Community Noise Report

Breachwood Green

Q1 2023

London Luton Airport

Introduction

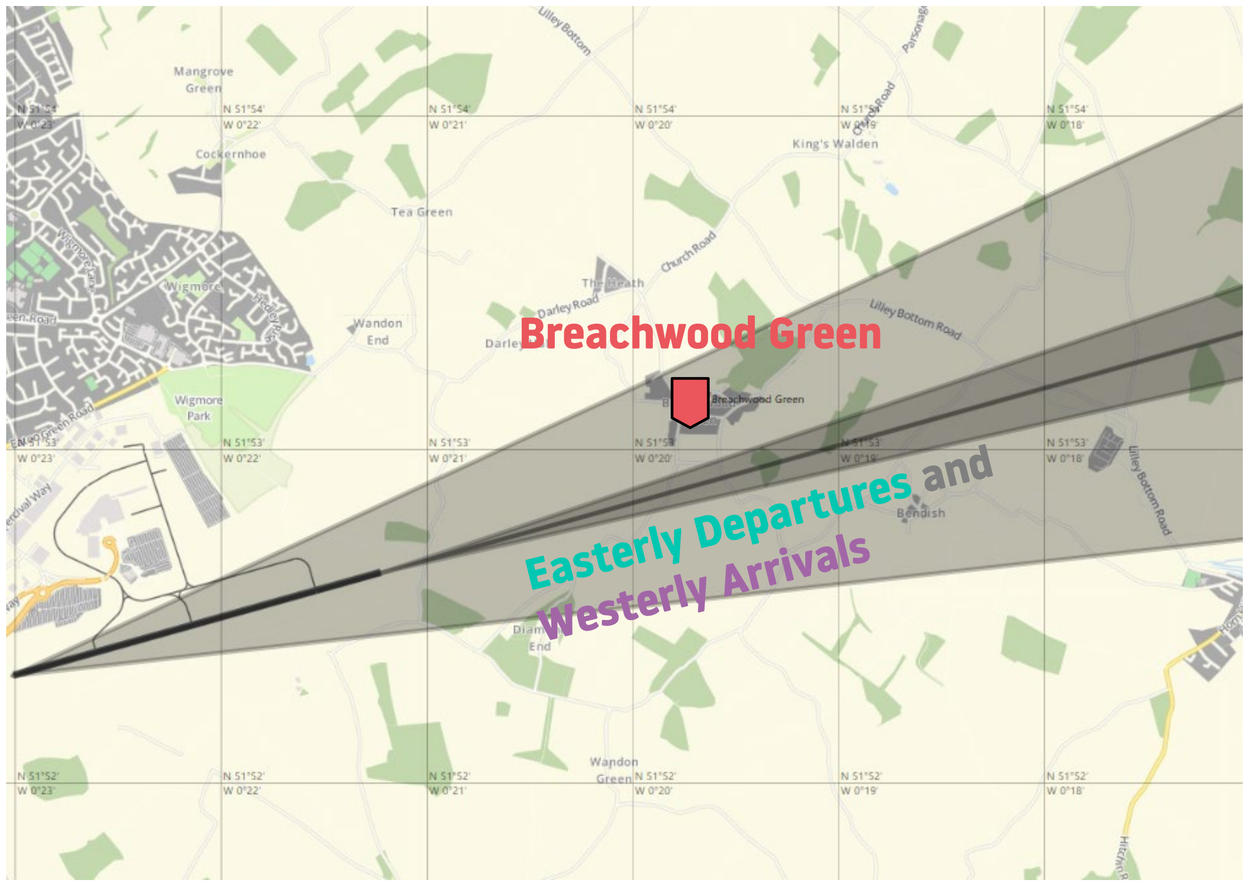
As part of the ongoing noise monitoring programme, London Luton Airport handed out a handheld noise monitor to a resident to monitor aircraft noise in Breachwood Green.

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 the westerly arrival and easterly departures. The final approach flightpath and departure route are shown on the map.

Breachwood Green is approximately 250 m north of the runway extended centerline at an altitude of 489 feet above sea level. The red pinpoint on the map shows Breachwood Green.

The handheld noise monitor in Breachwood Green was used by a resident for 11 separate days in Q1 2023.

Aircraft noise events were recorded by the resident and the sound level readings were passed to LLA for more in-depth analysis at the end of the monitoring period. The radar tracks recorded were extracted from LLA's 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.

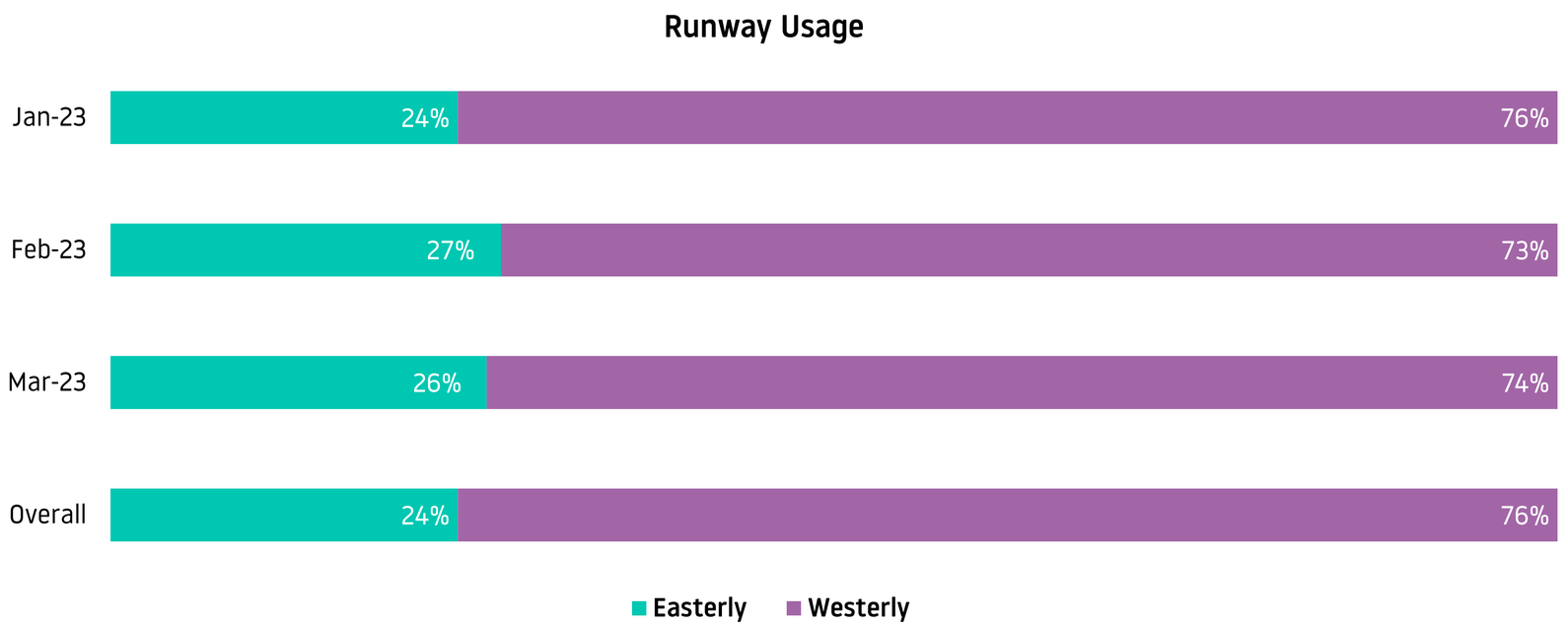


LLA Operations

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.

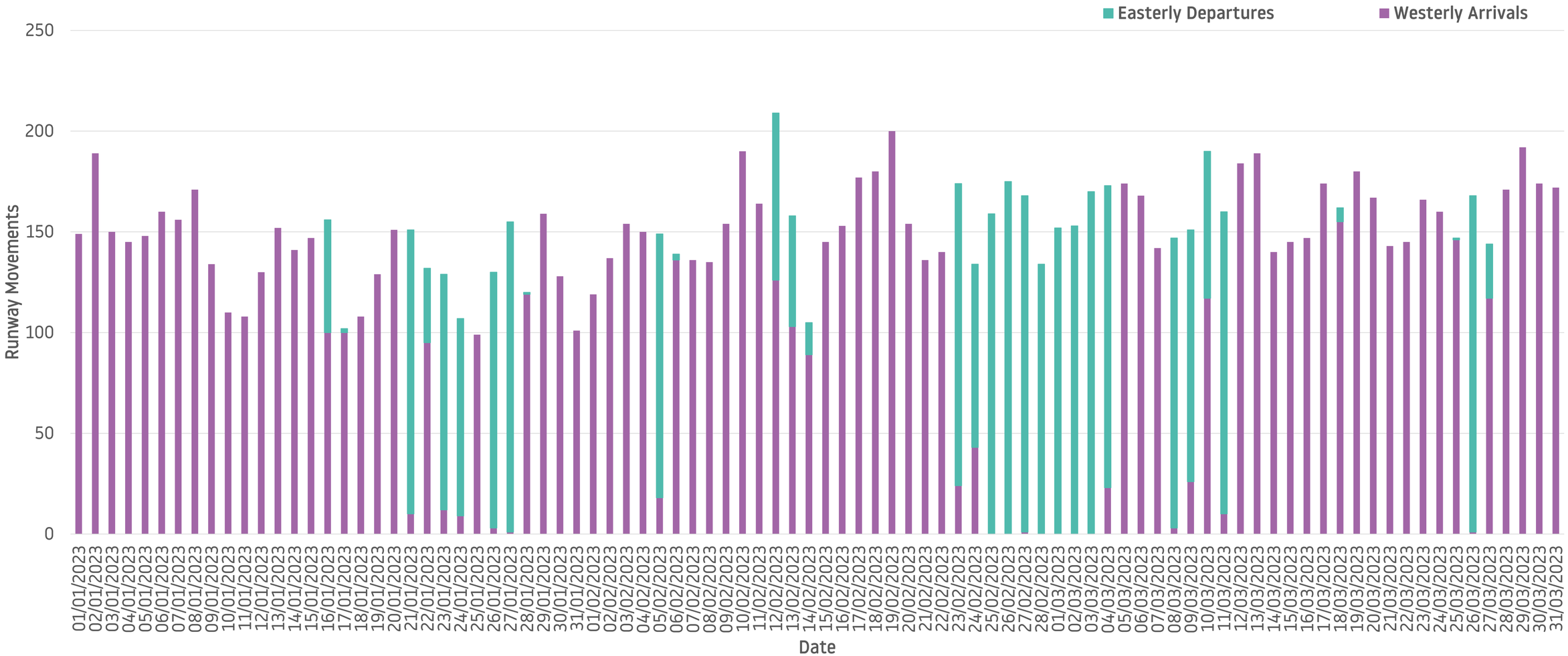
During the monitoring period, the direction of operation was 24% easterly and 76% westerly. The 5-year average for this time of year is 20% easterly vs 80% westerly.

There were 10,373 aircraft arriving on the westerly route and 3,170 aircraft departing on the easterly route in Q1 2023.



Daily Movements

The chart below shows the number of daily arrivals and departures that passed near Breachwood Green. Due to the location of Breachwood Green, all flights that landed on westerly runway and departed from easterly runway would have flown near Breachwood Green. The graph shows the number of westerly arrivals (purple) as well as easterly departures (green) on each day in Q1 2023.



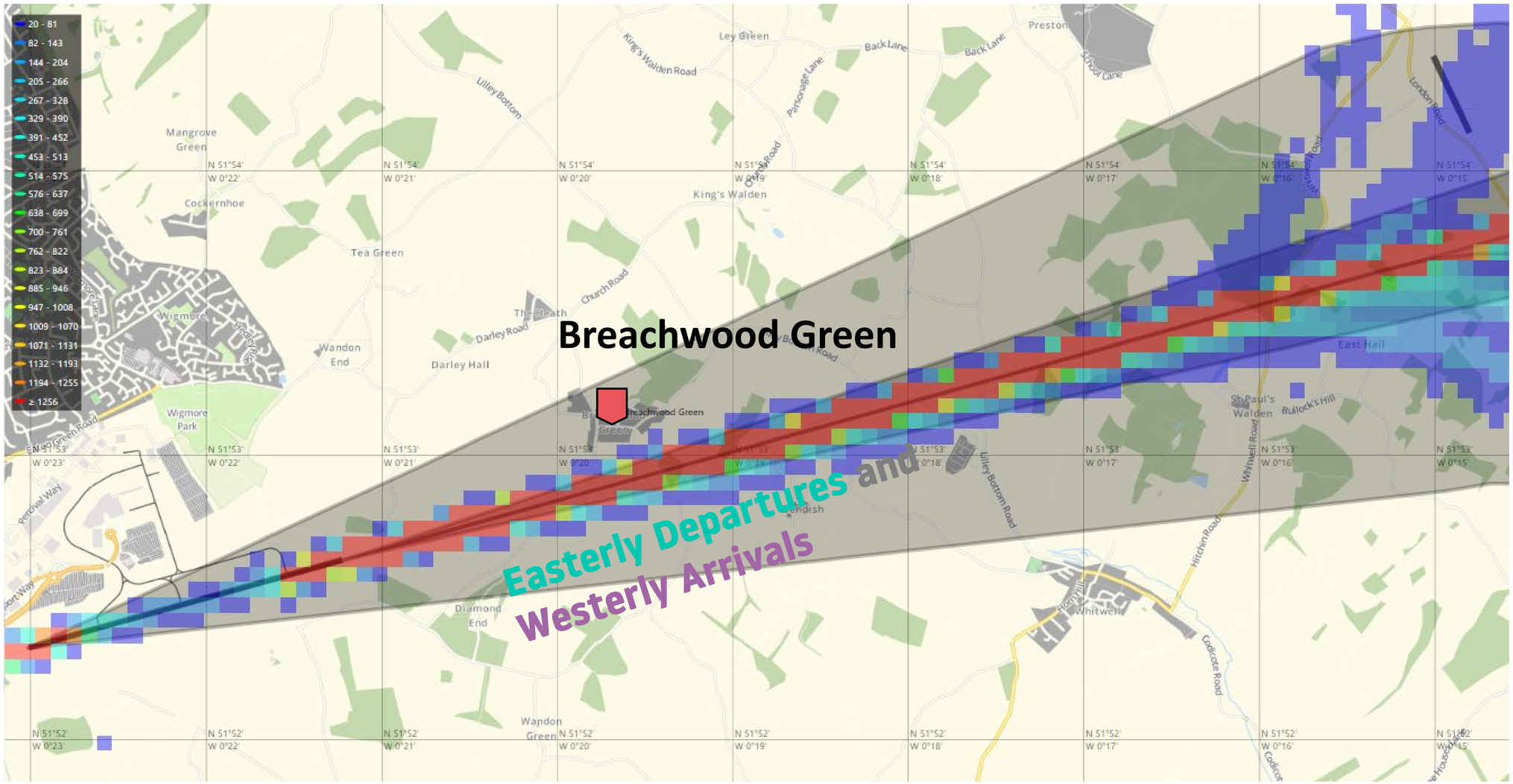
Operations

The graph below represents the average aircraft movement by hours during the monitoring period. Residents at this location may notice the morning peak begins at 06:00 on easterly operations and an hour later on days of westerly operation. This is due to the arrival peak experienced in Breachwood Green (easterly operation) begins at around 7am. The morning peak hours may last until 10am. The arrival peak starts again from around 9pm until midnight.

During the night period of 23:00 – 06:59 in the monitoring period, there were average of 20 arrivals or 16 departures depending on the operating direction.

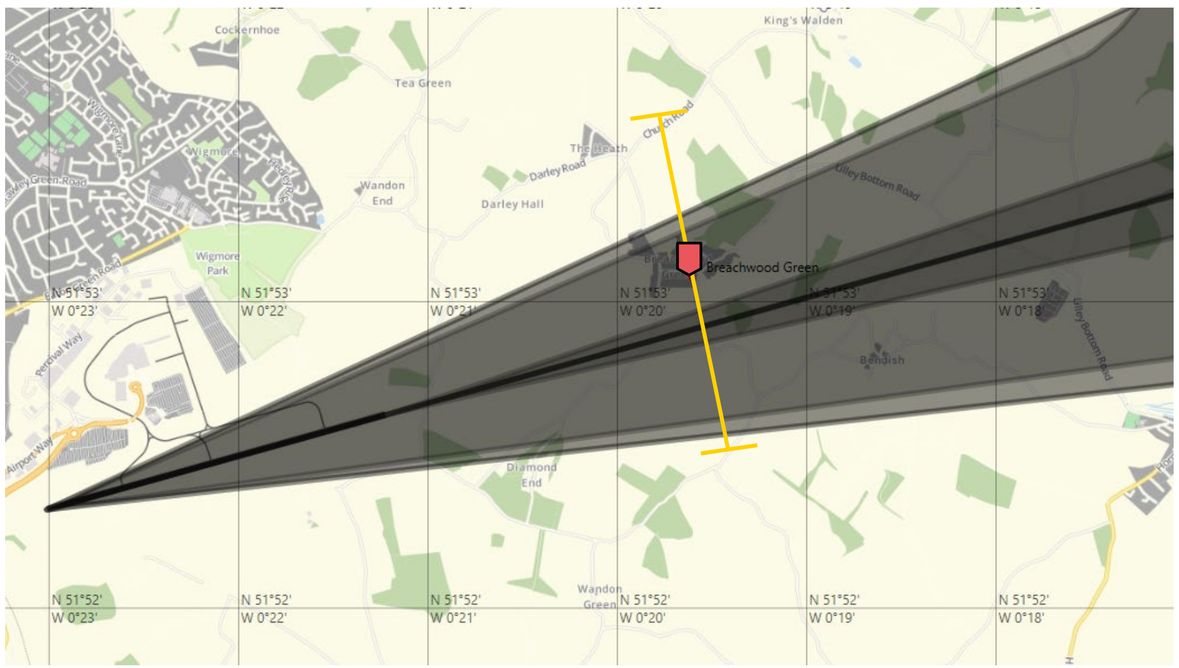
Aircraft Tracks

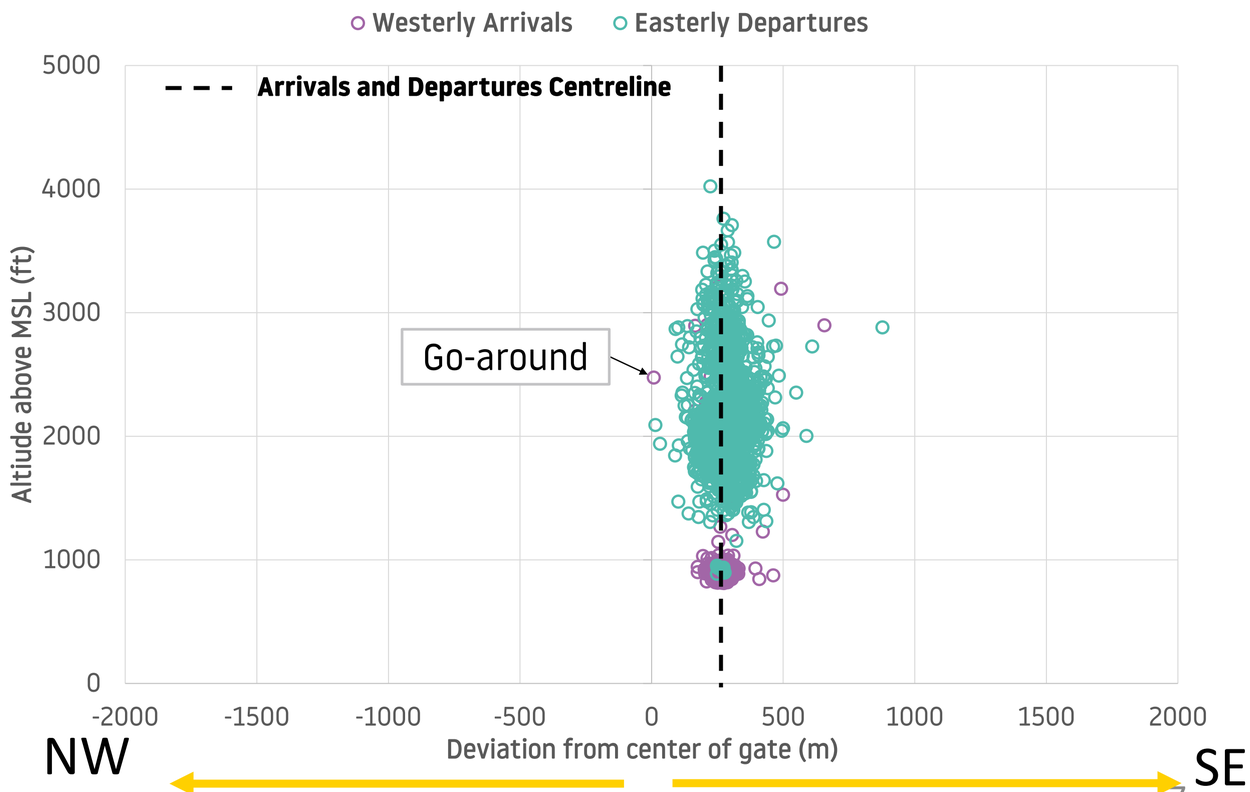
The heat map below show the representative flight tracks that passed near Breachwood Green during the monitoring period. The red pinpoint shows Breachwood Green. At this location, it is affected by westerly arrivals and easterly departures.



Altitude Gate Analysis

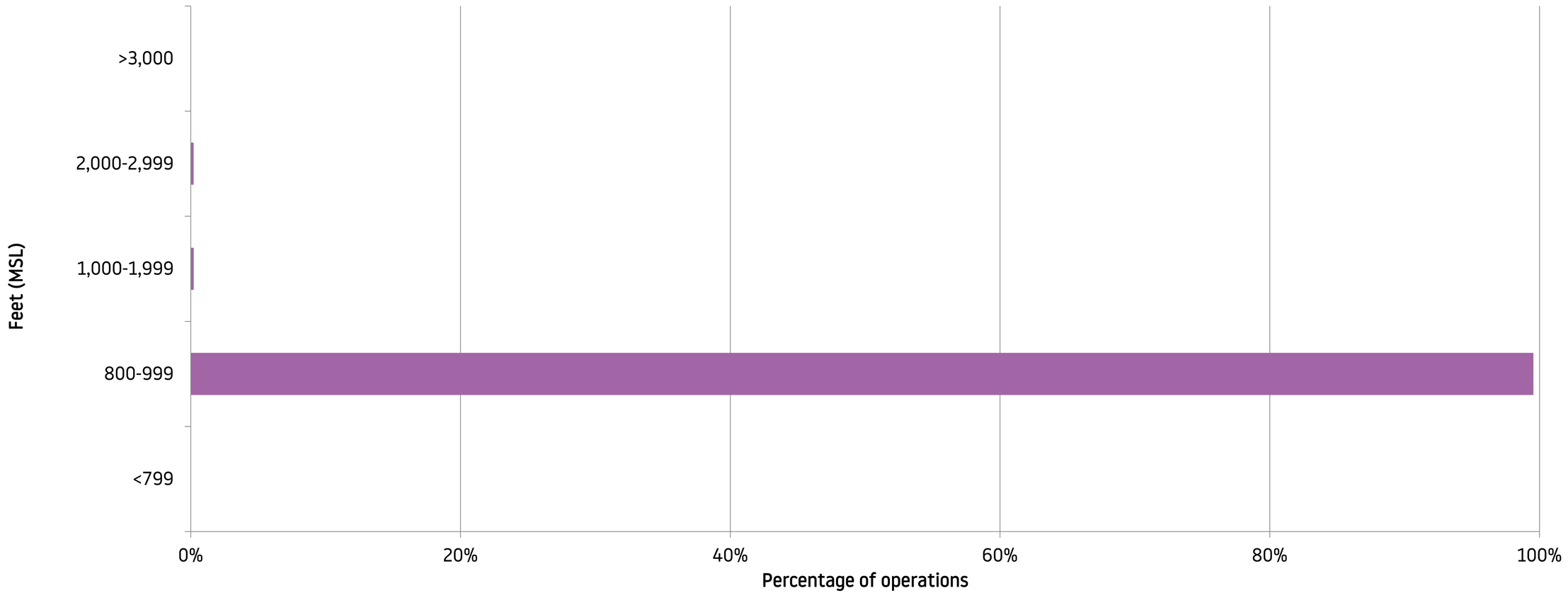
The altitude analysis for Breachwood Green shows the vertical and lateral dispersion of aircraft 2km either side of the noise monitor. The map below shows the 4km gate which is drawn across perpendicular to the runway centreline from north-west to south-east and will gather information about every aircraft 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 noise preferential routes (NPRs) and the westerly arrival route are displayed by the shaded area. Departing aircraft must remain within the NPR until reaching release altitude of 3,000ft during the day or 4,000ft at night (4,000ft at all times for Match route). Due to the close proximity of Breachwood Green to the airport, local residents see aircraft flying near Breachwood Green at a low altitude. Most aircraft are concentrated on the runway extended centreline.





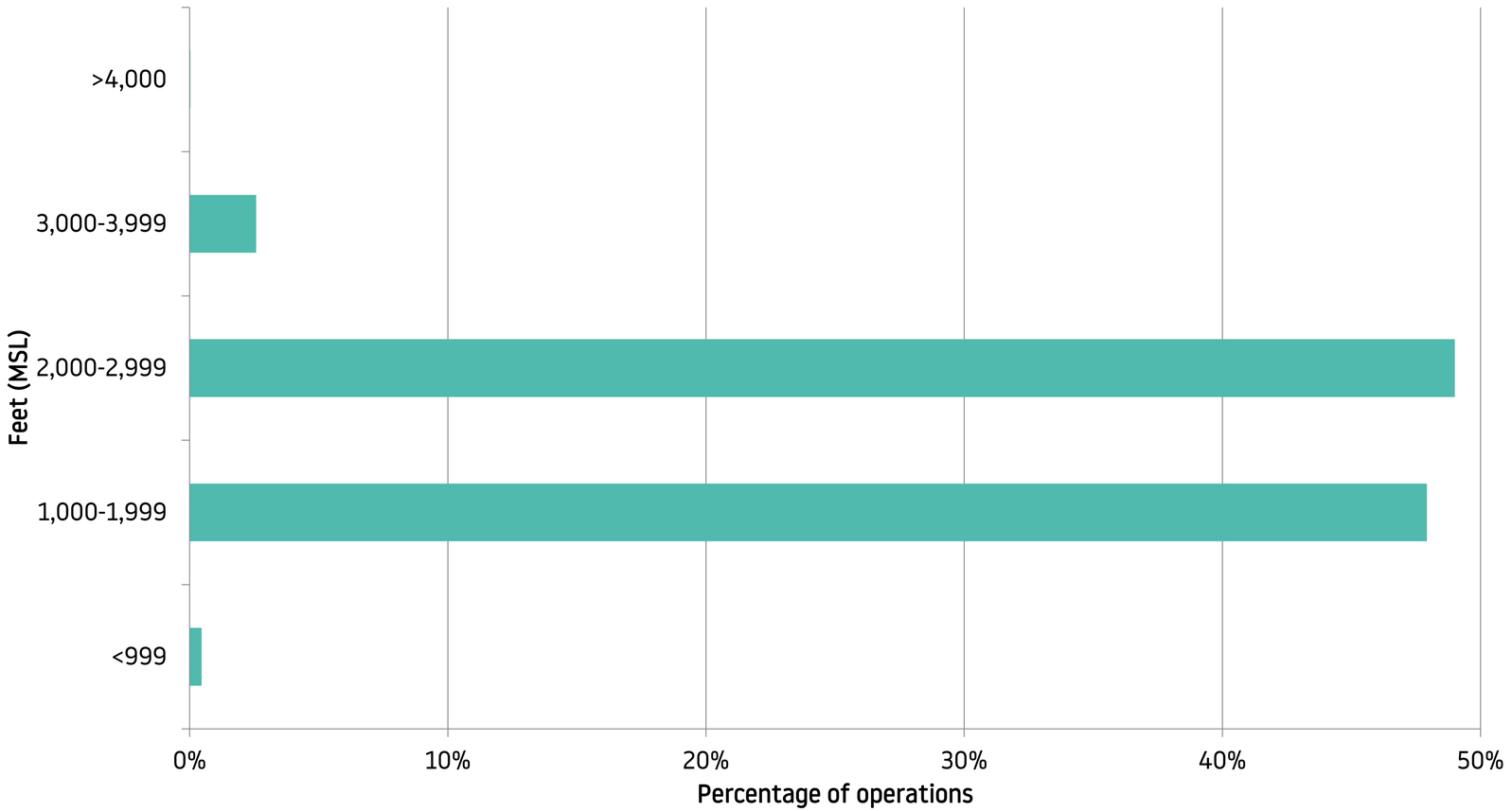
Altitude Gate Analysis – Westerly Arrivals

The altitude analysis is split into two parts in this Breachwood Green report – Departures and Arrivals. The bar chart in this section shows the concentration of the aircraft when aircraft reach the noise monitor in Breachwood Green. For arrivals, aircraft tend to be at much lower altitude due to the close proximity to the runway at Breachwood Green. The average altitude of aircraft in this area was 910 feet AMSL (421 feet AGL).



Altitude Gate Analysis – Easterly Departures

For departures, the average altitude of aircraft was 2,067 feet AMSL (1,578 feet AGL) when they reach Breachwood Green. The green bar chart shows above half of the departing flights were above 2,000 feet AMSL. The lighter weight aircraft, Cessna 560X, Gulfstream G650 and Global Express, and A306 freight aircraft achieved higher altitude.



Aircraft Type	Number of movements detected	Average Altitude (AMSL in ft)
A306	33	2,651
A319	409	1,979
A320 CEO	749	2,009
A320 NEO (A20N)	241	2,058
A321 CEO	294	1,986
A321 NEO (A21N)	396	1,932
B737-800 NG (B738)	347	2,011
B737 Max 8 (B38M)	10	1,942
Global Express (GLEX)	103	2,198
Cessna 560X (C56X)	62	2,554
Gulfstream G560 (GLF6)	47	2,149
All	3,222	2,067

Noise Data

Following the noise monitoring period, we collate the data taken from the resident and analyse the noise reading and the radar track data. During the monitoring period in Breachwood Green, the resident collected readings from 23 westerly arriving aircraft and 49 easterly departing aircraft at various time period on 11 separate days. During the period, there were 10,409 westerly arrivals and 3,216 easterly departures at LLA.

Due to the small sample size, the result in this report may not reflect to the true average of noise level experienced by the residents in Breachwood Green. We recommend the aircraft types with small sample sizes should be analysed with caution.

Noise Results

The noise result is split into two parts in this Breachwood Green report – Departures and Arrivals. The tables show the average noise and range by aircraft type.

Westerly Arrivals

Aircraft Type	Number of movements	Average Noise (dB)	Range (dB)
A319	6	71.7	62.0 – 78.7
A320 CEO	2	65.9	62.4 – 69.3
A320 NEO (A20N)	2	75.6	74.4 – 76.8
A321 CEO	2	73.3	62.3 – 84.3
A321 NEO (A21N)	2	70.3	69.4 – 71.1
B737-800 NG (B738)	4	75.3	64.7 – 83.4
Others	5	67.0	55.9 – 76.0

Easterly Departures

Aircraft Type	Number of movements	Average Noise (dB)	Range (dB)
A319	9	75.5	71.5 - 84.7
A320 CEO	7	79.9	74.3 - 82.3
A320 NEO (A20N)	7	79.0	71.0 – 83.7
A321 CEO	2	82.0	81.9 – 82.1
A321 NEO (A21N)	5	79.2	77.4 – 80.0
B737-800 NG (B738)	9	83.1	78.8 – 85.8
Others	10	81.5	73.1 – 87.2

Noise Results - Summary

- In Breachwood Green, residents may experience different pattern of aircraft noise when the airport is operating in different direction. On days of westerly operation, the arrival aircraft follow the final approach flightpath in a straight line towards the runway at low altitude. The average arrival noise measured was 71.1dB, based on a sample size of 23 taken by the resident.

- For easterly departures which is usually 30% of the year due to prevailing wind, the average noise measured was 79.8dB.

- From the results, Luton's most popular aircraft type by operators, Airbus A320 CEO, had an average noise of 65.9dB and 79.9dB on arrivals and departures respectively.

- The Boeing B738 was the noisiest aircraft type at Breachwood Green. This aircraft type registered at average of 75.3dB and 83.1dB for arrivals and departures.

- The departure noise from the newer generation aircraft, A320 NEO, and A321 NEO produced less noise than the A320 CEOs and A321 CEOs, at an average of 0.9dB and 2.8dB quieter at Breachwood Green.

- During the monitoring period, 20% of the movements were newer generation aircraft which are more fuel efficient and quieter.

- Due to the small sample size, the result in this report may not reflect to the true average of noise level experienced by the residents in Breachwood Green. We recommend reading the Community Noise Report for Breachwood Green published in 2019. The aircraft noise was measured with a tripod noise monitor for 62 full days. There is larger sample size in the study.

Conclusion

- A handheld noise monitor was handed out to a resident for aircraft noise monitoring in Breachwood Green in Q1 2023.
- For Breachwood Green, it specifically related to westerly arrivals and easterly departures. During the monitoring period, the airport operated in the direction of easterly and westerly for 24% and 76% 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 track data shows almost all aircraft were concentrated on the Instrument Landing System (ILS) glidepath and its centreline on departure.
- The average altitude of westerly arrival aircraft in Breachwood Green is 910 feet above mean sea level (AMSL), as Breachwood Green is already approximately 489 feet AMSL, aircraft will typically be at 421 feet above ground level (AGL) in this area.
- The main aircraft type operating at London Luton Airport is the Airbus A320 CEO which produced an average noise of 65.9dB and 79.9dB on arrivals and departures respectively..
- The newer generation NEO aircraft, registered average arriving noise of 79.0dB and 79.2dB, between 0.9dB and 2.8dB quieter than the its predecessors, CEOs.
- In Q1, 20% of the movements were newer generation aircraft, A320 NEO, A321 NEO and B737 Max 8.
- Due to the small sample size, the result in this report may not reflect to the true average of noise level experienced by the residents in Breachwood Green. We recommend the aircraft types with small sample sizes should be analysed with caution. A Community Noise Report for Breachwood Green (2019) is available from the Noise webpage on the LLA website. There are larger sample size in this study. As per the Noise Monitoring Programme, a larger scale noise monitoring will take place in Q4 2023.
- In Q1 2023, 47 departure aircraft (both westerly and easterly) were investigated as part of the Noise and Track violation scheme. 14 aircraft and 6 aircraft were fined for track violations and noise violations respectively. 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 and newsletter 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

Easterly Operations: As aircraft take off and land into the wind , easterly operations refers to the time when the wind is blowing from the east and aircraft depart on the easterly runway and would fly above Breachwood Green, when they line up towards the easterly runway on final approach.

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 land on the westerly runway and would fly above Breachwood Green, when they line up towards the westerly runway on final approach.

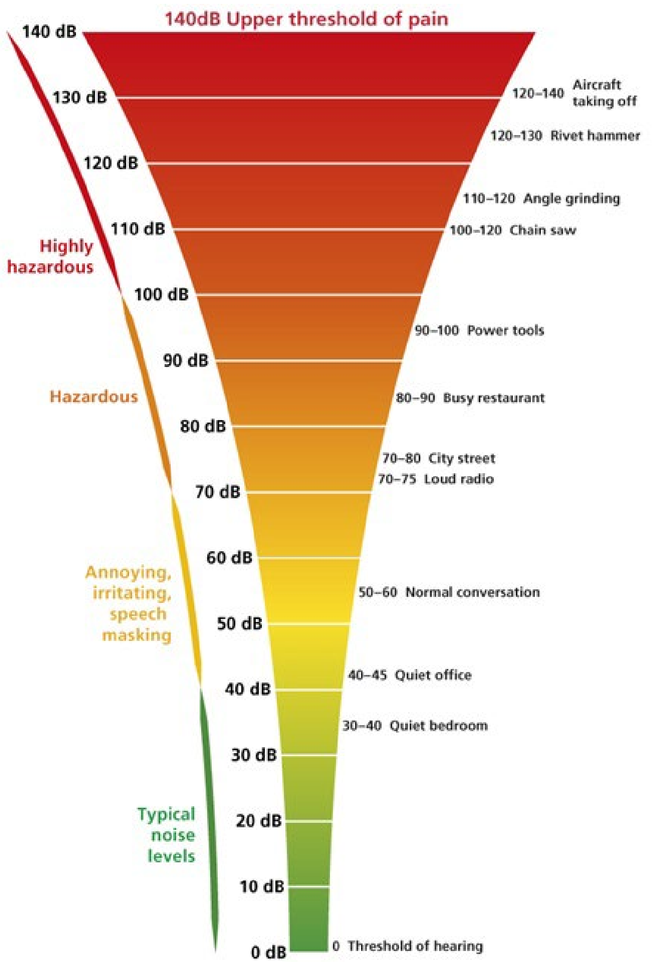
Aircraft Movement: A single aircraft departing or arriving at the airport.

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.



Source: iosh.co.uk