

Community Noise Report

Redbourn

February – March 2020



London
Luton
Airport



Introduction

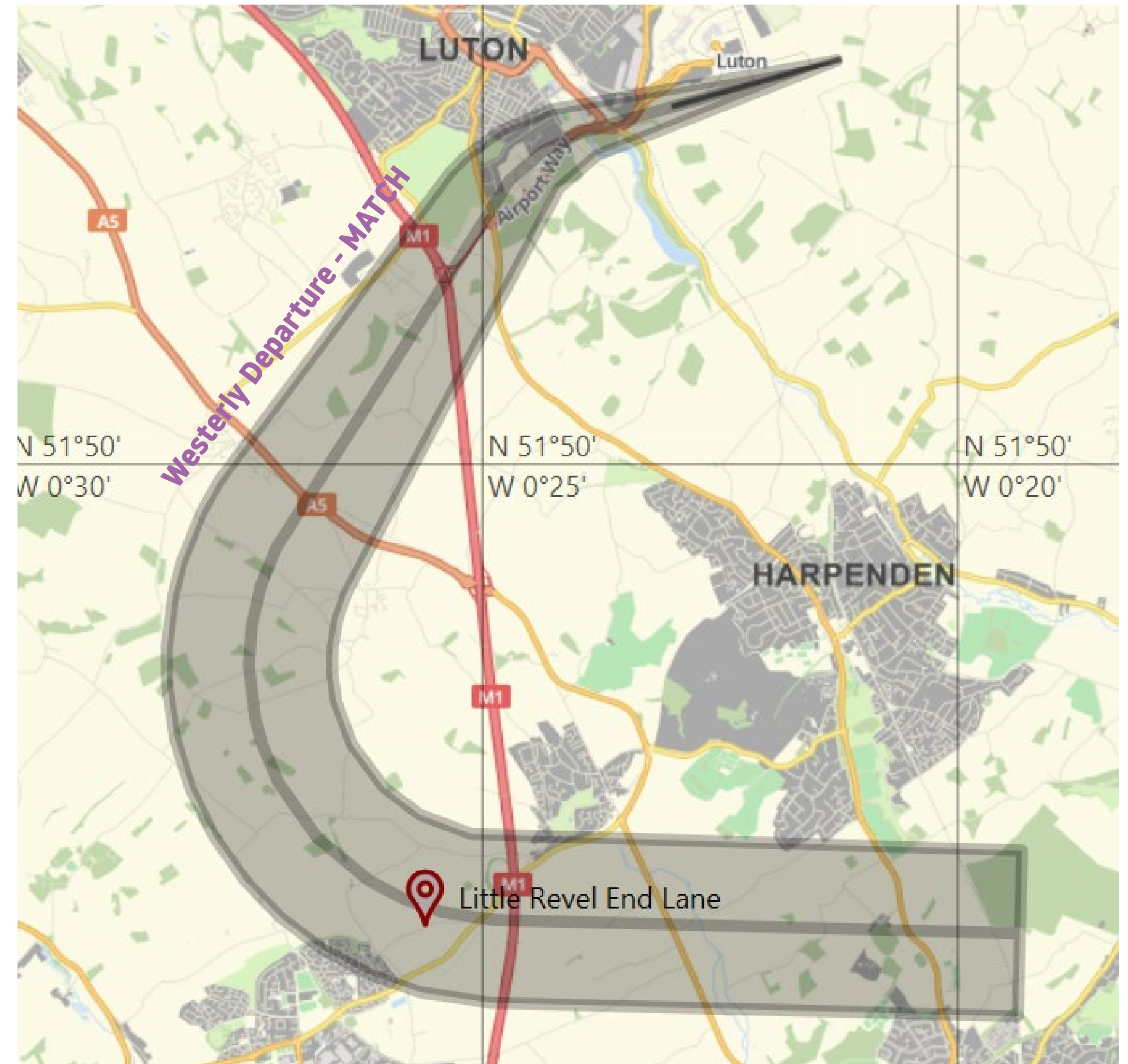
As part of the ongoing noise monitoring programme, London Luton Airport deployed a portable noise monitoring terminal in Redbourn.

The purpose of the monitoring programme is to understand the typical noise levels created in the local community. For Redbourn, it specifically related to the westerly Match departure. The Noise Preferential Route (NPR) is shown on the map.

The noise monitor was located at a property on Little Revel End Lane, close to the centreline of the westerly Match departure corridor, at an altitude of approximately 348 feet above sea level. The red pinpoint on the map shows the location of the noise monitor.

The noise monitor in Redbourn was in place between 21st February and 23rd March 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.

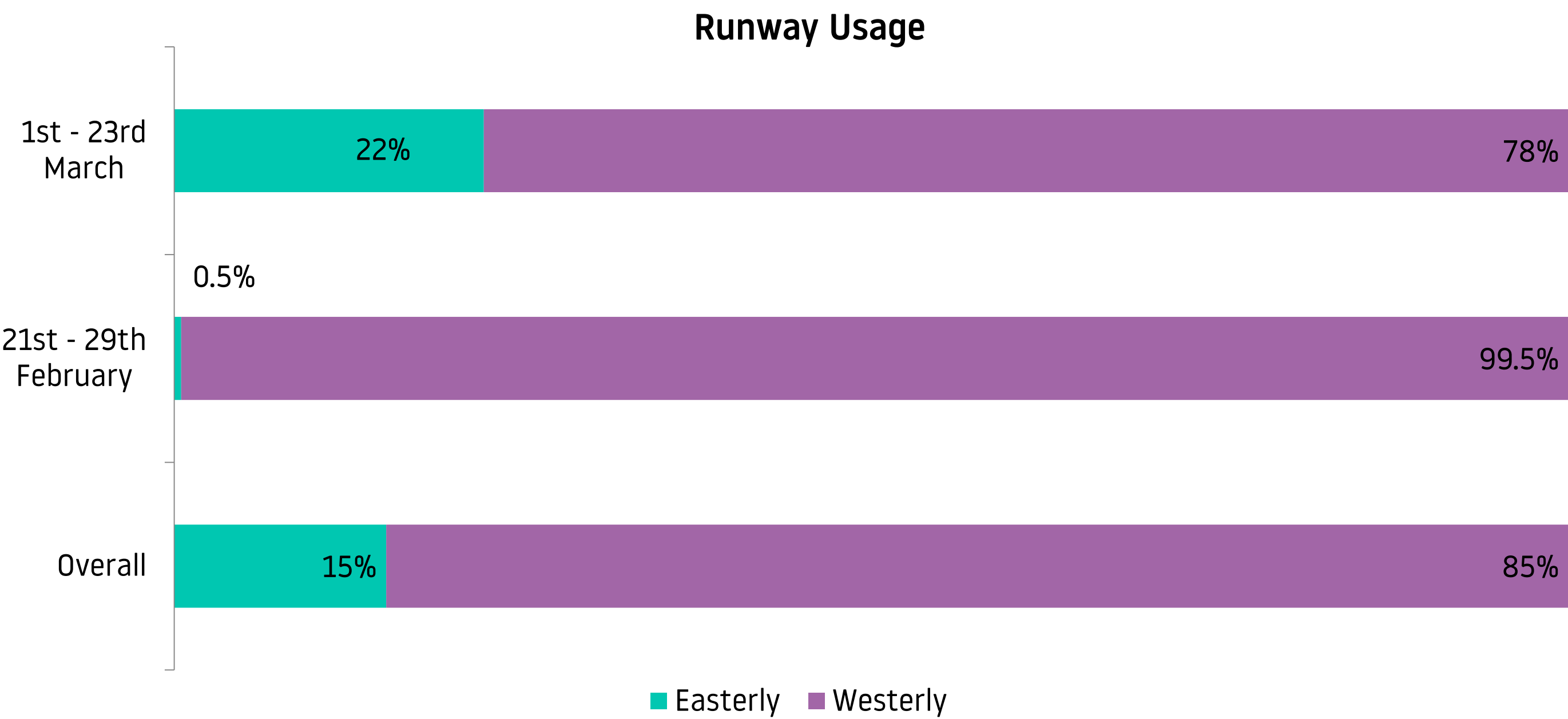


LLA Operations During the Monitoring

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.

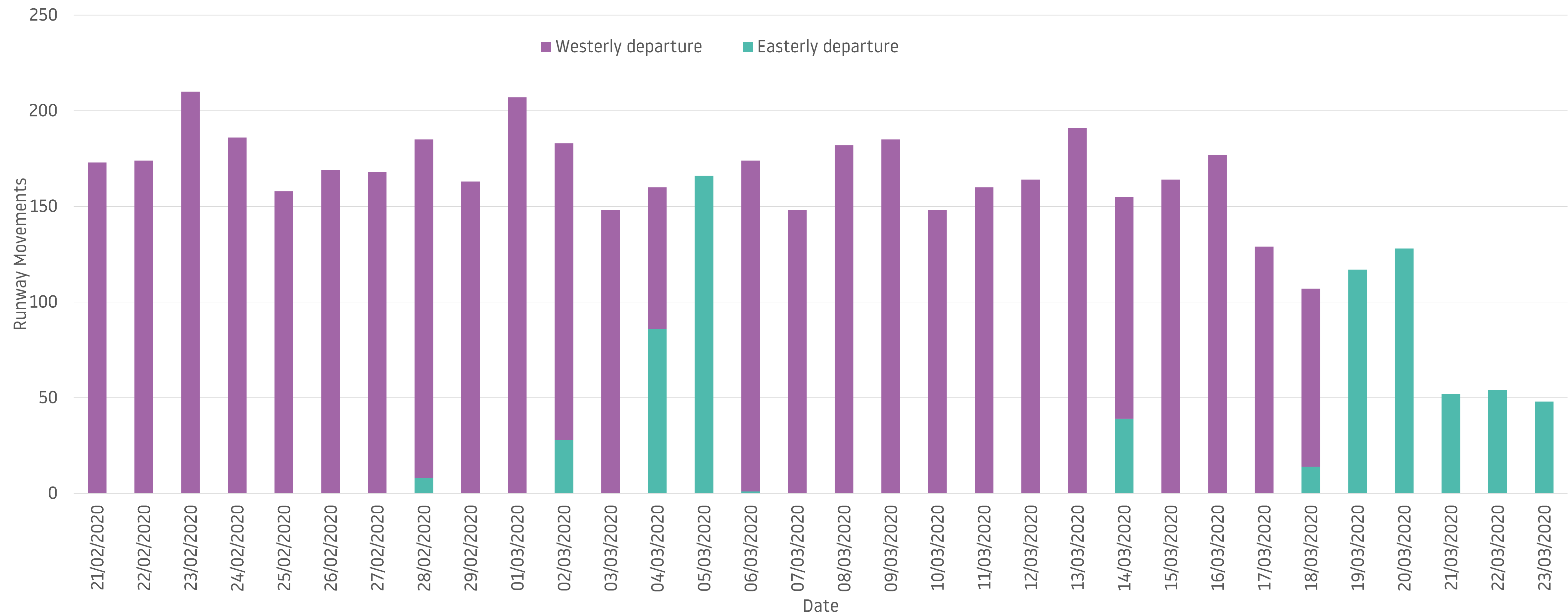
During the monitoring period, the direction of operation was 15% easterly and 85% westerly. The 5 year average for this time of year is 36% easterly vs 64% westerly.

There were 2,112 aircraft which departed on the westerly Match route whilst the noise monitor was located in Redbourn.



Daily Movements During Monitoring Period

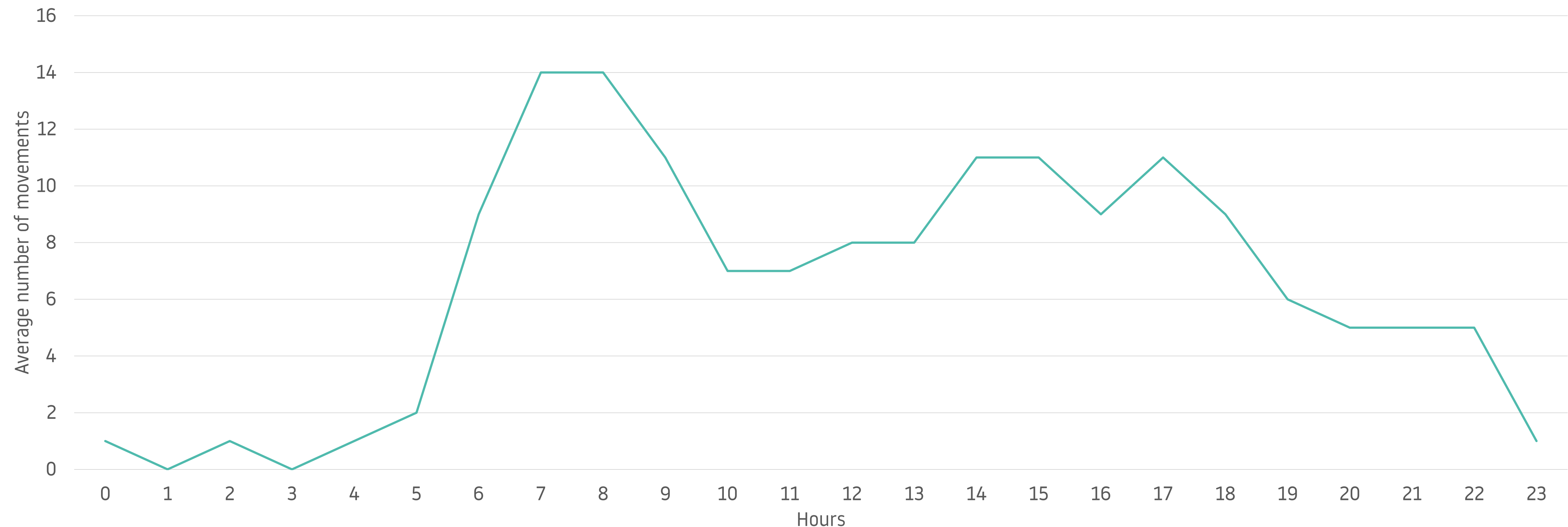
The chart below shows the number of daily westerly and easterly departures at LLA. Due to the location of Redbourn, some flights that departed on our westerly Match route would have flown near the monitor. Therefore, aircraft noise may be noticeable.



Operations During the Monitoring Period

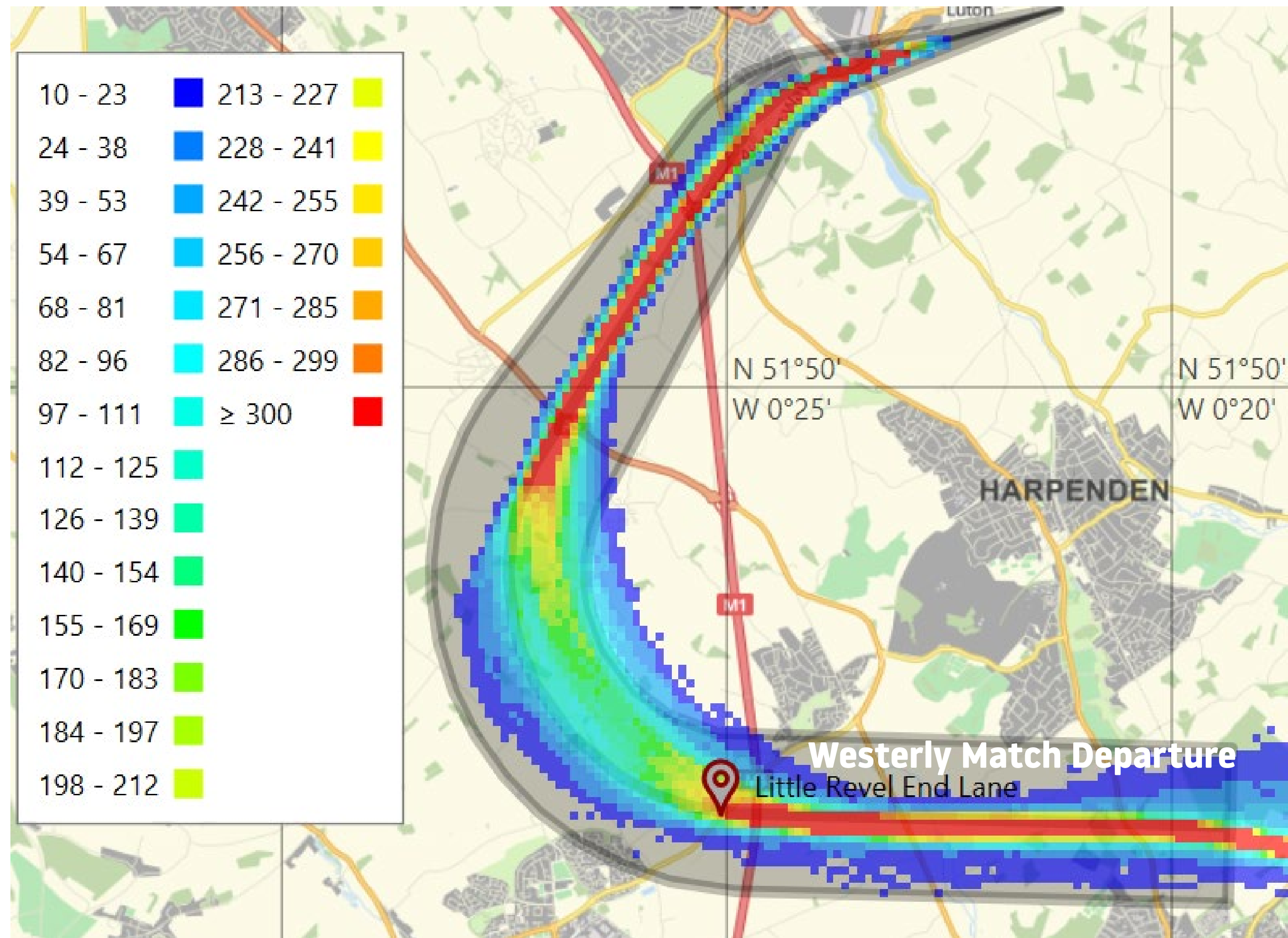
The graph below represents the average number of departures during the monitoring period. Depending on the operating direction on the day, residents in Redbourn may experience different flight patterns. During the peak periods, local residents of Redbourn may notice more frequent aircraft movements. In general, the morning peak starts at 0600 and may last up to 3 hours. The afternoon peak is generally between 1400-1800. On a day of westerly operation which occur approximately 70% of the time annually, residents may notice more aircraft flying close to Redbourn.

During the night period of 23:00 – 06:00 in the monitoring period, there was an average of 7 departures, in line with last year’s trend.



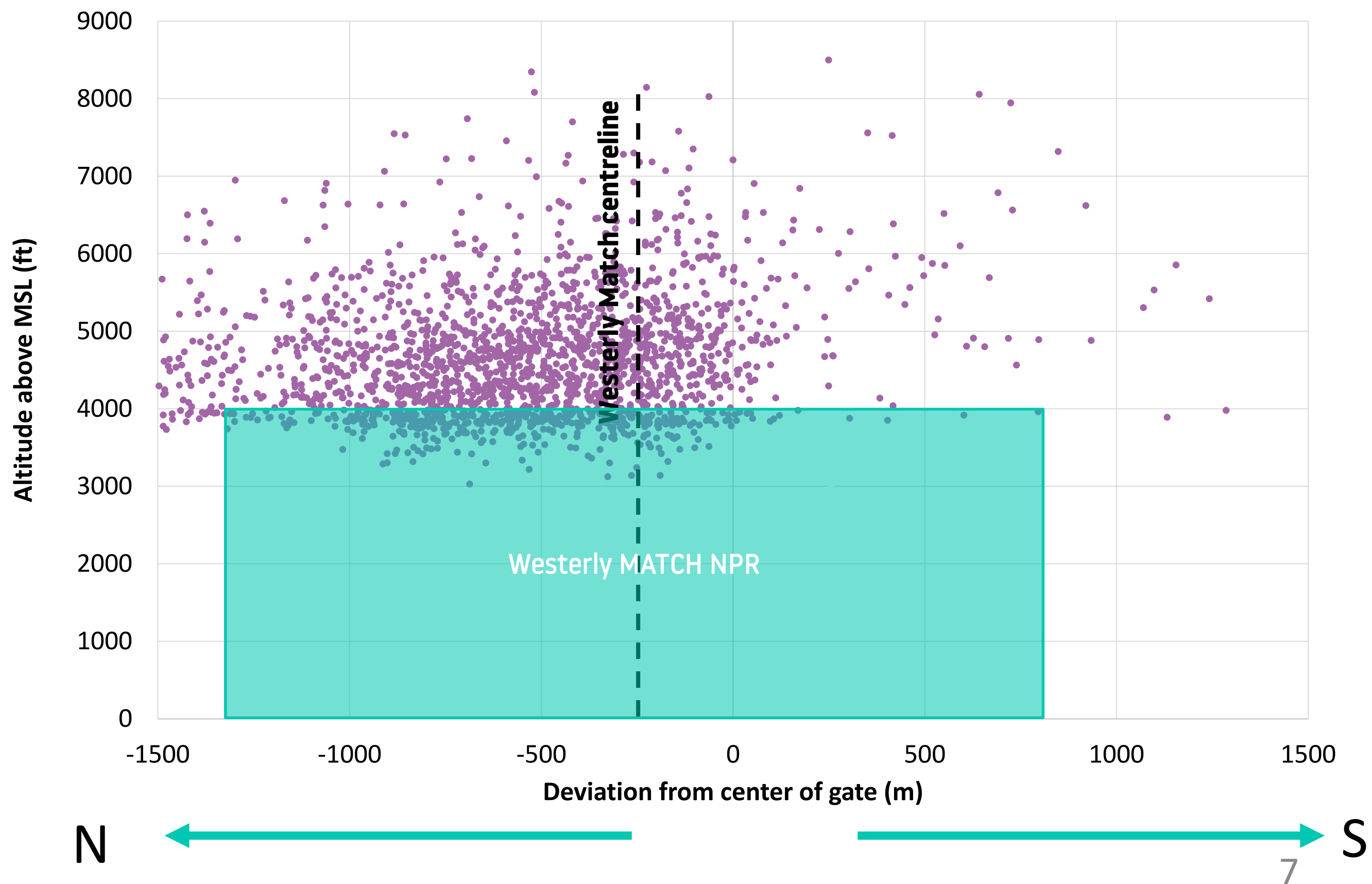
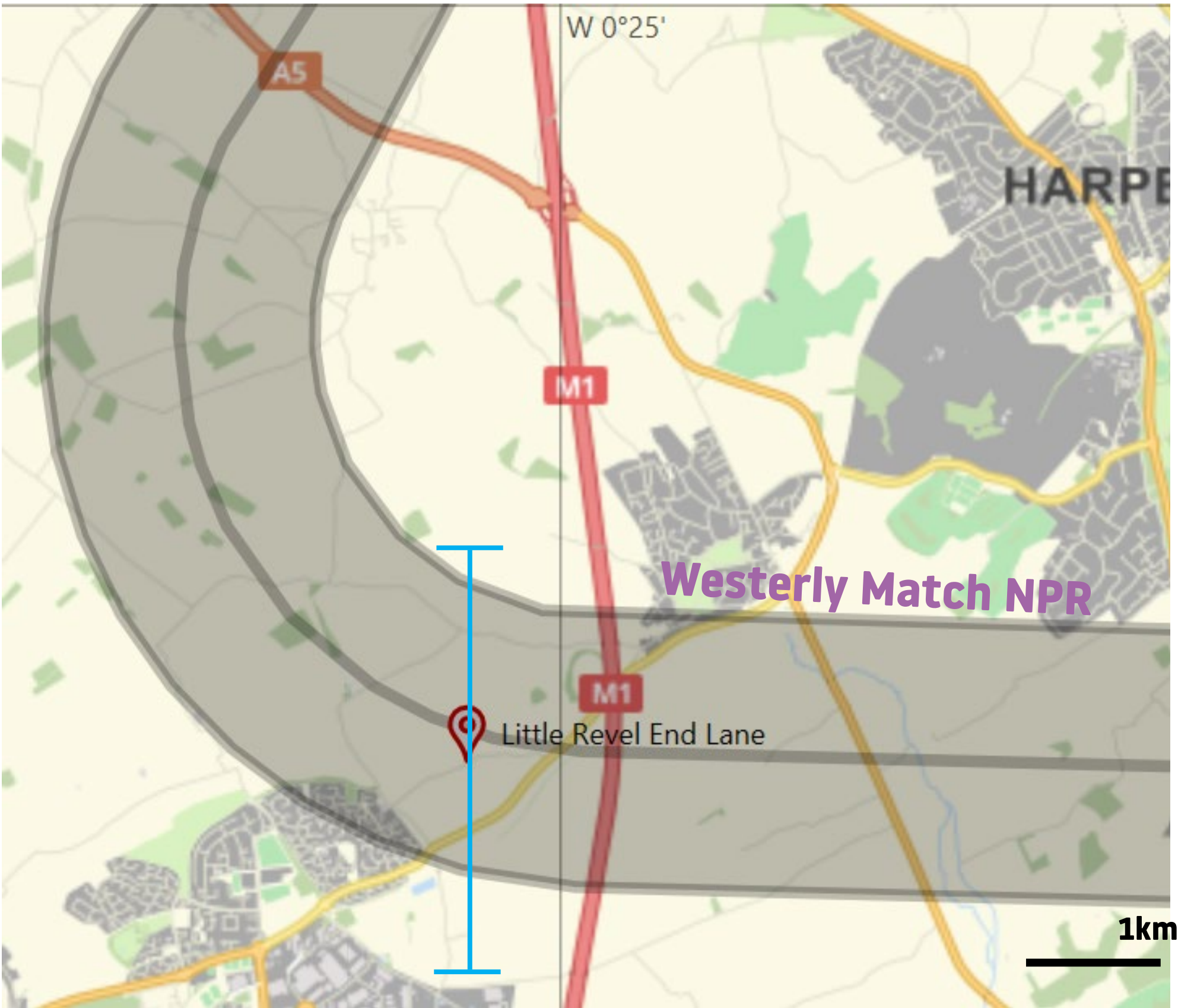
Aircraft Tracks During the Monitoring Period

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 Redbourn.



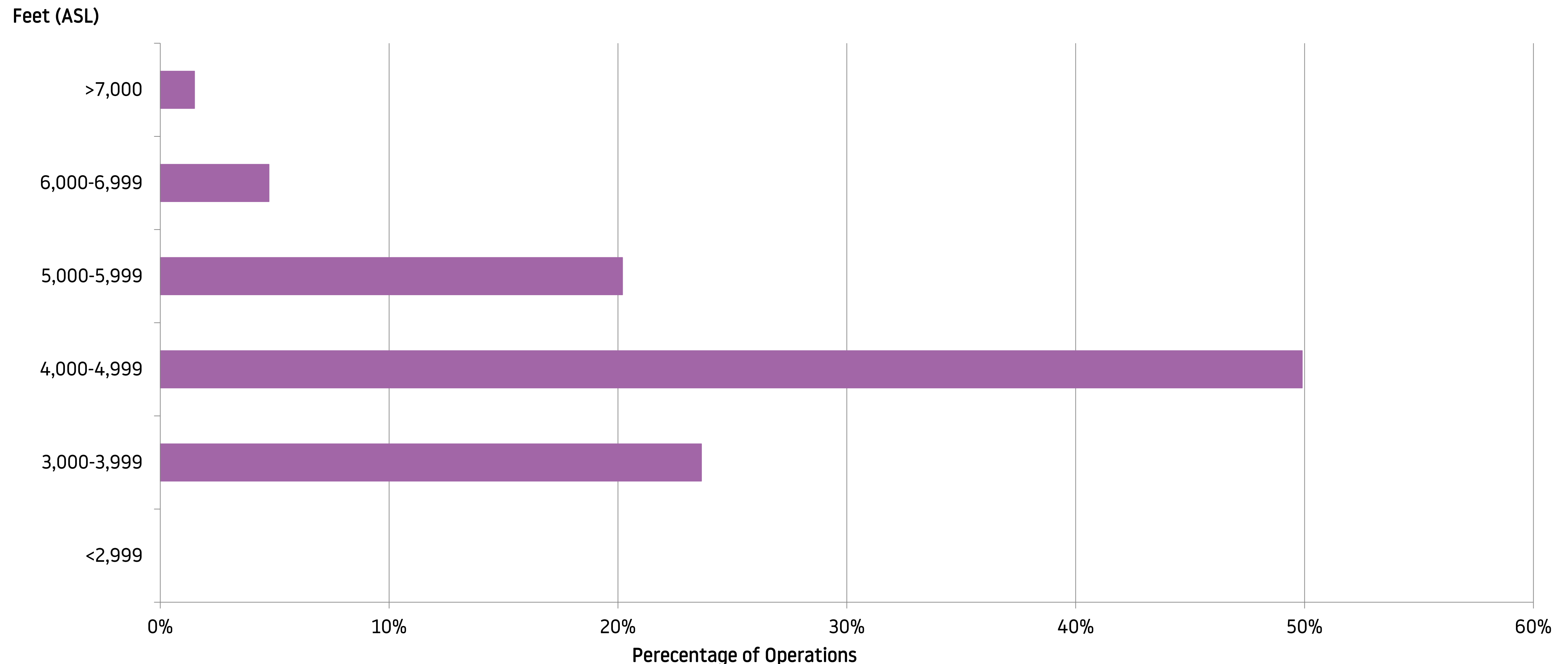
Altitude Analysis During Monitoring Period

The altitude analysis for Redbourn 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 NPR from north to south 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. The westerly Match noise preferential route (NPR) is labelled and displayed by the shaded area. Departing aircraft must remain within the NPR until reaching release altitude of 4,000ft at all times. Due to the close proximity of Redbourn to the departure routes, local residents may see aircraft flying near Redbourn at an altitude of above 3,000ft. There were a few aircraft which flew outside the NPR below 4,000 feet this was due to strong winds and these aircraft were exempted from the track violation charge.



Altitude Analysis During Monitoring Period

The bar chart shows the altitude spread when aircraft reach the noise monitor in Redbourn. For westerly departures, the average altitude of aircraft in this area was 4,659 feet above sea level (ASL) (4,211 feet above ground level [AGL]). It shows the majority of the flights departed on westerly Match route were 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 Redbourn, the noise monitoring terminal collected readings from 844 westerly Match departing aircraft. During the period, there were total of 2,112 westerly Match departures.

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). During the monitoring period, no recordings need to be excluded from the analysis for weather reason.

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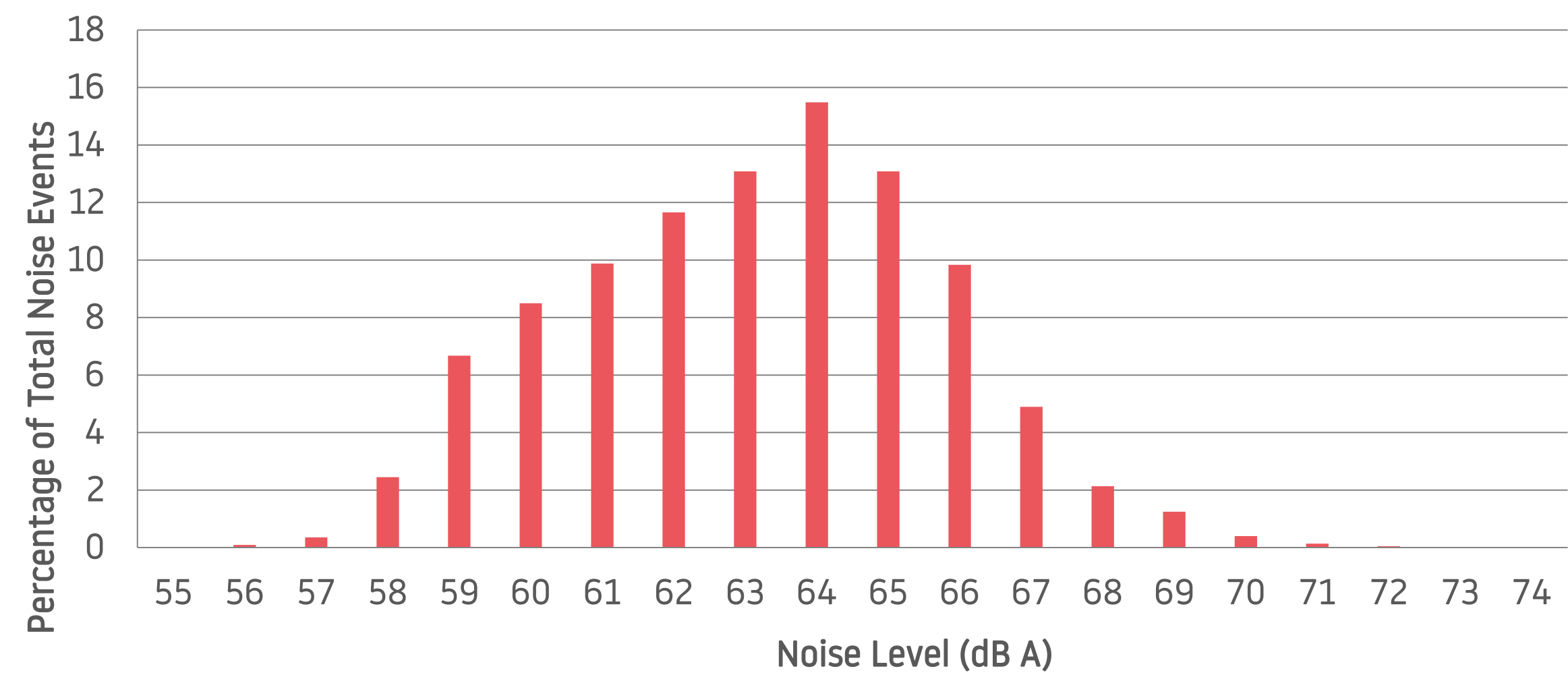
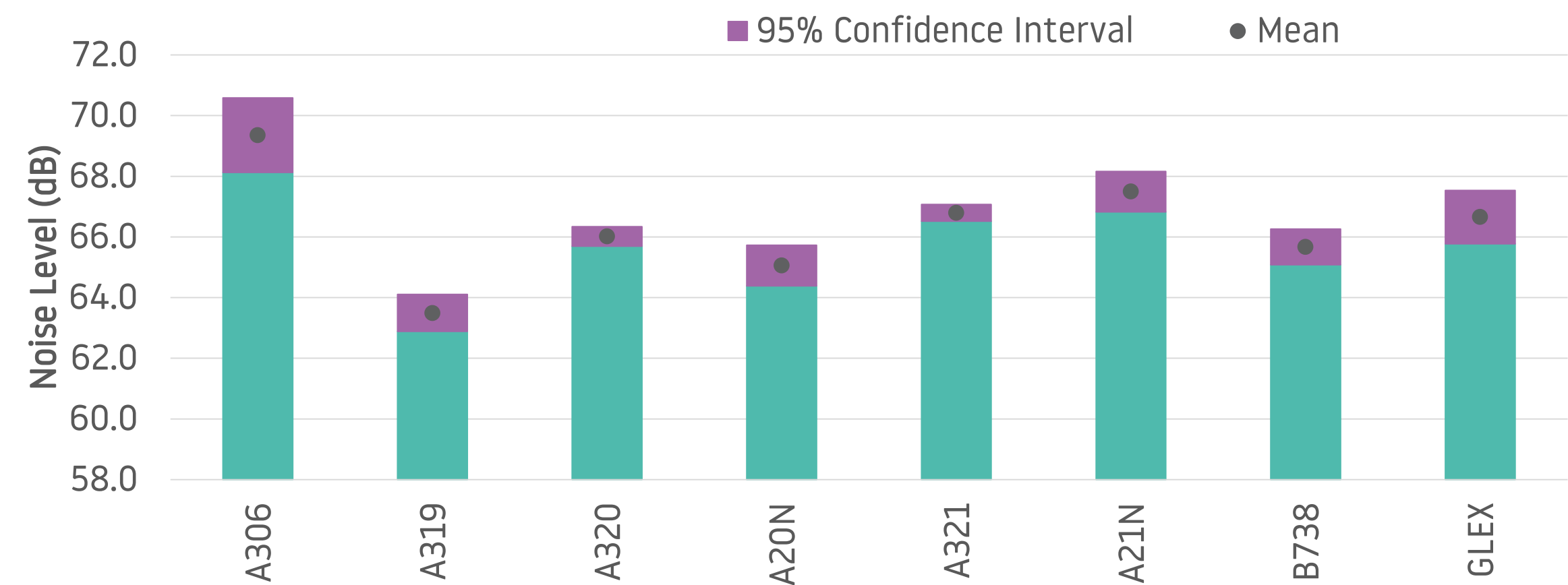
Westerly Departures - Noise Results During Monitoring Period

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 westerly departing aircraft noise are shown on this page.

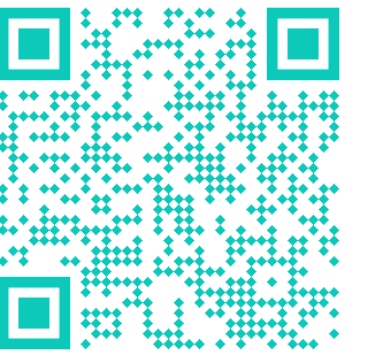
Aircraft Type	Number of movements	Average Noise (dB)
A306	29	69.4
A319	44	63.5
A320 CEO	266	66.0
A20N (A320 NEO)	7	65.1
A321 CEO	310	66.8
A21N (A321 NEO)	44	67.5
B738	70	65.7
GLEX	22	66.7

The average westerly departure noise in Redbourn is 66.3dB, based on a sample size of 844. 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, Luton’s most popular aircraft Airbus A320 CEO and A321 CEO have an average noise of 66.0dB and 66.8dB respectively in Redbourn. The departure noise from A320 NEO produced less noise than A320 CEOs, however, the A321 NEOs were noisier than the A321 CEOs. This was due to the heavier load on the Budapest flight which utilised the A321 NEO aircraft. The A306 was the noisiest aircraft type at Redbourn on days of westerly operation during the monitoring period.

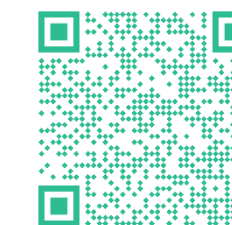
*The noise results shown in the analysis are only for those aircraft types that recorded more than 20 events per aircraft (A320 NEO included for comparison).



Conclusion



- For Redbourn, it specifically related to westerly Match departures. During the monitoring period, the airport was using westerly operations for 85% of the time, this is more than the five year average of this time period.
- The average altitude of westerly departing aircraft in Redbourn is 4,659 feet above sea level (ASL), and as Redbourn is already approximately 348 feet ASL, aircraft will typically be 4,211 feet above ground level (AGL) in this area.
- Almost all aircraft shown in the altitude analysis flew within or above the NPR corridor. Some aircraft had flew outside the NPR below its release altitude of 4,000 feet because of strong wind.
- The main aircraft type operating at London Luton Airport is the Airbus A320 CEO and A321 CEO which produced an average noise of 66.0dB and 66.8dB respectively in Redbourn on a day of westerly operation. 6% of the noise events recorded in Redbourn were created by the newer generation aircraft, A320 NEO and A321 NEO, registering average departing noise events of 65.1dB and 67.5dB respectively.
- We noticed that the average noise of A321 NEO was nosier than the A320 CEO in this report. This was due to the heavier load on the Budapest flight which utilised the A321 NEO aircraft.
- In Q1 2020, 53 aircraft (both westerly and easterly) were investigated as part of the Noise and Track violation scheme. Two 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

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 in the direction of Redbourn.

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.

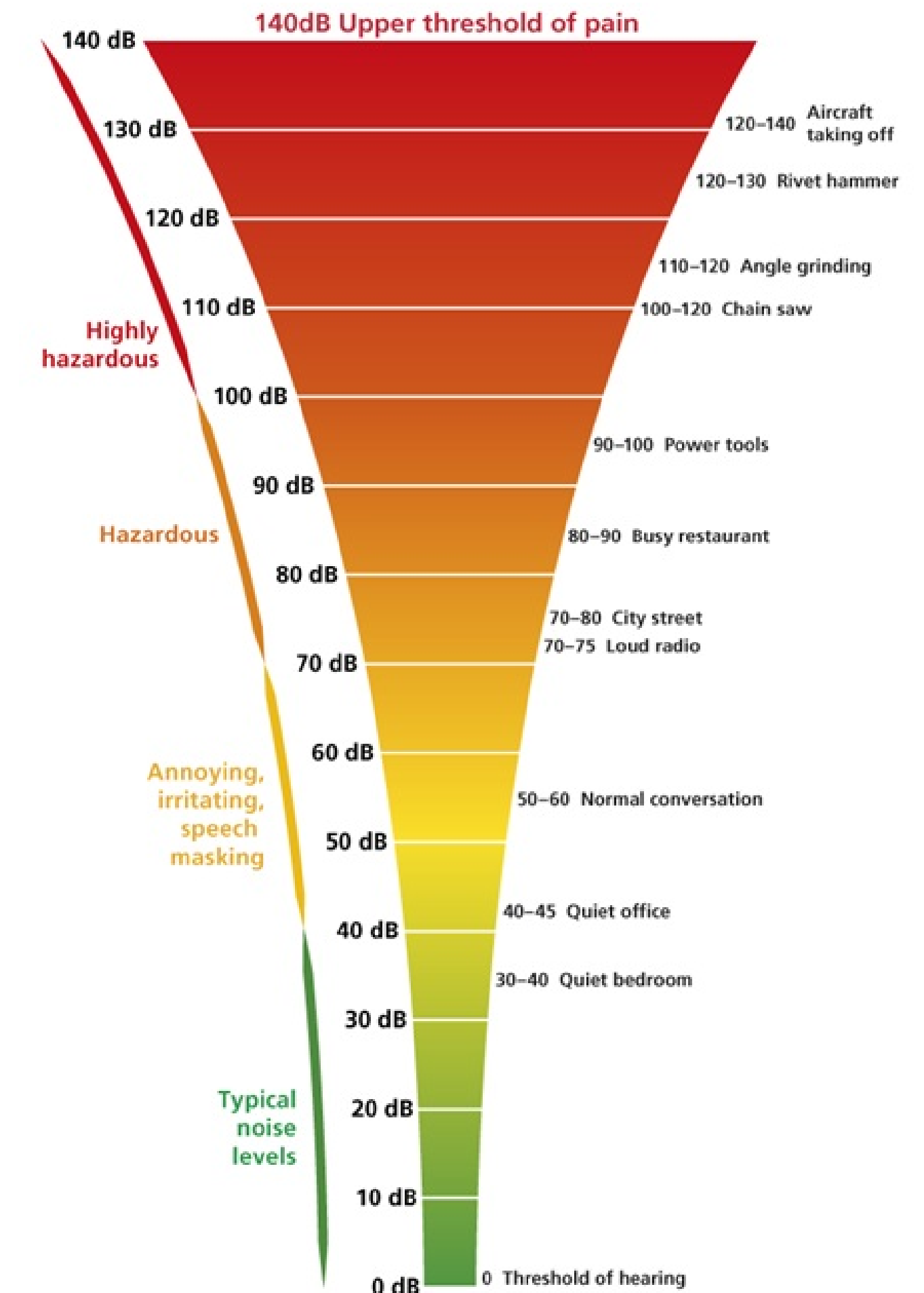
Gate Analysis: A gate which is drawn across an area and will gather information about every aircraft passing through the gate area.

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