Community Noise Report

St Albans

July – October 2023

London Luton Airport

Introduction

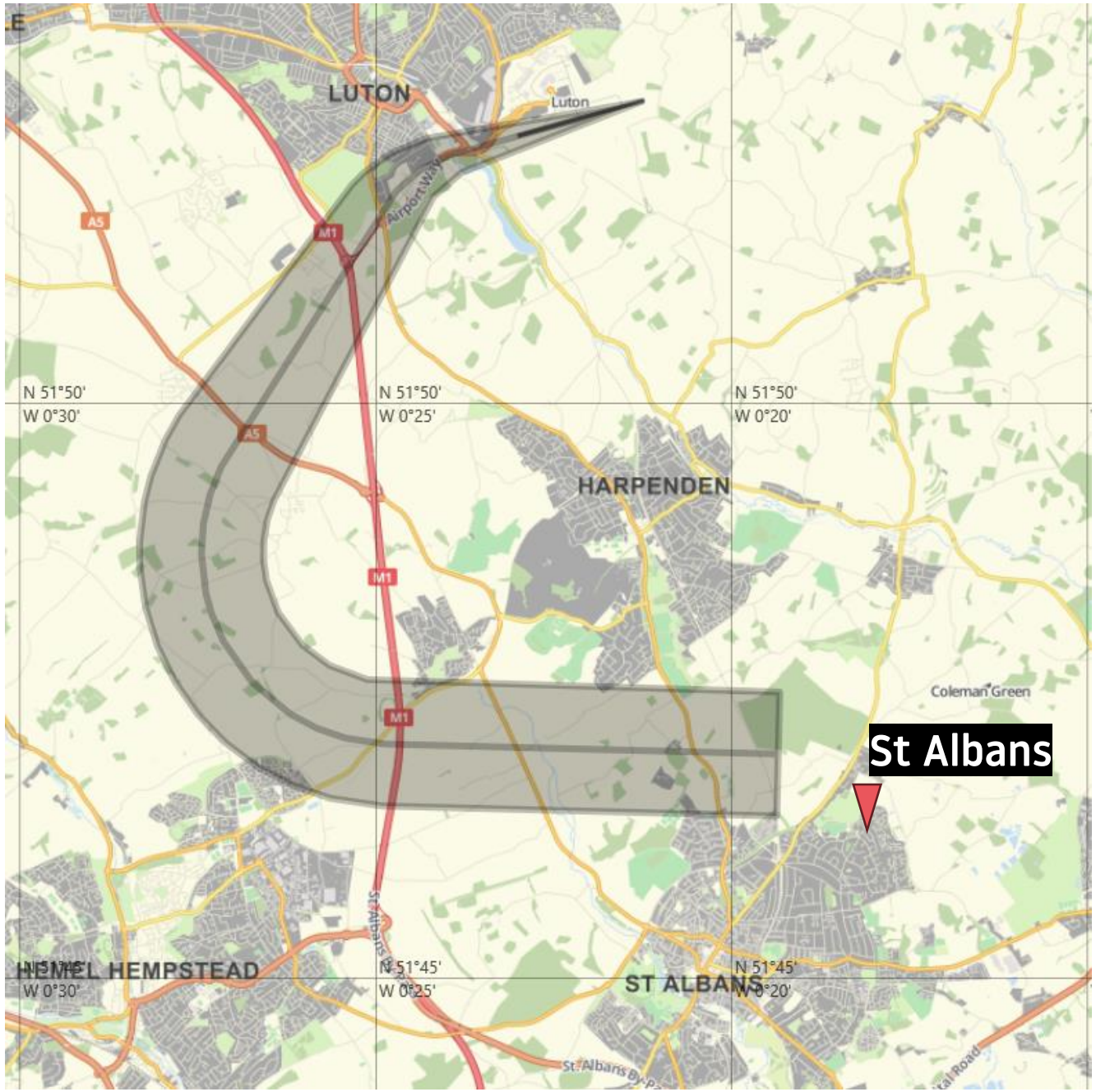
As part of the ongoing noise monitoring programme, London Luton Airport deployed a portable noise monitoring terminal in St Albans.

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 westerly departures, specifically the MATCH route, shown on the map.** The noise monitor was located at a residential property on Belsize close, at the edge of the westerly departure routes, at an altitude of 300 feet above sea level. The red pinpoint on the map shows the noise monitor location.

The noise monitor in St Albans was in place between the 6th July 2023 and 5th October 2023.

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.

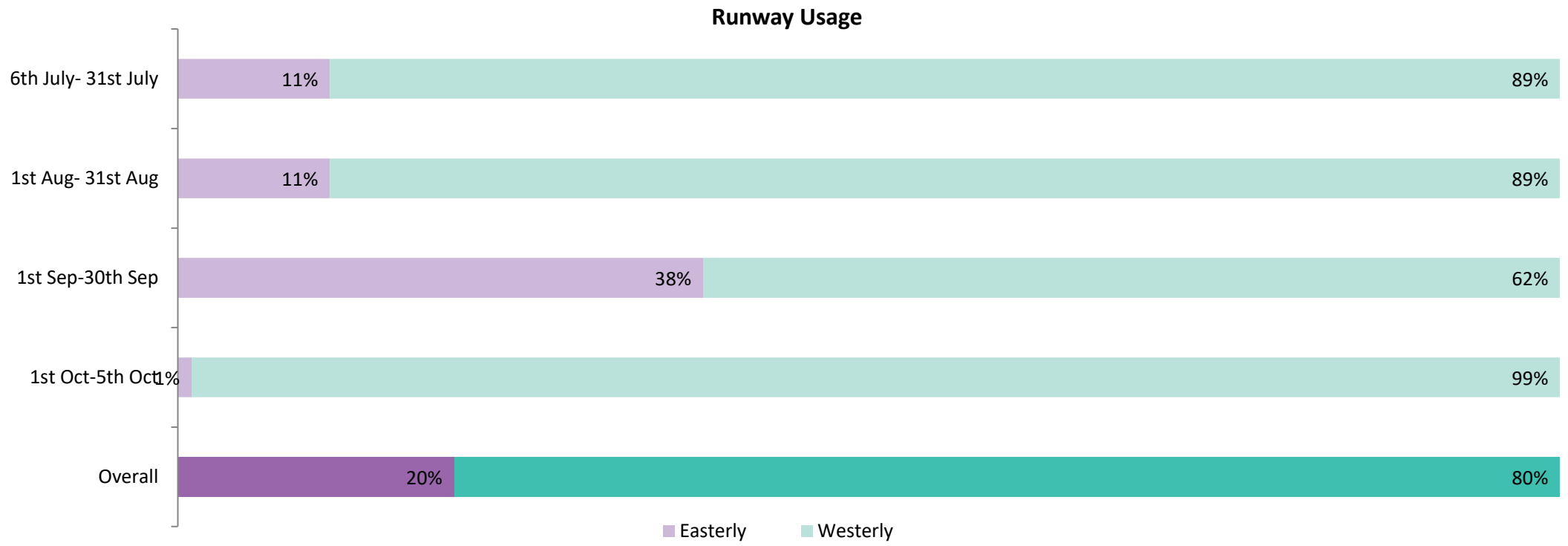


LLA operations during the monitoring period

There are two operating directions at LLA. The operating direction depends on the wind direction as aircraft are required to take off and land into the wind for aircraft performance and 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 wind direction.

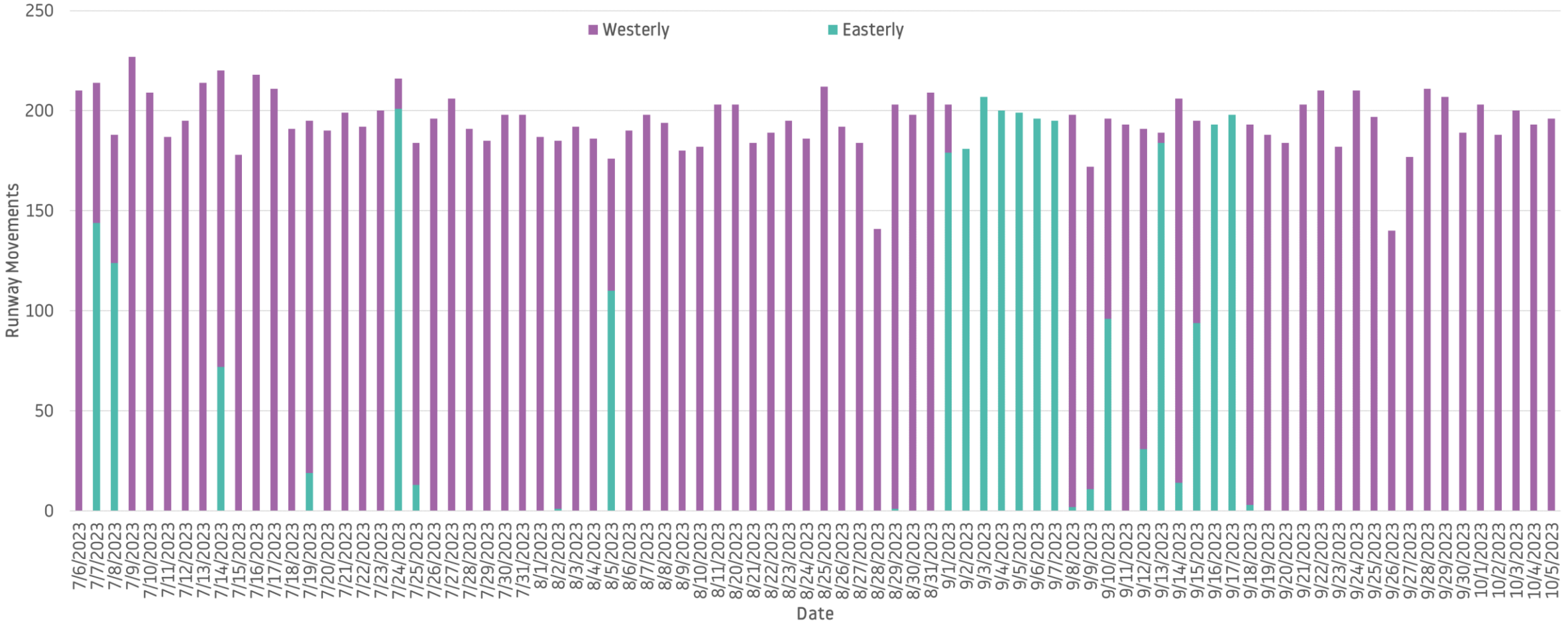
During the period of monitoring, the direction of operation was 32% Easterly and 68% Westerly. The 5-year average for this time of year is 23% easterly vs 73% westerly.

There were 12,555 aircraft departing on the westerly route in Q3 2023.



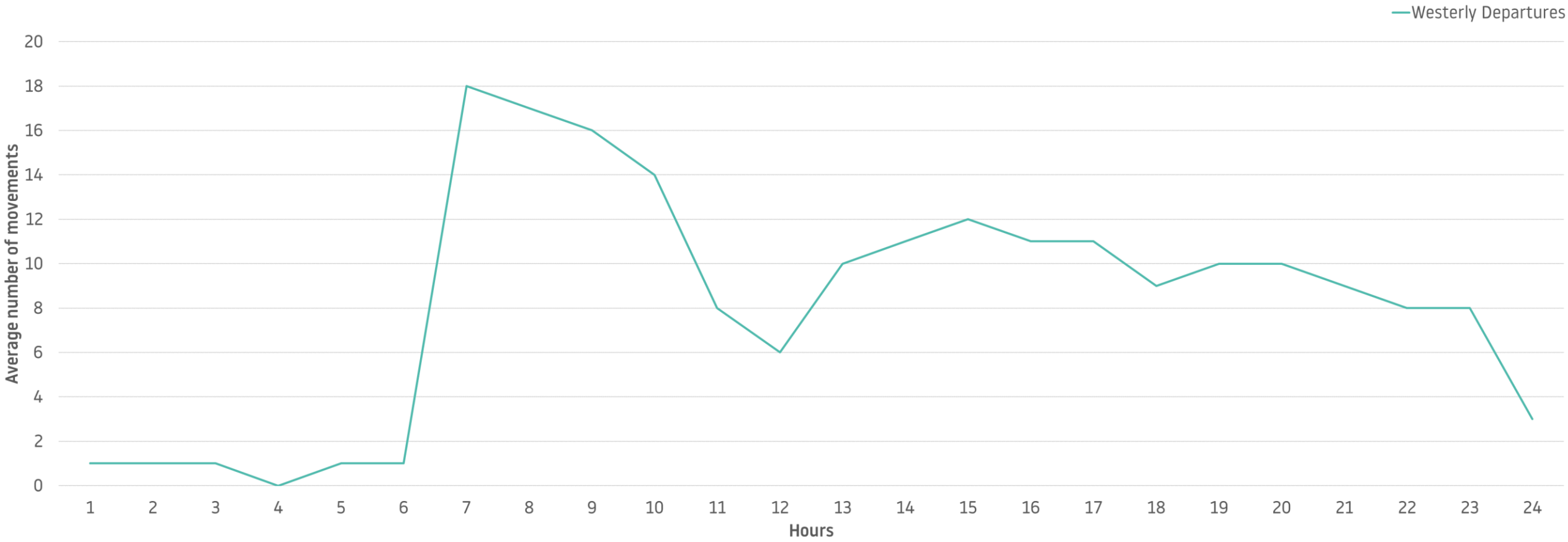
Daily Movements during monitoring period

The chart below shows the number of daily easterly and westerly operations. Due to the location, all flights that departed from our westerly runway on the MATCH3Y route would have flown above the noise monitor terminal. The graph shows the westerly operations (purple) as well as easterly operations (green) on the other side.



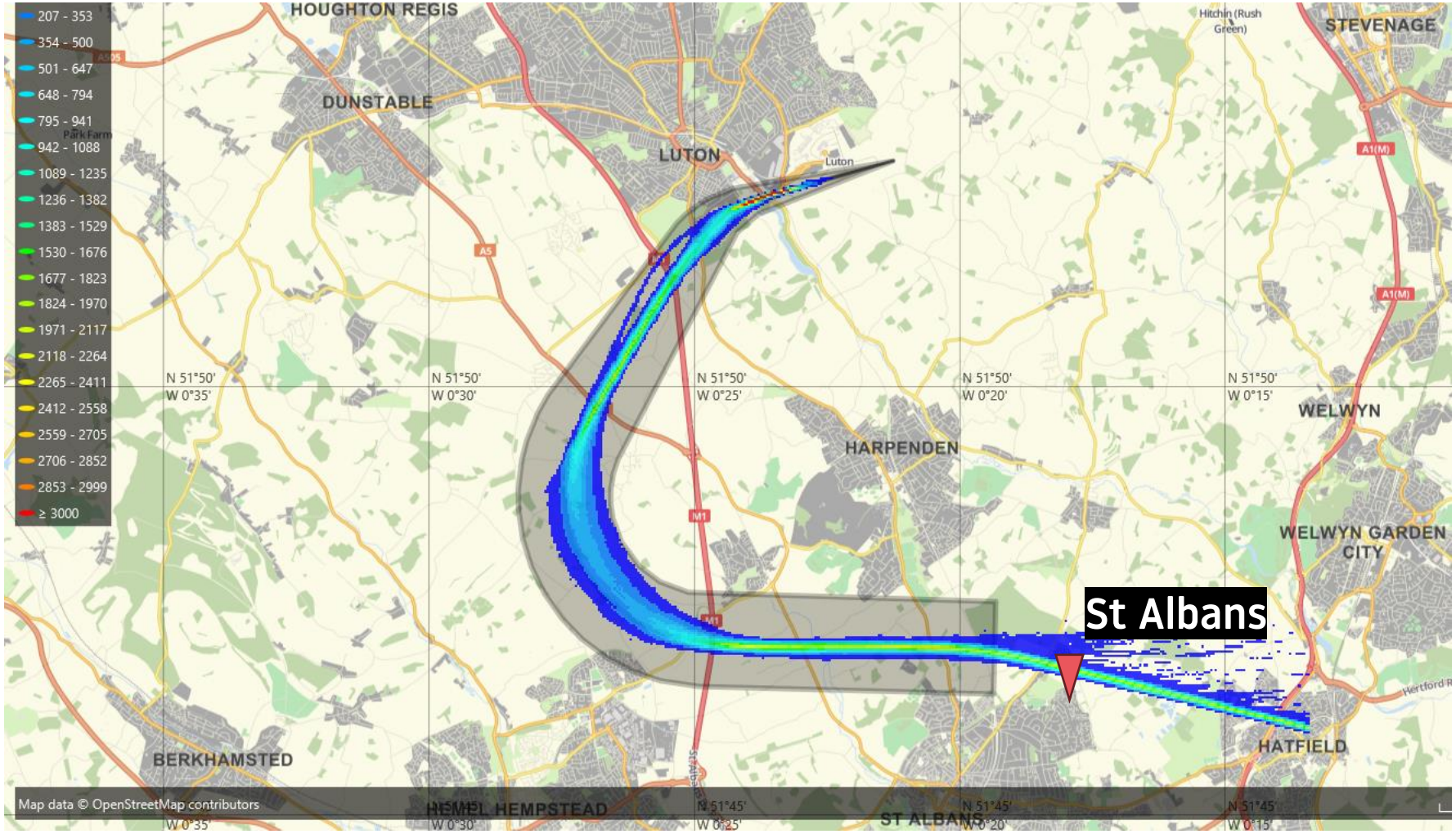
Operations during monitoring period

The graph below represents the average aircraft movement by hours during the monitoring period. Depending on the operating direction on the day, residents in St Albans may experience different flight patterns. During the peak periods, residents of St Albans may notice more frequent aircraft movements. In general, the morning peak starts at 6am on the days of departure operations and these aircraft would be lower at altitude and more noticeable as the dwellings at this location are near the westerly MATCH3Y departure flightpath. During the night period of 23:00 – 06:00 in the monitoring period, there were average of 15 departures.



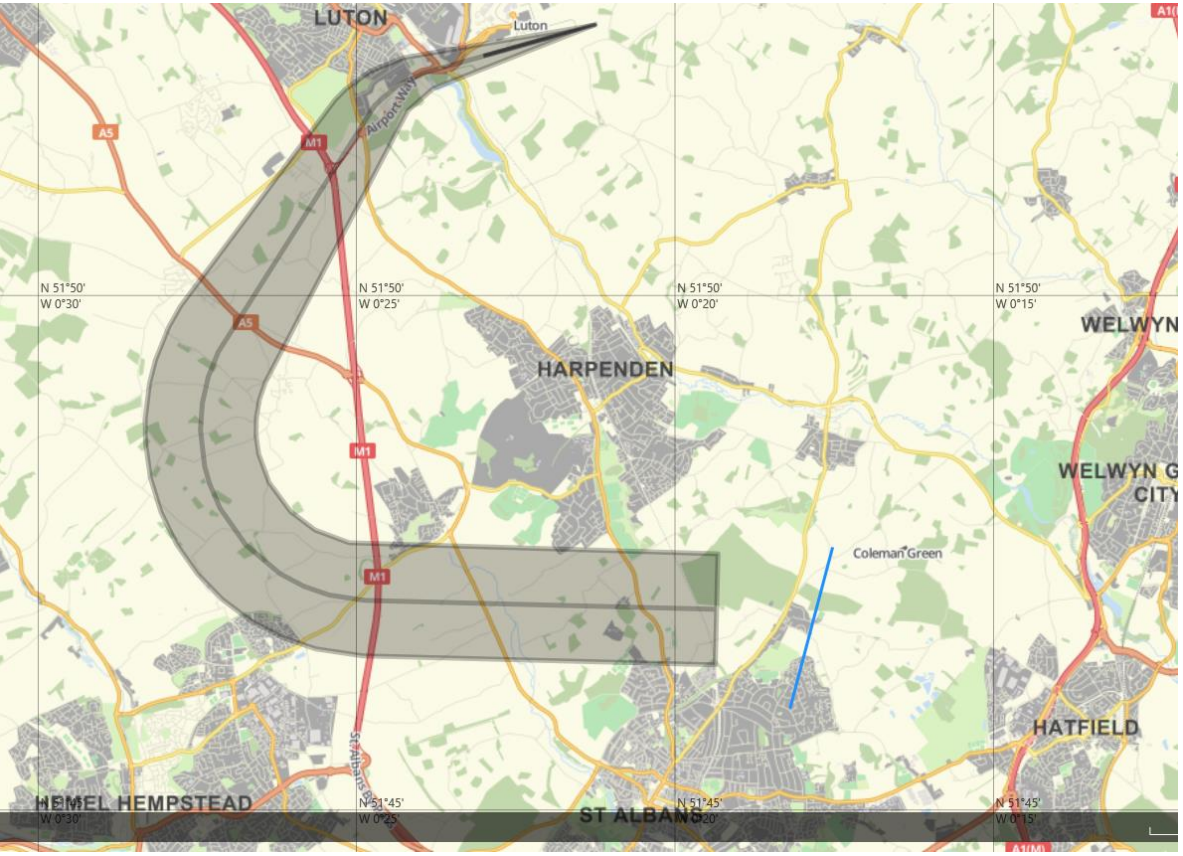
Aircraft Tracks

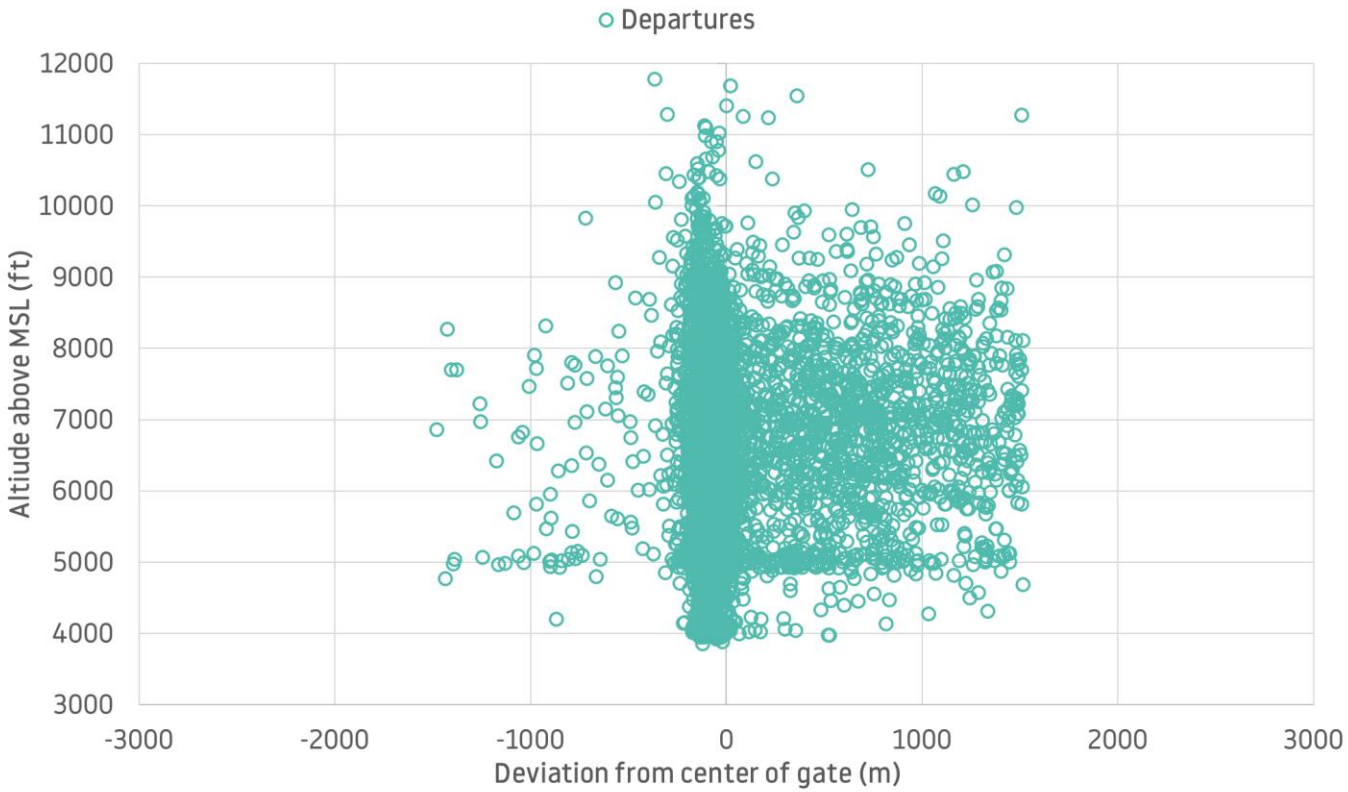
The heat map below show the representative flight tracks that passed near the noise monitor terminals during the monitoring period.
The red pinpoint indicates the location of the noise monitor in St Albans. This map shows the path of westerly departures on the MATCH3Y route.



Altitude Gate Analysis

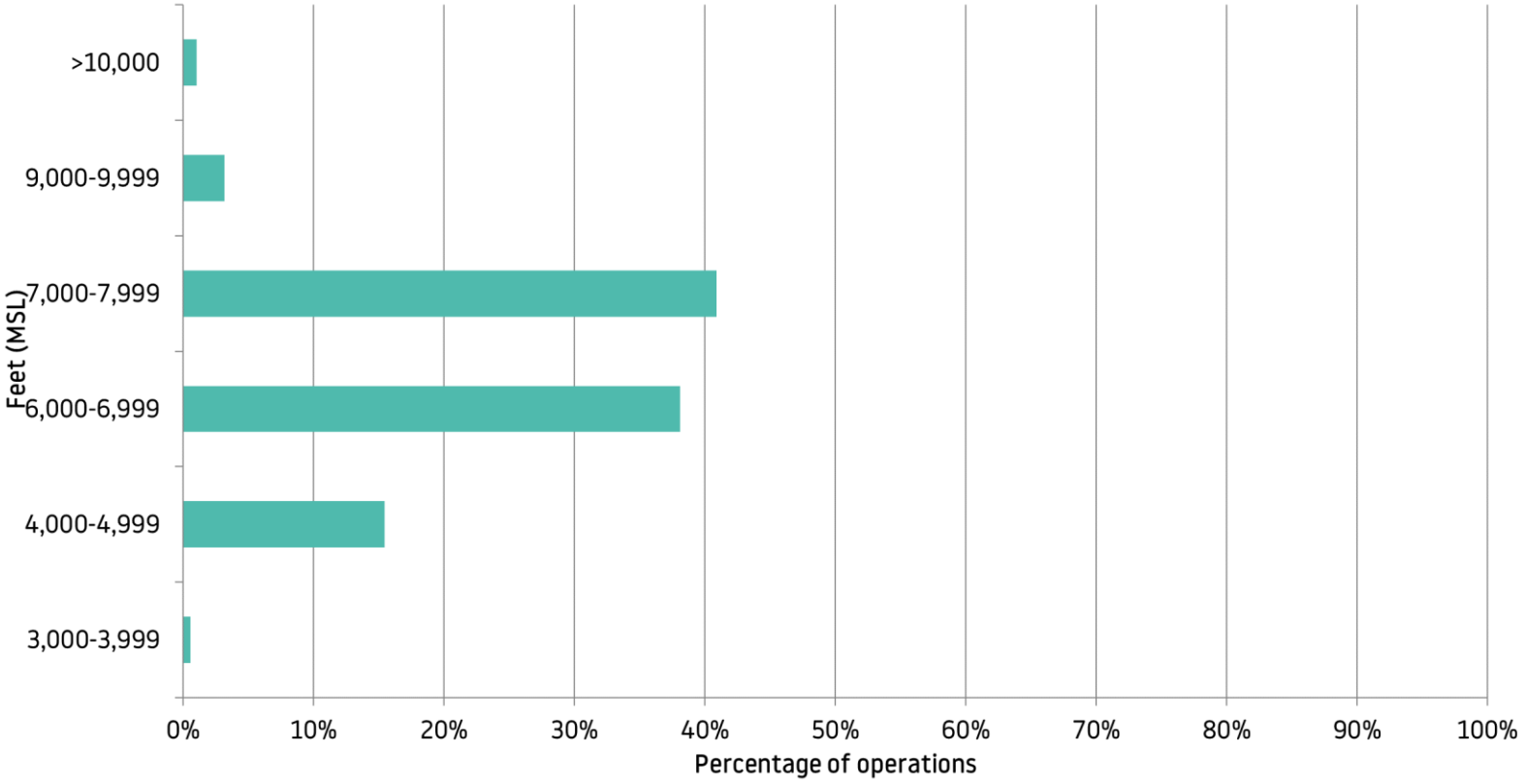
The altitude analysis for St Albans, shows the vertical and lateral dispersion of aircraft 1.5km either side of the noise monitor. The map below shows the 3km gate (blue line) which is drawn perpendicular to the NPR from northeast to southwest and it gathered information of every aircraft passing through the gate area. The scatter graph below shows the distance and altitude of aircraft from the noise monitor during the monitoring period. Residents in St Albans will see aircraft flying over St Albans on the days of westerly operations for departing aircraft.





Altitude Gate Analysis – Departures

The average altitude of aircraft was 6,611 feet AMSL (6,311 feet AGL) when they reach above the noise monitor above St Albans. The bar chart on the below shows the percentage rate and altitude of aircraft arriving.



Aircraft Type	Number of movements detected	Average Altitude (AMSL in ft)
A306	64	6,904
A319	448	6,788
A320 CEO	1,518	6,650
A320 NEO (A20N)	634	6,678
A321 CEO	904	6,418
A321 NEO (A21N)	1,718	6,516
B737-800 NG (B738)	440	6,315
B737 Max 8 (B38M)	182	6,265
Global Express (GLEX)	112	6,742
Cessna 560X (C56X)	108	6,833
All	6,128	6,611

How 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 St Albans, the noise monitoring terminal collected 5,806 readings. During the period, there were 7,657 westerly departures

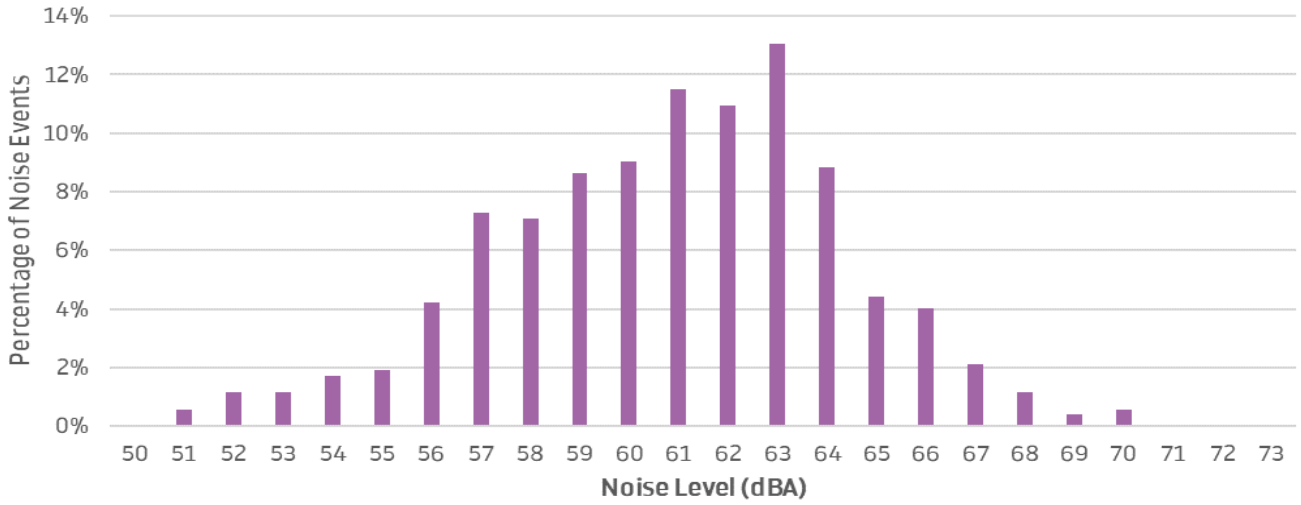
It is noteworthy that the noise monitor may not be able to record every aircraft noise event if the aircraft noise level is below ambient background noise or aircraft following a different route and not through the gate selected. Therefore, there may be a difference between the number of actual air transport movements and number of aircraft noise events collected during the monitoring period.

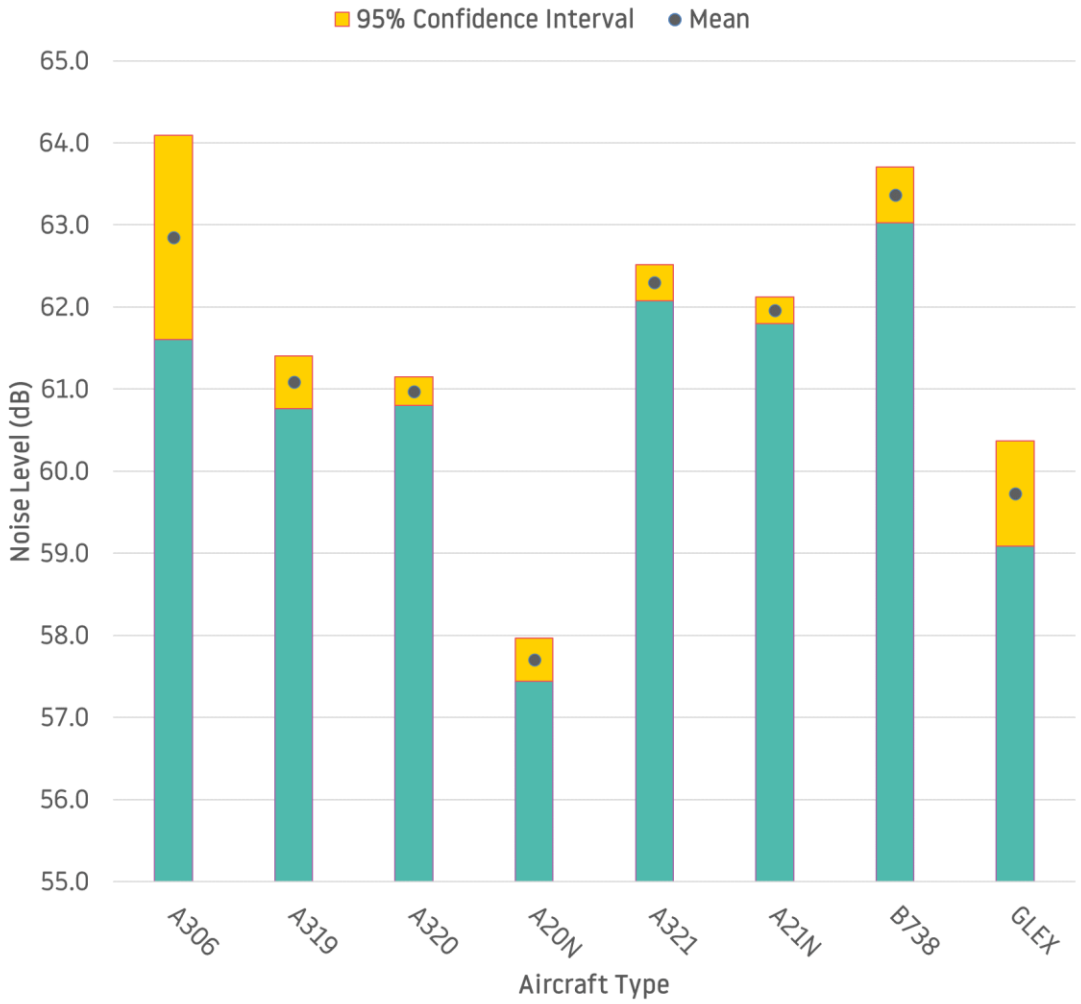
The weather also plays a big part in the data recorded and in periods of extreme weather i.e (very strong winds) the equipment can record noise incorrectly, so we exclude samples from the analysis during these weather conditions. When analysing the samples, the first thing we do is to ensure that there is no unusual noise event present which might not be caused by aircraft (i.e. vehicles or wildlife). A total of 7,028 recordings were excluded from the analysis for the above reasons.

Noise Results – Westerly departures

During the monitoring period, the noise recording samples were gathered from the most popular aircraft types at London Luton Airport*. The summary of the noise results is shown in this section. The tables show the average noise by aircraft type and the bar chart shows the uncertainty caused by the spread in readings and the sample size (95% confidence interval).

Aircraft Type	Number of movements	Average Noise (dB)
A306	43	62.8
A319	360	61.1
A320 CEO	1,204	61.0
A320 NEO (A20N)	506	57.7
A321 CEO	652	62.3
A321 NEO (A21N)	1,342	62.0
B737-800 NG (B738)	333	63.4
B737 Max 8 (B38M)	148	58.3
All	4,588	61.1





*The noise results shown in the analysis are only for those aircraft types that recorded more than 100 events per aircraft. A306 included for comparison.

Noise Results - Summary

- The average arrival noise in St Albans was 61.1dB, based on a sample size of 4,588.
- The noise from the newer generation aircraft, A320 NEO, produced less noise than A320 CEOs, at an average of 3.3dB quieter. The A321 NEO (A21N) was 0.3dB quieter than the older A321 CEO.
- Similarly, the Boeing 737 series, the new B737 Max 8 was 5.1dB quieter than its predecessor B737-800NG. Around 44% of all noise results movements were newer generation aircraft which are more fuel efficient and quieter.

Conclusion

- A mobile noise monitor was installed at a residential property on Belsize close from the 6th July to 5th October 2023.
- For St Albans, it specifically related to westerly departures on the MATCH3Y. During the monitoring period, the airport operated in the direction of easterly and westerly for 32% and 68% of the time, respectively. Generally, over the year, LLA operate in the westerly direction for 70% of the time due to the prevailing wind.
- The main aircraft type operating at London Luton Airport is the Airbus A320 CEO which produced an average noise of 61.0dB for departures.
- 44% of the noise events recorded in St Albans were created by the newer generation aircraft, A320 NEO, A321 NEO and B737 Max 8. The A320 NEO registered average departing noise of 57.7dB, 3.3dB lower than A320 CEOs.
- During the monitoring period, 107 aircraft were investigated as part of the Noise and Track violation scheme. Of these, 20 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.
- LLA publish other monitoring reports on a regular basis. These reports can be viewed and downloaded from the Noise webpage on the LLA website - https://www.london-luton.co.uk/corporate/community/noise.

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 South Luton.

Easterly Operations: Easterly operations refers to the time when the wind is blowing from the east and aircraft land on the easterly runway and would fly above South Luton.

Standard Instrument Departure (SID): Published route that an aircraft must follow on departure.

Noise Preferential Route (NPR): 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.

Altitude Gate Analysis: A gate which is drawn across an area and will gather flight date 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.