

Community Noise Report

Breachwood Green
January – April 2024



London Luton Airport



Introduction

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

The purpose of the monitoring programme is to understand the typical noise levels created in the local community. **For Breachwood Green it specifically related to Easterly departures and Westerly arrivals. The flightpaths are shown on the map.**

The noise monitor was located at a residential property on Lye Hill, in the middle of the easterly departure and westerly arrival routes, at an altitude of 430 feet above sea level. The red pinpoint on the map shows the noise monitor location.

The noise monitor in Breachwood Green was in place between the 10th January and 3rd April 2024.

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.

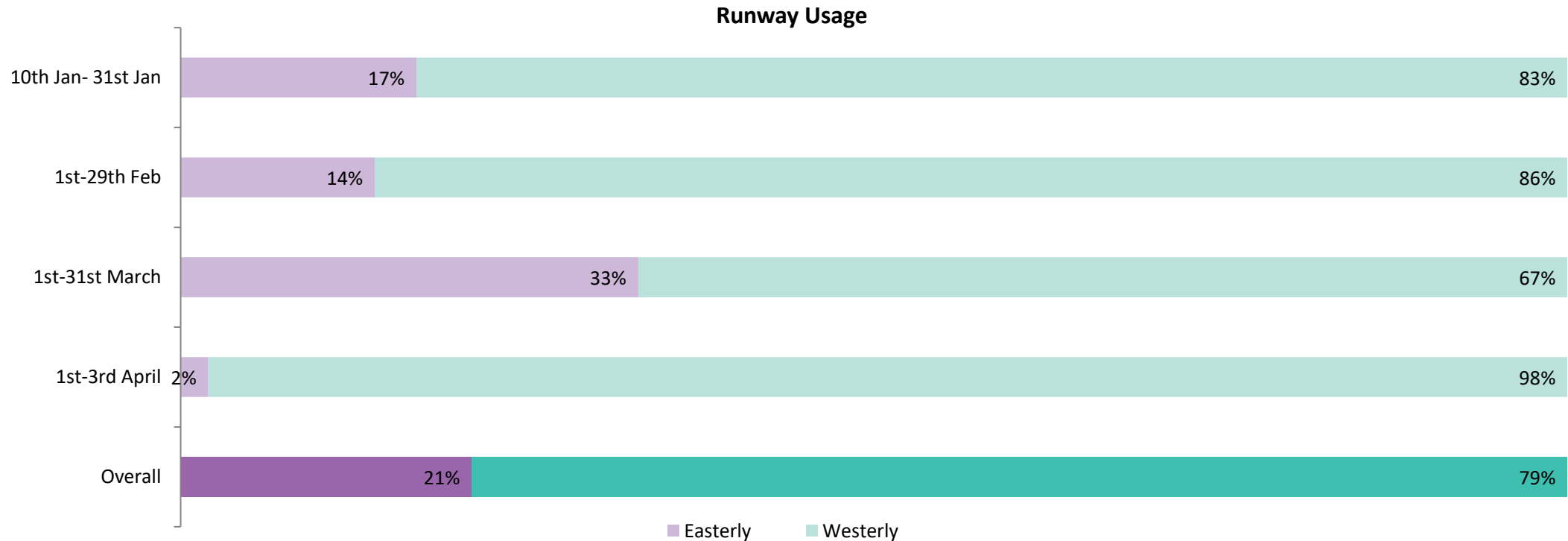


LLA operations during the monitoring period

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.

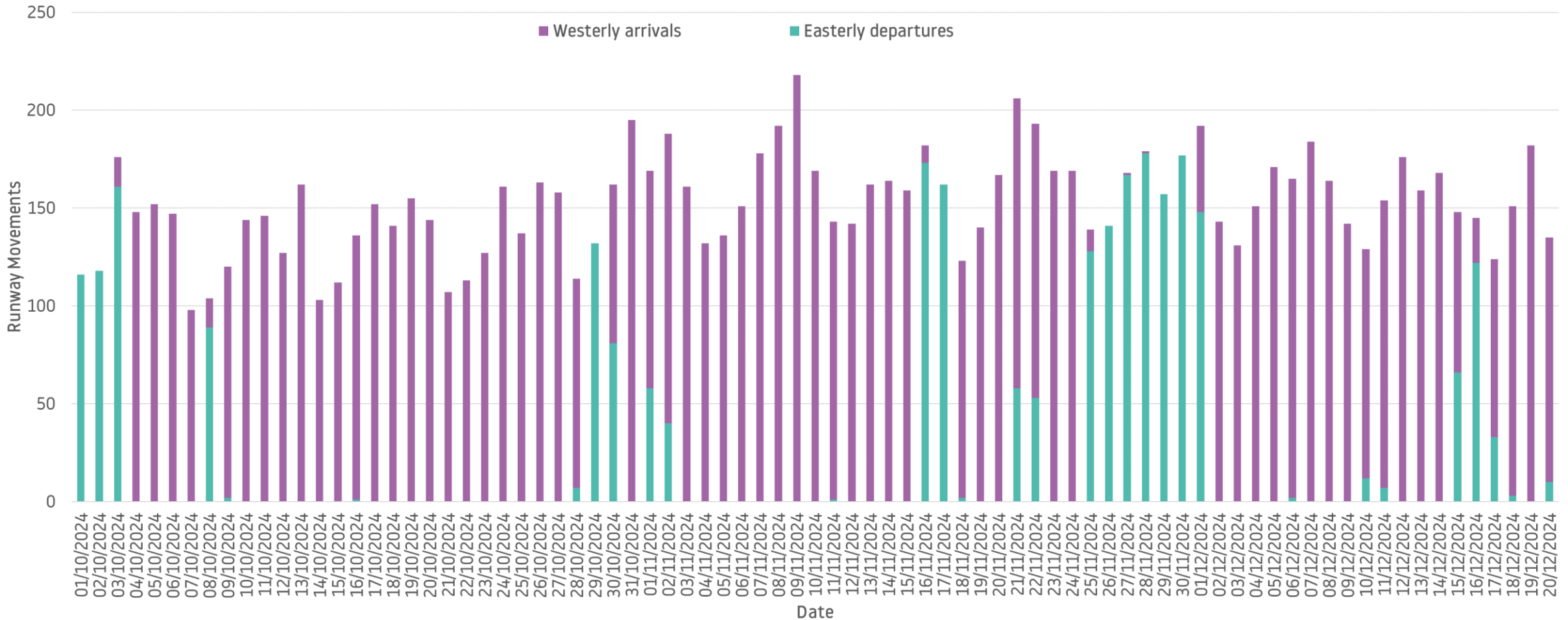
During the period of monitoring, the direction of operation was 21% Easterly and 79% Westerly. The 5-year average for this time of year is 25% easterly vs 75% westerly.

There were 2,786 aircraft departing easterly and 10,406 aircraft arriving on the westerly route in Q1 2024.



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.



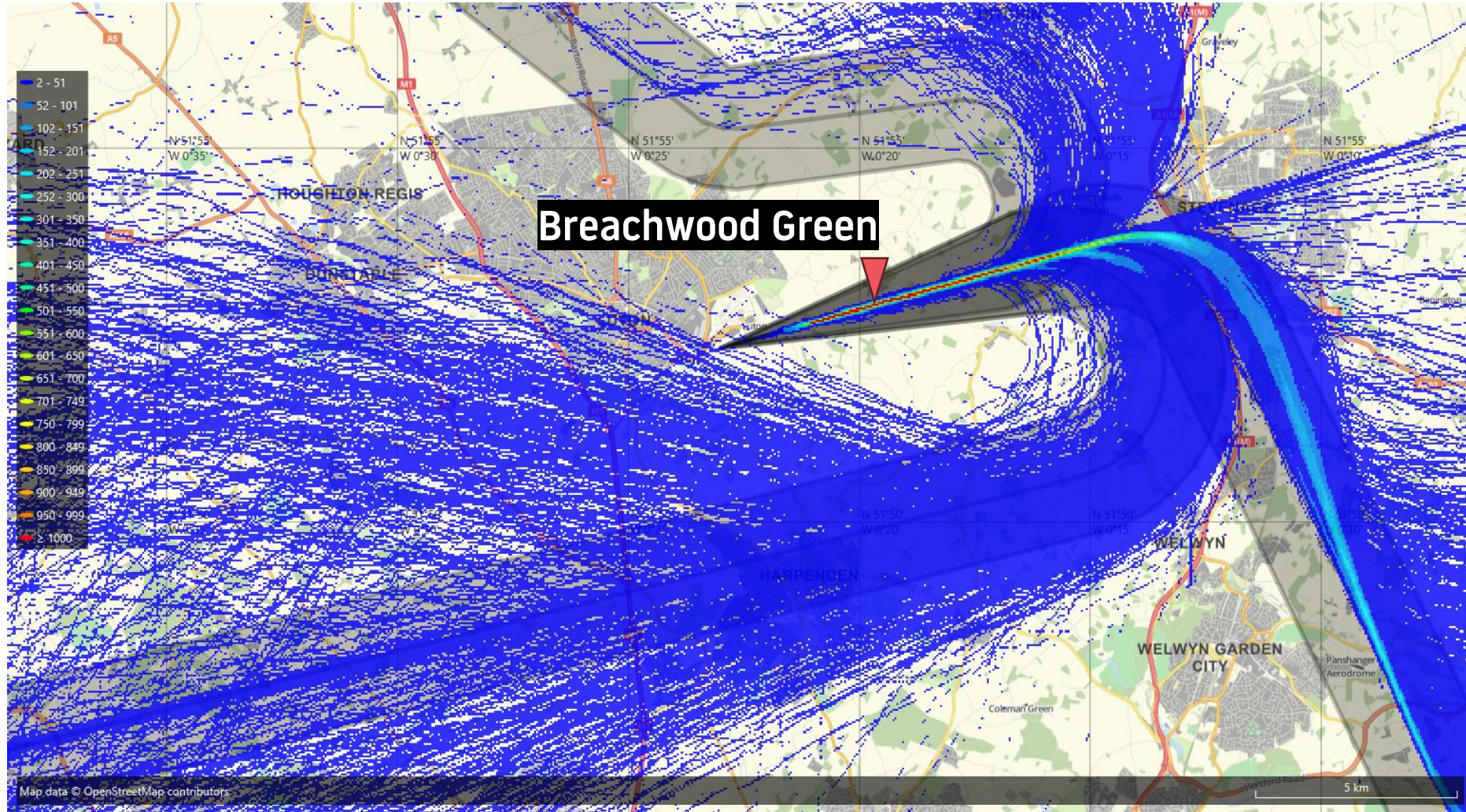
Operations during monitoring period

The graph below represents the average aircraft movement by hours during the monitoring period. Depending on the operating direction on the day, residents in Breachwood Green may experience different flight patterns. During the peak periods, residents of Breachwood Green may notice more frequent aircraft movements. In general, the morning peak starts at 6am on the days of departure operations and these aircraft would be lower at altitude and more noticeable as the dwellings at this location are just next to the westerly departure flightpath. During the night period of 23:00 – 06:00 in the monitoring period, there were average of 6 departures.



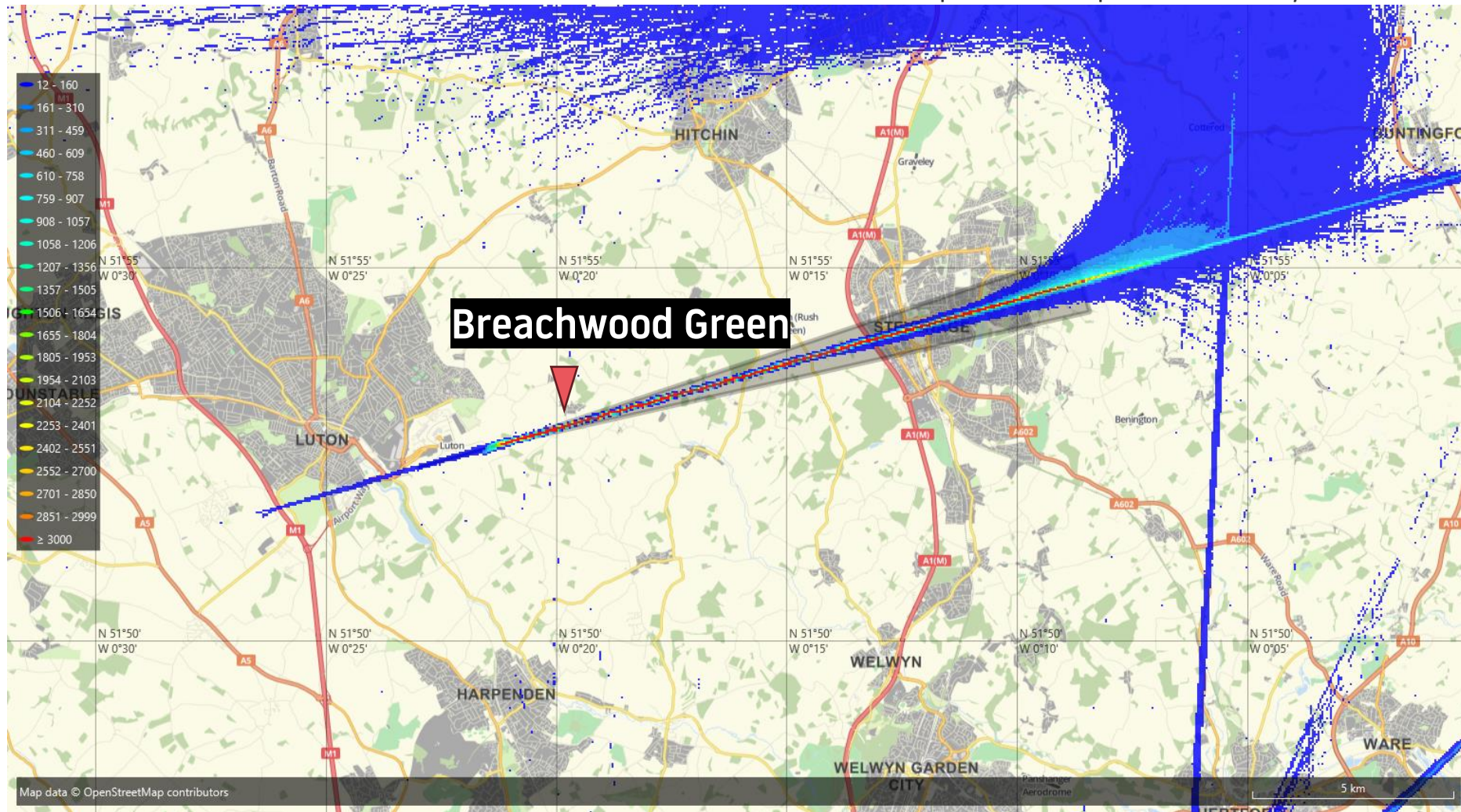
Aircraft Tracks- Easterly departures

The heat map below shows 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 Breachwood Green. This map shows the path of easterly departures.



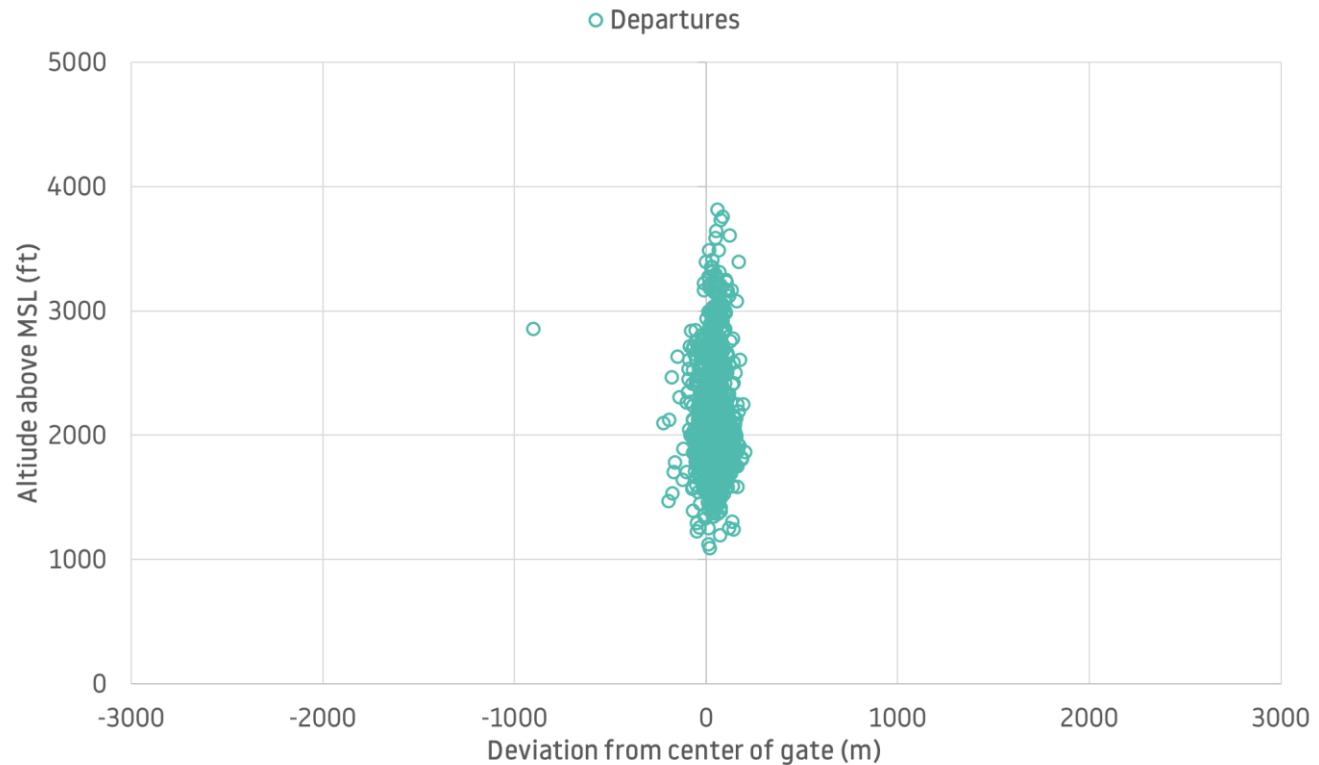
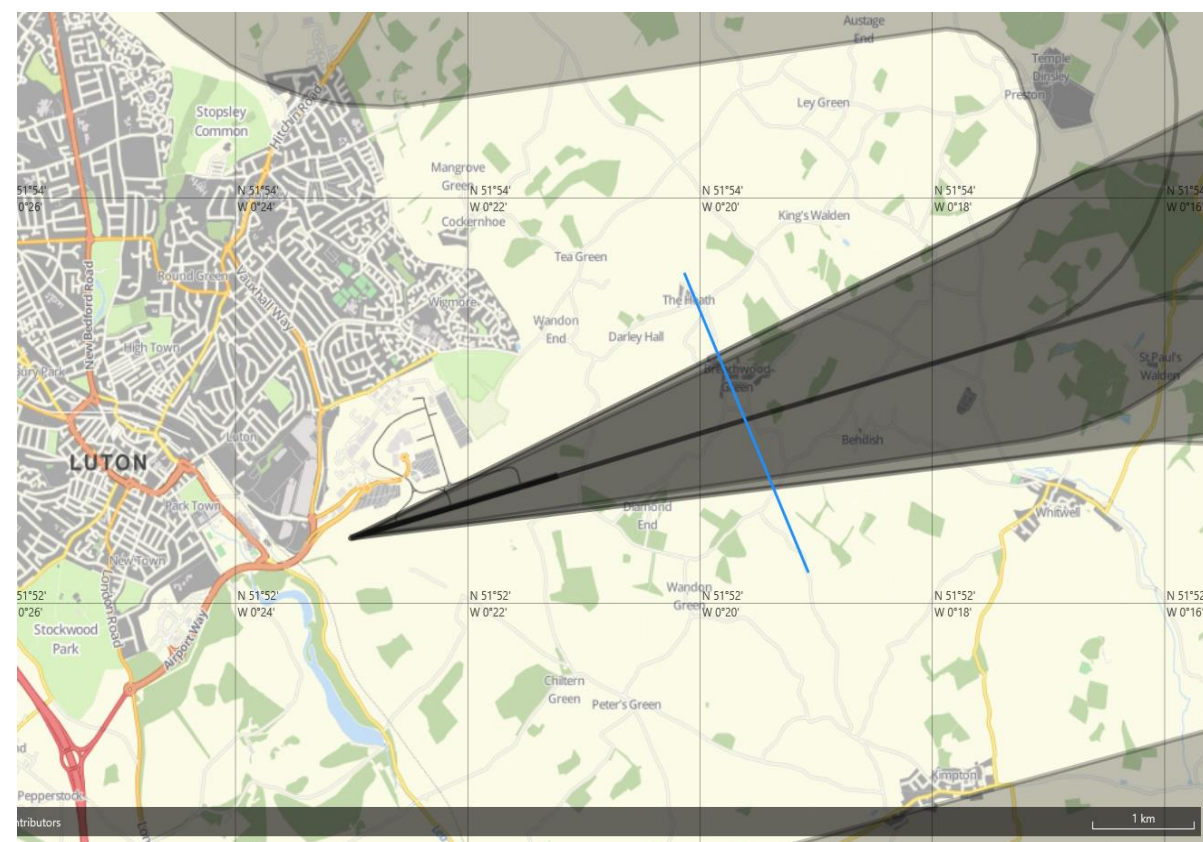
Aircraft Tracks- Westerly arrivals

The heat map below shows 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 Breachwood Green. This map shows the path of westerly arrivals.



Altitude Gate Analysis- Easterly departures

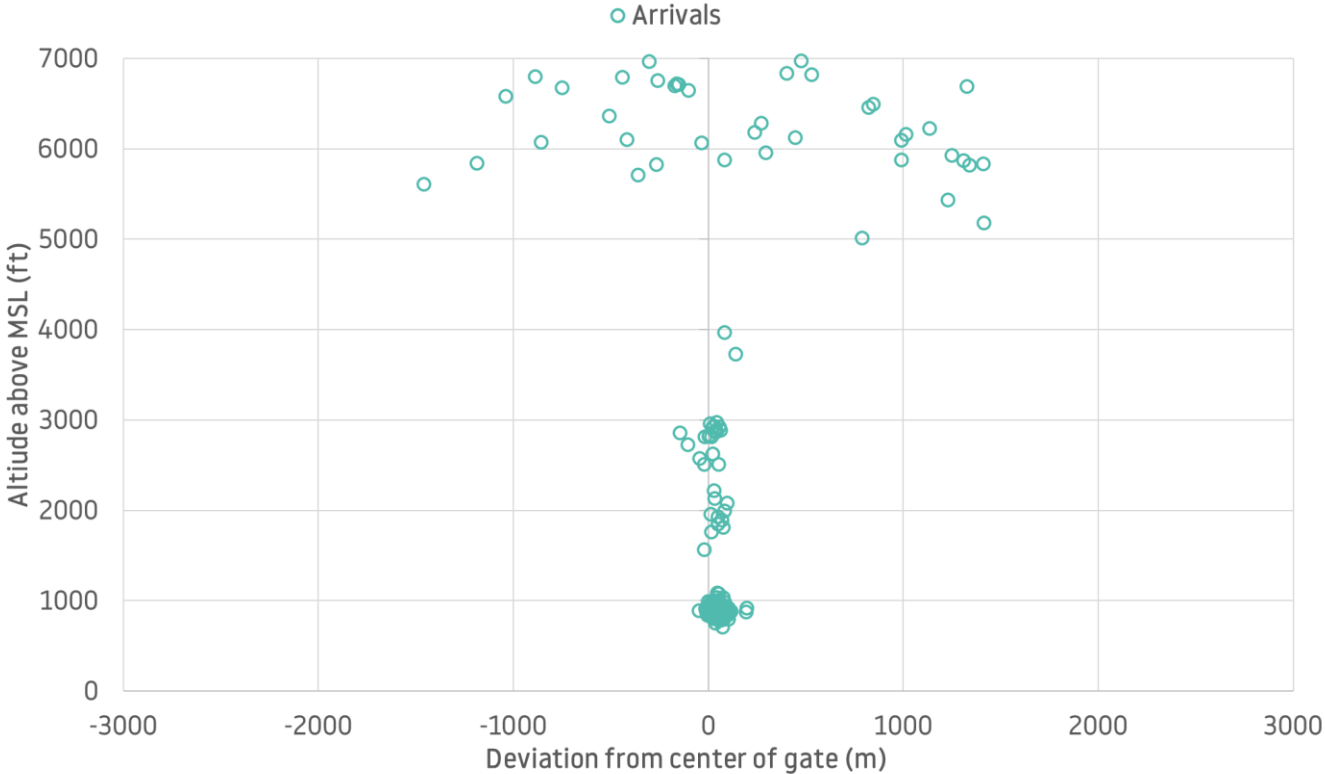
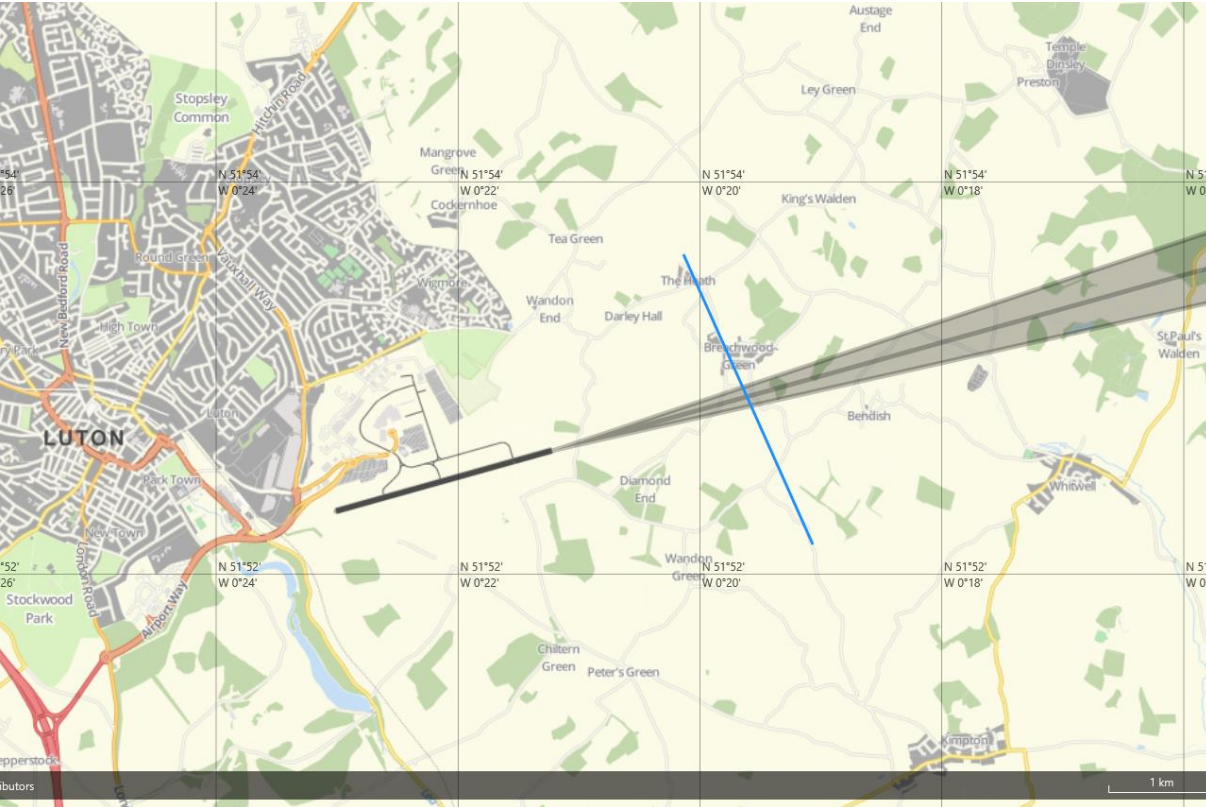
The altitude analysis for Breachwood Green, shows the vertical and lateral dispersion of aircraft 1.5km either side of the noise monitor. The map below shows the 3km gate (blue line) which is drawn perpendicular to the NPR from northwest to southeast and it gathered information of every aircraft passing through the gate area. The scatter graph below shows the distance and altitude of aircraft from the noise monitor during the monitoring period. Residents in Breachwood Green will see aircraft flying over them on the days of easterly operations for departing aircraft.



Altitude Gate Analysis- Westerly arrivals

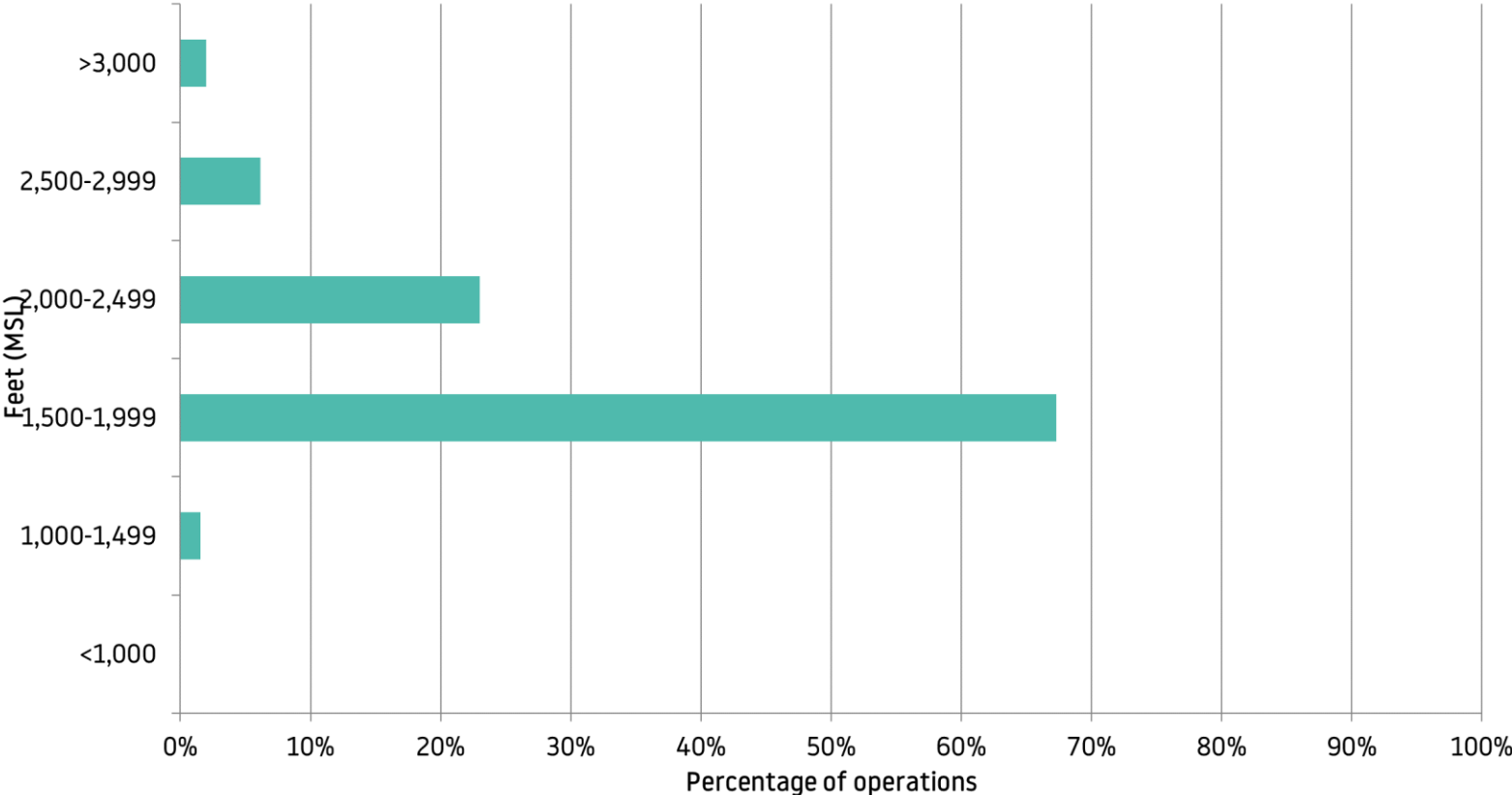
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Aircraft above 1,500' will be go-arounds and other traffic passing through the gate.



Altitude Gate Analysis – Easterly Departures

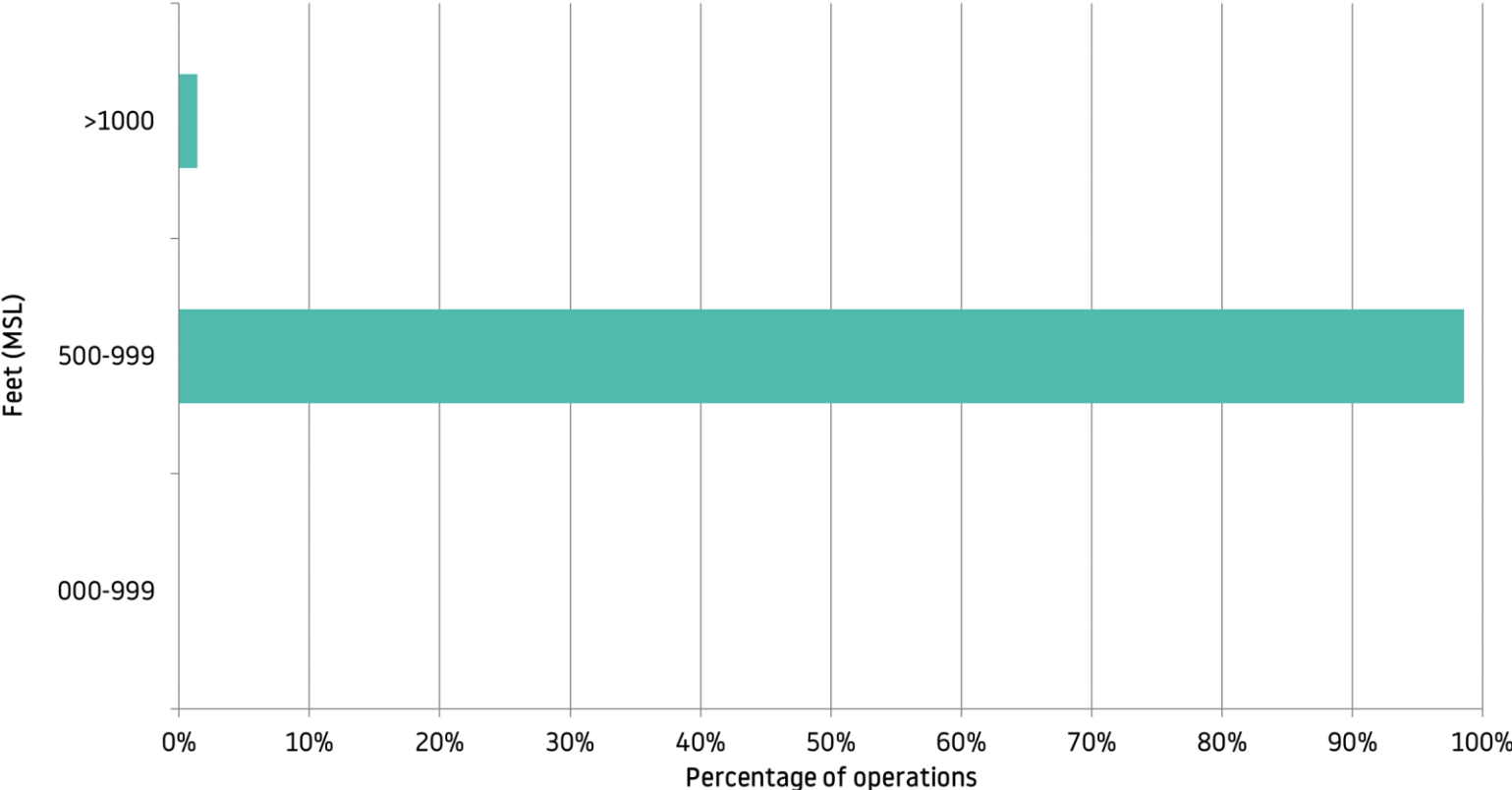
The average altitude of aircraft was 2,055 feet AMSL (1,625 feet AGL) when they reach above the noise monitor above Breachwood Green. The bar chart on the below shows the percentage rate and altitude of aircraft arriving.



| Aircraft Type | Number of movements detected | Average Altitude (AMSL in ft) |
|-----------------------|------------------------------|-------------------------------|
| A306 | 27 | 2,555 |
| A319 | 311 | 1,855 |
| A320 CEO | 527 | 1,915 |
| A320 NEO (A20N) | 283 | 1,948 |
| A321 CEO | 169 | 1,978 |
| A321 NEO (A21N) | 545 | 1,870 |
| B737-800 NG (B738) | 178 | 1,966 |
| B737 Max 8 (B38M) | 125 | 1,906 |
| Global Express (GLEX) | 69 | 2,119 |
| Cessna 560X (C56X) | 42 | 2,436 |
| All | 2,276 | 2,055 |

Altitude Gate Analysis – Westerly Arrivals

The average altitude of aircraft was 944 feet AMSL (514 feet AGL) when they reach above the noise monitor above Breachwood Green. 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 | 85 | 885 |
| A319 | 1,082 | 1,043 |
| A320 CEO | 1,848 | 960 |
| A320 NEO (A20N) | 984 | 1,031 |
| A321 CEO | 659 | 867 |
| A321 NEO (A21N) | 1,792 | 894 |
| B737-800 NG (B738) | 704 | 1,001 |
| B737 Max 8 (B38M) | 363 | 957 |
| Global Express (GLEX) | 260 | 910 |
| Cessna 560X (C56X) | 156 | 890 |
| All | 7,933 | 944 |

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 Breachwood Green, the noise monitoring terminal collected 25,600 readings. During the period, there were 2,262 easterly departures and 9,448 westerly arrivals.

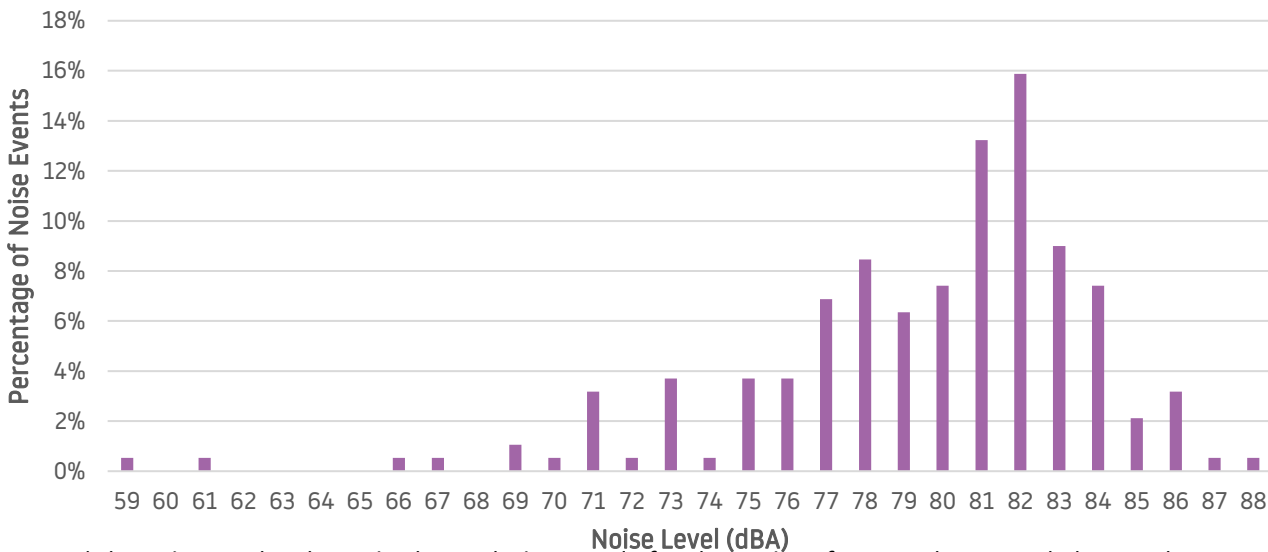
It is noteworthy that the noise monitor may not be able to record every aircraft noise event if the aircraft noise level is below ambient background noise or aircraft following a different route and not through the gate selected. Therefore, there may be a difference between the number of actual air transport 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 13,890 recordings were excluded from the analysis for the above reasons.

Noise Results – Easterly 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 | 12 | 83.0 |
| A319 | 204 | 80.8 |
| A320 CEO | 366 | 81.0 |
| A320 NEO (A20N) | 191 | 78.0 |
| A321 CEO | 90 | 83.8 |
| A321 NEO (A21N) | 322 | 81.5 |
| B737-800 NG (B738) | 115 | 84.6 |
| B737 Max 8 (B38M) | 76 | 80.3 |
| All | 1,376 | 81.6 |

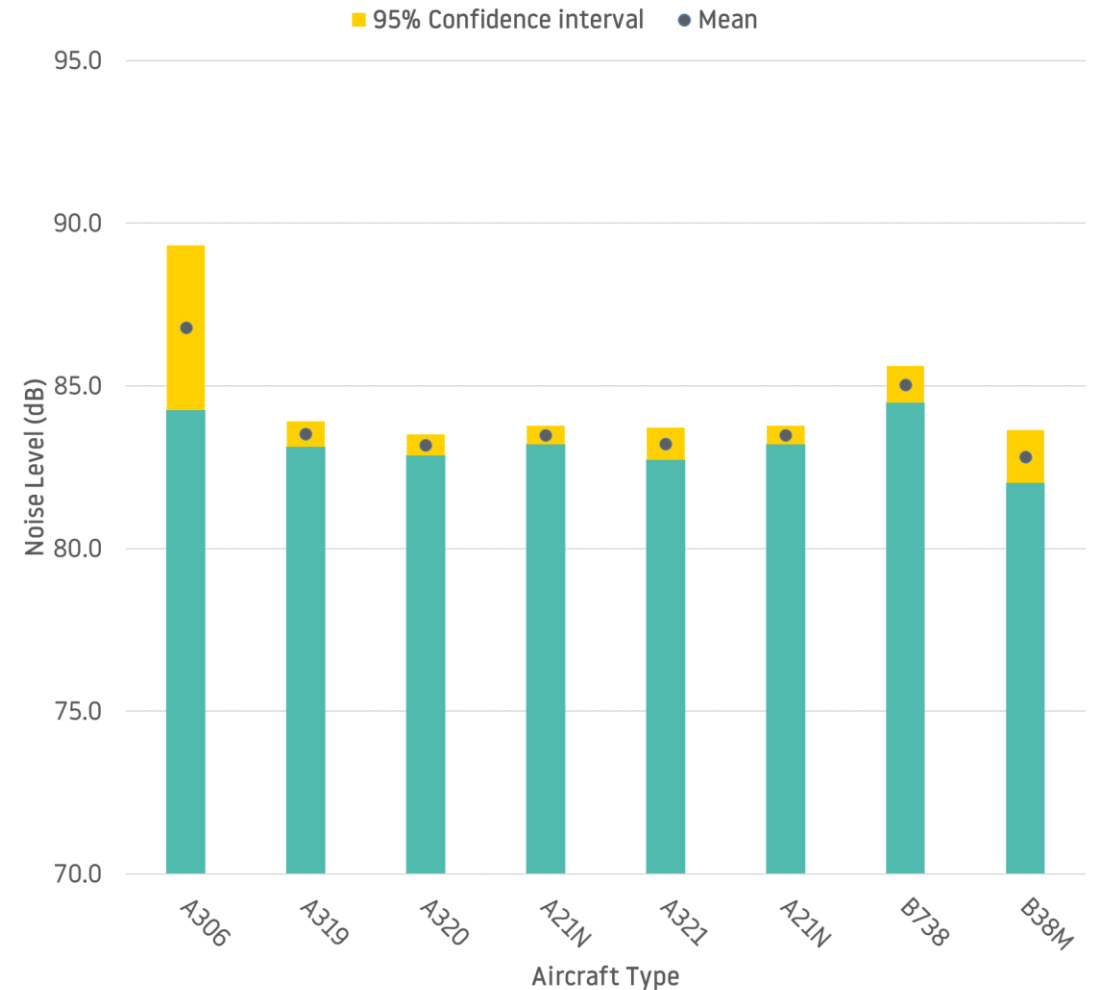
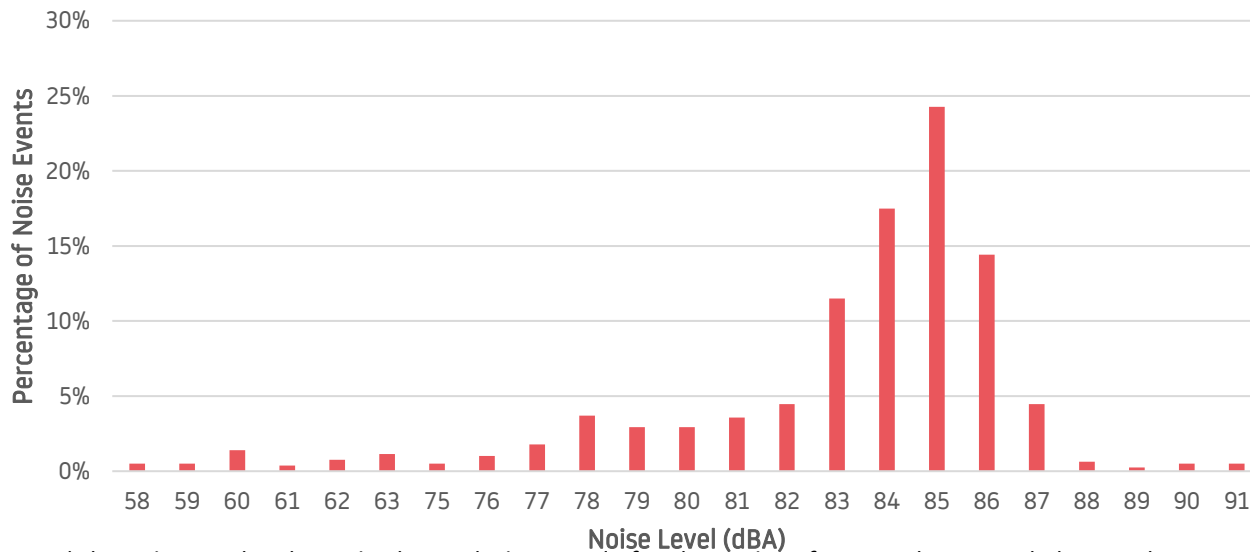


*The noise results shown in the analysis are only for those aircraft types that recorded more than 60 events per aircraft. A306 included for comparison.

Noise Results – Westerly Arrivals

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 | 51 | 86.8 |
| A319 | 887 | 83.5 |
| A320 CEO | 1,402 | 83.2 |
| A320 NEO (A20N) | 798 | 82.0 |
| A321 CEO | 447 | 83.2 |
| A321 NEO (A21N) | 1,256 | 83.5 |
| B737-800 NG (B738) | 465 | 85.0 |
| B737 Max 8 (B38M) | 275 | 82.8 |
| All | 5,581 | 83.8 |



*The noise results shown in the analysis are only for those aircraft types that recorded more than 250 events per aircraft. A306 included for comparison.

Noise Results - Summary

- The average westerly arrival noise in Breachwood Green was 83.8dB, based on a sample size of 5,581. The average easterly departure noise was 81.6, based on a sample size of 1,376.
- For easterly departures, Breachwood Green's most popular aircraft type by operators, Airbus A320 CEO, had an average noise of 81.0dB. The A320 NEO (A20N) was 3.0 dB quieter in comparison. The Boeing 737 series, the new B737 Max 8 was 4.3dB quieter than its predecessor B737-800NG.
- For westerly arrivals, Breachwood Green's most popular aircraft type by operators, Airbus A320 CEO, had an average noise of 83.2dB. The A320 NEO (A20N) was 1.2dB quieter in comparison. The Boeing 737 series, the new B737 Max 8 was 2.2dB quieter than its predecessor B737-800NG.
- The noise from the newer generation aircraft, A320 NEO, produced less noise than A320 CEOs, at an average of 2.1dB quieter and the B737 Max 8 (B38M) compared with the older B737-800NG (B738) was at an average of 3.3dB quieter.
- Around 42% of all noise results movements were newer generation aircraft which are more fuel efficient and quieter.
- Compared to 2019 results, the noise monitor was positioned in a different location for further analysis of the area. It was placed 600m closer to the runway in 2024, in which aircraft were 150ft lower on arrival and 400ft higher on departure which could account for the increase in noise results in 2024 compared with 2019.

Conclusion

- A mobile noise monitor was installed at a residential property on Lye Hill from the 10th January to 3rd April 2024.
- For Breachwood Green, it specifically related to easterly departures and westerly arrivals. During the monitoring period, the airport operated in the direction of easterly and westerly for 21% and 79% 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 is the Airbus A320 CEO which produced an average noise of 81.0dB for departures and 83.2dB for arrivals.
- 42% of the noise events recorded in Breachwood Green were created by the newer generation aircraft, A320 NEO, A321 NEO and B737 Max 8. The A320 NEO registered average departing noise of 80.0dB, 2.1dB lower than A320 CEOs.
- During the monitoring period, 330 aircraft were investigated as part of the Noise and Track violation scheme. Of these, 21 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.london-luton.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 data 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.

