Community Noise Report

Wheathampstead

Jun – Oct 2019

London
Luton
Airport

Introduction

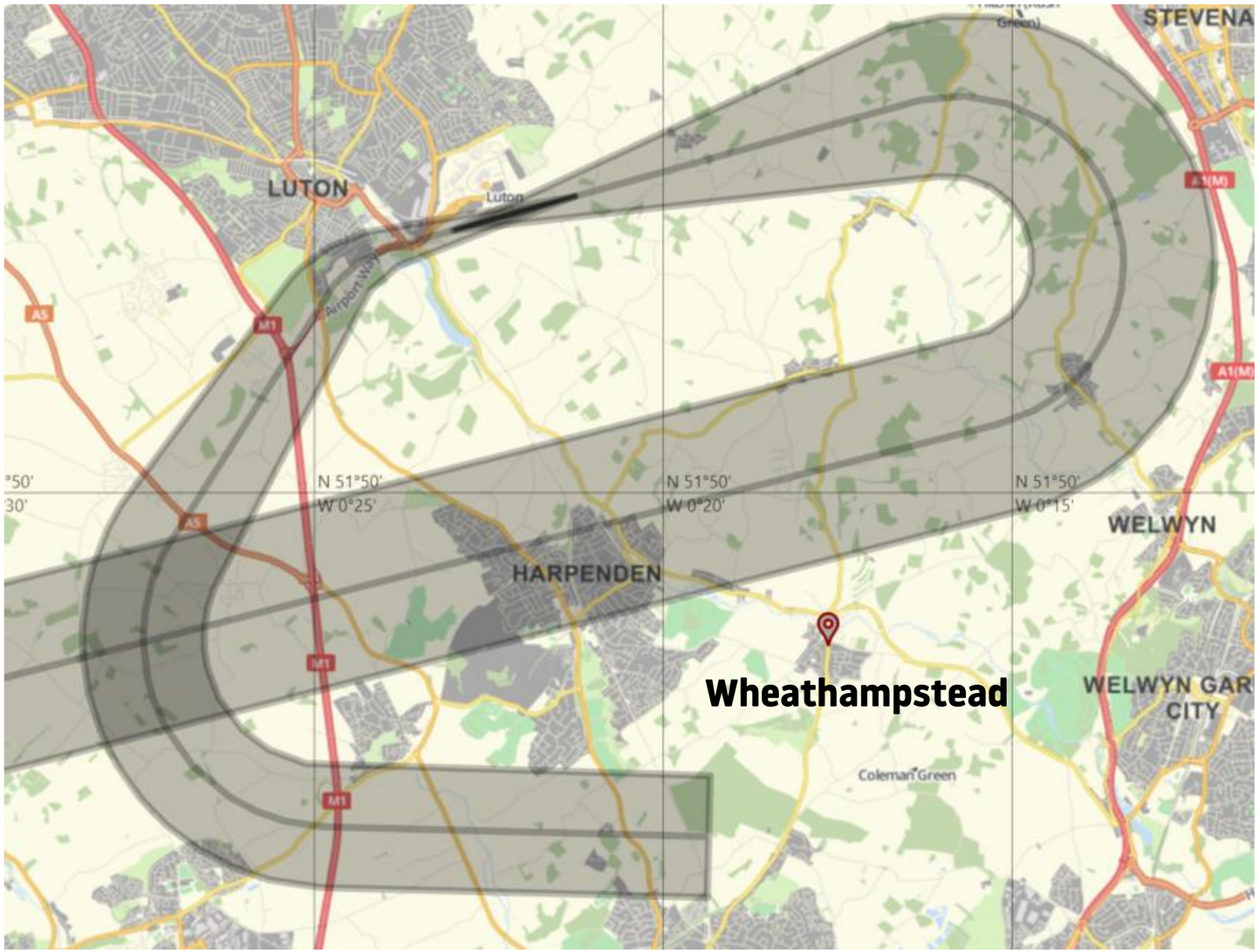
As part of the ongoing noise monitoring programme, London Luton Airport (LLA) deployed a portable noise monitoring terminal in Wheathampstead.

The purpose of the monitoring programme is to understand the typical noise levels created in the local community. For Wheathampstead, it specifically related to the departures on the westerly Match route and easterly Compton route.

The noise monitor was located in Wheathampstead between 21st June and 9th October 2019.

The monitor's location was at approximately 2,800m south of the easterly Compton route's centreline and 3,180m north of the westerly Match route's extended centreline, at an altitude of 364 feet above sea level. The red pinpoint on the map shows the location of the noise monitor.

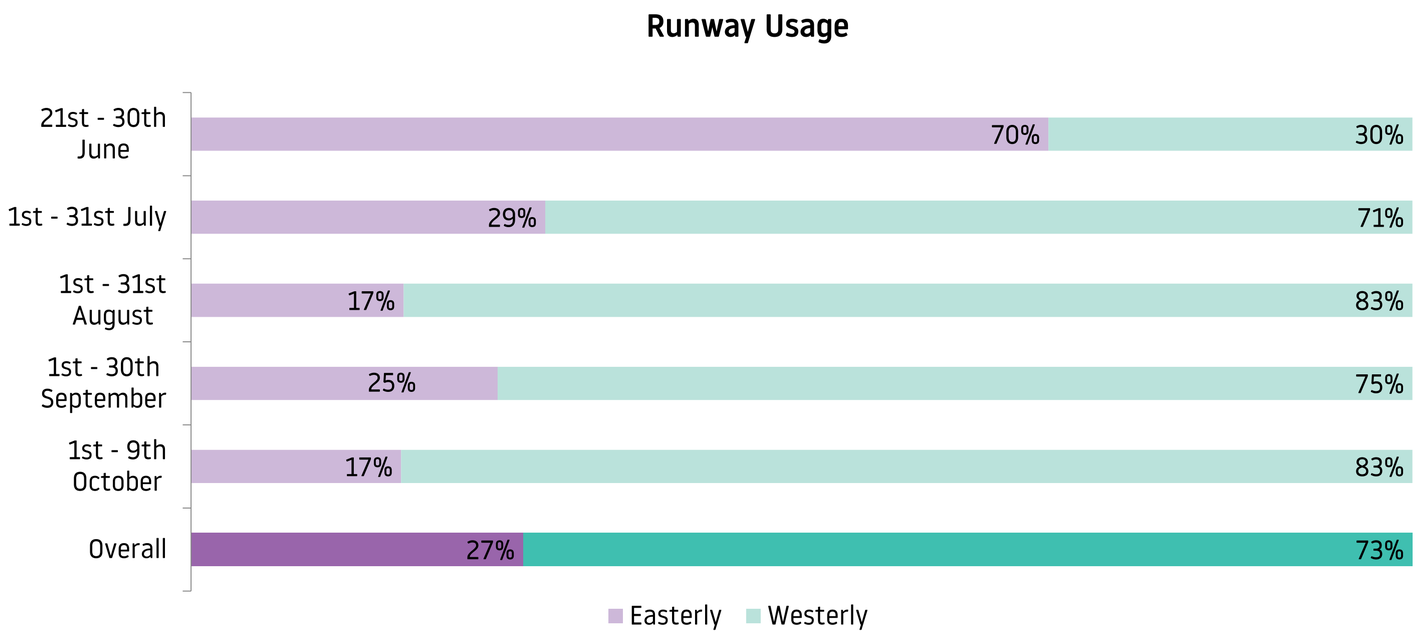
The aircrafts' noise and tracks were recorded and extracted from LLA's noise and track-keeping system. This document evaluates the lateral and vertical positioning of aircraft near the monitor as well as the noise recorded at ground level.



LLA Operations During the Monitoring

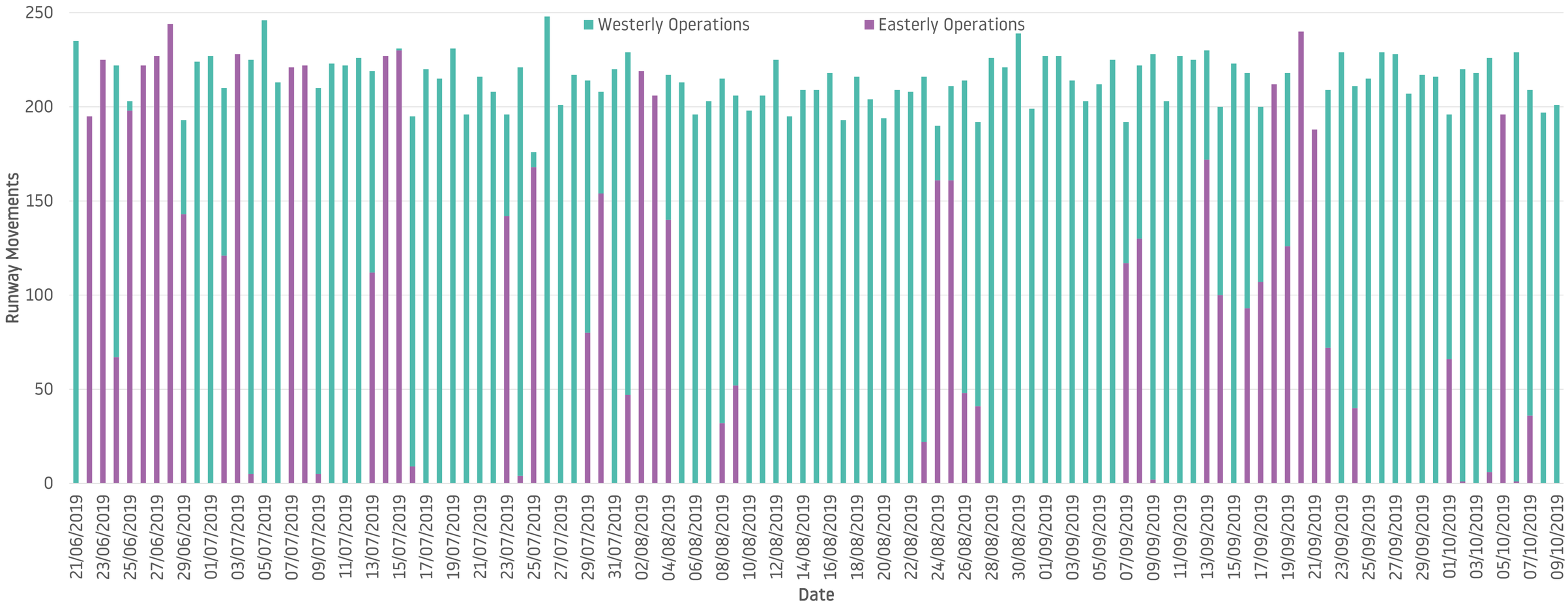
At the airport we have two directions of operation, depending on the wind direction, as aircraft are required to take off and land into the wind for safety reasons. These are known as easterly operations and westerly operations and can change the aircraft tracks nearby specific areas. The split in operating direction varies from year to year and month to month. The amount of time that the runway operates in one direction all depends on the weather.

During the noise monitoring period, the direction of LLA's operation was 27% easterly and 73% westerly. The five year average for this time of the year is 25% easterly vs 75% westerly. A total of 11,444 aircraft departed on the easterly Compton (2,416) and westerly Match (9,028) SID whilst the monitor was located in Wheathampstead. The chart below shows the runway usage split for each month during the noise monitoring period.



Daily Movements During Monitoring Period

The bar chart below shows the number of daily departures at London Luton Airport. During the monitoring period, there were more westerly departures than easterly departures. Due to the location of Wheathampstead and the noise monitor terminal, small number of flights that departed on westerly Match or easterly Compton route would have flown passed near the monitor. The flight tracks will be displayed on page 6.



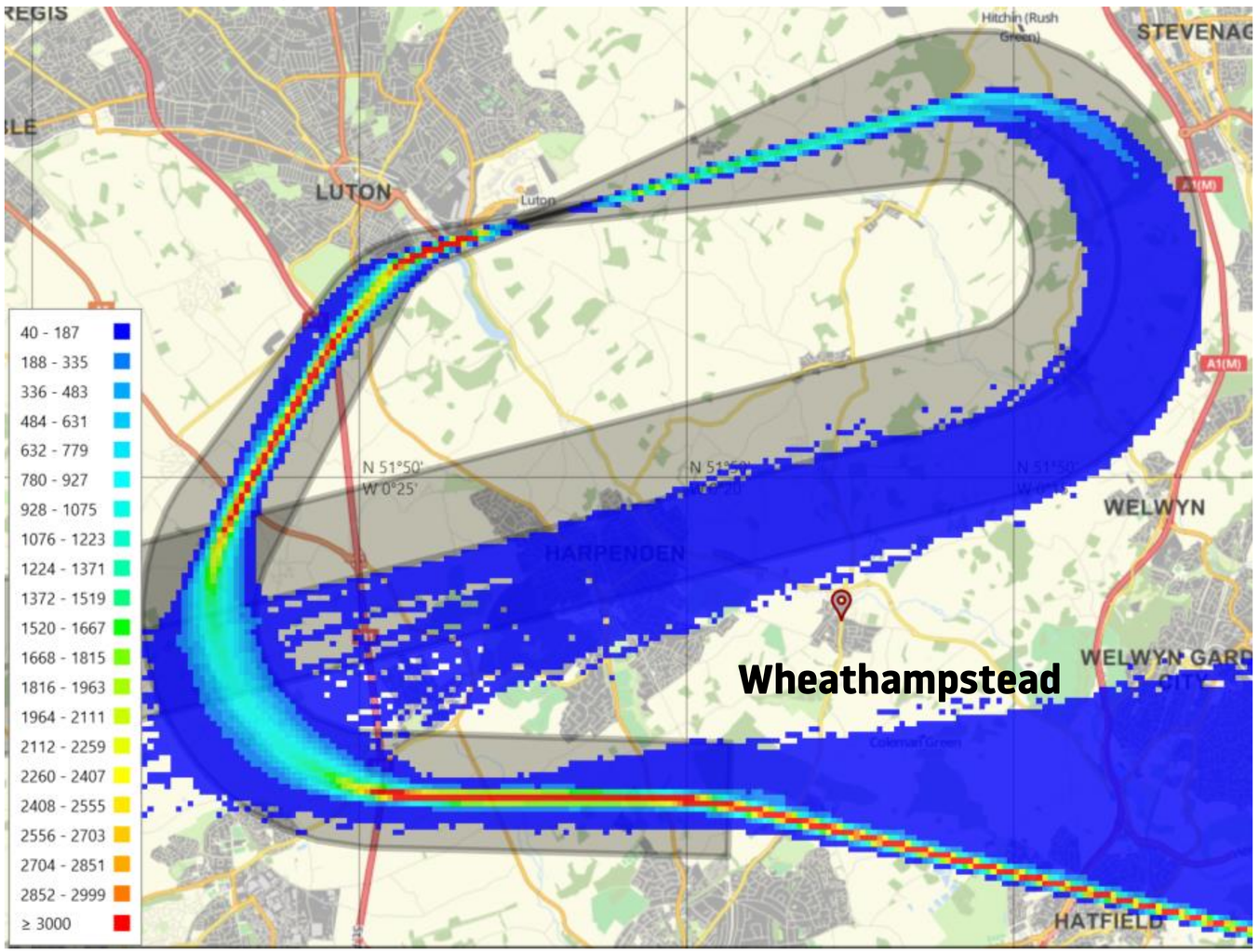
Operations during the monitoring period

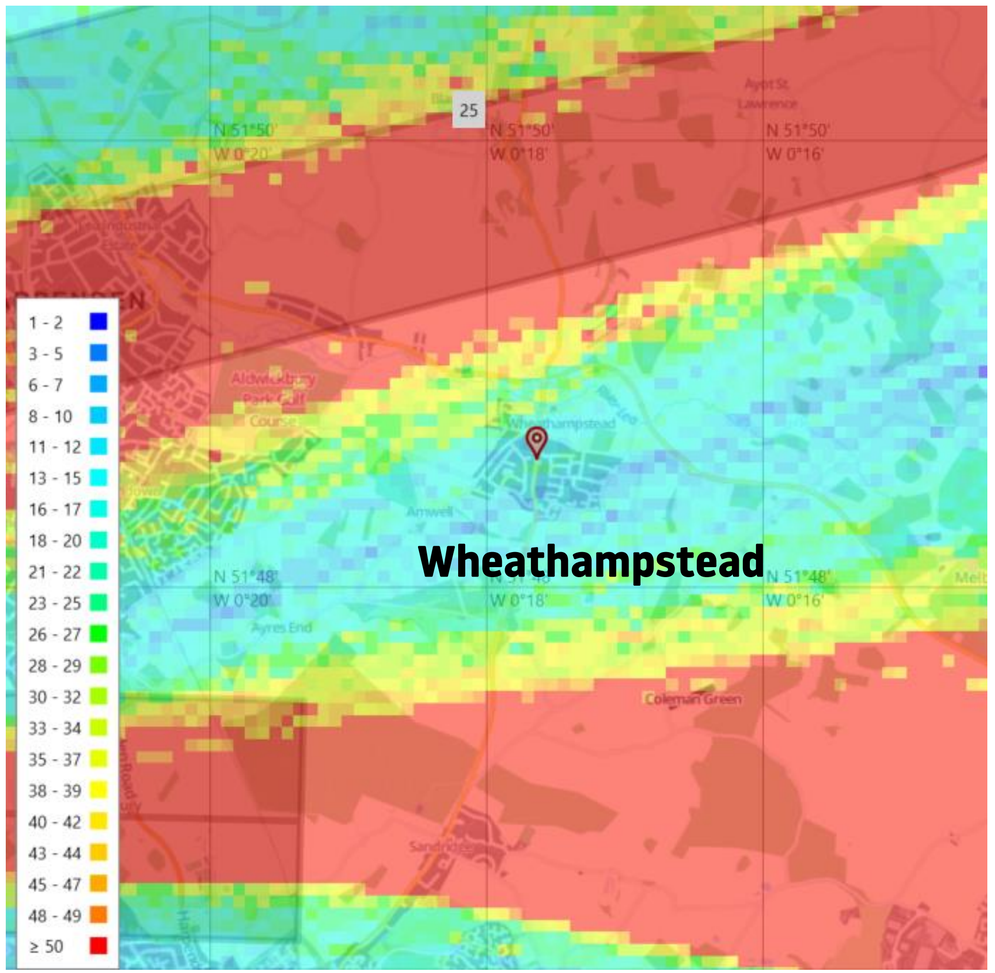
The graph below represents the average number of all departures during the monitoring period. The peak period was between 06:00-09:00 in the morning and smaller peak between 13:00-15:00 and 19:00-20:00. During the night period of 23:00 – 05:59, there was an average of 9 departures compared to 5 departures for the previous year.

At Wheathamsptead, local residents may experienced aircraft noise from the easterly Compton and westerly Match route but not from all departures. The easterly Compton and westerly Match route accounted for 10% and 38% of all operations respectively. During the peak period, local residents of Wheathampstead may notice more aircraft.

Aircraft Tracks During the Monitoring Period

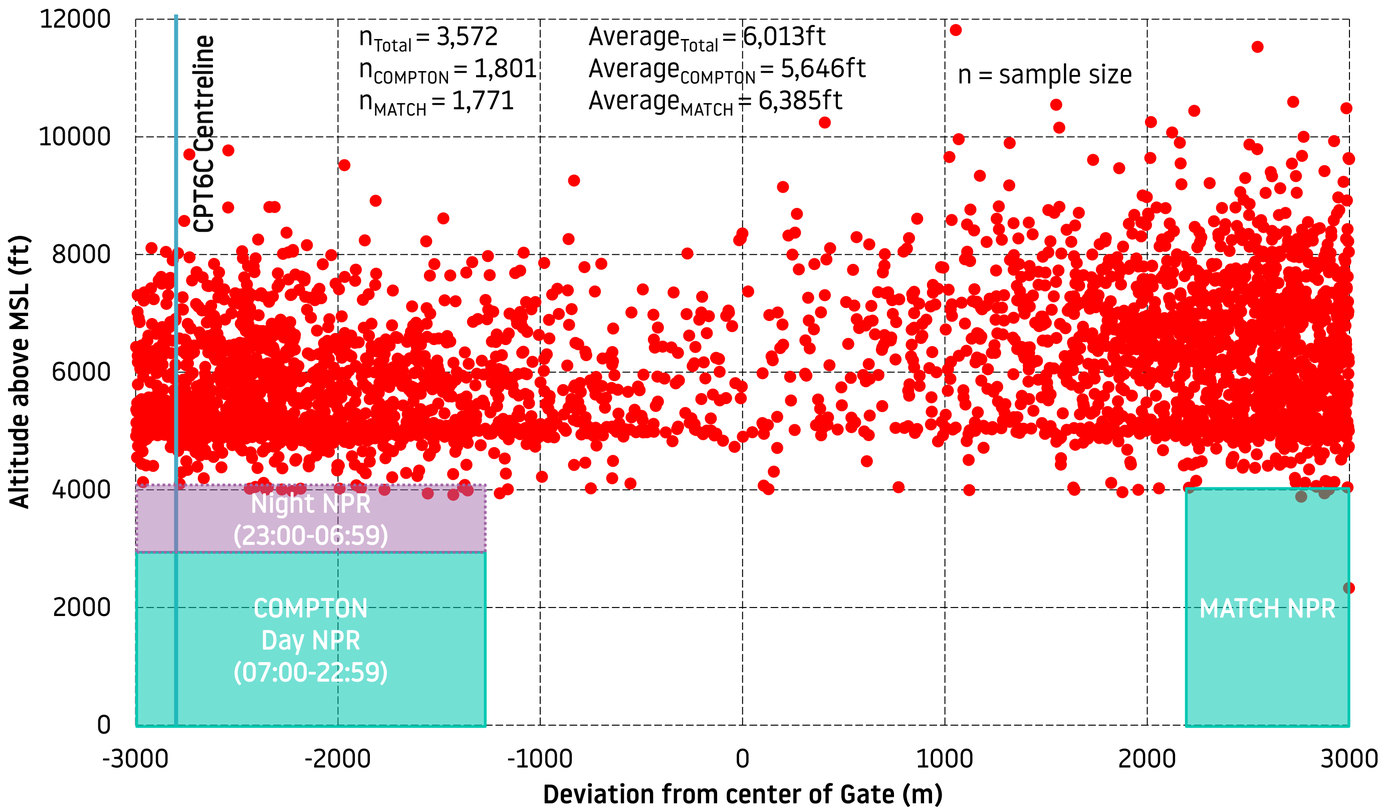
The heat maps below show the representative flight tracks that passed near the noise monitor terminal during the monitoring period. The red pinpoint indicates the location of the noise monitor, approximately 2,800m south of the easterly Compton route's centreline and 3,180m north of the westerly Match route's extended centreline, at an altitude of 364 feet above sea level.

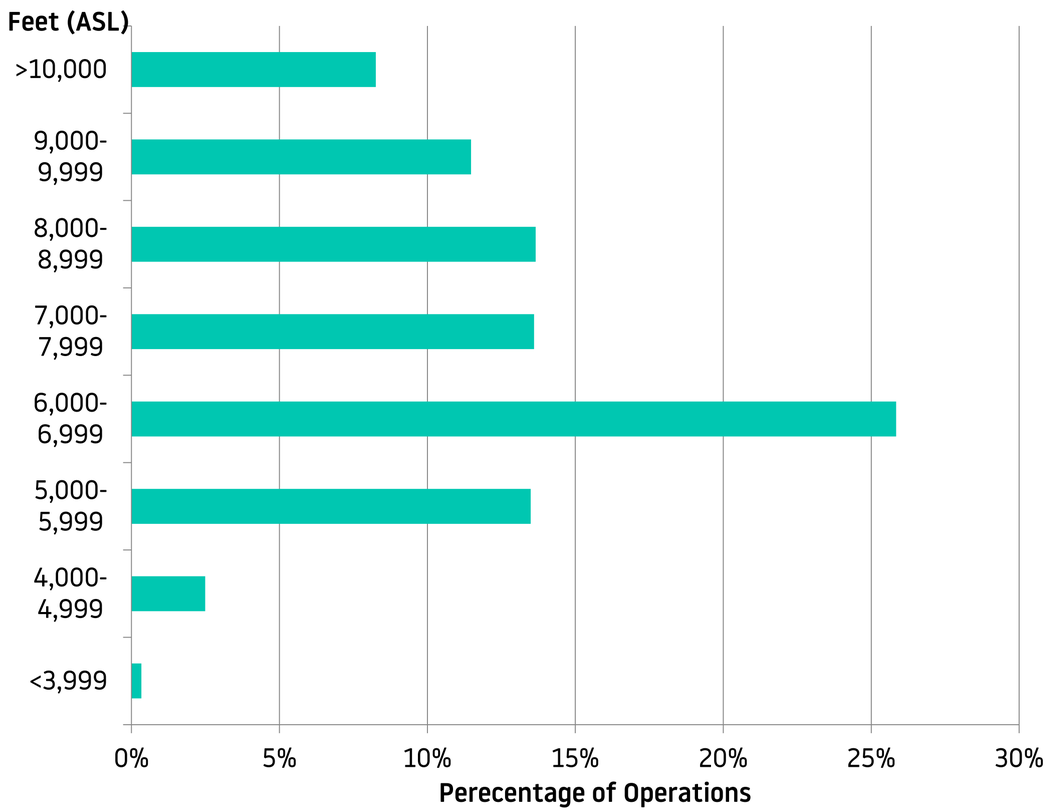




Altitude Analysis During Monitoring Period

The altitude analysis shows the vertical and lateral dispersion of aircraft 3km either side of the noise monitor. The scatter graph below shows the distance and altitude of aircraft from the noise monitor during the monitoring period. The noise preferential routes (NPRs) 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). Almost all aircraft climbed above the release altitude when they reached near Wheathamstead. Therefore, local residents of Wheathamstead may see small number of aircraft directly overflying Wheathamstead above 3,000 feet. The average altitude of aircraft in this area was 6,013 feet ASL (5,649 feet above ground level). The bar chart shows that 26% of flights were between 6,000-6,999 feet above sea level (ASL) and 47% of flights above 7,000 feet ASL.





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).

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. In this analysis, two samples were excluded from the analysis for weather reason.

During the monitoring period in Wheathampstead, the noise monitoring terminal collected readings from 927 aircraft which was fewer than expected but sufficient enough for analysis. During the period, there were total of 11,444 of Match and Compton departures. Of those departures, only 3,572 flights flew within 3km of Wheathamstead as shown on the last page (708 within 2km; 336 within 1km). There were large number of Match and Compton departures that did not fly close enough to Wheathamstead to reach the detection threshold, due to the aircraft noise level fall below the background noise level or threshold setting and an aircrafts lateral distance from the noise monitor.

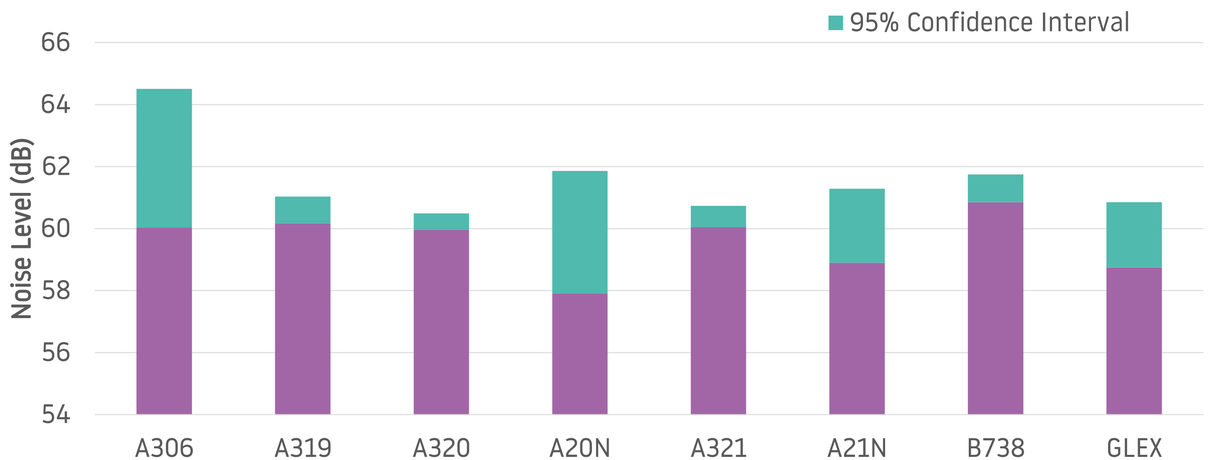
Unfortunately, there was an internal power outage to the noise monitor in the last 13 days of the planned monitoring period. This had caused a number of noise events not being captured during the outage. In addition, there were four days of unreliable recordings due to faulty data cable during the start of the monitoring period, these have been excluded from the analysis.

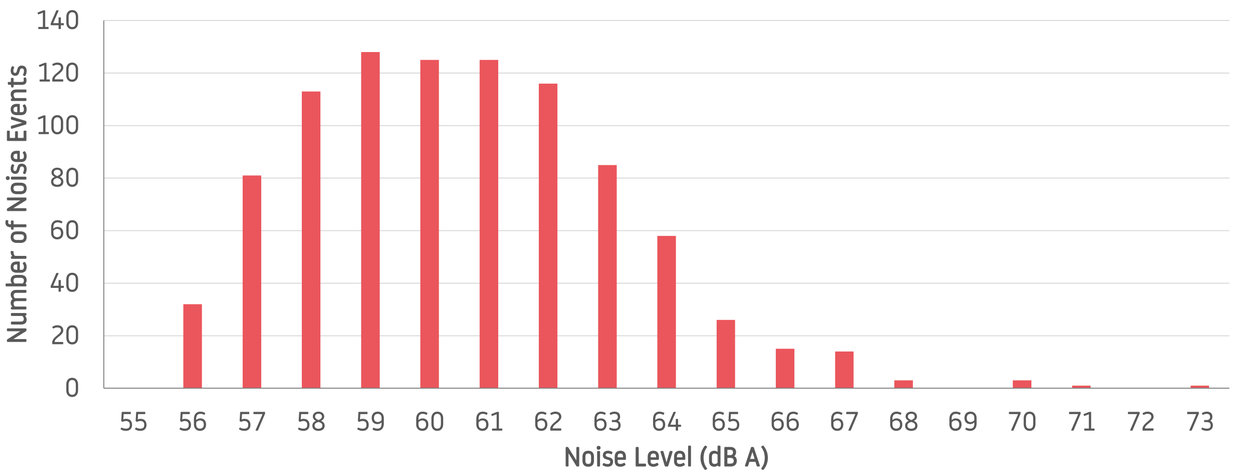
Noise Results During Monitoring Period

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

Aircraft Type	Number of movements	Average Noise (dB)
A306	10	62.3
A319	135	60.6
A320	1349	60.2
A20N (A320 Neo)	17	59.9
A321	164	60.4
A21N (A321 Neo)	10	60.1
B738	151	61.3
GLEX (Global Express)	14	59.8

The average noise in Wheathampstead is 60.5 dB, based on a sample size of 927. The table above shows the average noise level 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). The A306 cargo aircraft was the noisiest aircraft type at Wheathampstead during the monitoring period. The cargo operator has recently modified their Luton based aircrafts' engines, making them quieter and more fuel efficient. From the data we collected, the Airbus' newer generation aircraft type, NEOs, produced slightly less noise than the older CEO generation (A320 and A321) at Wheathamstead. As discussed on the previous page, this NMT collected only 927 noise events out of a total of 11,444 Match and Compton departures during the monitoring period. The noise events only accounts for 8% of the relevant flight operations. The rest of the flights were at a higher altitude and/or and therefore the aircraft noise may not be captured by the noise monitor.





*The noise results shown in this analysis are only for those aircraft types that recorded more than 10 events during the monitoring period.

Conclusion

- During the noise monitoring period, the airport runway usage split was 73% westerly and 27% easterly. Local residents at Wheathamstead may be affected by noise from some aircraft operating on the westerly Match and easterly Compton departure routes.

- There were 11,444 of westerly Match and easterly Compton departures during the noise monitoring period. Only 708 flights flew within 2km of the noise monitor in Wheathamstead and we collected 927 noise events correlated to track data. That suggests only a small number of flights flew directly over or near Wheathamstead.

- The average altitude of aircraft in the area is 6,013 feet above sea level, and as Wheathampstead is already 364 feet above sea level, aircraft will typically be 5,649 feet above ground level in this area. Above Wheathampstead, aircraft were typically above 6,000 feet during the monitoring period. That is accounted for 73% of all aircraft that flew within 3km of Wheathamstead. Aircraft on the westerly Match departure route tend to be at higher altitude when reaching near Wheathamstead.

- The main aircraft types operating at the airport are A320 & A321 which produced an average noise of 60.2dB and 60.4dB respectively. 2.9% of the noise events recorded were created by the newer generation aircraft, A320 NEO and A321 NEO, registering average noise events of 60.0 dB.

- 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

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 towards the west from the runway.

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 towards the east from the runway.

SID: Standard instrument departure, is the published route that an aircraft must follow on departure.

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

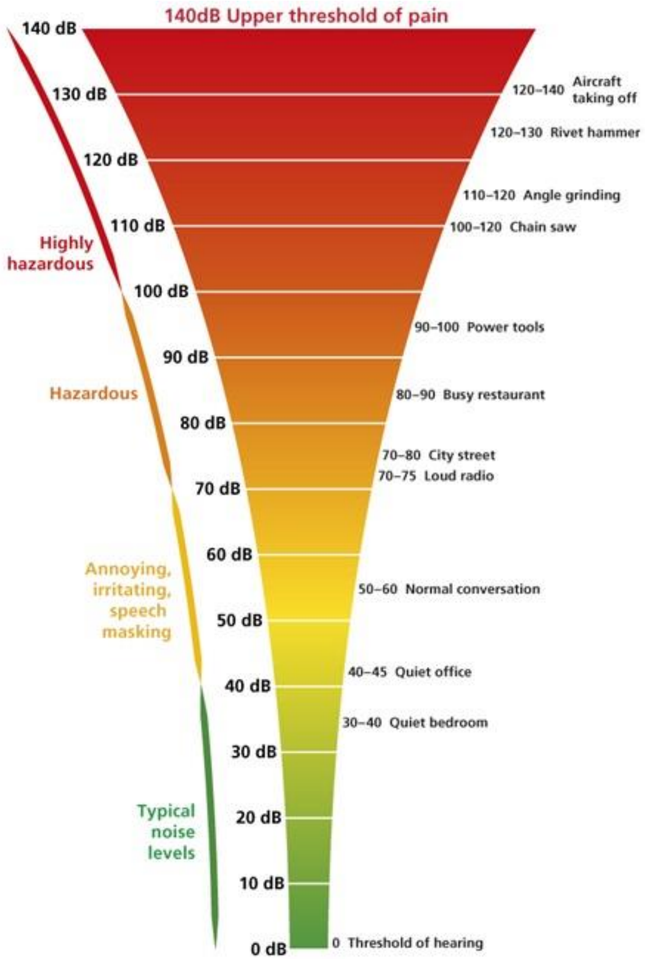
Gate Analysis: A 1km - 3km gate which is drawn across an area and will gather information about every aircraft passing through the gate area.

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