Community Noise Report

Breachwood Green

October – December 2019

London Luton Airport

Version 1.0

Introduction

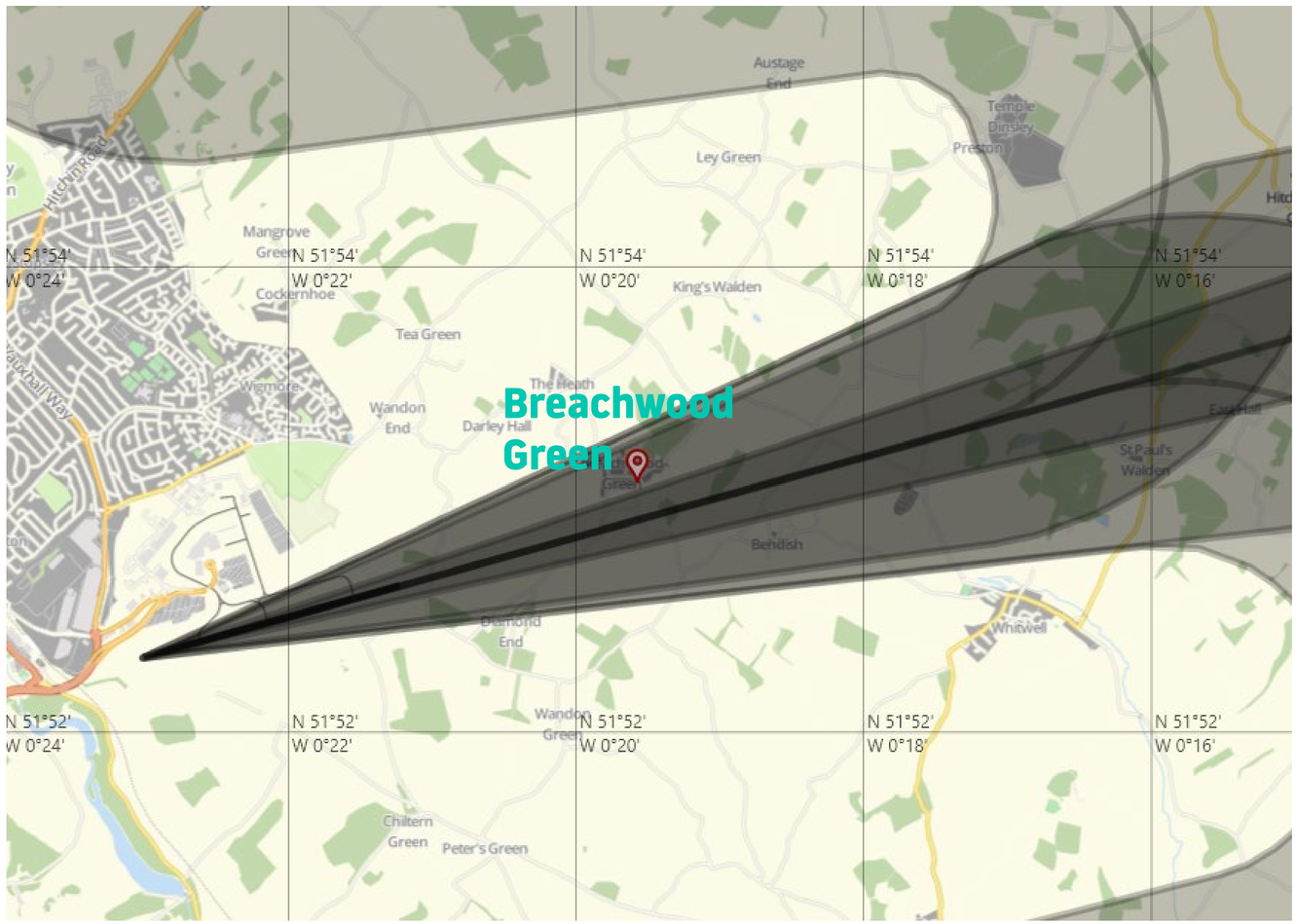
As part of the ongoing noise monitoring programme, London Luton Airport deployed portable noise monitoring terminals in Breachwood Green.

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 Standard Instrument Departures (SIDs) or Noise Preferential Routes (NPRs) are shown on the map.

The noise monitor was located within the easterly departure corridors and close to the edge of the westerly arrival final approach path (250m from the centerline), approximately 2km from the Luton runway threshold at an altitude of approximately 489 feet above sea level. The red pinpoint on the map show the location of the noise monitor.

The noise monitor in Breachwood Green was in place between 31st October and 19th December 2019.

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.

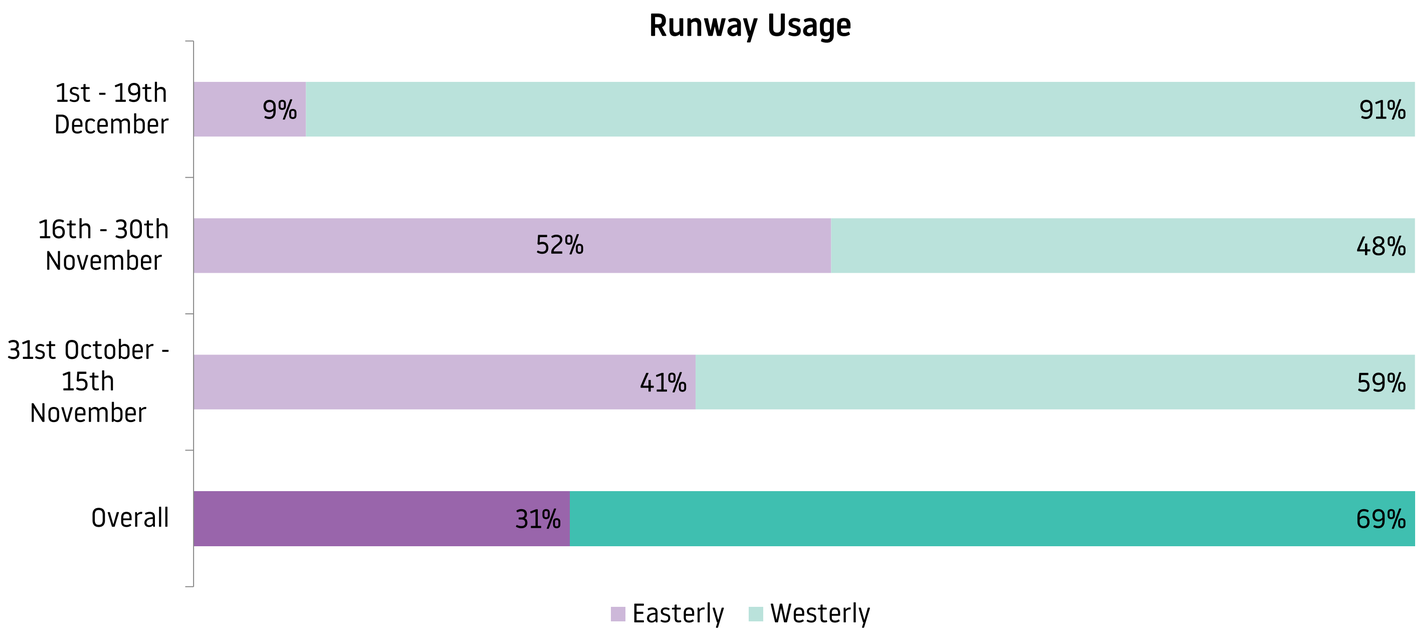


LLA Operations During the Monitoring

There are two directions of operation, depending on the wind direction as aircraft are required to take off and land into the wind for 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 weather.

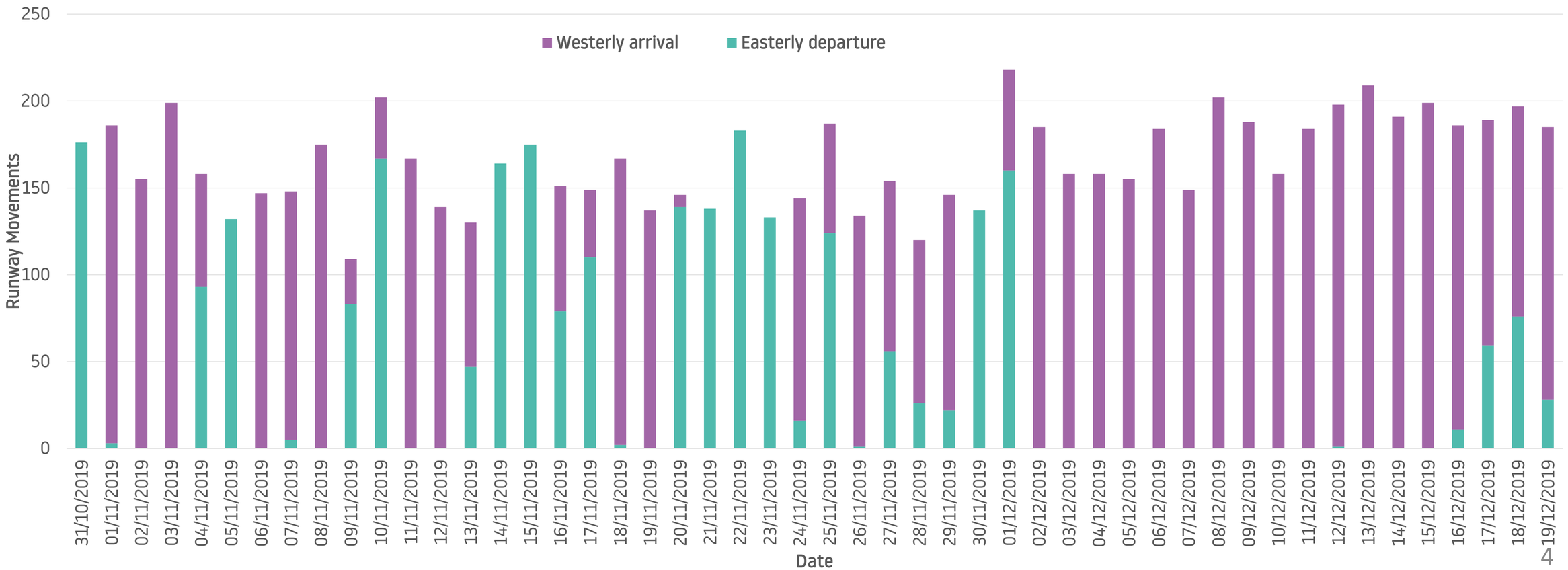
During the monitoring period, the direction of operation was 31% easterly and 69% westerly. The 5 year average for this time of year is 25% easterly vs 75% westerly.

There were 5,735 aircraft landed on Runway 26 (westerly operation) and 2,546 aircraft departed on easterly SIDs operated from the airport whilst the noise monitor was located in Breachwood Green.



Daily Movements During Monitoring Period

The chart below shows the number of daily easterly departures and westerly arrivals that passed near the noise monitor. Due to the location of Breachwood Green, all flights that departed on our Standard Instrument Departure (SID) routes during easterly operations or flights that landed on the westerly Runway 26 would have flown over near the monitor. The busiest day in terms of total westerly arrival and easterly departure during the monitoring period was the 1st of December – total movement of 218. Residents in the area may experience more frequent aircraft noise on busier days. Residents may experience quieter noise from aircraft when the airport operates in westerly operation due to quieter arrival noise – shown by the purple bars. The recorded noise level between departure and arrival flights will be compared in this report.



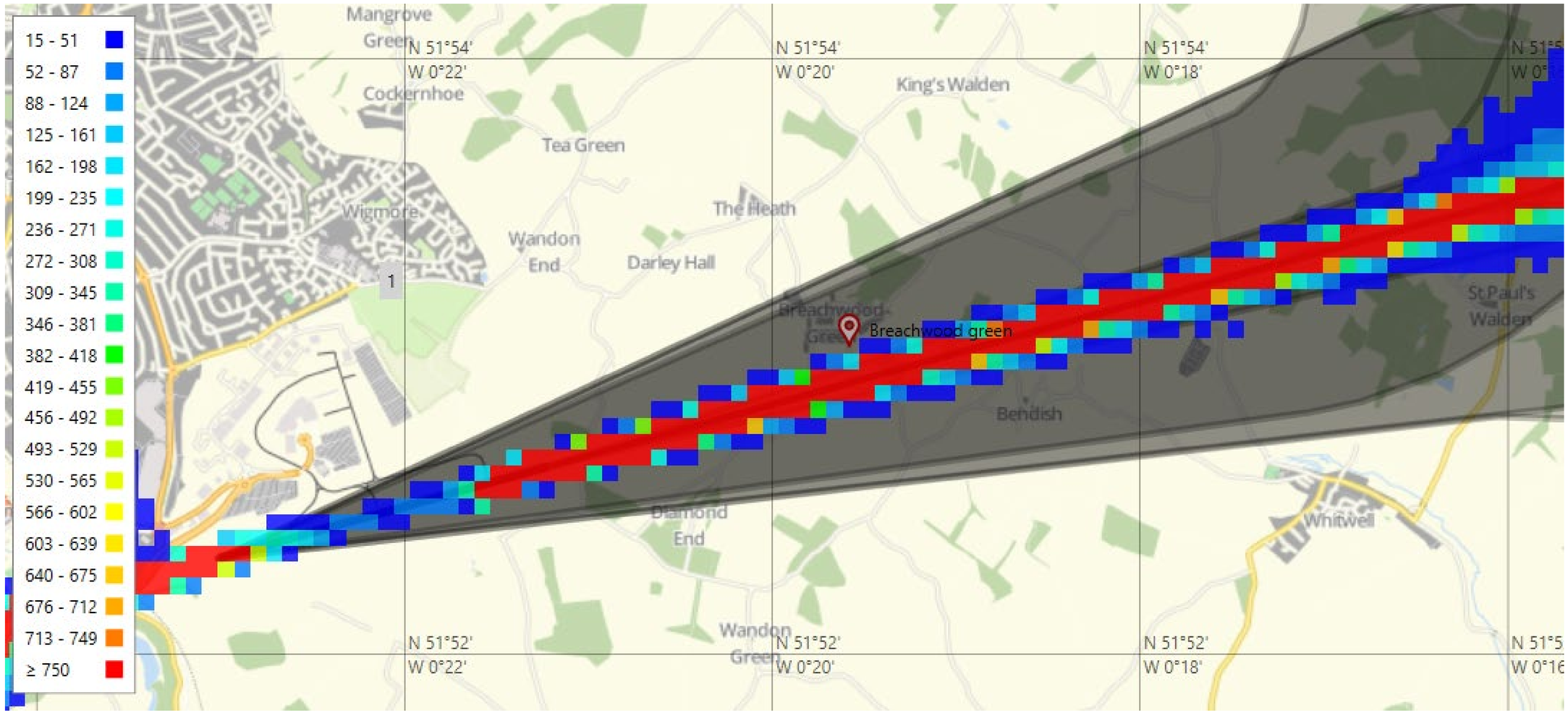
Operations During the Monitoring Period

The graph below represents the average number of air transport movement during the monitoring period. Depending the operating direction on the day, residents in Breachwood Green may experience different flight patterns and times of peak period. During the peak periods, local residents of Breachwood Green may notice more aircraft. In general, the morning peak starts at 0600 and last for a longer period on a day of easterly operation which occur 30% of the time yearly. On a day of westerly operation (70% of the time yearly), Breachwood Green may see more arrival aircraft between 2100-2300.

During the night period of 23:00 – 06:00 in the monitoring period, there was an average of 23 air transport movements and the same amount of air transport movement in the previous year.

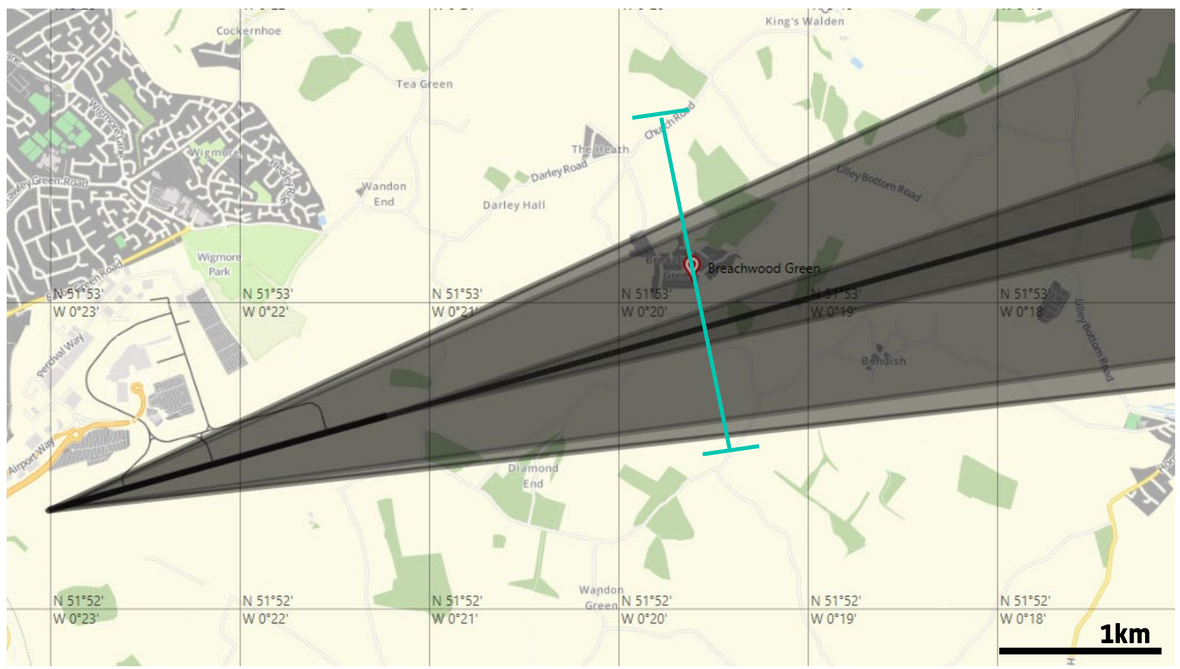
Aircraft Tracks During the Monitoring Period

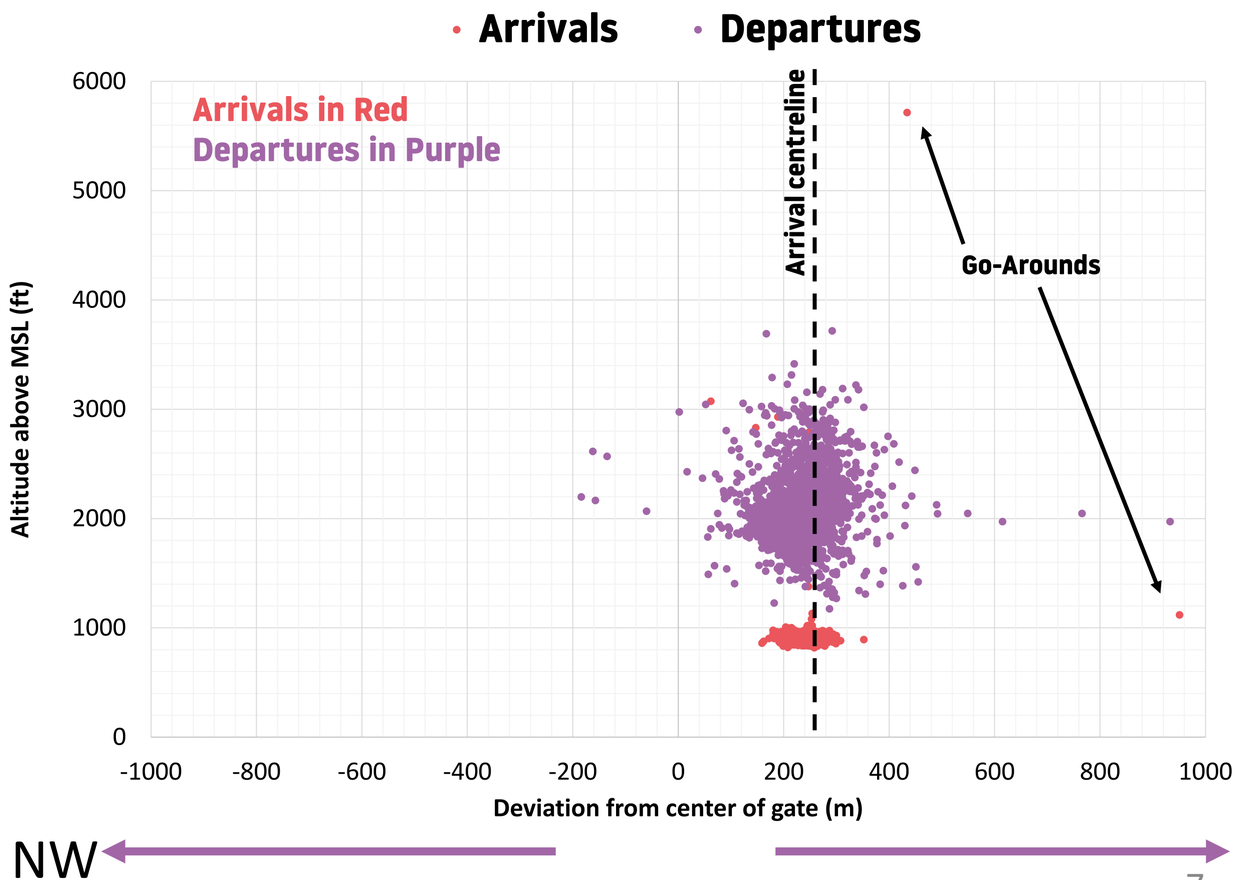
The heat maps below show the representative flight tracks that passed near the noise monitor terminals during the monitoring period. The red pinpoints indicate the location of the noise monitor in Breachwood Green.



Altitude Analysis During Monitoring Period

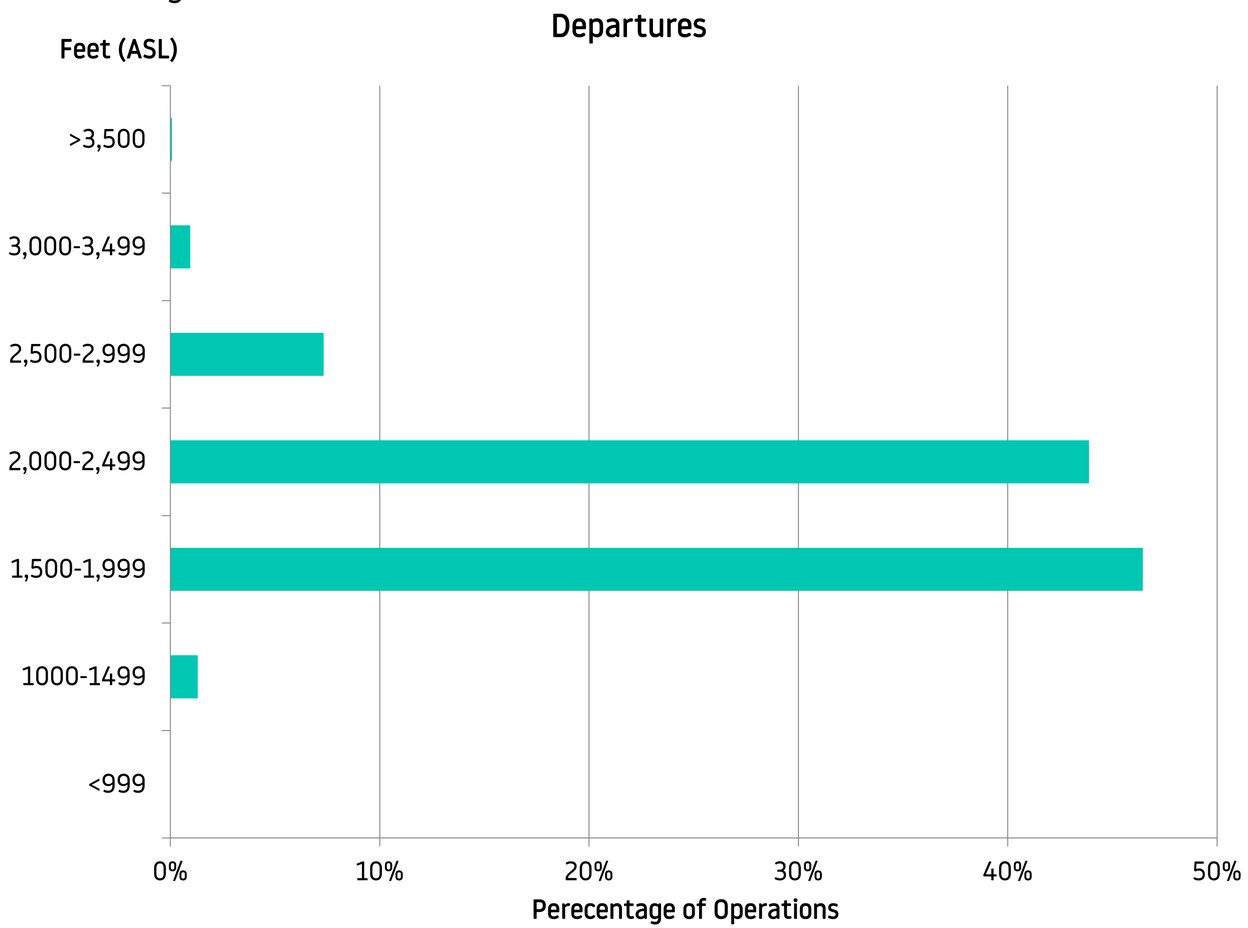
The altitude analysis for Breachwood Green shows the vertical and lateral dispersion of aircraft 1km either side of the noise monitor. The map below shows the 2km gate which is drawn across perpendicular to the runway centreline from north-west to south-east and will gather information about every aircraft 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 may see aircraft flying near Breachwood Green at a low altitude.

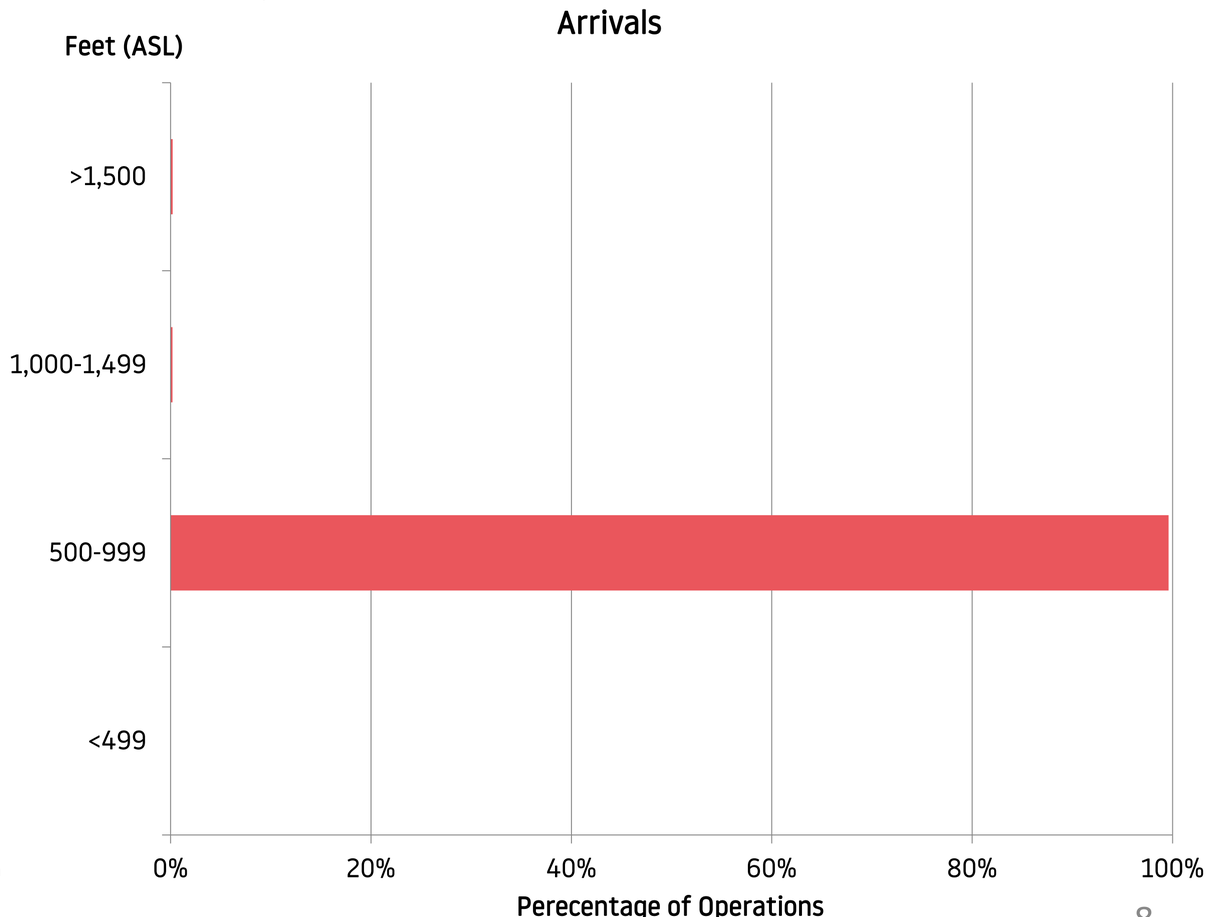




Altitude Analysis During Monitoring Period

The altitude analysis is splitted into two parts in this Breachwood Green report – Departures and Arrivals. The below bar charts show the spread of the altitude when aircraft reach the noise monitor in Breachwood Green. For departures, the average altitude of aircraft in this area was 2,063 feet above sea level (ASL) (1,574 feet above ground level [AGL]). The yellow bar chart shows majority of the departing flights were above 1,500 feet ASL. For arrivals, aircraft tend to be at much lower altitude due to the close proximity to the runway touchdown area at Breachwood Green. The average altitude of aircraft in this area was 900 feet ASL (411 feet AGL). Although the arriving flights are lower than the departing aircraft but the noise from arriving aircraft tend to be at a lower noise level. The noise data is discussed in the next chapter.





How Do 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. 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).

During the monitoring period in Breachwood Green, the noise monitoring terminal collected readings from 7,967 departing and arriving aircraft. During the period, there were total of 2,709 easterly departures and 5,735 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. 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.

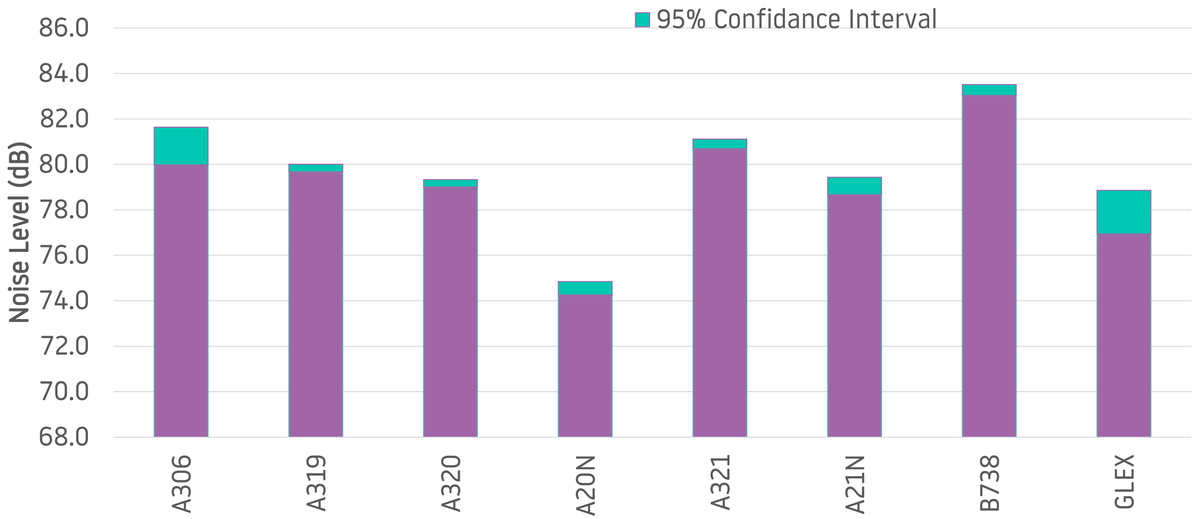
The weather also plays a big part in the data recorded and in periods of extreme weather i.e (very strong winds) the equipment can record noise incorrectly so we exclude samples from the analysis during these weather conditions. During the monitoring period, 54 recordings need to be excluded from the analysis for weather reason.

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. For this reason, the data analysis is split into two parts – Departures and Arrivals.

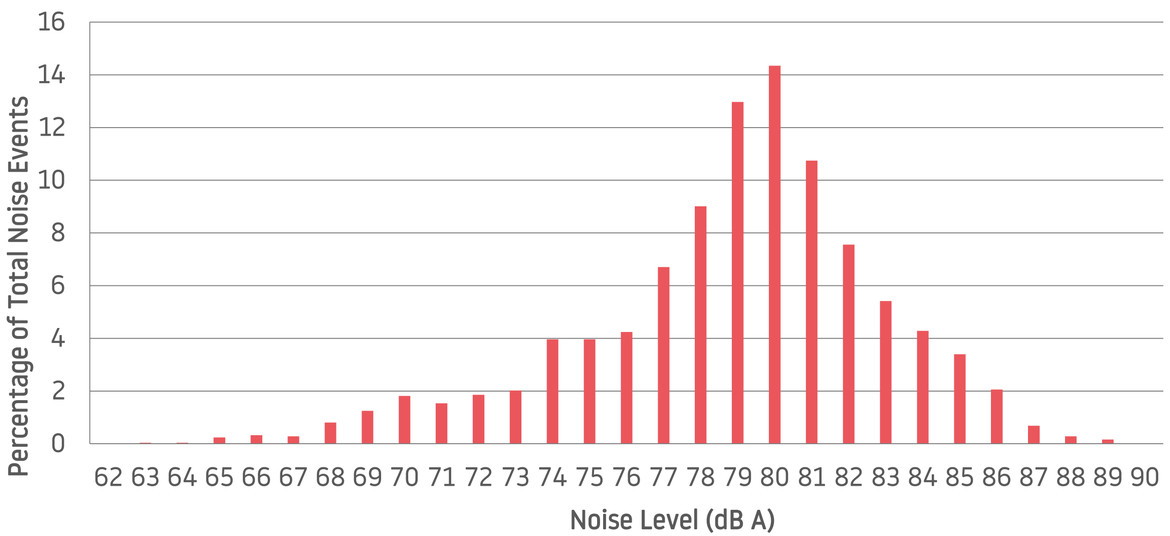
Departures - Noise Results During Monitoring Period

During the monitoring period, noise recording samples were gathered from the most popular aircraft types at London Luton Airport*. The summary of the results on departing aircraft noise are shown on this page.

Aircraft Type	Number of movements	Average Noise (dB)
A306	58	80.8
A319	328	79.8
A320 CEO	581	79.2
A20N (A320 NEO)	142	74.6
A321 CEO	458	80.9
A21N (A321 NEO)	43	79.0
B738	298	83.3
GLEX	80	77.9



The average departure noise in Breachwood Green is 78.8dB, based on a sample size of 2,475. The table shows the average noise for each aircraft type and the green bar on the chart shows the uncertainty caused by the spread in readings and the sample size (95% confidence interval). From the results, Luton's most popular aircraft Airbus A320 CEO has an average noise of 79.2dB in Breachwood Green. The departure noise from A320 NEO and A321 NEO produced less noise than A320 and A321 CEOs. The B738 was the noisiest aircraft type at Breachwood Green on days of easterly operation during the monitoring period.

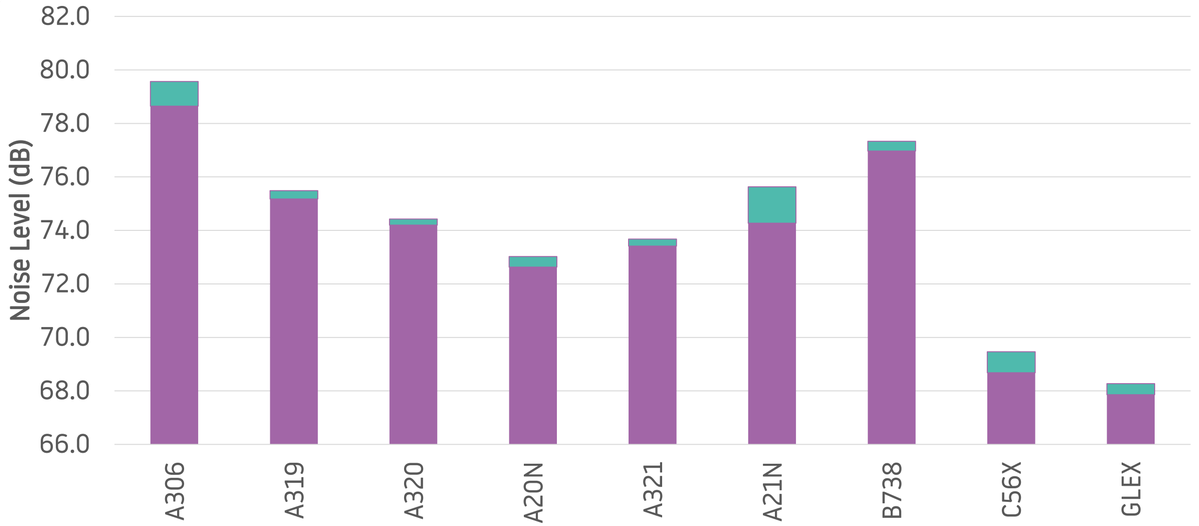


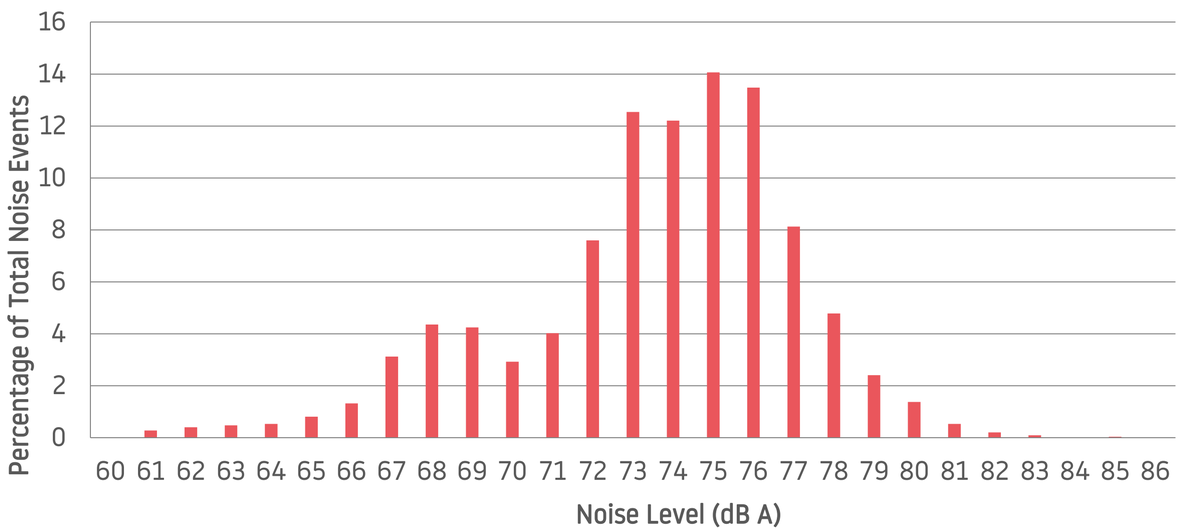
*The noise results shown in the analysis are only for those aircraft types that recorded more than 50 events per aircraft (A321 NEO included for comparison).

Arrivals - Noise Results During Monitoring Period

During the monitoring period, noise recording samples were gathered from the most popular aircraft types at London Luton Airport*. The summary of the results of arriving aircraft noise are shown on this page.

Aircraft Type	Number of movements	Average Noise (dB)
A306	114	79.1
A319	758	75.3
A320 CEO	1,377	74.3
A20N (A320 NEO)	310	72.8
A321 CEO	952	73.5
A21N (A321 NEO)	85	75.0
B738	594	77.2
C56X	101	76.9
GLEX	183	69.1





The average arrival noise in Breachwood Green is 73.5dB, based on a sample size of 5,438. The table shows the average noise for each aircraft type and the green bar on the chart shows the uncertainty caused by the spread in readings and the sample size (95% confidence interval). From the results, Luton's most popular aircraft Airbus A320 CEO has an average noise of 74.3dB in Breachwood Green. The A321 NEO has an average noise of 75.0dB, nosier than the A321 CEO. LLA will continue to investigate into this further as we collect more A321s' arrival noise events from the fixed noise monitor located in Frogmore. As seen from the altitude analysis in the previous chapter, arriving aircraft tend to be at a lower altitude. The noise data show the average arrival noise is lower than departure noise. During the noise monitoring period, LLA operated in westerly operation for 69% of the time.

* The noise results shown in the analysis are only for those aircraft types that recorded more than 100 events per aircraft. (A321 NEO included for comparison)

Conclusion

- During the monitoring period, the airport was using westerly operations for 69% of the time, this is less than the five year average of this time period.

- The average altitude of departing aircraft in Breachwood Green is 2,063 feet above sea level (ASL), and as Breachwood Green is already approximately 489 feet ASL, aircraft will typically be 1,574 feet above ground level (AGL) in this area. For the arrivals, the average altitude is 900 feet ASL or 411 feet AGL.

- Most aircraft shown in the altitude analysis flew within or above the NPR/approach corridor.

- The main aircraft type operating at London Luton Airport is the Airbus A320 CEO which produced an average noise of 79.2dB and 74.3dB for departures and arrivals respectively in Breachwood Green. 7.3% of the noise events recorded in Breachwood Green were created by the newer generation aircraft, A320 NEO and A321 NEO, registering average departing noise events of 74.6dB and 79.0dB respectively, quieter than the Airbus CEO departures. On the other hand, for the arrivals, the data show that the A321 NEO were nosier than the A321 CEO. LLA will continue to investigate into this further as we collect more A321 NEO's arrival noise events from the fixed noise monitor located in Frogmore. For the A320 NEOs, its arrival noise are quieter than the A320 CEOs.

- In general, the noise data show the average arrival noise is lower than departure noise. During the noise monitoring period, LLA operated in westerly operation for 69% of the time.

- In Q4 2019, 57 aircraft (both westerly and easterly) were investigated as part of the Noise and Track violation scheme. 11 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

- We are looking at new ways to make our community noise reports easier for the local communities to understand as well as including the right information. If you have any suggestions about how we can make these reports better, please don't hesitate to let us know by emailing noise.enquiries@ltn.aero.

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 follow the departure route in the direction of Breachwood Green.

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

Noise Preferential Route: 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.

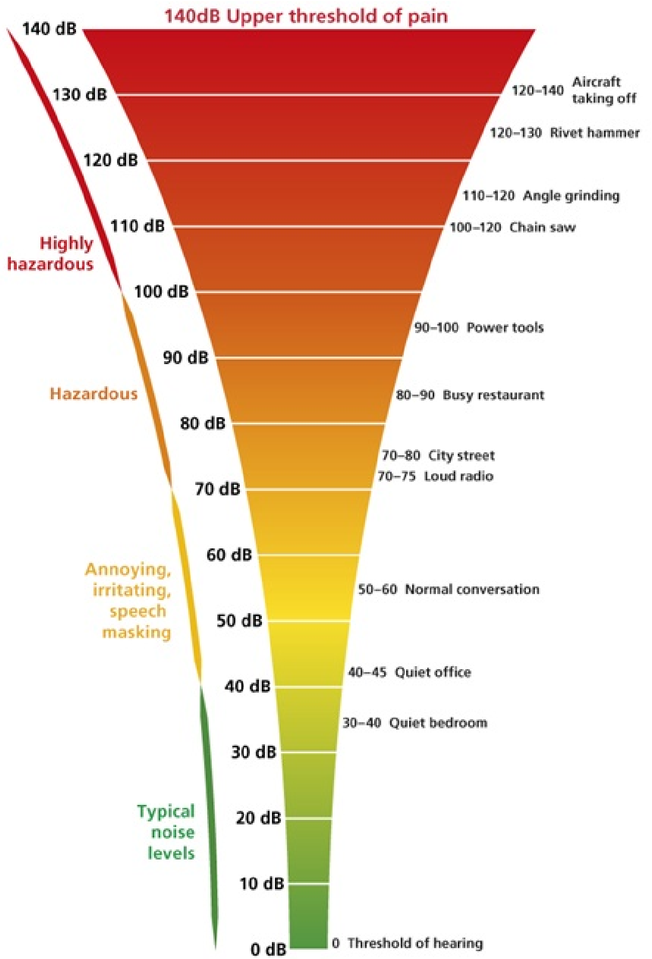
Gate Analysis: A gate which is drawn across an area and will gather information about every aircraft passing through the gate area.

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.



Source: iosh.co.uk