Community Noise Report

Wilstone

February – March 2020

London
Luton
Airport

Introduction

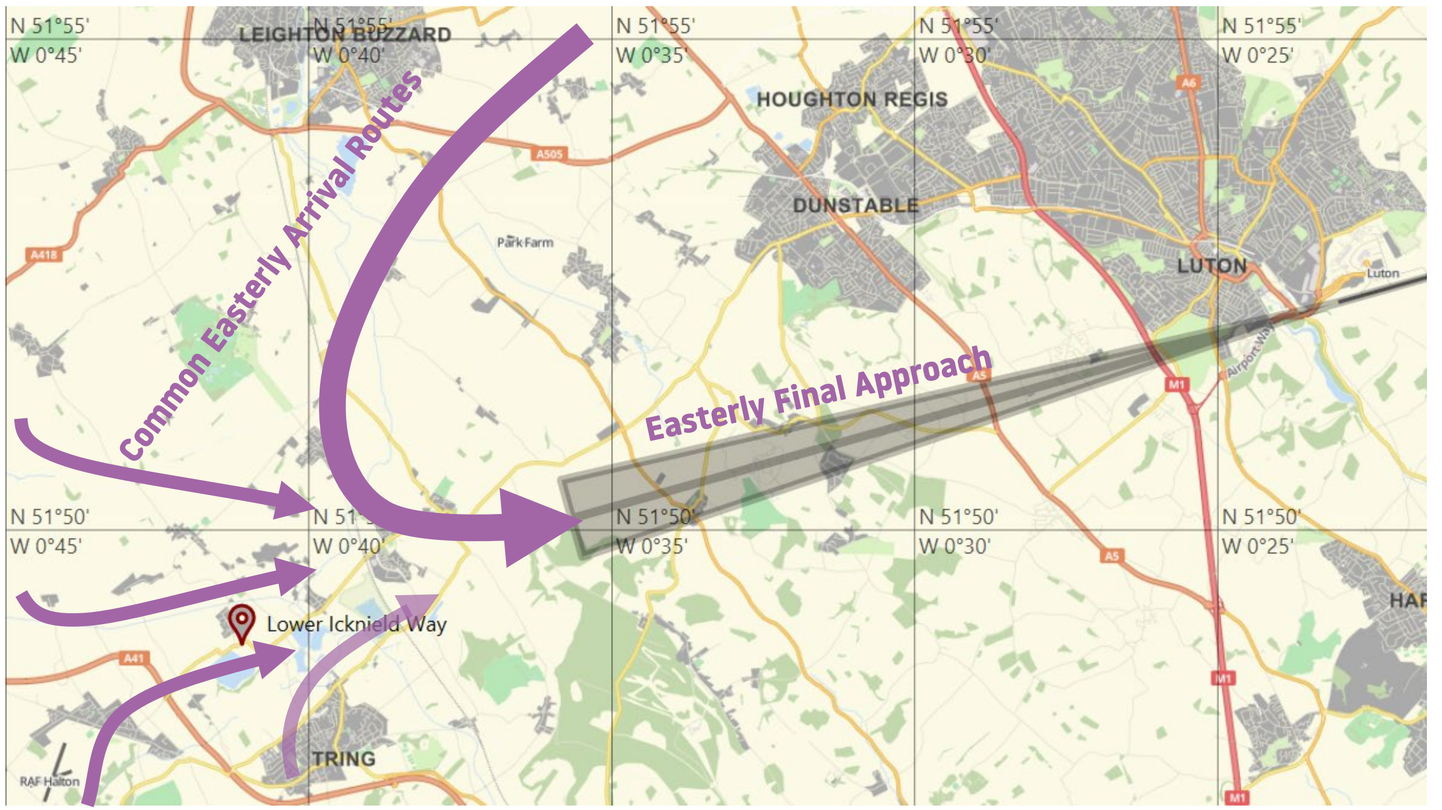
As part of the ongoing noise monitoring programme, London Luton Airport deployed a portable noise monitoring terminal in Wilstone.

The purpose of the monitoring programme is to understand the typical noise levels created in the local community. For Wilstone, it specifically related to the easterly arrivals. The easterly arrival route is shown on the map.

The noise monitor was located at a property on Lower Icknield Way near Wilstone, close to the easterly arrival extended centerline (approx. 750m), at an altitude of approximately 322 feet above sea level. The red pinpoint on the map shows the location of the noise monitor.

The noise monitor in Wilstone was in place between 1st February and 5th October 2020.

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.

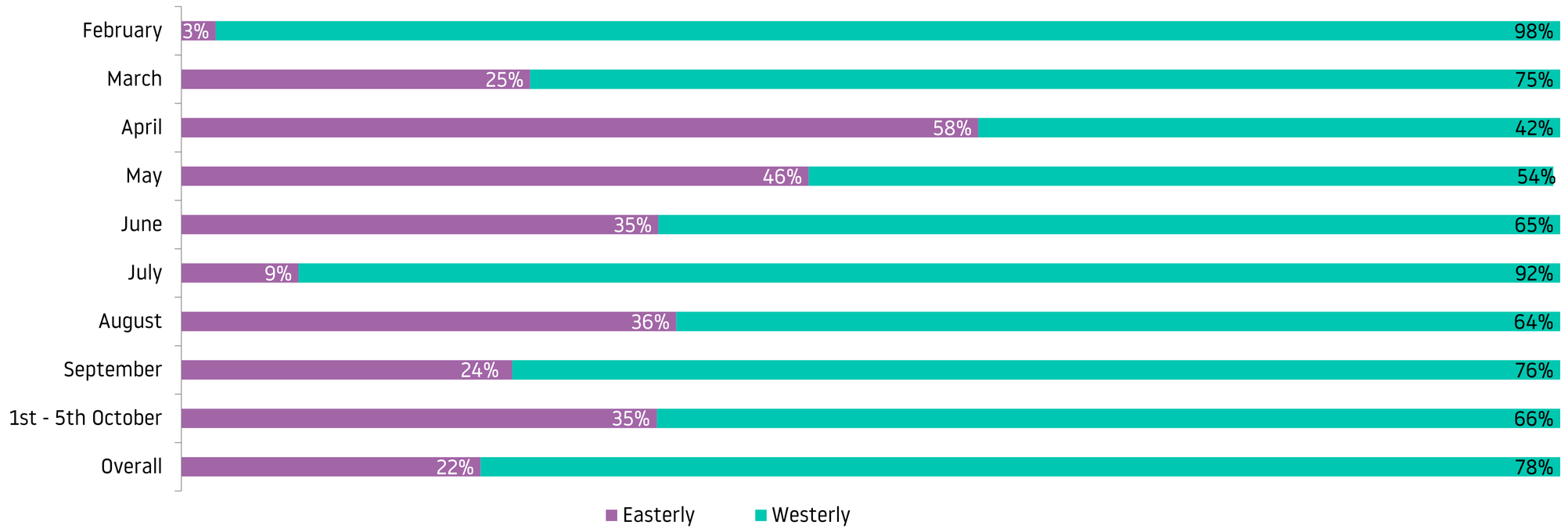


LLA Operations During the Monitoring

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.

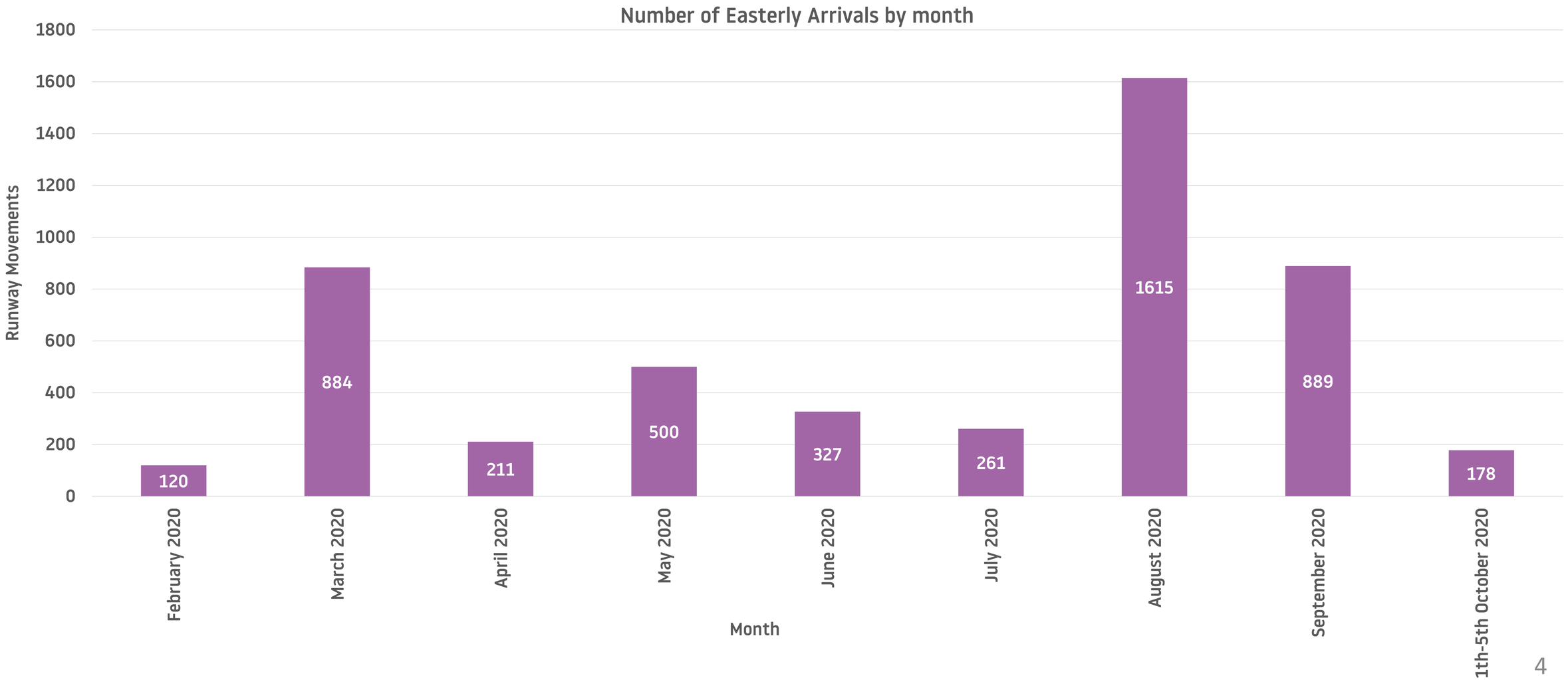
During the monitoring period, the direction of operation was 22% easterly and 78% westerly. The 5 year average for this time of year is 31% easterly vs 69% westerly.

There were 4,985 aircraft which arrived during easterly operations whilst the noise monitor was located in Wilstone.



Daily Movements During Monitoring Period

22% of total movements operated in the easterly direction during the monitoring period. The chart on this page shows the number of monthly easterly arrivals at LLA. Due to the location of Wilstone, not all easterly arrivals would have flown near the monitor. Compared to previous years, the number of arrivals is significantly lower due to the impacts of the COVID pandemic.



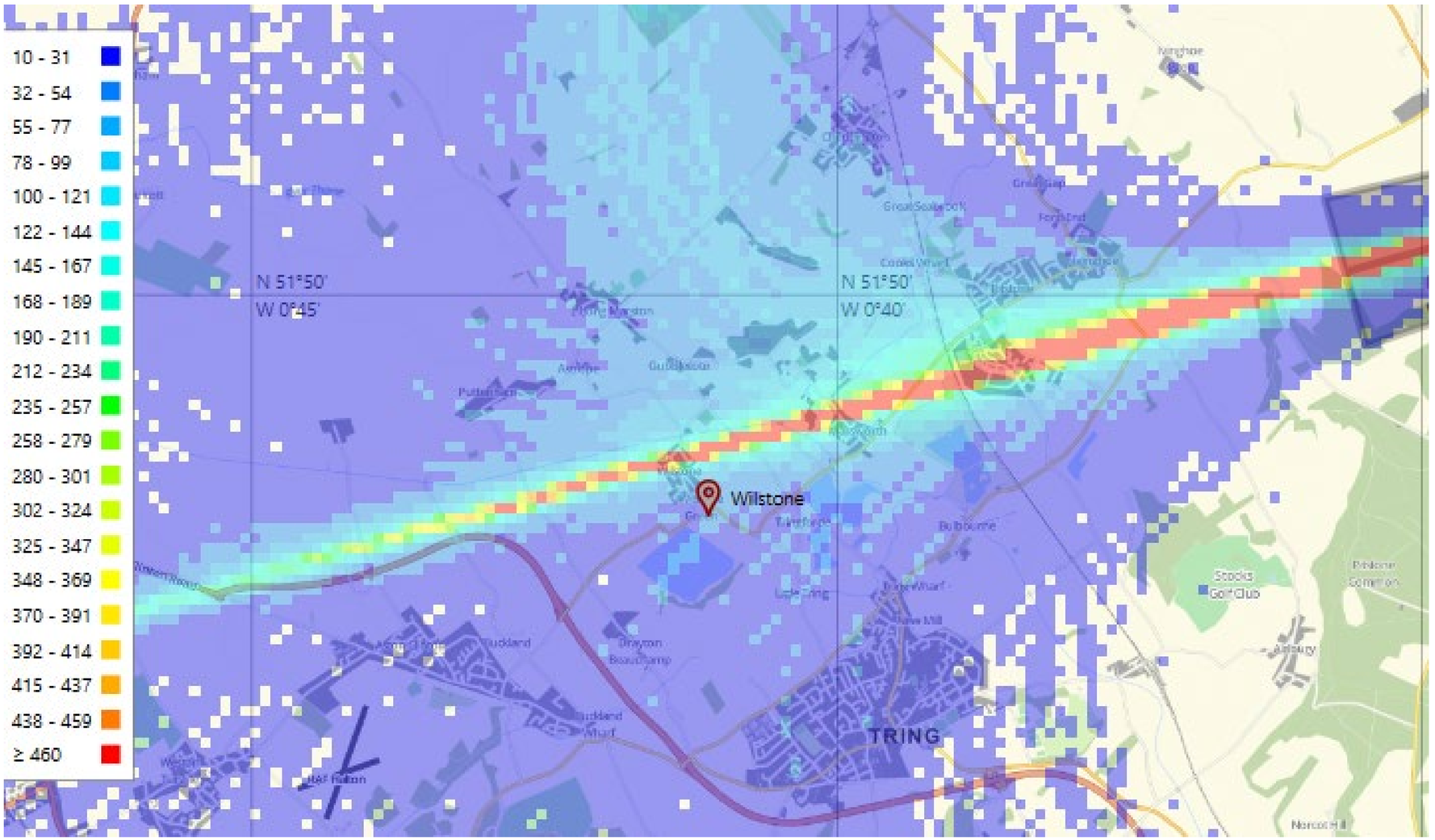
Operations During the Monitoring Period

The graph below represents the average number of arrivals during the monitoring period. Depending on the operating direction on the day, residents in Wilstone may experience different flight patterns. During the peak periods on a day of easterly operation, local residents of Wilstone may notice more frequent aircraft movements. In general, the morning peak is between at 0700 and 0800. The second peak is generally at 1200, with a further peak between 2000 and 2200.

During the night (between 23:00 – 06:00) in the monitoring period, there were an average of 11 departures, significantly less than last year's trend, due to the impacts of the COVID pandemic.

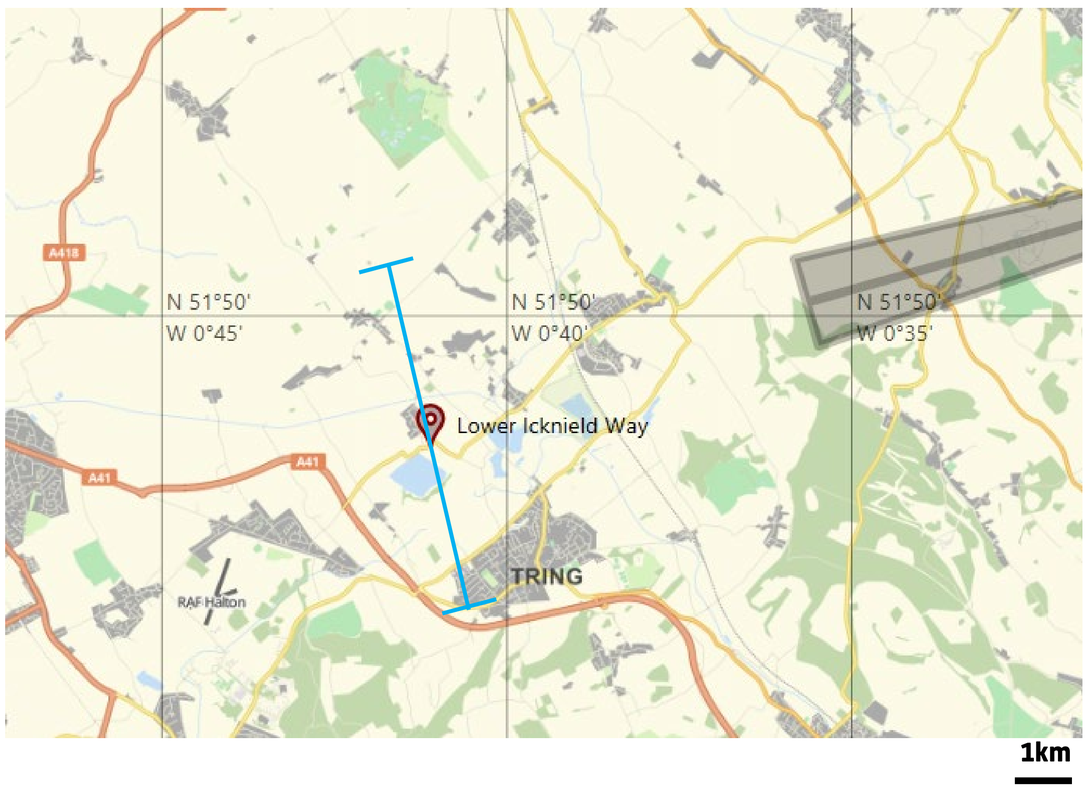
Aircraft Tracks During the Monitoring Period

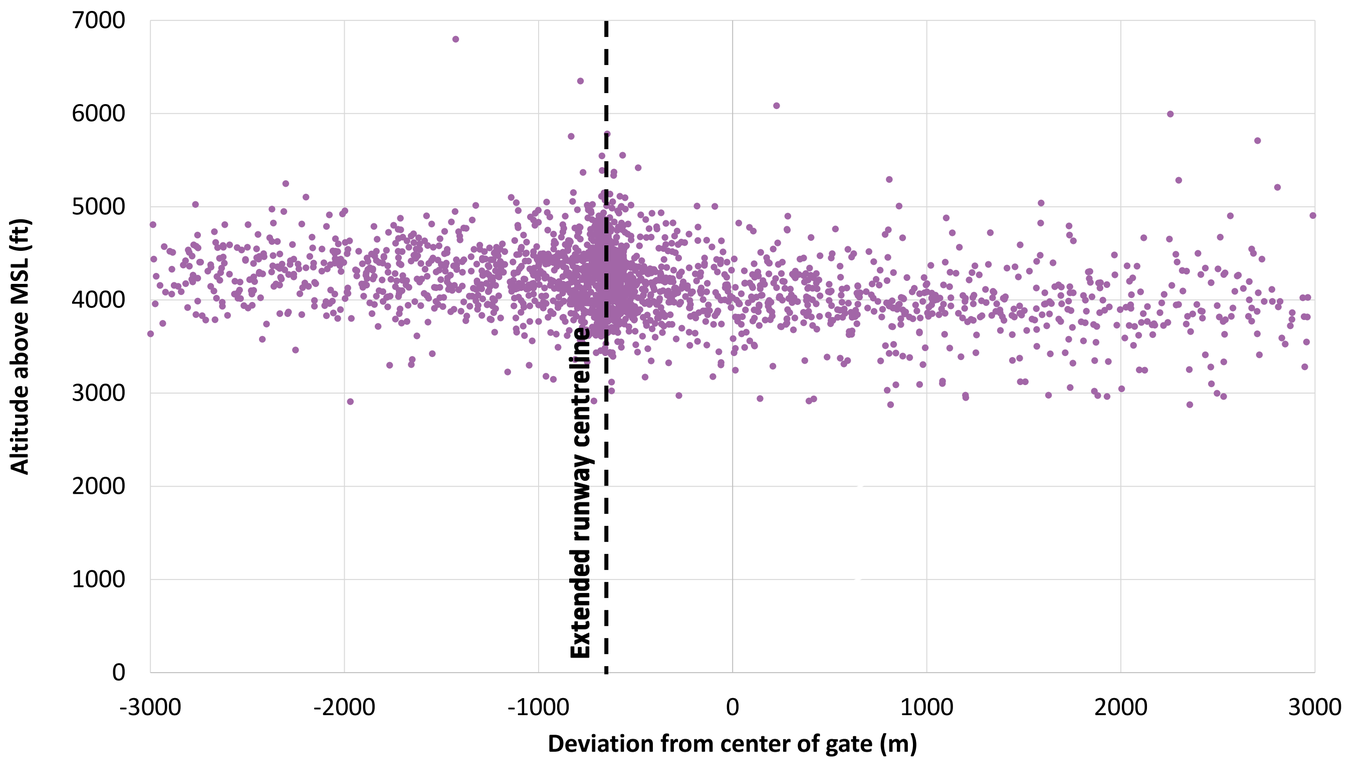
The heat maps below show the representative flight tracks that passed near the noise monitor terminals during the monitoring period. The red pinpoint indicates the location of the noise monitor in Wilstone.



Altitude Analysis During Monitoring Period

The altitude analysis for Wilstone shows the vertical and lateral dispersion of aircraft 3km either side of the noise monitor. The map below shows the 6km gate which is drawn perpendicular to the extended runway centreline from north west to south east and will gather 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. Arriving aircraft are vectored by air traffic controllers to line up with the runway before its final approach. Due to the close proximity of Wilstone to the arrival route vectoring area, local residents may see aircraft flying near Wilstone at an altitude of above 3,000ft.

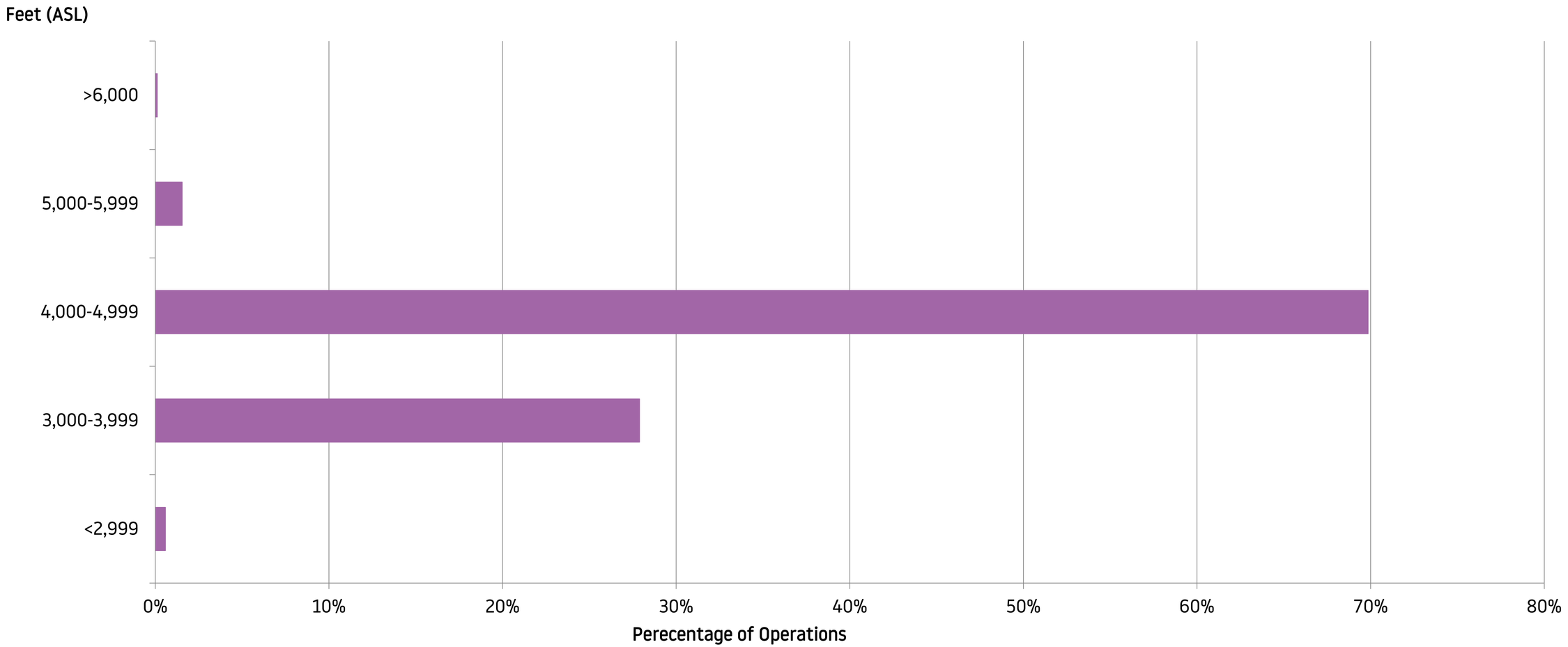




NW ← → SE

Altitude Analysis During Monitoring Period

The bar chart shows the altitude spread when aircraft reach the noise monitor in Wilstone. For easterly arrivals, the average altitude of aircraft in this area was 4,200 feet above sea level (ASL) (3,878 feet above ground level [AGL]). It shows the majority of the flights above 3,000 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.

During the monitoring period in Wilstone, the noise monitoring terminal collected readings from 829 easterly arriving aircraft. During the period, there were total of 4,985 easterly 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.

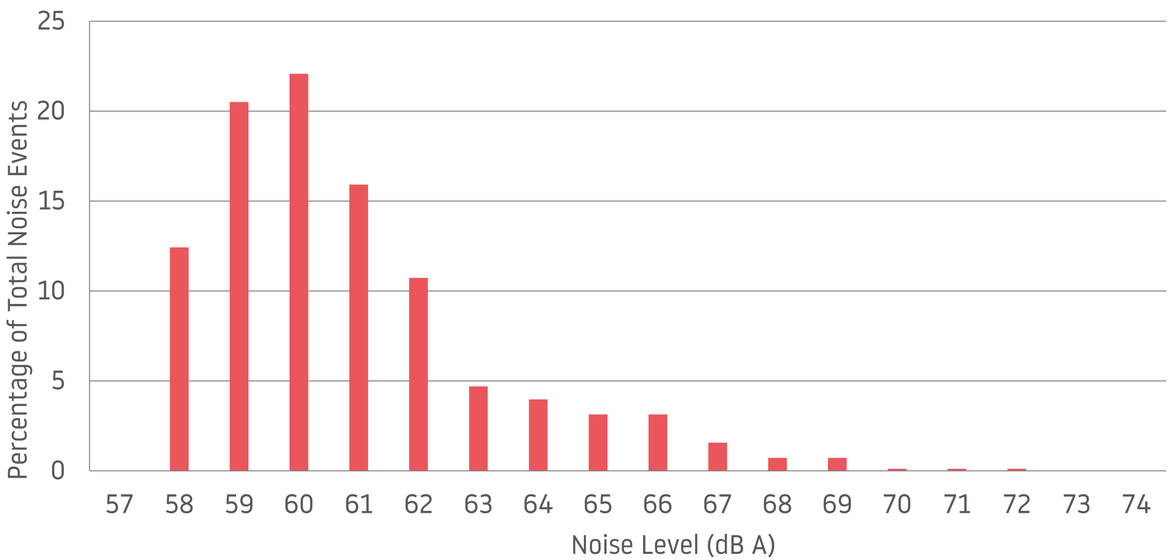
The weather also plays a big part in the data recorded and in periods of extreme weather (i.e very strong winds) the equipment can record noise incorrectly so we exclude samples from the analysis during these weather conditions. When analysing the samples, the first thing we do is to ensure that there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

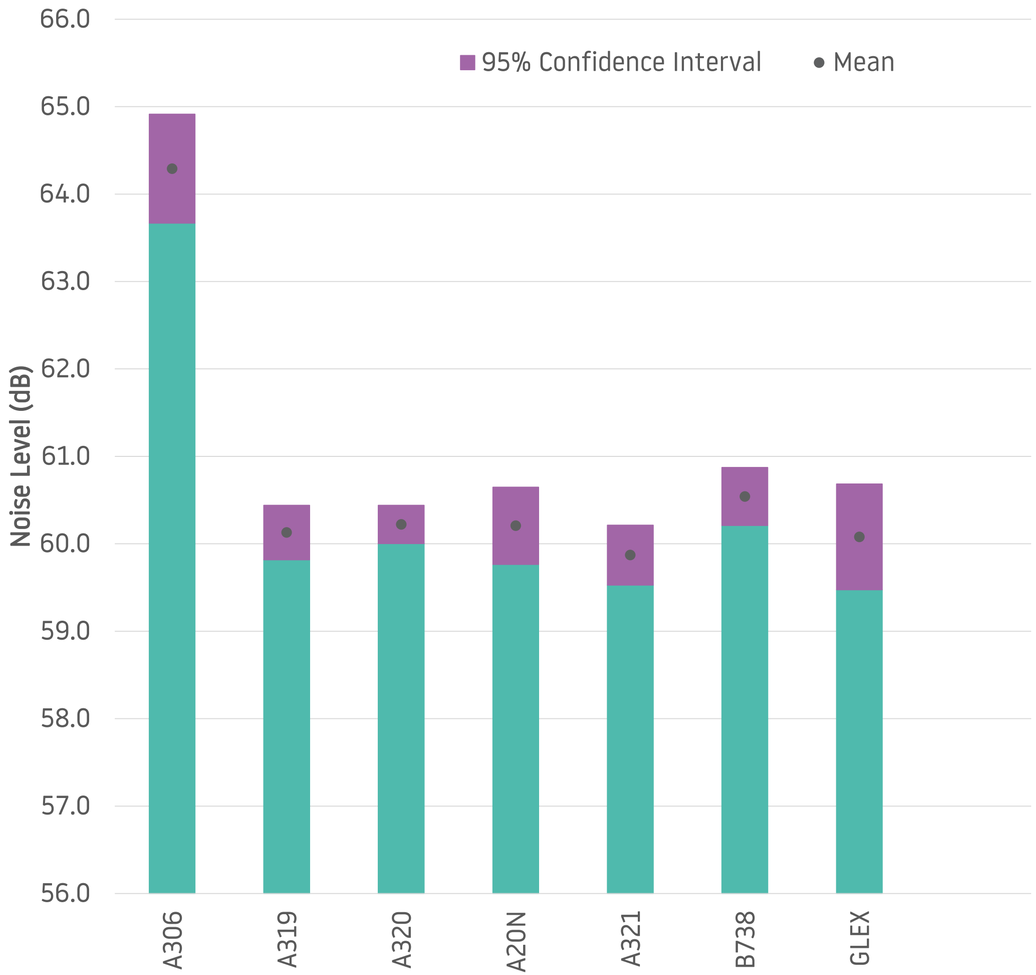
The purpose of the monitoring programme is to understand the typical noise levels created in the local community. For Wilstone, it specifically related to easterly arrivals.

Westerly 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 easterly arriving aircraft noise are shown on this page.

Aircraft Type	Number of movements	Average Noise (dB)
A306	80	64.3
A319	82	60.1
A320 CEO	229	60.2
A20N (A320 NEO)	83	60.2
A321 CEO	85	59.9
B738	119	60.5
GLEX	29	60.1





- The average aircraft noise in Wilstone is 60.8dB, based on a sample size of 829.
- The table shows the average noise for each aircraft type and the purple bar on the chart shows the uncertainty caused by the spread in readings and the sample size (95% confidence interval).
- From the results, LLA's most popular aircraft Airbus A320 CEO and B738 have an average noise of 60.2 dB and 60.5dB respectively in Wilstone.
- The A306 was the noisiest aircraft type at Wilstone during the monitoring period.
- The majority of the easterly arriving aircraft were not captured by the noise monitor due to the higher altitude of aircraft at this location and distance from the noise monitor. Many of the events were below the detection threshold of the microphone and ambient background noise. Therefore, the true average value of noise may not be reflected in this study.

Conclusion

- For Wilstone, it specifically related to easterly arrivals. During the monitoring period, the airport was using easterly operations for 22% of the time, this is less than the five year average of this time period.

- The average altitude of easterly arriving aircraft in Wilstone is 4,200 feet above sea level (ASL), and as Wilstone is already approximately 322 feet ASL, aircraft will typically be 3,878 feet above ground level (AGL) in this area.

- Almost all aircraft shown in the altitude analysis flew above 3,000 feet ASL.

- Only 17% of easterly arrivals noise samples were recorded at Wilstone due to the higher altitude of aircraft and its noise was below the detection threshold of the microphone and ambient background noise.

- During the monitoring period, the main aircraft type operating at London Luton Airport is the Airbus A320 CEO and B738, which produced an average noise of 60.2dB and 60.5dB respectively in Wilstone. 11% of the noise events recorded in Wilstone were created by the newer generation aircraft, A320 NEO registering an average departing noise of 60.2dB.

- In Q1-Q3 2020, 116 aircraft (both westerly and easterly departures) were investigated as part of the Noise and Track violation scheme. 9 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 face to the east when taking off and landing.

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.

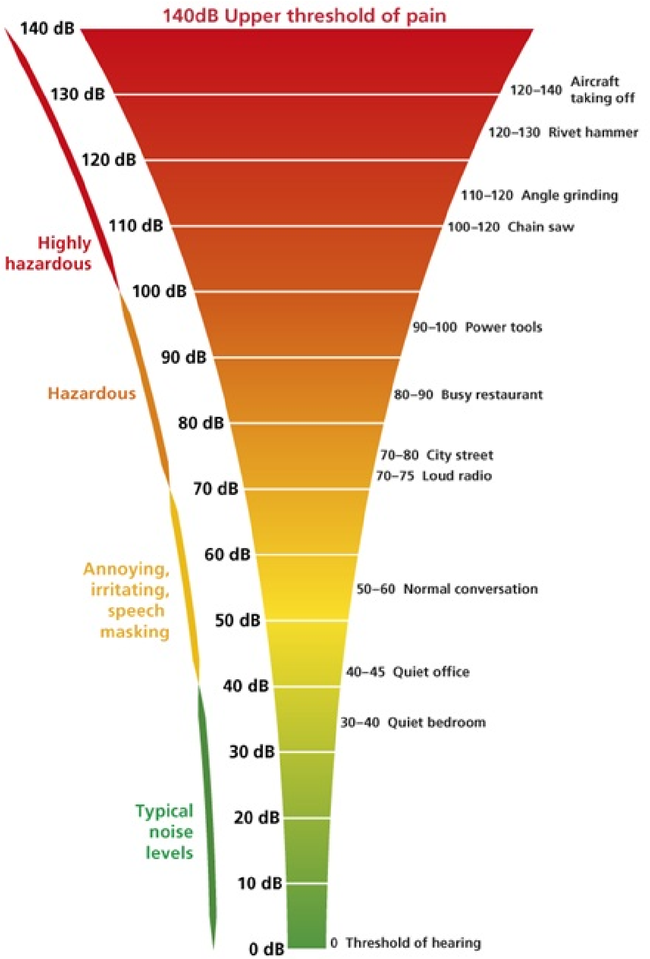
Gate Analysis: A gate which is drawn across an area and will gather information about every aircraft passing through the gate area.

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