

Community Noise Report

St Albans (Jersey Farm)

Jul – Oct 2019



Introduction

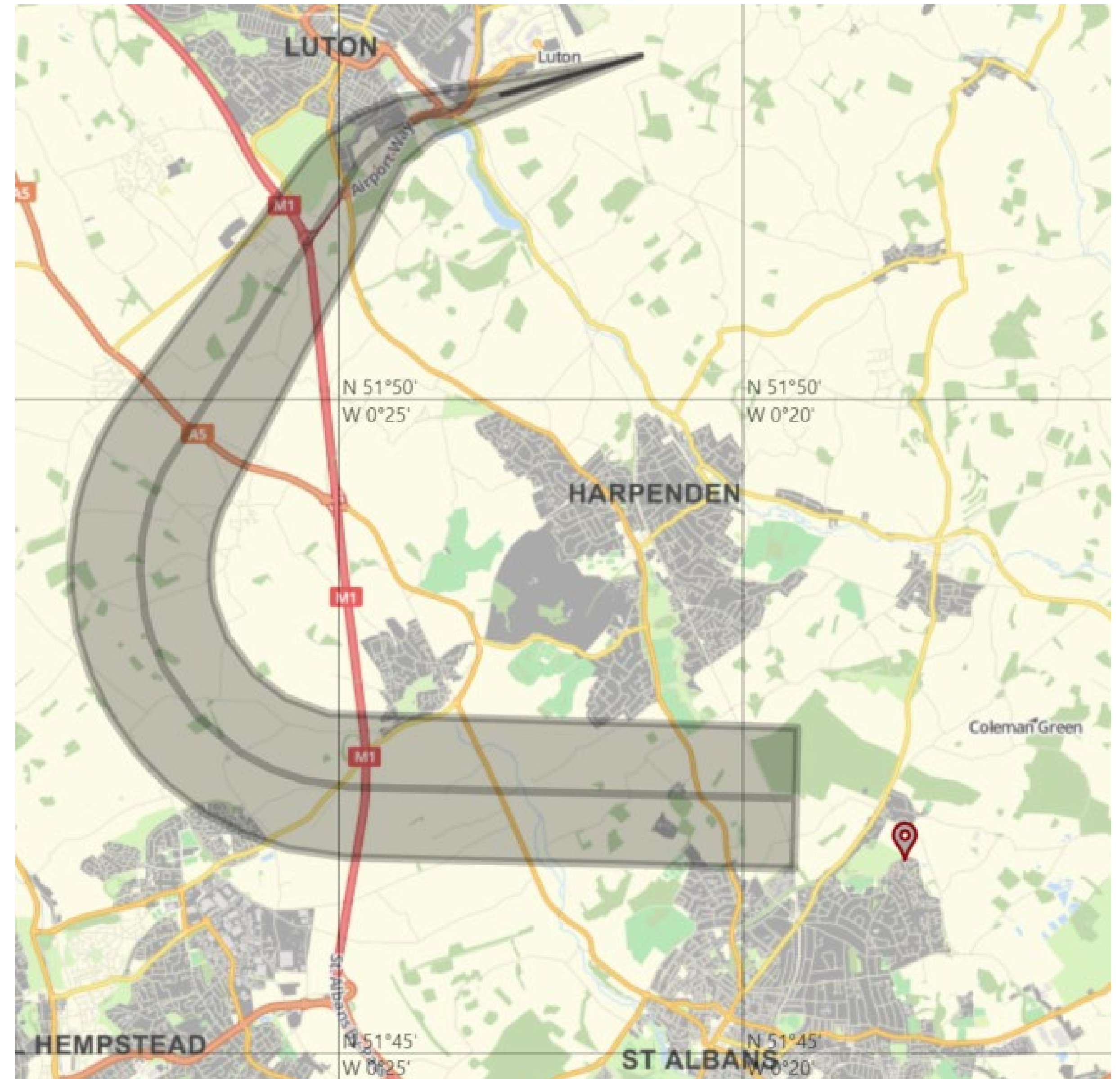
As part of the ongoing noise monitoring programme, London Luton Airport (LLA) deployed a portable noise monitoring terminal in St Albans.

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

The noise monitor was located in St Albans between 2nd July and 18th October 2019.

The monitor's location was at approximately 880m south of the westerly Match route's extended centreline, at an altitude of 302 feet above sea level. The red pinpoint on the map shows the location of the noise monitor.

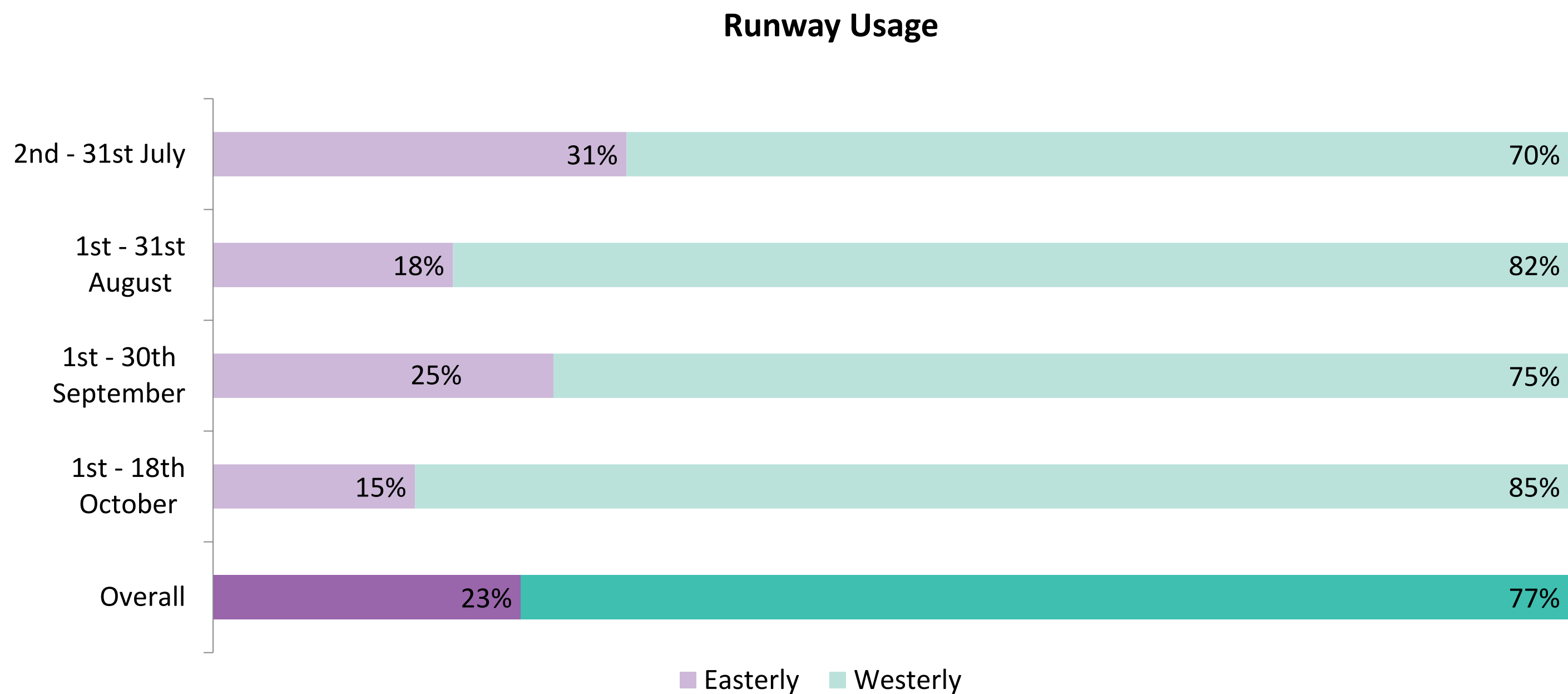
The aircrafts' noise and tracks were recorded and extracted from LLA's noise and track-keeping system. This document evaluates the lateral and vertical positioning of aircraft near the monitor as well as the noise recorded at ground level.



LLA Operations During the Monitoring

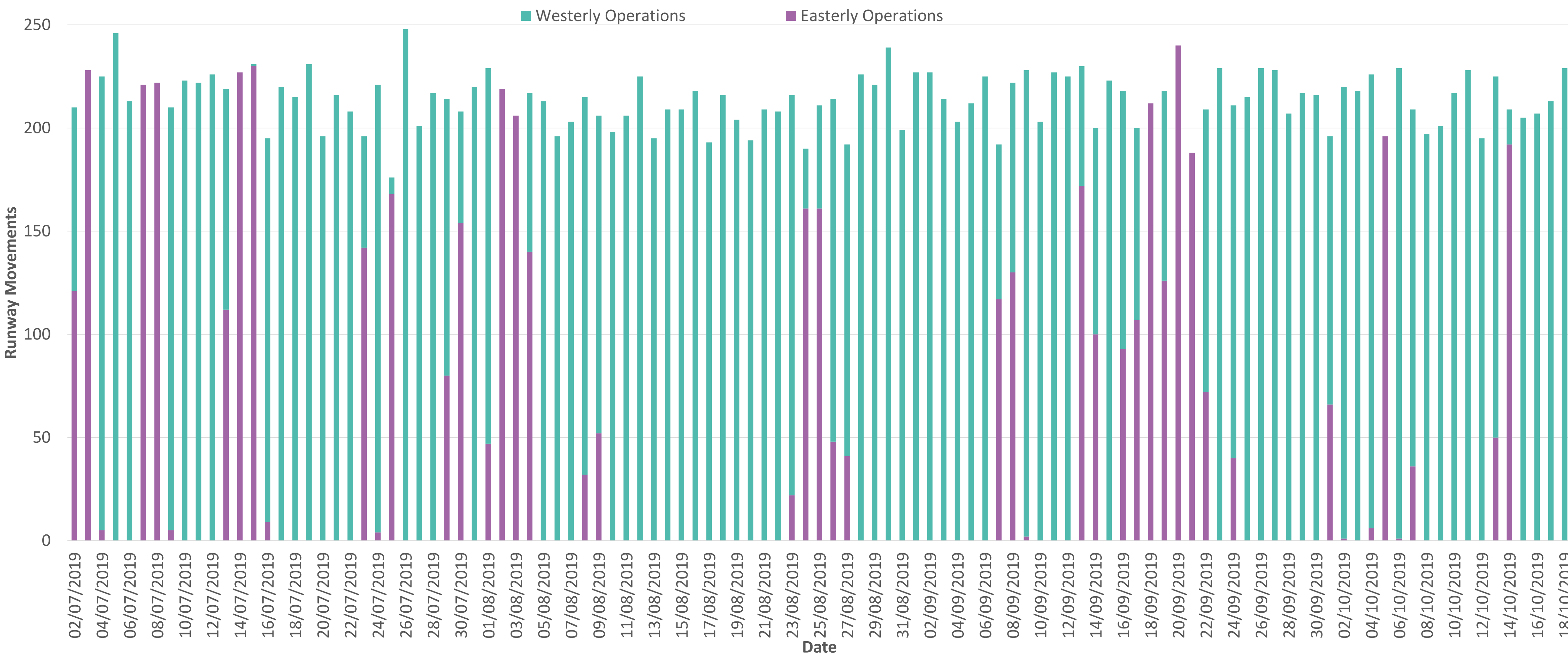
At the airport we have two directions of operation, depending on the wind direction, as aircraft are required to take off and land into the wind for safety reasons. These are known as easterly operations and westerly operations and can change the aircraft tracks nearby specific areas. The split in operating 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 23% easterly and 77% westerly. The five year average for this time of the year is 26% easterly vs 74% westerly. A total of 9,486 aircraft departed westerly Match SID whilst the monitor was located in St Albans. The chart below shows the runway usage split for each month during the noise monitoring period.



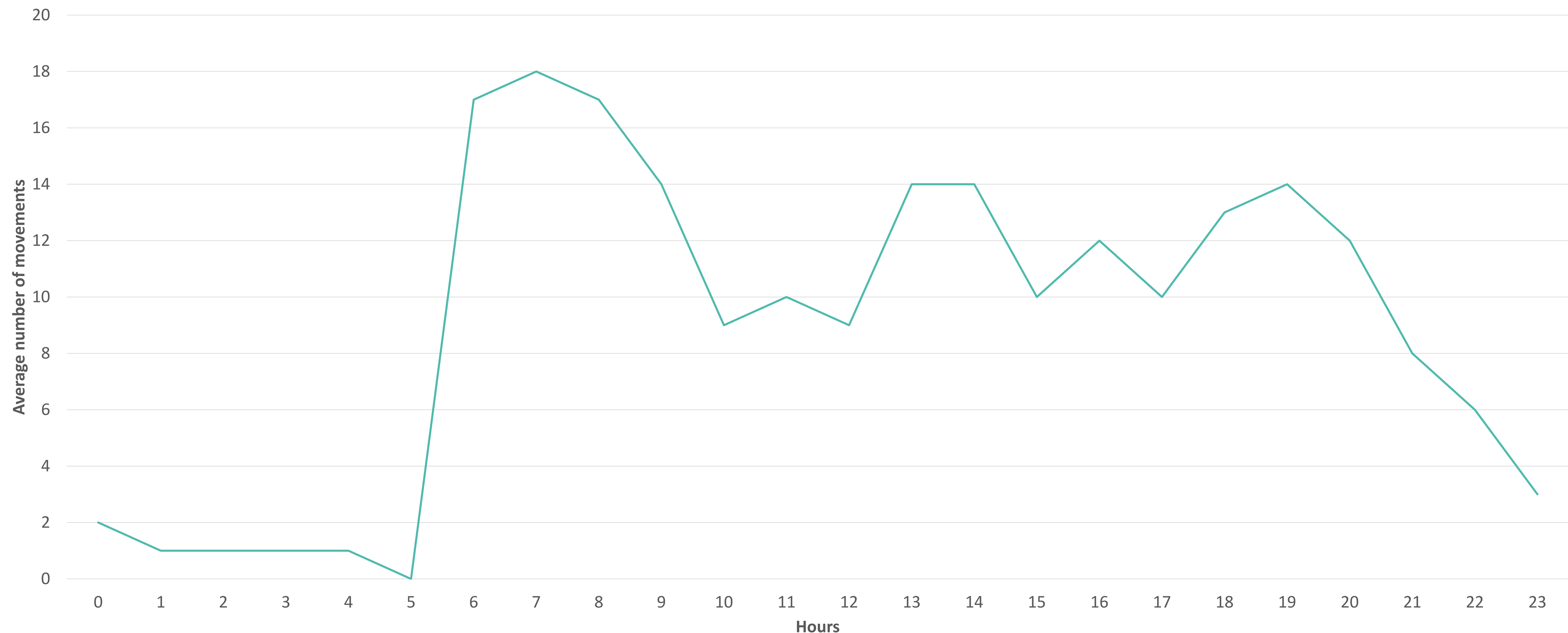
Daily Movements During Monitoring Period

The bar chart below shows the number of daily departures at London Luton Airport. Due to the location of St Albans and the noise monitor terminal, flights that departed on westerly Match route would have flown passed near the monitor. The flight tracks will be displayed on page 6. There were 10 full days of easterly operations so therefore there was no flight passed near the monitor on those days.



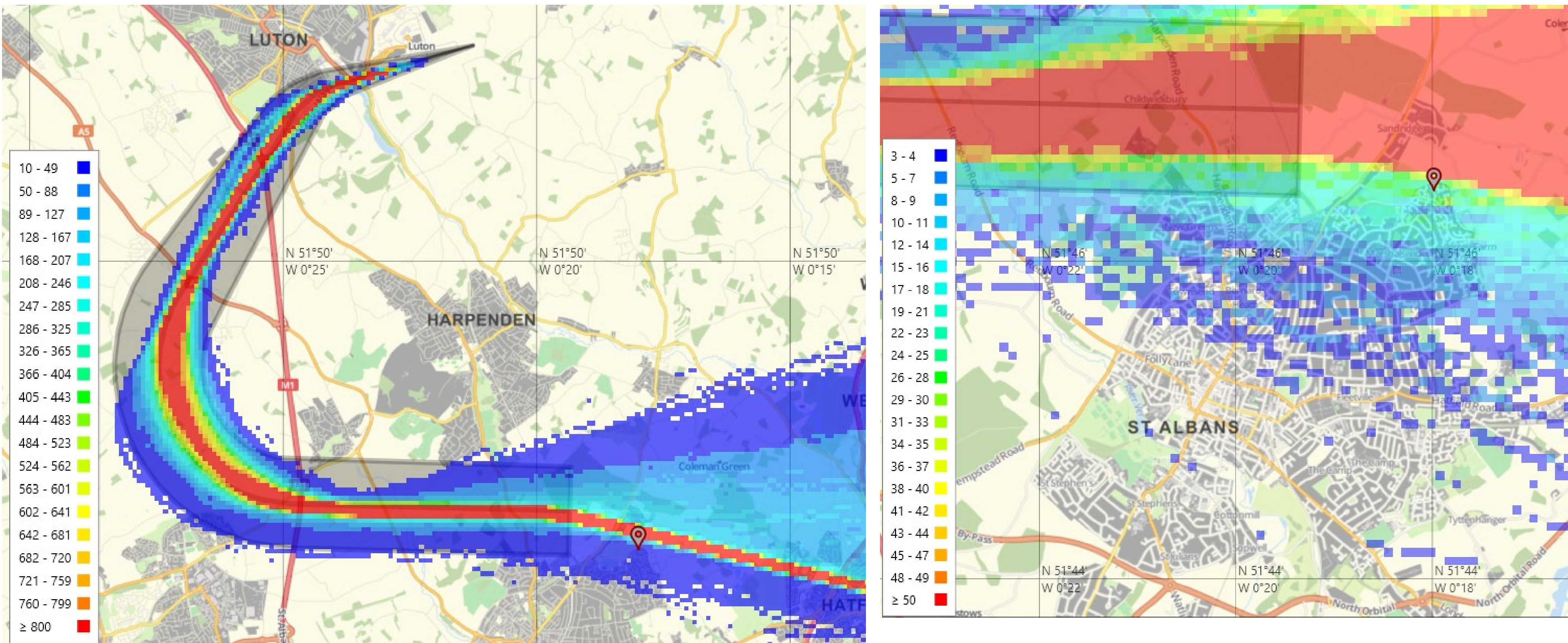
Operations during the monitoring period

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 7 departures for the previous year. Please note, this is all departures, approx. 50% use the Match route nearby St Albans.



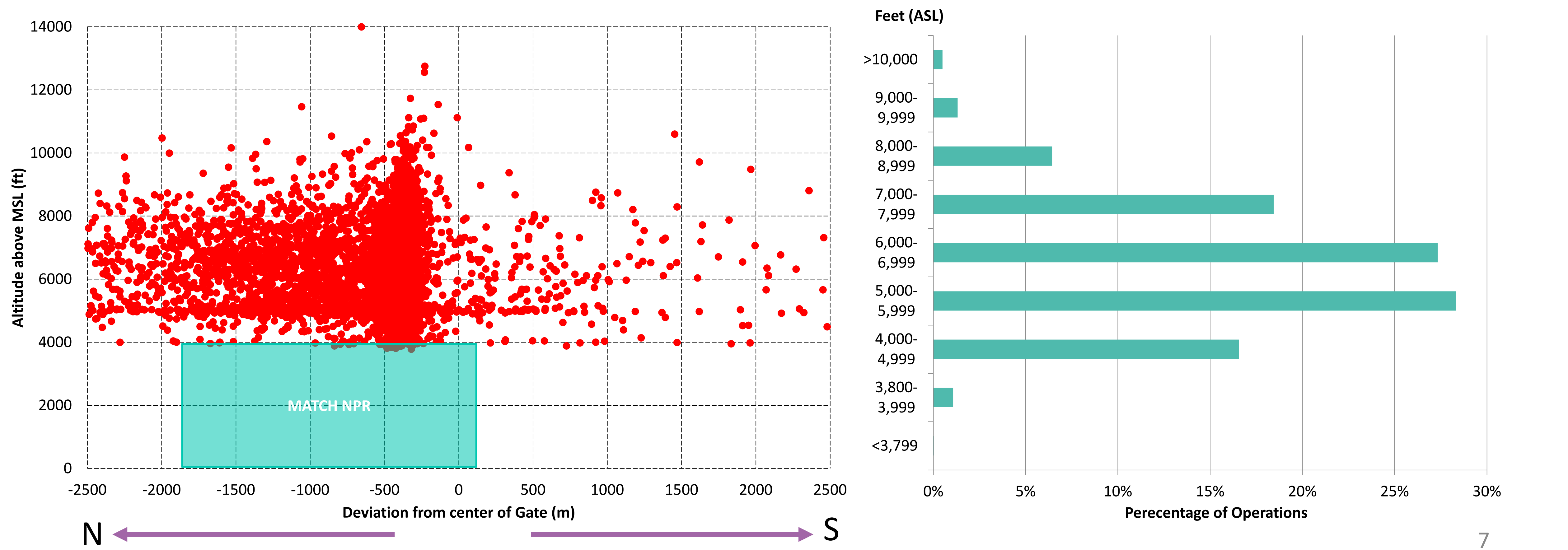
Aircraft Tracks During the Monitoring Period

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 880m south of the westerly Match route's extended centreline, at an altitude of 302 feet above sea level. The Match route was designed to avoid overflying population at St Albans and Harpenden at below 4,000 feet. Some flight may still overfly part of north St Albans once the aircraft has reached above the release altitude at 4,000 feet.



Altitude Analysis During Monitoring Period

The altitude analysis shows the vertical and lateral dispersion of aircraft 2.5km 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 route (NPR) is displayed by the shaded area. All aircraft were above 4,000ft when instructed by Air Traffic Control to leave the NPR. Therefore, local residents of St Albans may see small number of aircraft directly overflying St Albans above 4,000 feet. At the location of the noise monitor, the average altitude of aircraft was 6,213 feet ASL (5,911 feet above ground level). The bar chart shows that 99% of flights were above 4,000 feet above sea level (ASL) and 26% 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 St Albans, the noise monitoring terminal collected readings from 6,107 aircraft. There were total of 9,486 of westerly Match departures. Of those departures, 9,056 flights flew within 2.5km of St Albans as shown on the last page (8,881 within 2km; 7,908 within 1km).

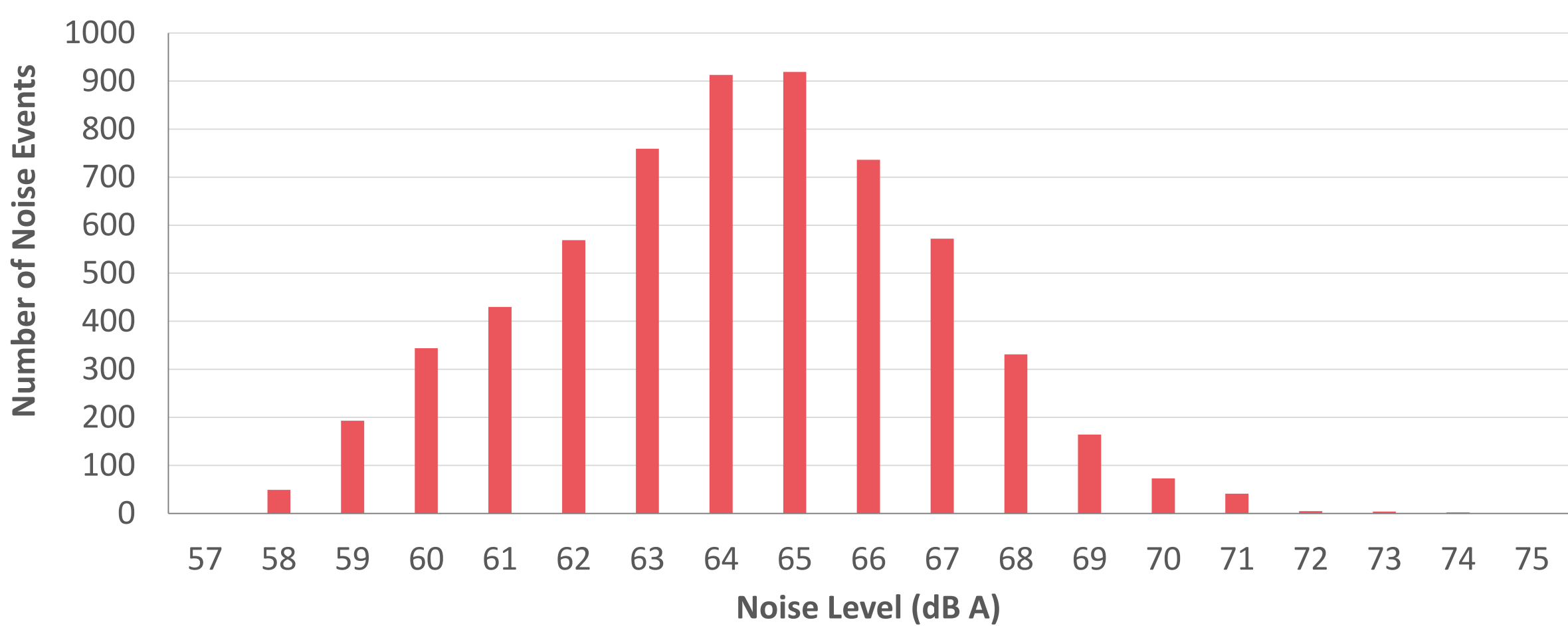
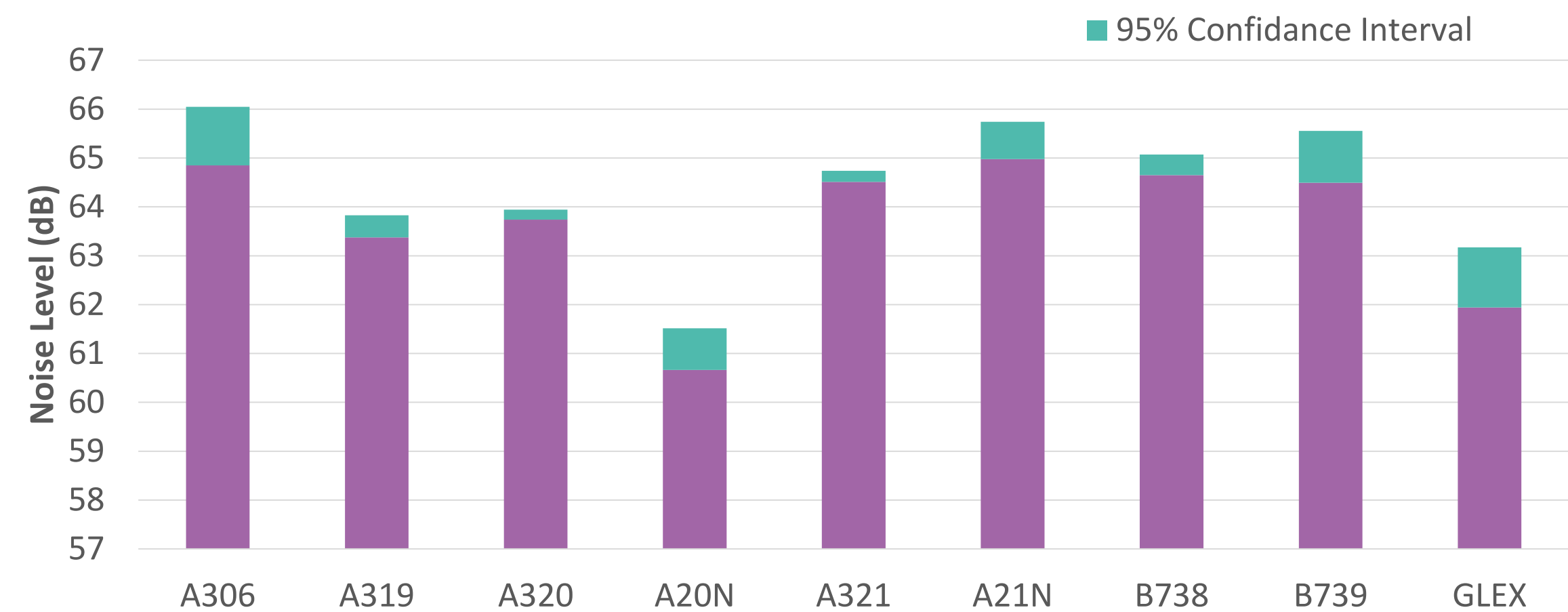
Unfortunately, there was an internal power outage at the noise monitor for total of 117 hours over the monitoring period. This had caused a number of noise events not being captured during the outage.

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	82	65.5
A319	469	63.6
A320	2,406	63.8
A20N (A320 Neo)	83	61.1
A321	1,786	64.6
A21N (A321 Neo)	172	65.4
B738	561	64.9
B739	72	65.0
GLEX (Global Express)	61	62.6

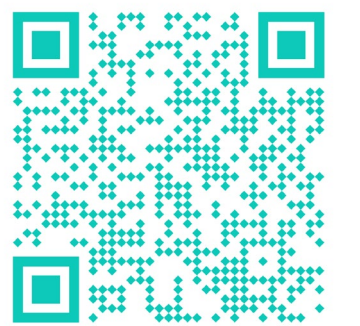
The average noise in St Albans is 64.2 dB, based on a sample size of 6,107. The table above shows the average noise level for each aircraft type and the green bar on the chart shows the uncertainty caused by the spread in readings and the sample size (95% confidence interval). The A306 cargo aircraft was the loudest aircraft type at St Albans 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, A320 NEO, produced significant less noise than the older A320 CEO at St Albans. However, the A321 NEO aircraft had a wider spread of readings as the green bar has shown on the chart. Some were quieter and some were nosier than the A321 CEO. LLA will continue to investigate this matter with the operators and other airports.



*The noise results shown in this analysis are only for those aircraft types that recorded more than 60 events during the monitoring period.

Conclusion

- During the noise monitoring period, the airport runway usage split was 77% westerly and 23% easterly. Local residents at St Albans may be affected by noise from some aircraft operating on the westerly Match departure route.
- There were 9,486 westerly Match departures during the noise monitoring period. 9,057 flights flew within 2.5km either side of the noise monitor and we collected 6,107 noise events correlated to track data.
- The average altitude of aircraft in the area is 6,213 feet above sea level, and as St Albans is already 302 feet above sea level, aircraft will typically be 5,911 feet above ground level in this area. Above St Albans, aircraft were typically above 4,000 feet during the monitoring period. That is accounted for 99% of all aircraft that flew within 2.5km on either side of the noise monitor. Aircraft on the westerly Aircraft that departed on the Match departure route tend to be at high altitude when reaching near St Albans. 27% of the flights were at above 7,000 feet.
- The main aircraft types operating at the airport are A320 & A321 which produced an average noise of 63.8dB and 64.6dB respectively. 4.2% of the noise events recorded were created by the newer generation aircraft, A320 NEO and A321 NEO, registering average noise events of 64.0 dB. The initial noise data suggests that the A321 NEO had a wider spread of readings, with higher average noise level than the A321 CEO. LLA will continue to investigate this matter with the operators and other airports.
- 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 St Albans.

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.

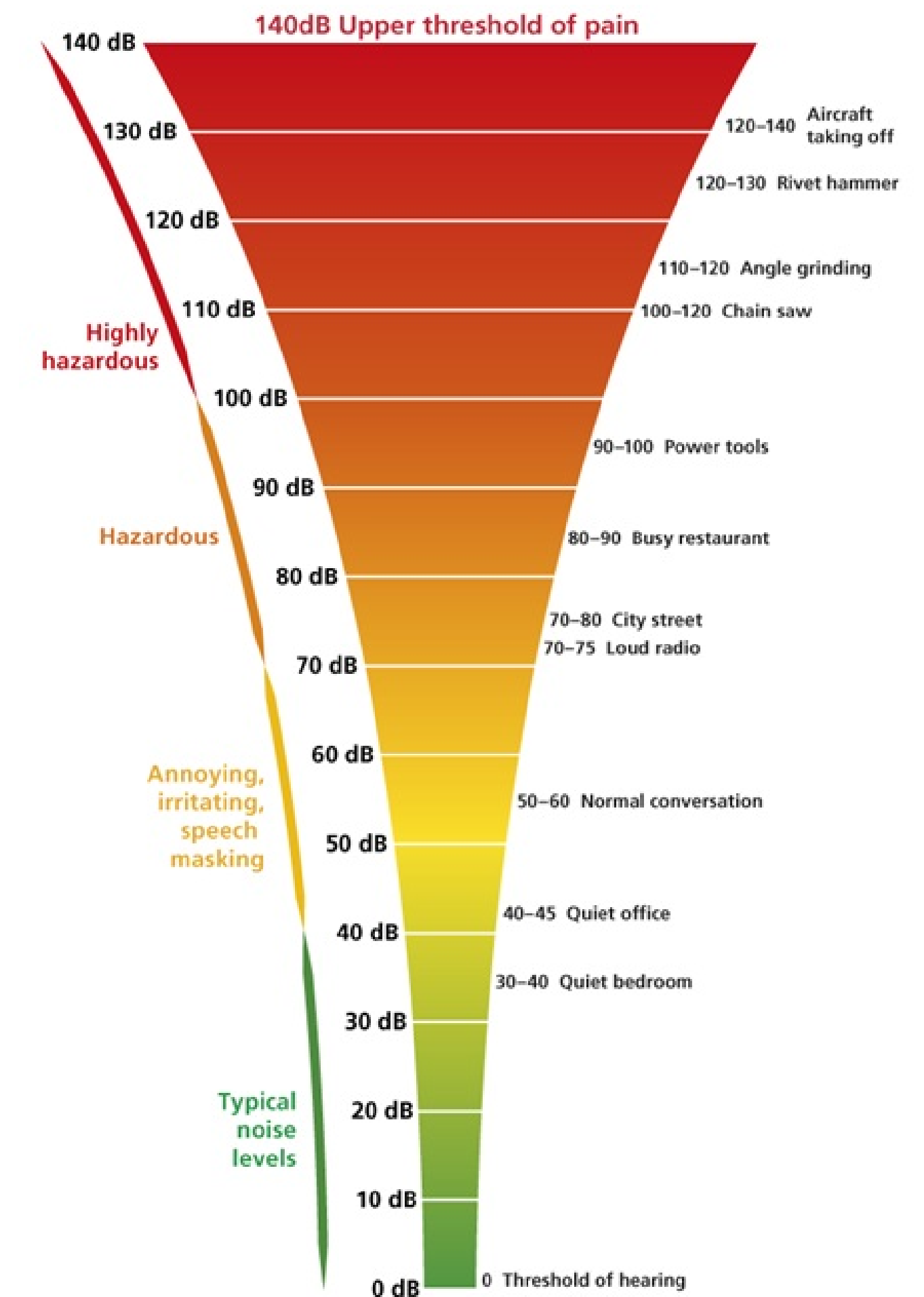
Gate Analysis: A 1km - 3km gate which is drawn across an area and will gather information about every aircraft passing through the gate area.

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

