Community Noise Report

Kensworth

October – December 2022

London Luton Airport

Introduction

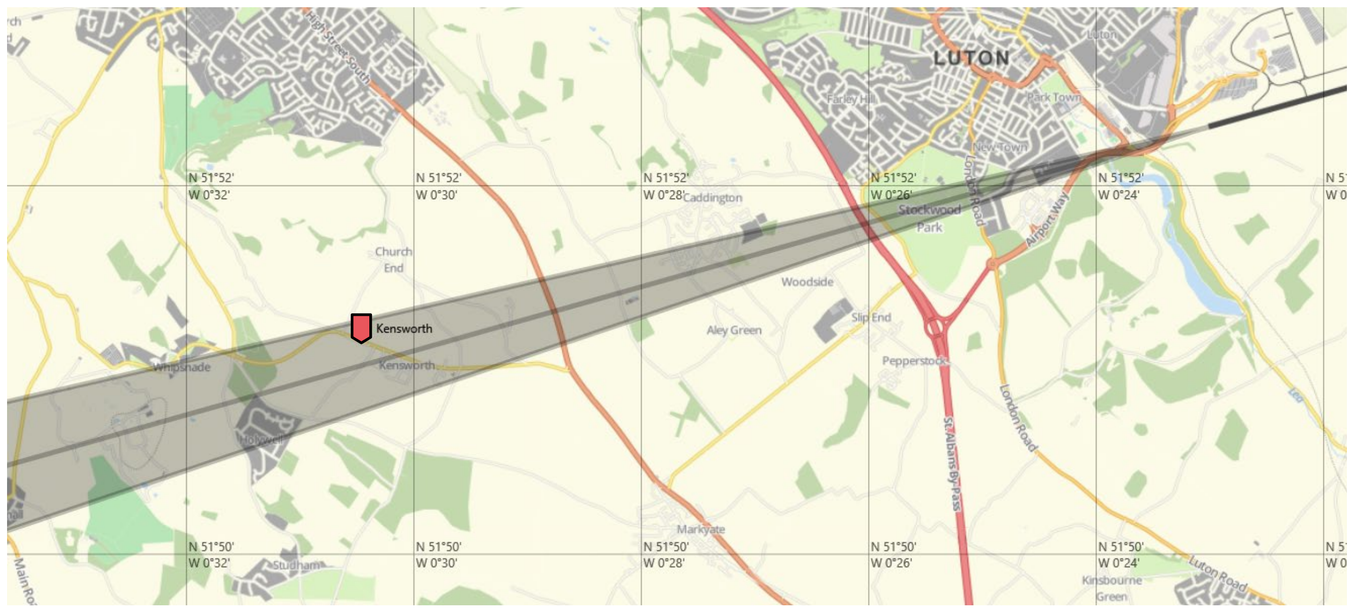
As part of the ongoing noise monitoring programme, London Luton Airport deployed a portable noise monitoring terminal in Kensworth.

The purpose of the monitoring programme is to understand the typical noise levels created in the local community. For Kensworth, it specifically related to the westerly arrival and easterly departures. The final approach flightpath and departure flightpaths are shown on the maps.

The noise monitor was located at a property on Common Road, approximately 240m north of the easterly arrival centerline at an altitude of 633 feet above sea level. The red pinpoint on the map shows the noise monitor location.

The noise monitor in Kensworth was in place between 18th October and 21st December 2022.

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.

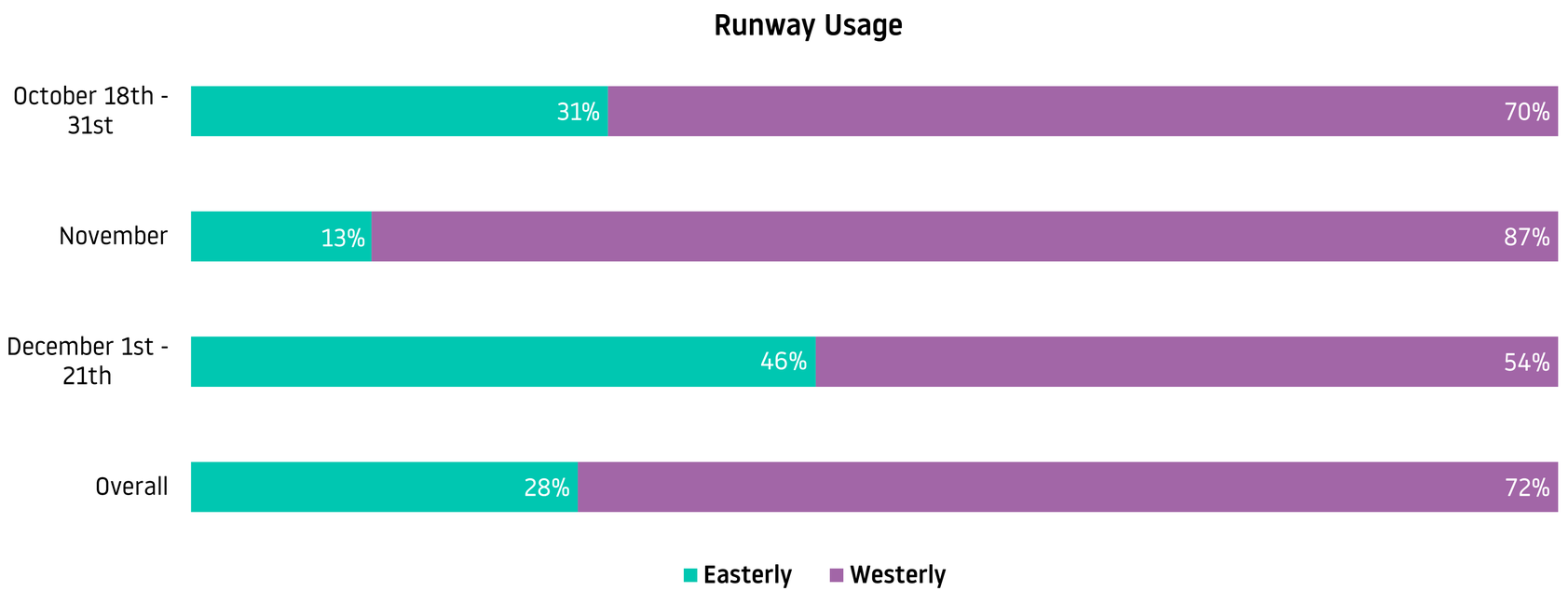


LLA Operations During the Monitoring Period

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.

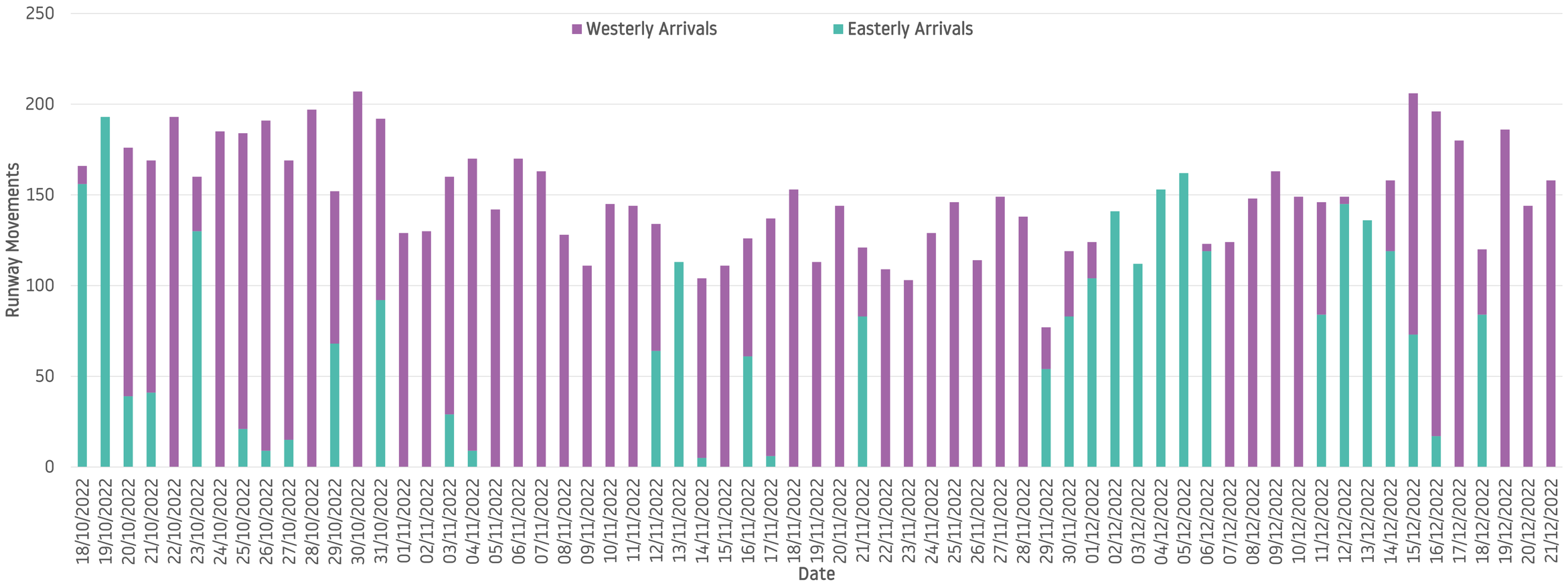
During the monitoring period, the direction of operation was 28% easterly and 72% westerly. The 5-year average for this time of year is 28% easterly vs 72% westerly.

There were 3,379 aircraft which arrived on the easterly routes whilst the noise monitor was located in Kensworth.



Daily Movements During Monitoring Period

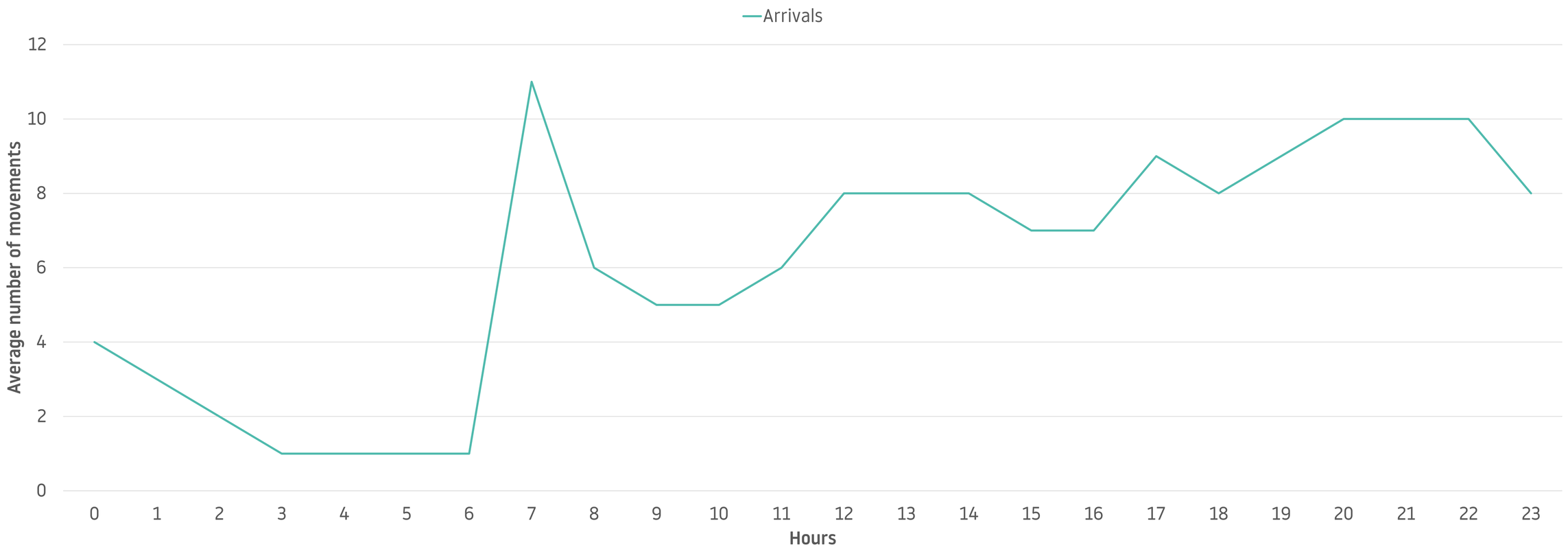
The chart below shows the number of daily arrivals that passed over the noise monitor. Due to the location, all flights that have landed whilst on easterly runway would have flown above the noise monito terminal. This graph shows the easterly arrivals (green) as well as westerly arrivals (purple) on the other side.



Operations During the Monitoring Period

The graph below represents the average aircraft movement by hours during the monitoring period. During the peak periods on easterly operation, local residents of Kensworth may notice more frequent aircraft movements. Residents may notice the morning peak begins at 07:00. Then the peak starts again at midday and 20:00. Each peak period may last for few hours.

During the night period of 23:00 – 06:59 in the monitoring period, there were average of 21 arrivals.

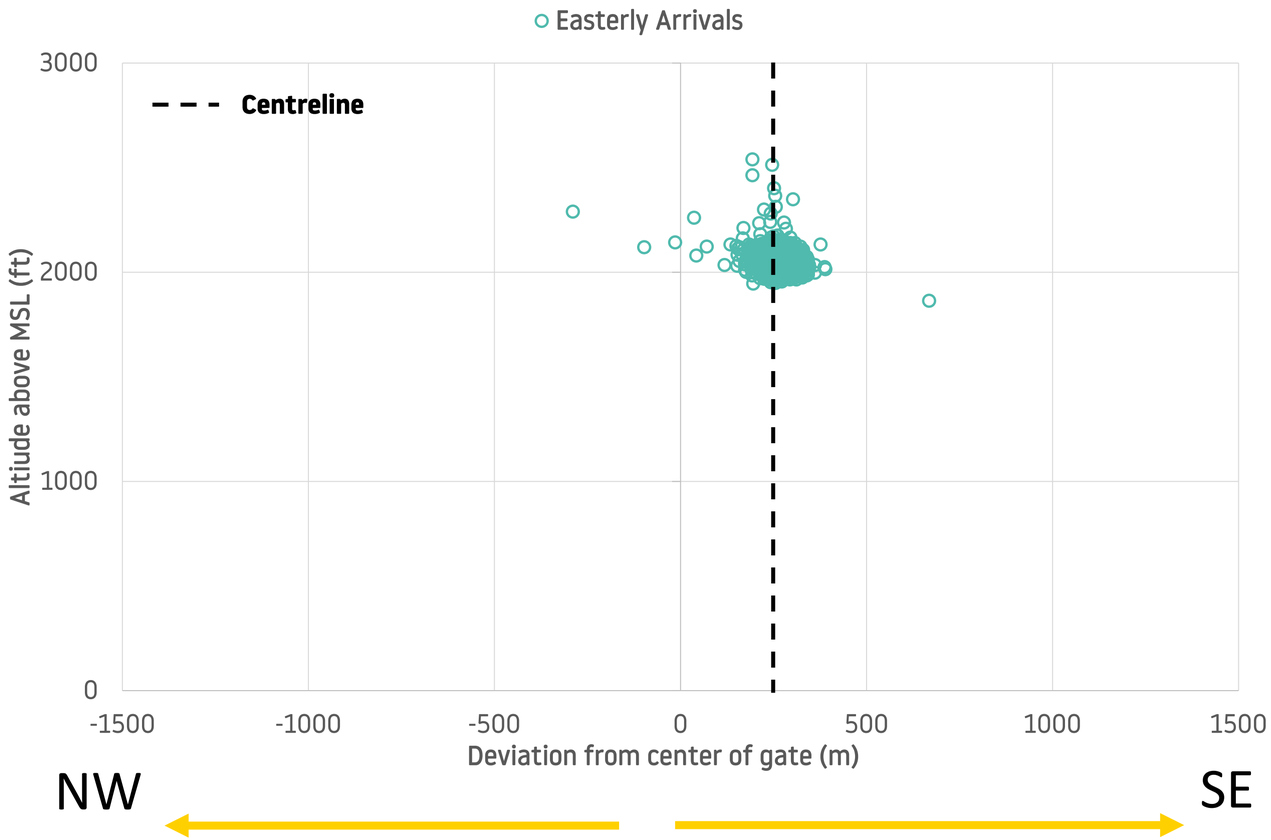


Aircraft Tracks

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 Kensworth. At this location, it is affected by easterly arrivals.

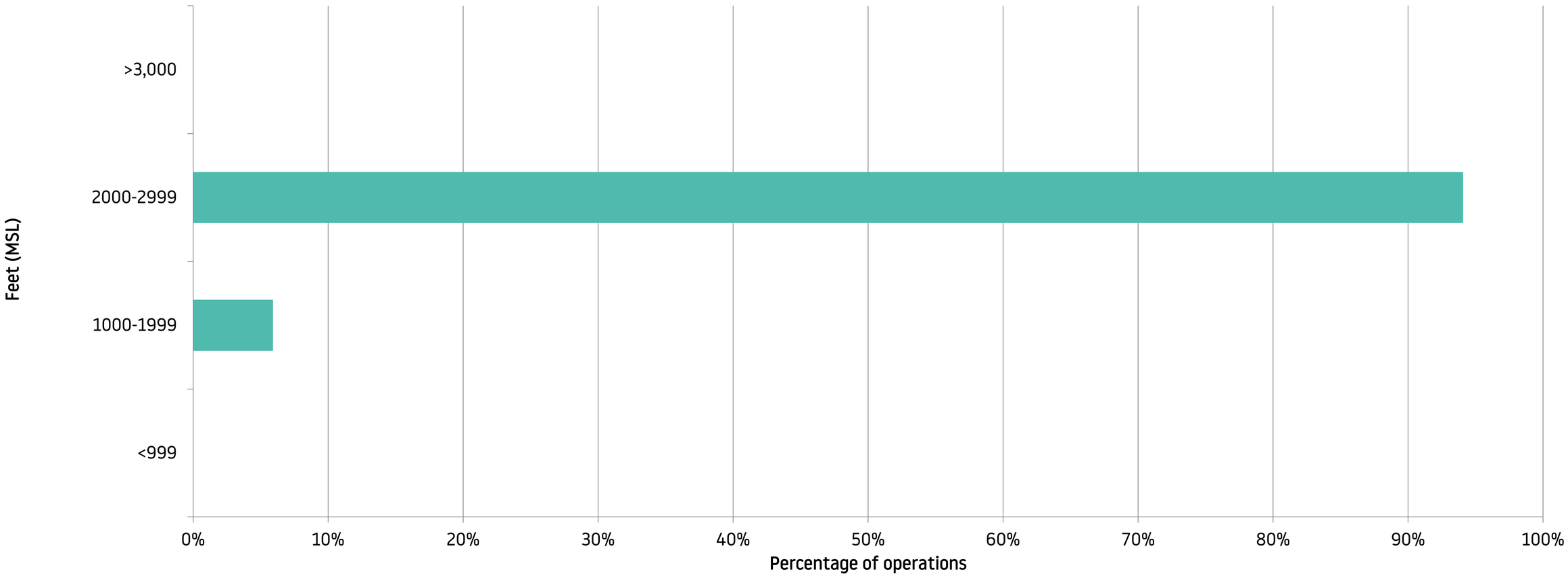
Altitude Gate Analysis

The altitude analysis for Kensworth shows the vertical and lateral dispersion of aircraft 1.5km either side of the noise monitor. The map below shows the 3km gate which is drawn perpendicular to the runway extended centreline 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. Each arrival aircraft will use ILS (Instrument Landing System), providing guidance to stay on the centreline as seen in the graph below, residents will see aircraft fly near Kensworth on easterly operations.



Altitude Gate Analysis – Easterly Arrivals

The average altitude of arriving aircraft was 2,050 feet AMSL (1,417 feet AGL) when they reach above the noise monitor in Kensworth. The bar chart shows the concentration of the aircraft when aircraft reach the noise monitor in Kensworth.



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.

During the monitoring period in Kensworth, the noise monitoring terminal collected readings from 2,807 easterly arriving aircraft. During the period, there were 3,379 arrivals.

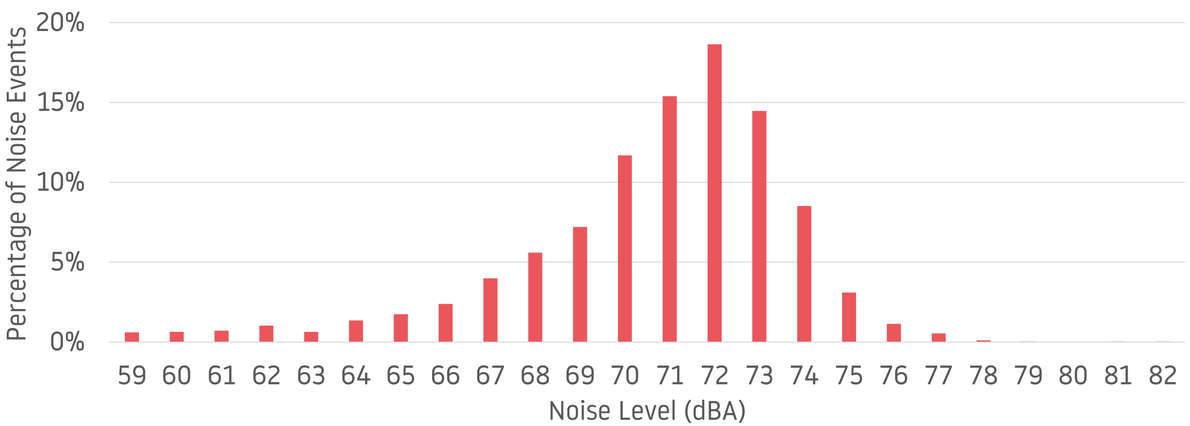
It is noteworthy that the noise monitor may not be able to record every aircraft noise event if the aircraft noise level is below ambient background noise. Therefore, there may be a difference between the number of actual air transport movements and number of aircraft noise events collected during the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

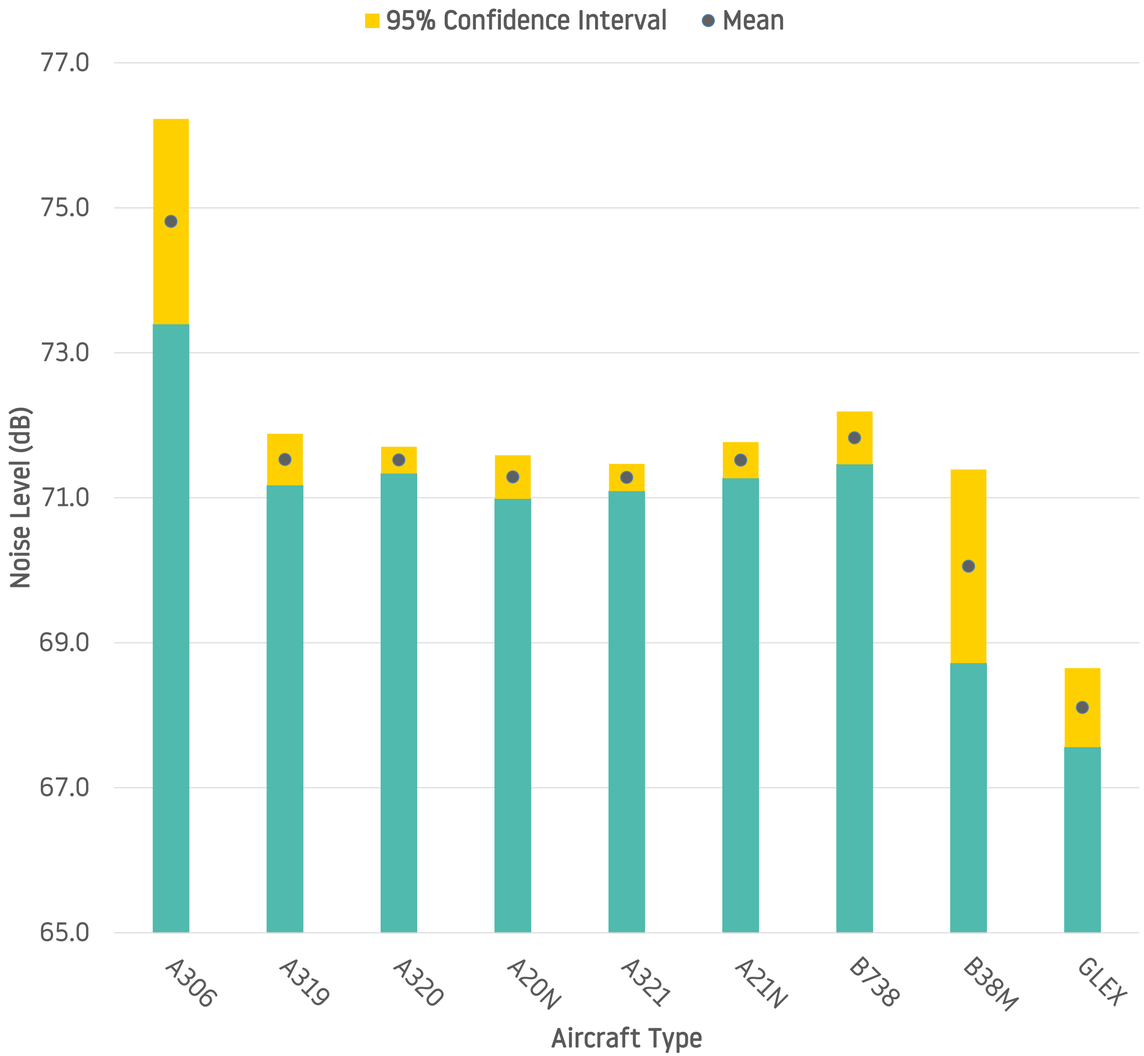
The weather also plays a big part in the data recorded and in periods of extreme weather i.e (very strong winds) the equipment can record noise incorrectly, so we exclude samples from the analysis during these weather conditions. When analysing the samples, the first thing we do is to ensure that there is no unusual noise event present which might not be caused by aircraft (i.e. vehicles or wildlife). 44 recordings were excluded from the analysis for the above reasons.

Noise Results – Easterly 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	29	74.8
A319	294	71.5
A320 CEO	643	71.5
A320 NEO (A20N)	206	71.3
A321 CEO	348	71.3
A321 NEO (A21N)	251	71.5
B737-800 NG (B738)	327	71.8
B737 Max 8200 (B38M)	11	70.1
Global Express (GLEX)	88	68.1
All Aircraft Types	2,807	70.6





*The noise results shown in the analysis are only for those aircraft types that recorded more than 50 events per aircraft (A306 and B737 Max 8200 included for comparison).

Noise Results – Summary

- In Kensworth, residents may experience aircraft noise when the airport is operating in the easterly direction as the arrival aircraft follow the final approach flightpath in a straight line towards the runway at low altitude.

- On easterly operation, the average departure noise measured was 70.6dB, based on a sample size of 2,807.

- From the results, Luton's most popular aircraft type by operators, Airbus A320 CEO and A321 CEO, had an average noise of 71.5dB and 71.3dB respectively.

- In Luton, almost all commercial passenger jets are narrow bodied aircraft and of similar size. The results show the average level of arrival noise recorded at the noise monitor in Kensworth across the fleet are very similar, ranging between 70.1dB and 71.8dB.

- The A306 freight aircraft, however, registered slightly higher arrival noise level than the other aircraft types. The average noise recorded was 74.8dB. This aircraft type is generally deployed in the daytime period.

- The private jet aircraft, Global Express (GLEX) had a lower average noise reading of 68.1dB during the monitoring period.

Conclusion

- A mobile noise monitor was installed at a residential property in Kensworth for nine weeks.

- For Kensworth, it specifically related to easterly arrivals. During the monitoring period, the airport operated in the direction of easterly and westerly for 28% and 72% 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 most arriving aircraft are concentrated on the Instrument Landing System (ILS) glidepath and its centreline.

- The average altitude of easterly departing aircraft in Kensworth is 2,050 feet above mean sea level (AMSL), and as Kensworth is already approximately 633 feet AMSL, aircraft will typically be at 1,417 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 71.5dB. Other similar aircraft types also had similar noise results, ranging between 70.1dB and 71.8dB.

- 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 land on the easterly runway and would fly above Kensworth when they line up towards the easterly runway on final approach.

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

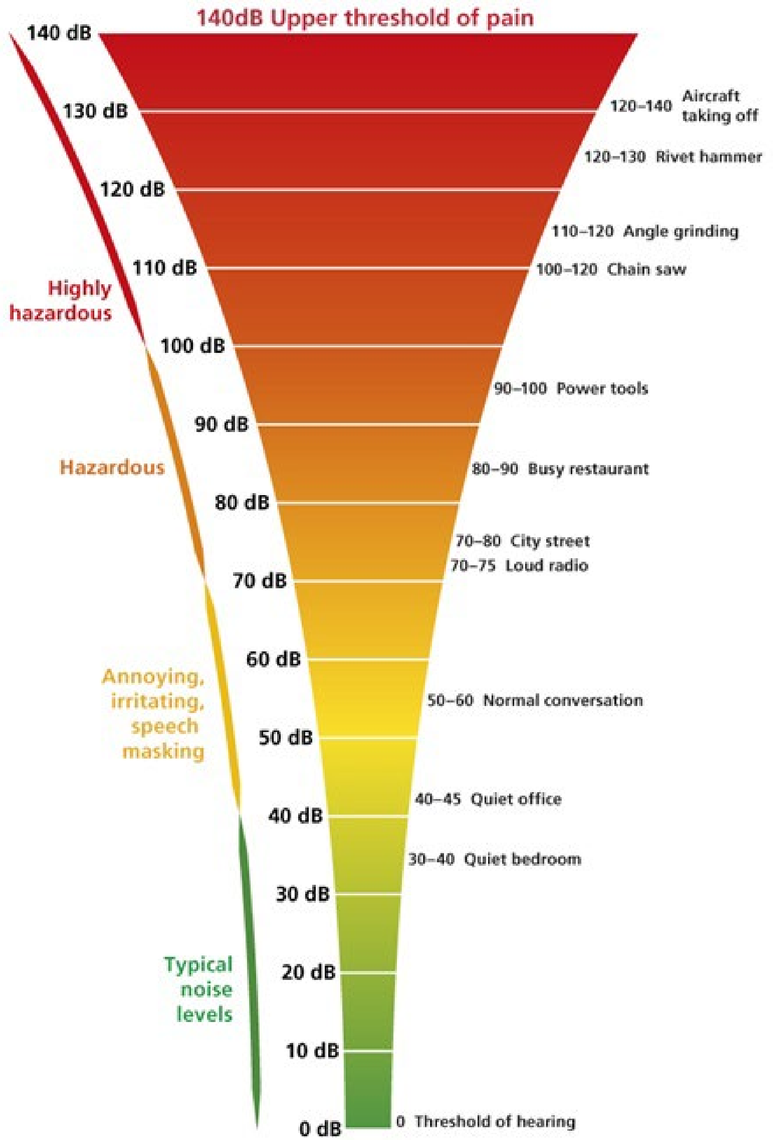
Altitude Gate Analysis: A gate which is drawn across an area and will gather flight date about every aircraft passing through the gate area.

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.

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



Source: iosh.co.uk