

Community Noise Report

Childwickbury

November 2020 – August 2021



London
Luton
Airport

Introduction

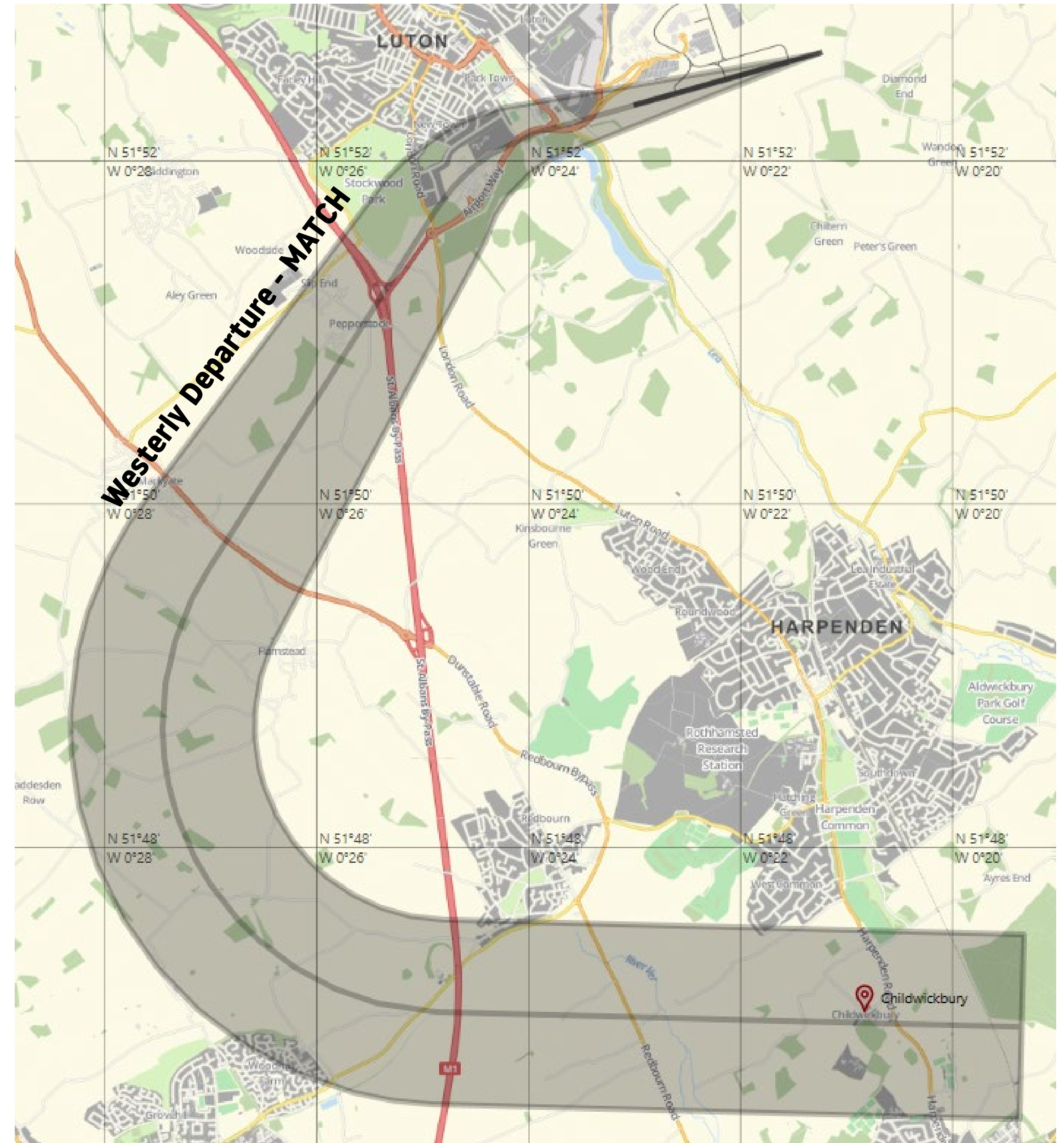
As part of the ongoing noise monitoring programme, London Luton Airport deployed a portable noise monitoring terminal in Childwickbury.

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

The noise monitor was located at The Church of Saint Mary at Childwickbury, less than 100m north of the westerly Match route's centreline, at an altitude of 440 feet above sea level. The red pinpoint on the map shows the location of the noise monitor.

The noise monitor in Childwickbury was in place between 16th November 2020 and 21st August 2021.

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.

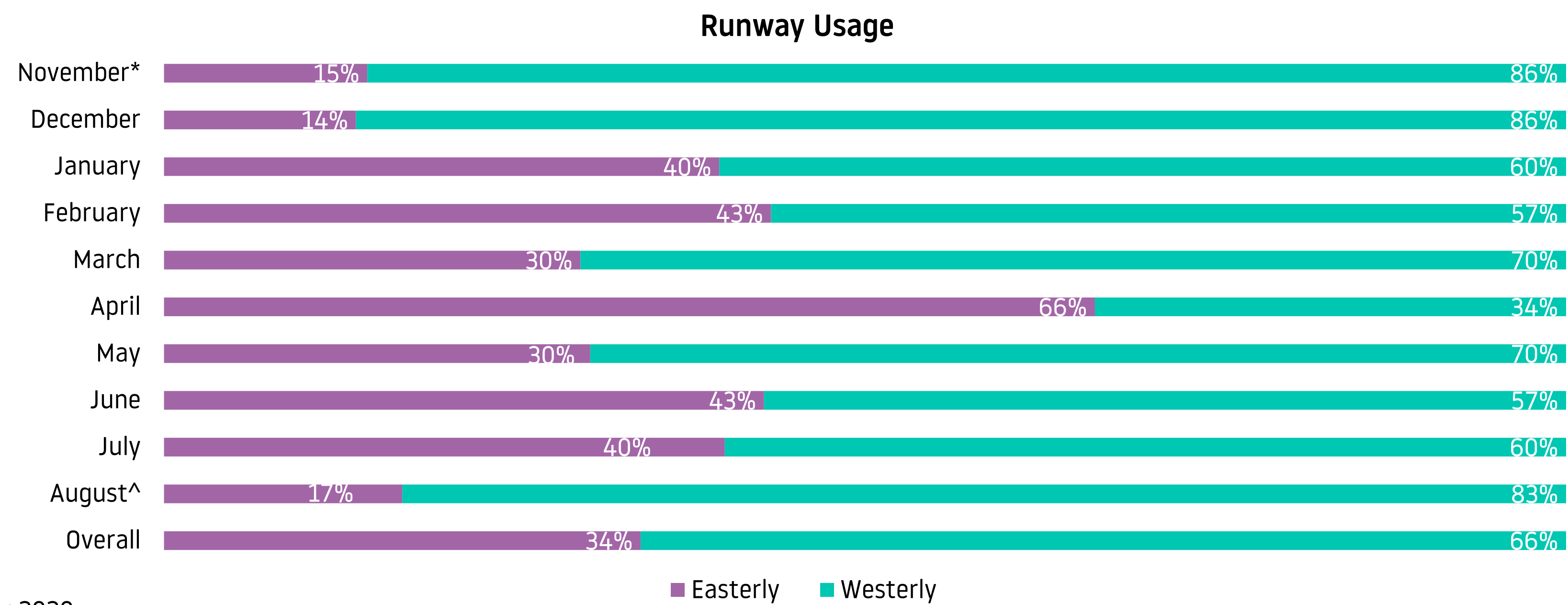


LLA Operations During the Monitoring

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 34% easterly and 66% westerly. The 5 year average for this time of year is 32% easterly vs 68% westerly.

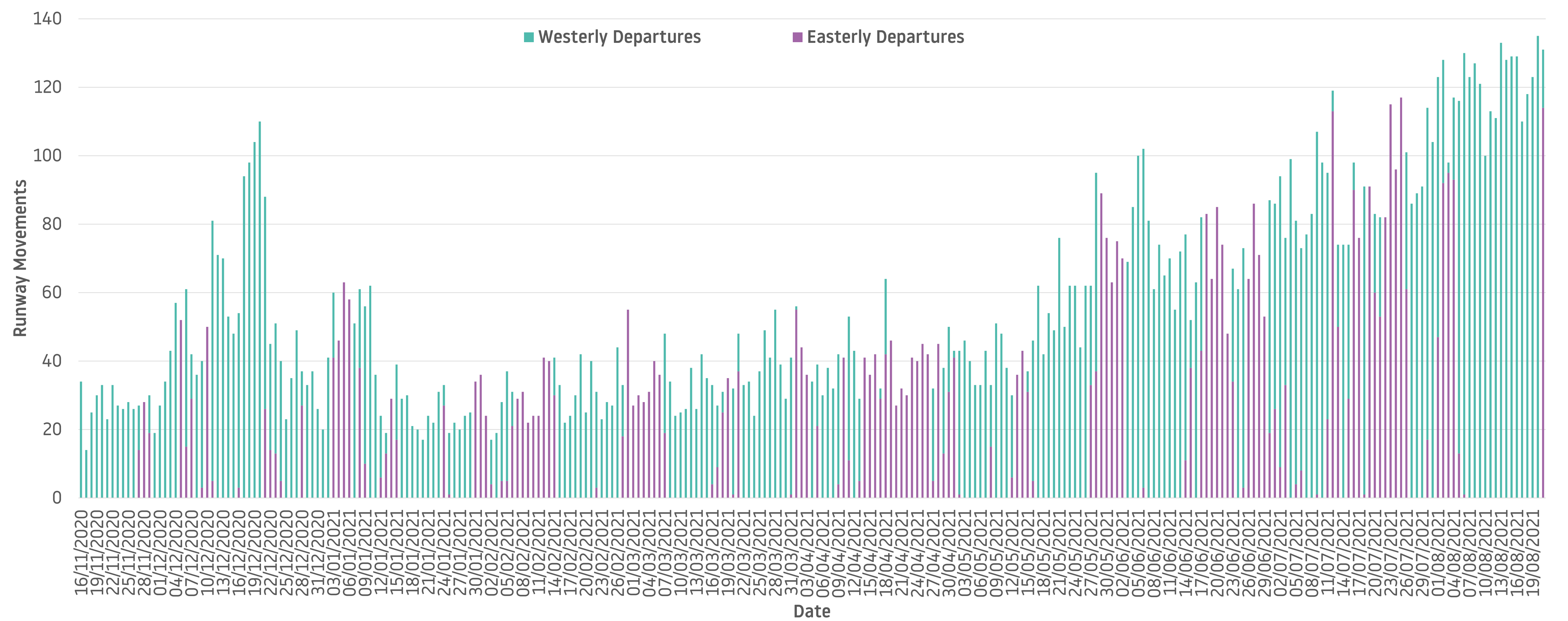
There were 5,491 aircraft which departed on the westerly Match route whilst the noise monitor was located in Childwickbury.



*16th – 30th November 2020
^1st – 21st August 2021

Daily Movements During Monitoring Period

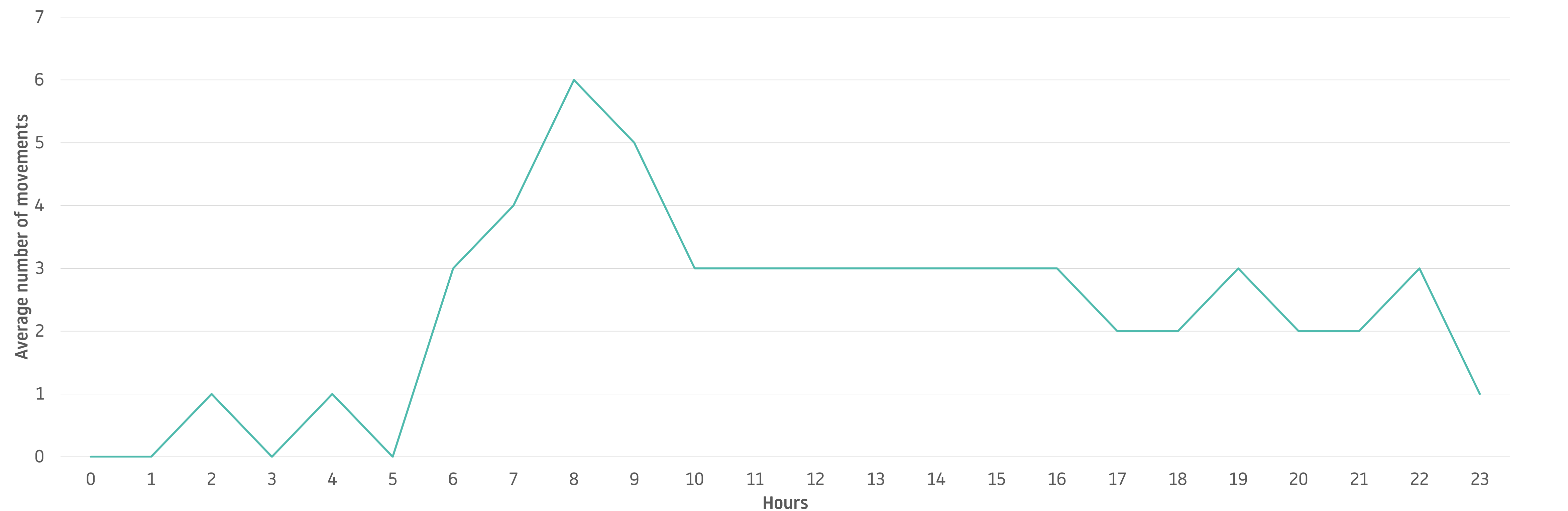
The chart below shows the number of daily westerly and easterly departures at LLA. Due to the location of Childwickbury, most flights that departed on our westerly Match route would have flown near the monitor. Therefore, aircraft noise may be noticeable. The number of aircraft movements dropped significantly in 2020 and 2021 due to the COVID pandemic and national restriction on passenger travel.



Operations During the Monitoring Period

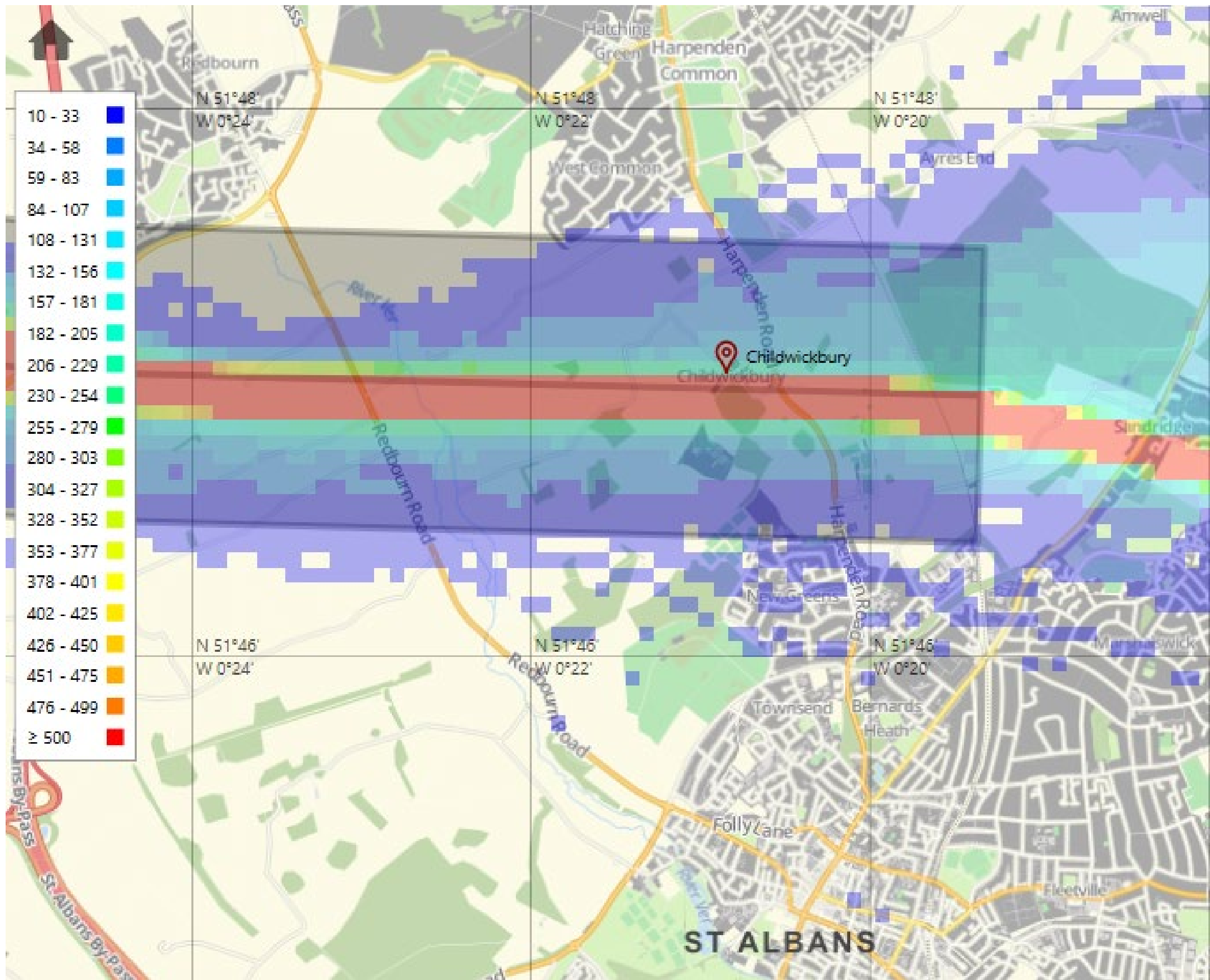
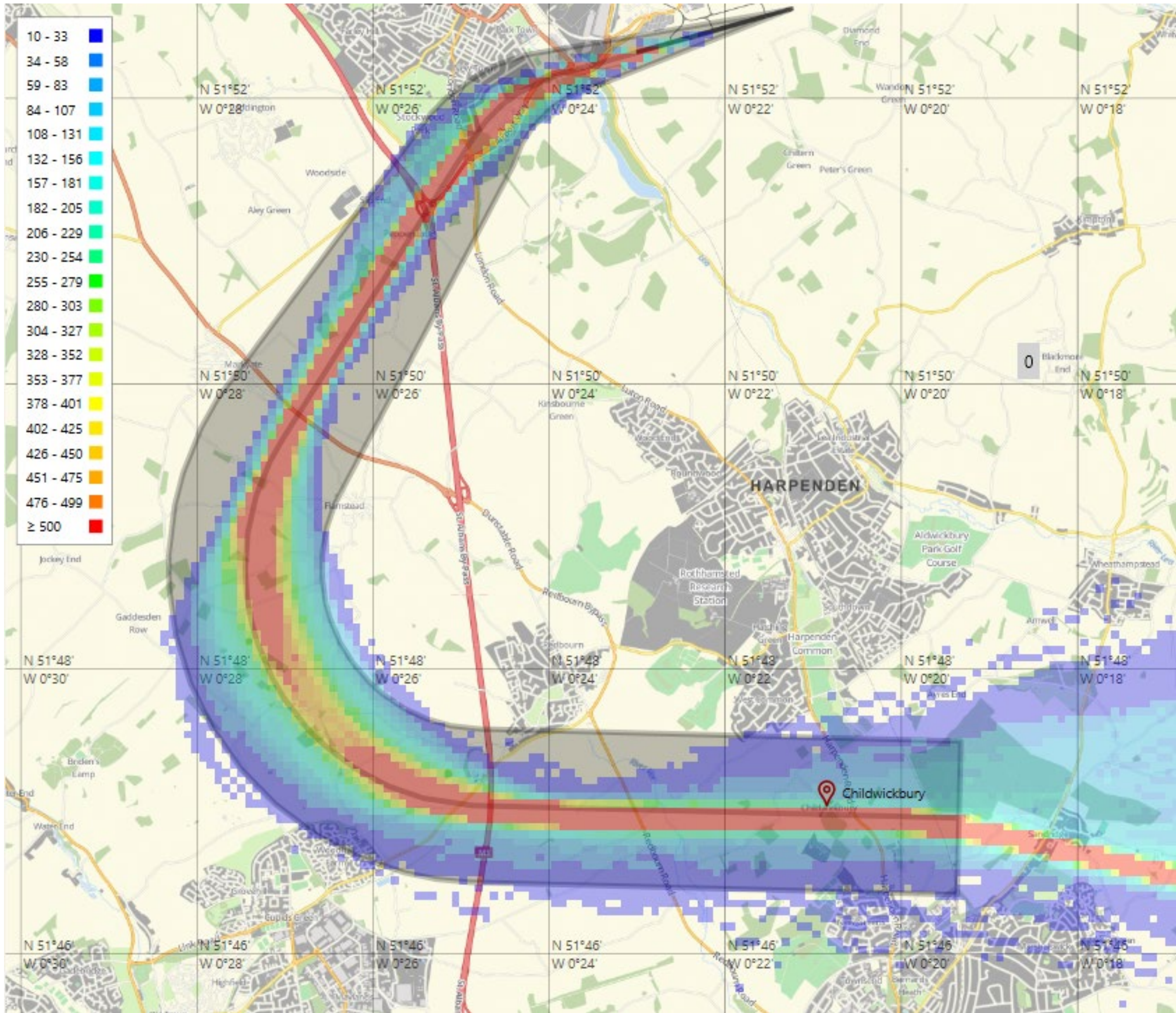
The graph below represents the average number of departures during the monitoring period. Depending on the operating direction on the day, residents in Childwickbury may experience different flight patterns. During the peak periods, local residents of Childwickbury may notice more frequent aircraft movements. In general, the morning peak starts at 8am. On a day of westerly operation which occur approximately 70% of the time annually, residents may notice more aircraft flying close to Childwickbury.

During the night period of 23:00 – 06:00 in the monitoring period, there was an average of three departures, less than the average movement of the previous year due to the COVID pandemic.



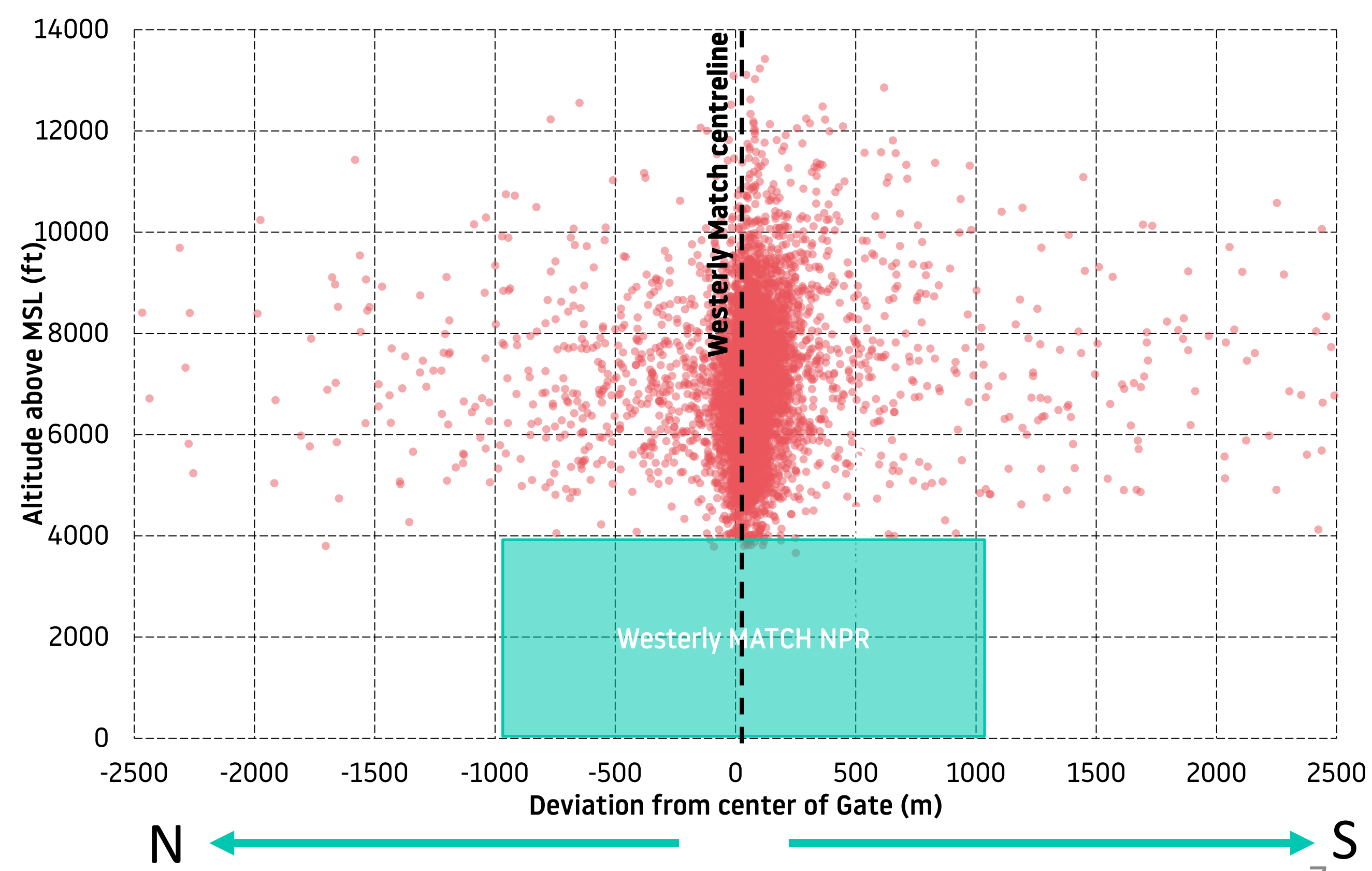
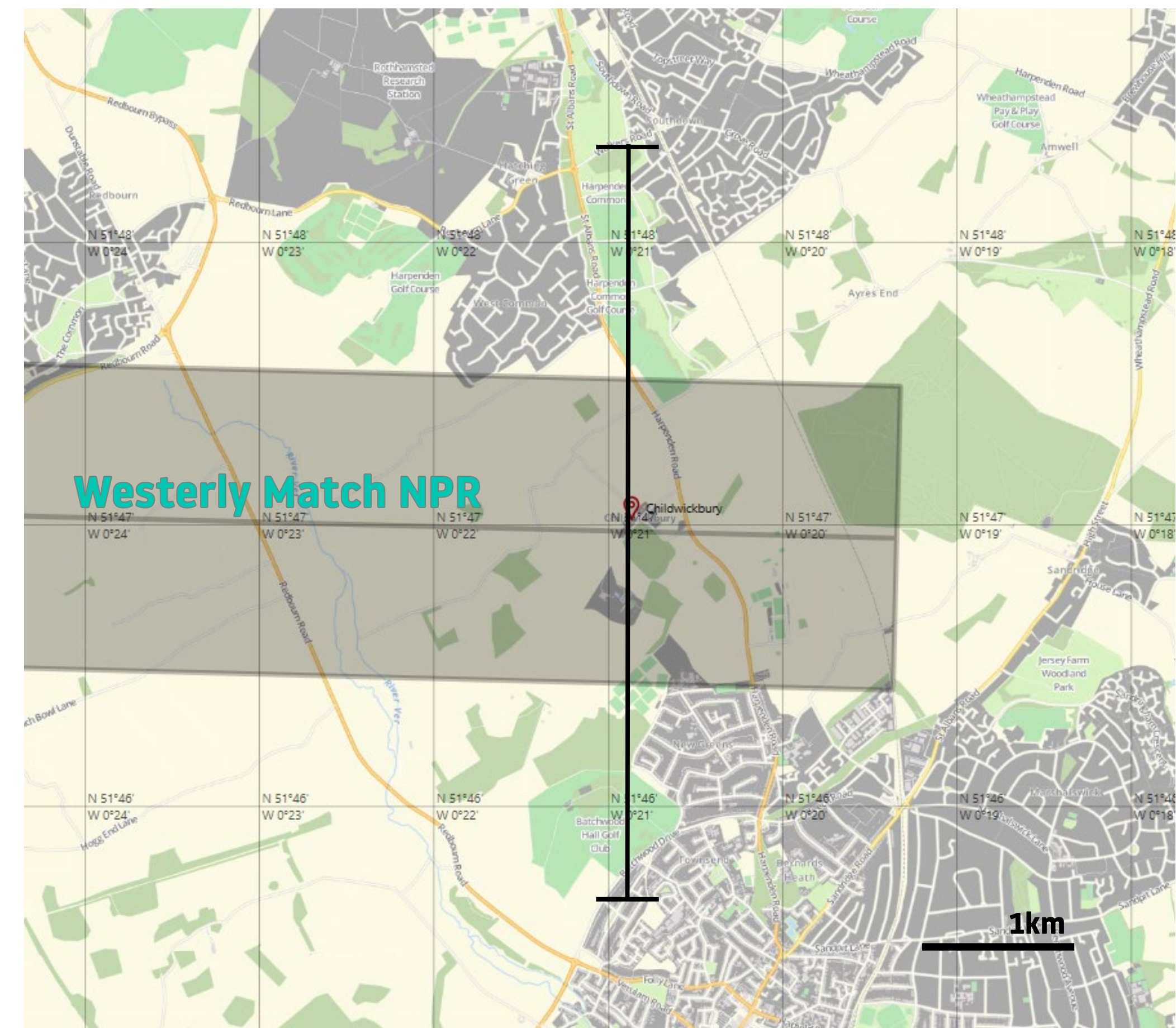
Aircraft Tracks During the Monitoring Period

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 Childwickbury.



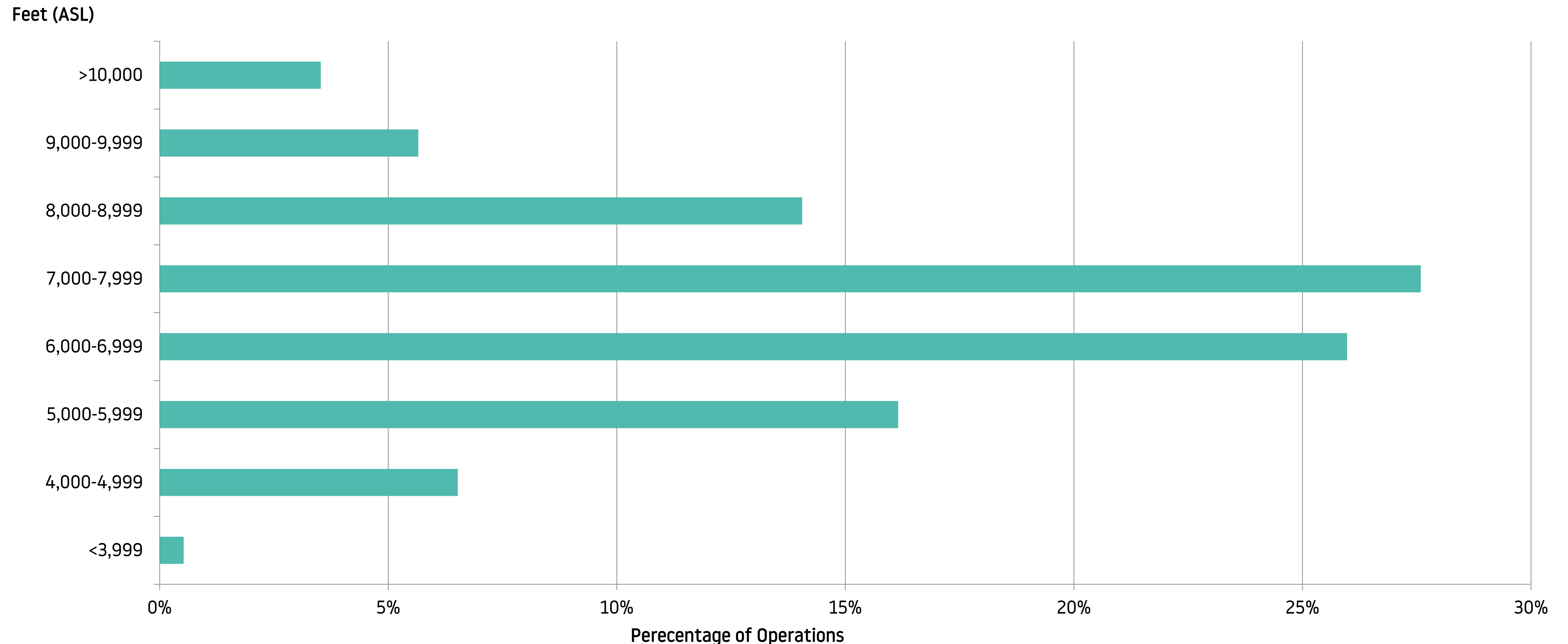
Altitude Analysis During Monitoring Period

The altitude analysis for Childwickbury shows the vertical and lateral dispersion of aircraft 2.5km either side of the noise monitor. The map below shows the 5km 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 Childwickbury to the departure route, local residents may see aircraft flying above Childwickbury, between populated towns, St Albans and Harpenden.



Altitude Analysis During Monitoring Period

The bar chart shows the altitude spread when aircraft reach the noise monitor in Childwickbury. For westerly departures, the average altitude of aircraft in this area was 7,080 feet above sea level (ASL) (6,640 feet above ground level [AGL]). It shows the majority of the flights departed on westerly Match route were above 5,000 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 Childwickbury, the noise monitoring terminal collected readings from 3,786 westerly Match departing aircraft. During the period, there were total of 5,491 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.

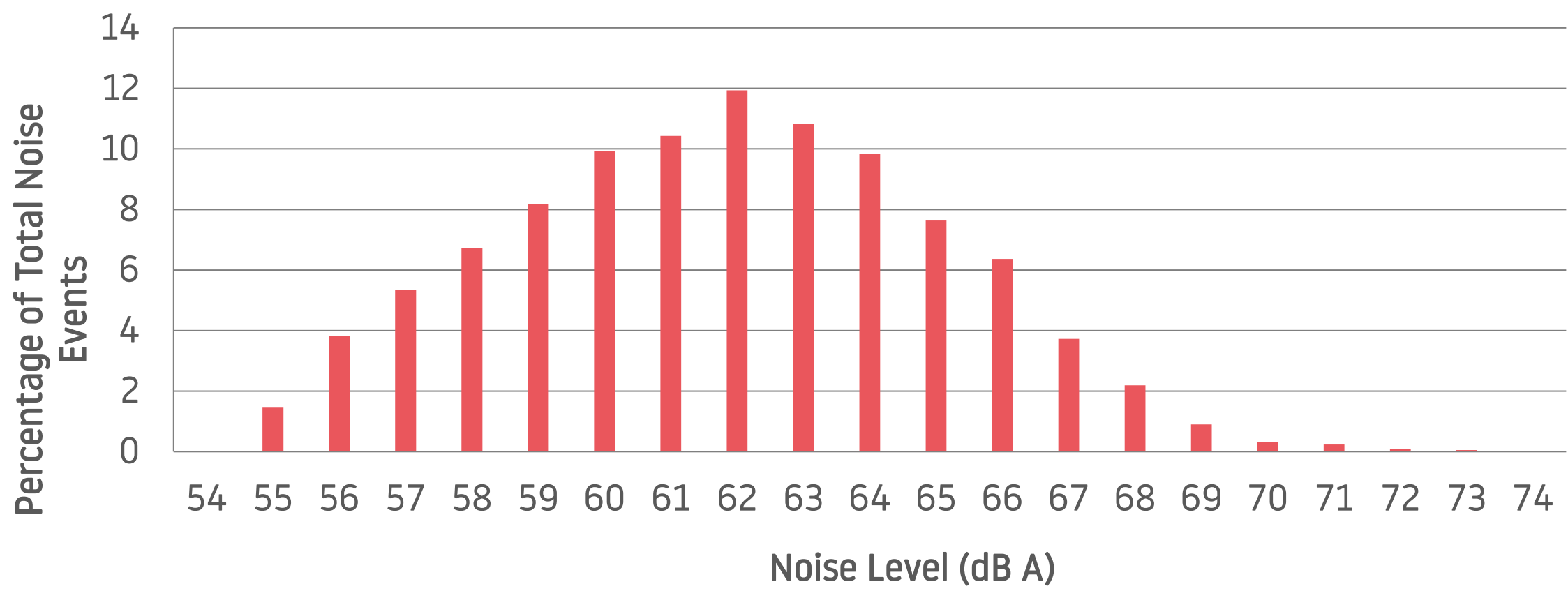
The weather also plays a big part in the data recorded and in periods of extreme weather i.e (very strong winds) the equipment can record noise incorrectly so we exclude samples from the analysis during these weather conditions. When analysing the samples, the first thing we do is to ensure that there is no unusual noise event present which might not be caused by aircraft (i.e. vehicles or wildlife). During the monitoring period, 29 recordings need to be excluded from the analysis for weather reason.

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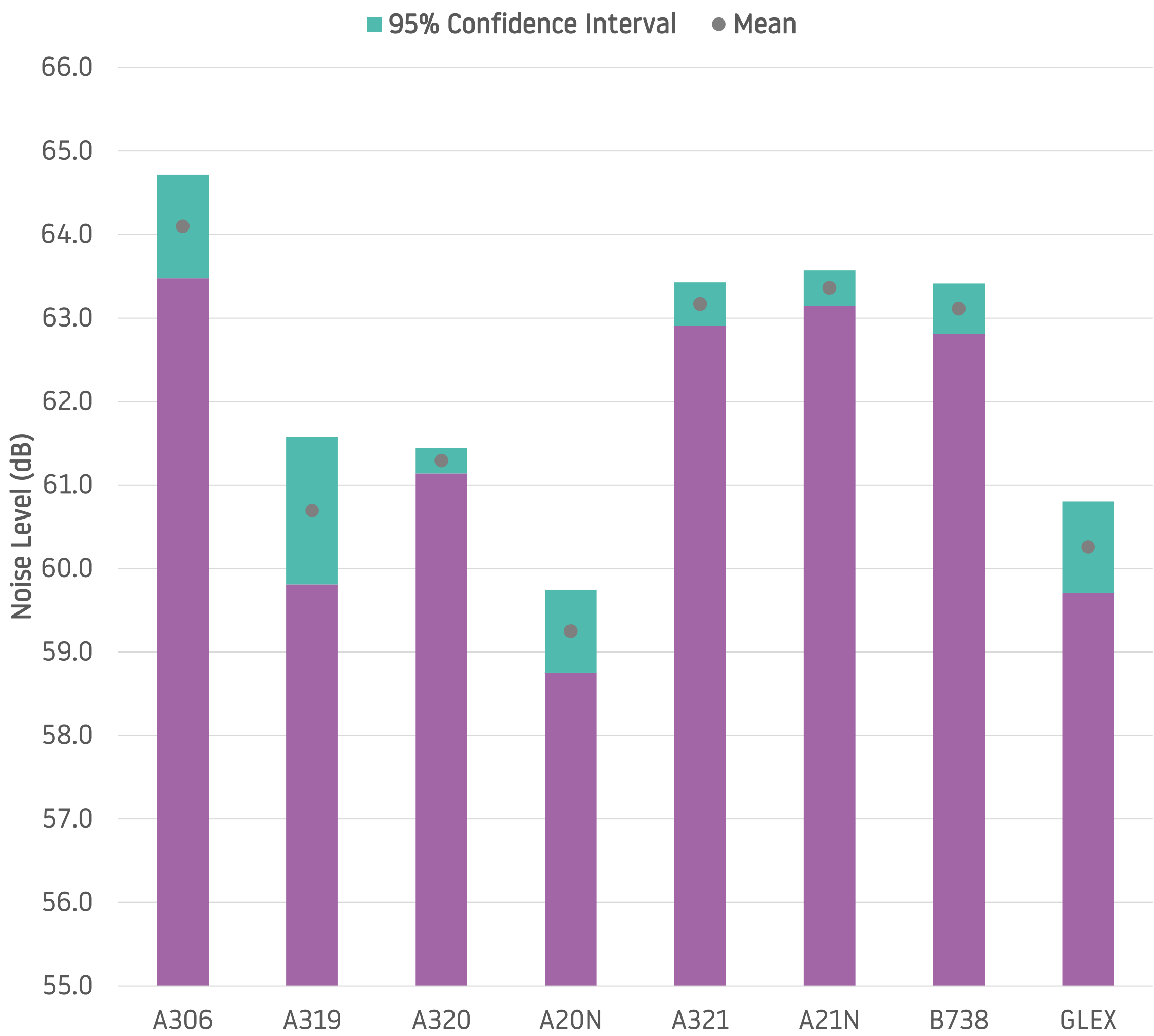
Noise Results During Monitoring Period

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 (Match) departing aircraft noise is shown on this page and the following page.

Aircraft Type	Number of movements	Average Noise (dB)
A306	96	64.1
A319	43	60.7
A320 CEO	1,311	61.3
A20N (A320 NEO)	113	59.2
A321 CEO	412	63.2
A21N (A321 NEO)	705	63.4
B738	350	63.1
GLEX	109	60.3



*The noise results shown in the analysis are only for those aircraft types that recorded more than 100 events per aircraft (A319 included for comparison).



Noise Results During Monitoring Period

- The average westerly departure noise in Childwickbury is 61.8dB, based on a sample size of 3,786.
- 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 NEO have an average noise of 61.3dB and 63.4dB respectively in Childwickbury.
- The departure noise from the newer generation aircraft, A320 NEO, produced less noise than A320 CEOs, at an average of 2.1dB quieter. However, the A321 NEOs recorded higher noise level than the A321 CEOs, registering 63.4dB and 63.2dB respectively. LLA is actively investigating this matter with aircraft manufacturer and operator.
- The freight aircraft A306 was the noisiest aircraft type at Childwickbury during the monitoring period. It has a range of 56.1 dB and 72.7dB, averaging 64.1dB. This aircraft type is generally deployed at daytime period.

Conclusion

- For Childwickbury, it specifically related to westerly Match departures. During the monitoring period, the airport was using westerly operations for 66% of the time, in line with the five year average runway usage split.
- The average altitude of westerly departing aircraft in Childwickbury is 7,080 feet above sea level (ASL), and as Childwickbury is already approximately 440 feet ASL, aircraft will typically be 6,640 feet above ground level (AGL) in this area.
- The main aircraft type operating at London Luton Airport is the Airbus A320 CEO and A321 NEO which produced an average noise of 61.3dB and 63.4dB respectively in Childwickbury on a day of westerly operation.
- 22% of the noise events recorded in Childwickbury were created by the newer generation aircraft, A320 NEO and A321 NEO. The A320 NEO registered average departing noise of 59.2dB, 2.1dB lower than A320 CEOs.
- The A321 NEO aircraft, however, registered slightly higher noise level than the A321 CEO. LLA is investigating this matter with aircraft manufacturer and operator.
- During the monitoring period, 76 aircraft (both westerly and easterly) were investigated as part of the Noise and Track violation scheme. 13 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 Childwickbury.

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.

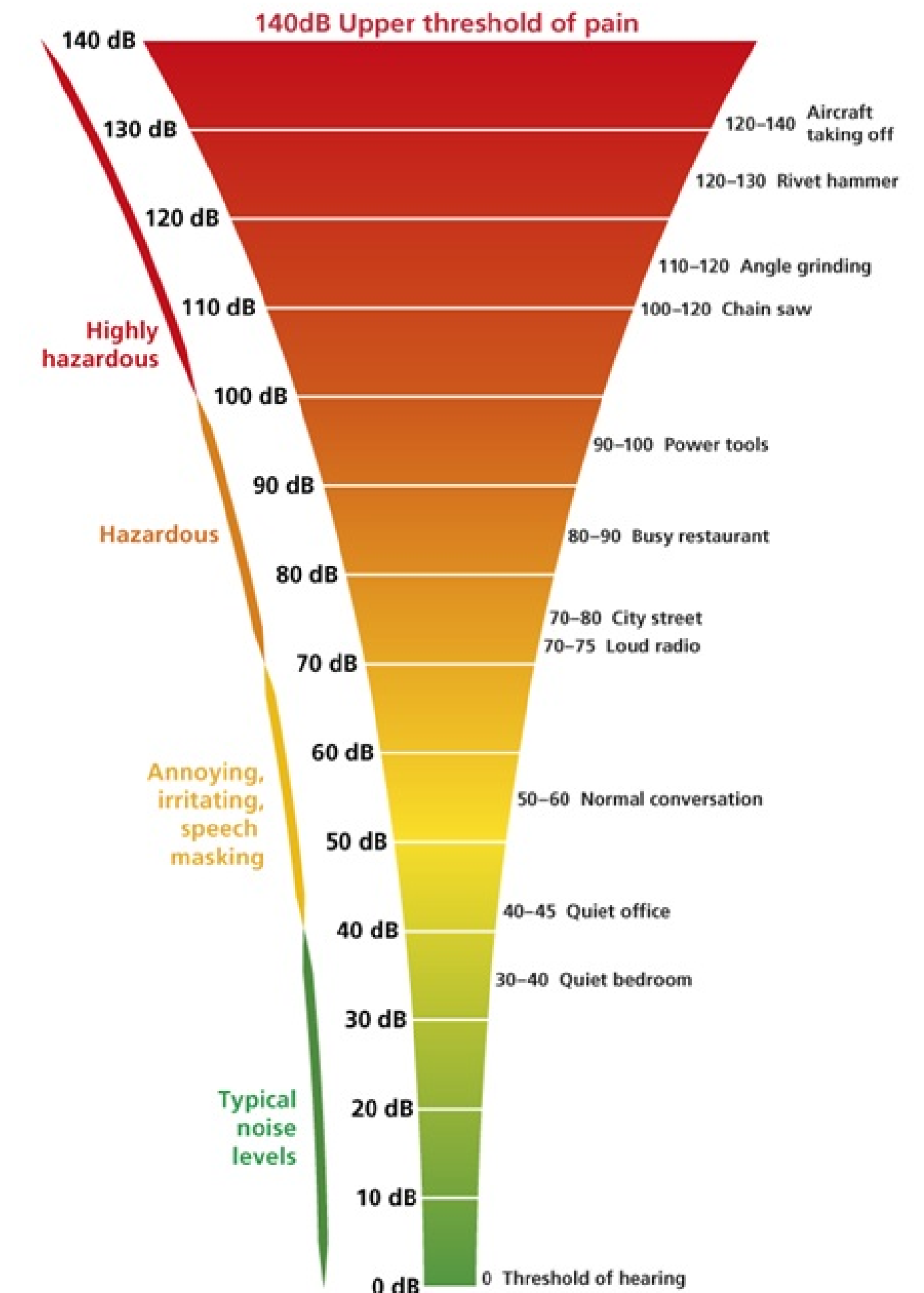
Gate Analysis: A gate which is drawn across an area and will gather information about every aircraft passing through the gate area.

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