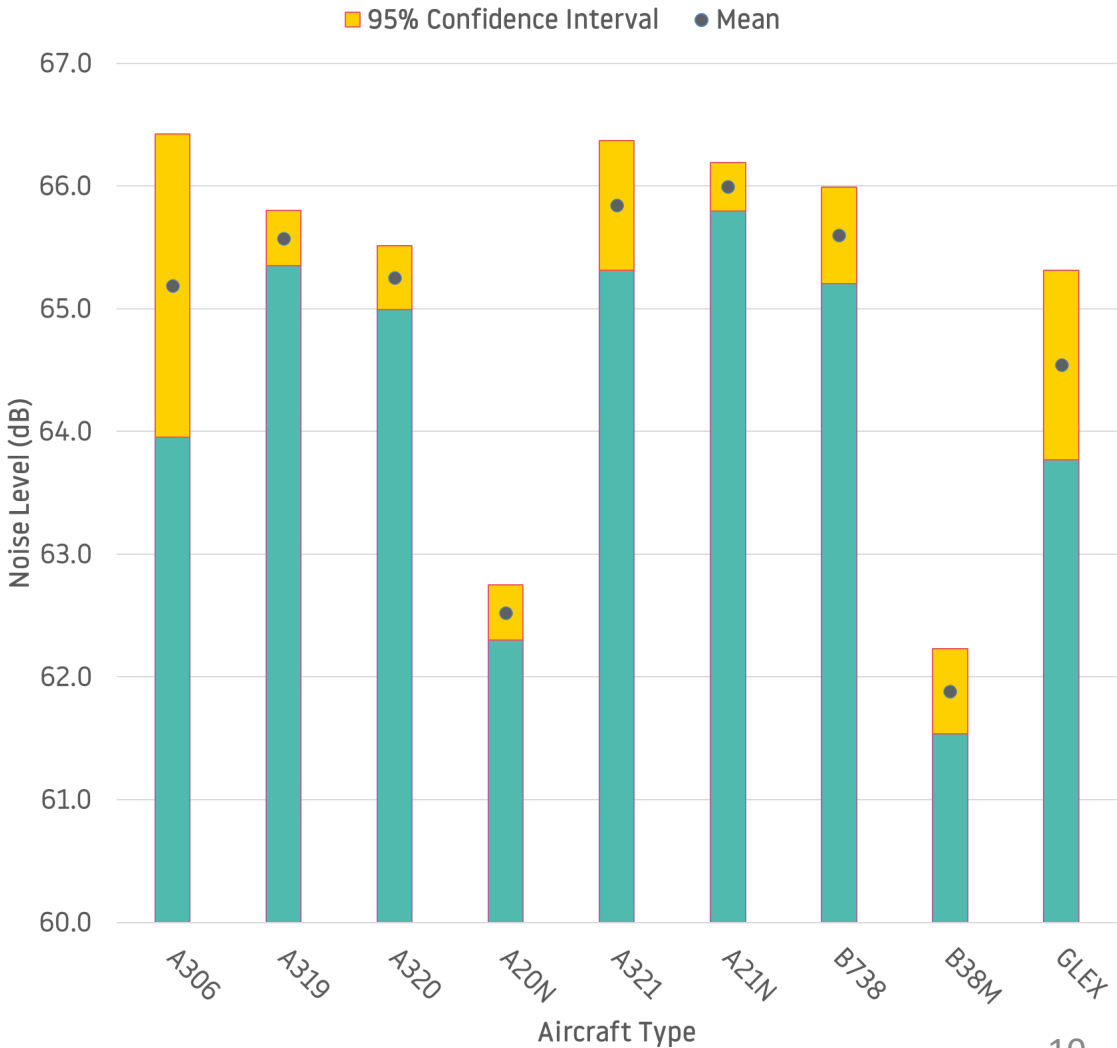
Noise Results - Summary

- The average departure noise in Flamstead was 64.7dB, based on a sample size of 3,080.

- From the results, Flamstead's most popular aircraft type by operators include Airbus and Boeing.

- Airbus operate the A320 CEO, A321 CEO and Boeing the B738-800NG.
- Both Airbus and Boeing also operate the newer generation aircraft. Airbus- A320 NEO (A20N) and A321 NEO (A21N). Boeing- operate the new B737 Max 8.
- These newer generation aircraft are quieter and more fuel efficient which also impacts the reduction in emissions.

- The table below shows the 6 types of aircraft operated by Airbus and Boeing, with three of the aircraft A20N, A21N and B38M being the newer and more efficient aircraft. It breaks down these results by showing both their arrival and departure decibel (dB) levels. In red/ green it shows the difference between the older and newer generation aircraft in their arrivals and departures.
- Around 44% of all noise results movements were newer generation aircraft which are more fuel efficient and quieter.

Aircraft type	Departure dB	New aircraft type	Departure dB
A320	65.3dB	A320N (A20N)	62.5dB (-2.8dB)
A321	65.8dB	A321N (A21N)	66.0dB (+0.2dB)
B738	65.6dB	B737 MAX8 (B38M)	61.9dB (-3.7dB)

Conclusion

- A mobile noise monitor was installed at a residential property on Wood end Ln from the 6th August to 30th October 2024. The noise events were recorded from 6th October- 23rd September

- For Flamstead, it specifically related to departures. During the monitoring period, the airport operated in the direction of easterly and westerly for 30% and 70% of the time, respectively. Generally, over the year, LLA operate in the westerly direction for 70% of the time due to the prevailing wind.

- The main aircraft type operating at London Luton Airport in this period of noise events is the Airbus A321 NEO (A21N) which produced an average noise of 66.0dB for departures.

- 44% of the noise events recorded in Flamstead were created by the newer generation aircraft, A320 NEO, A321 NEO and B737 Max 8.

- During the monitoring period, 233 aircraft were investigated as part of the Noise and Track violation scheme. Of these, 22 aircraft were fined. All fines generated by this scheme go directly into the community trust fund, more information on the community trust fund can be found on- https://www.londonluton.co.uk/corporate/community/community-trust-fund.

- LLA publish other monitoring reports on a regular basis. These reports can be viewed and downloaded from the Noise webpage on the LLA website - https://www.london-luton.co.uk/corporate/community/noise.

Glossary of Terms

Westerly Operations: As aircraft take off and land into the wind, westerly operations refers to the time when the wind is blowing from the west and aircraft follow the departure route in the direction of South Luton.

Easterly Operations: Easterly operations refers to the time when the wind is blowing from the east and aircraft land on the easterly runway and would fly above South Luton.

Standard Instrument Departure (SID): Published route that an aircraft must follow on departure.

Noise Preferential Route (NPR): All aircraft except propeller aircraft leaving London Luton Airport should follow flight paths known as Noise Preferential Routes (NPRs) up to an altitude of 3,000 feet or 4,000 feet depending on the route. They lead from the runway to the main UK air traffic routes and form the first part of the Standard Instrument Departure routes (SIDs).

Aircraft Movement: A single aircraft departing or arriving at the airport.

Altitude Gate Analysis: A gate which is drawn across an area and will gather flight date about every aircraft passing through the gate area.

Noise Event: A single event is the period from when an aircraft approaches the monitor until when the aircraft is leaving the area.

Decibel (dB): The unit used to measure noise (typically 50-60dB is equivalent to a normal conversation level).

LasMax: A unit of measure and is the maximum noise level from a single aircraft passing over the noise monitor.

95% Confidence Interval: A range of values that you can be 95% certain contains the population mean.