

# Community Noise Report

South Luton

October – December 2019



London  
Luton  
Airport

# Introduction

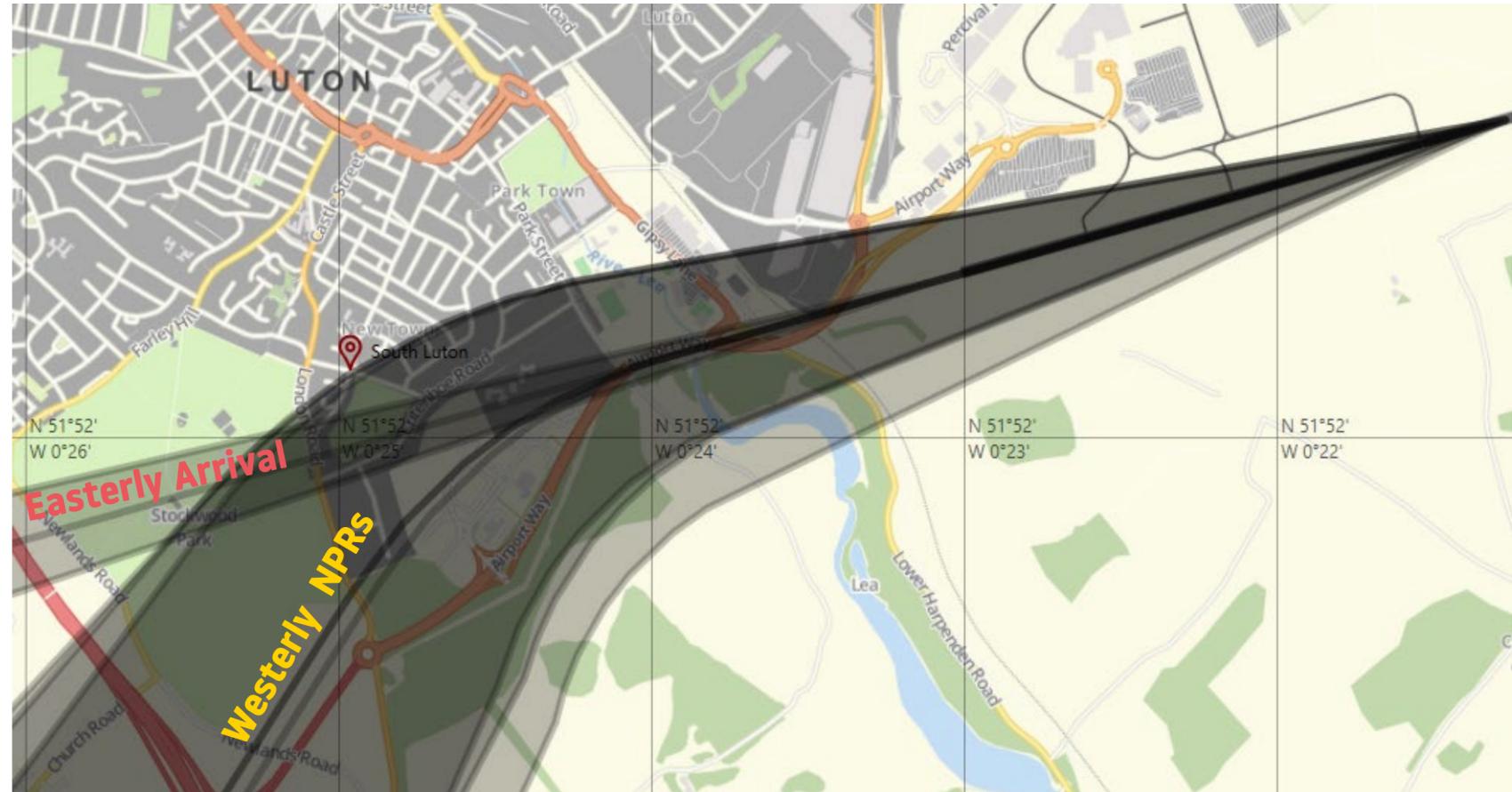
As part of the ongoing noise monitoring programme, London Luton Airport deployed portable noise monitoring terminals in South Luton.

The purpose of the monitoring programme is to understand the typical noise levels created in the local community. For South Luton, it specifically related to westerly departures and easterly arrivals. The Standard Instrument Departures (SIDs) or Noise Preferential Routes (NPRs) are shown on the map.

The noise monitor was located at a property on Tennyson Road, close to the edge of the westerly departure corridors and easterly arrival final approach path (260m from the centerline), approximately 2.2km from the Luton runway threshold at an altitude of approximately 528 feet above sea level. The red pinpoint on the map show the location of the noise monitor.

The noise monitor in South Luton was in place between 30<sup>th</sup> October and 19<sup>th</sup> December 2019.

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.

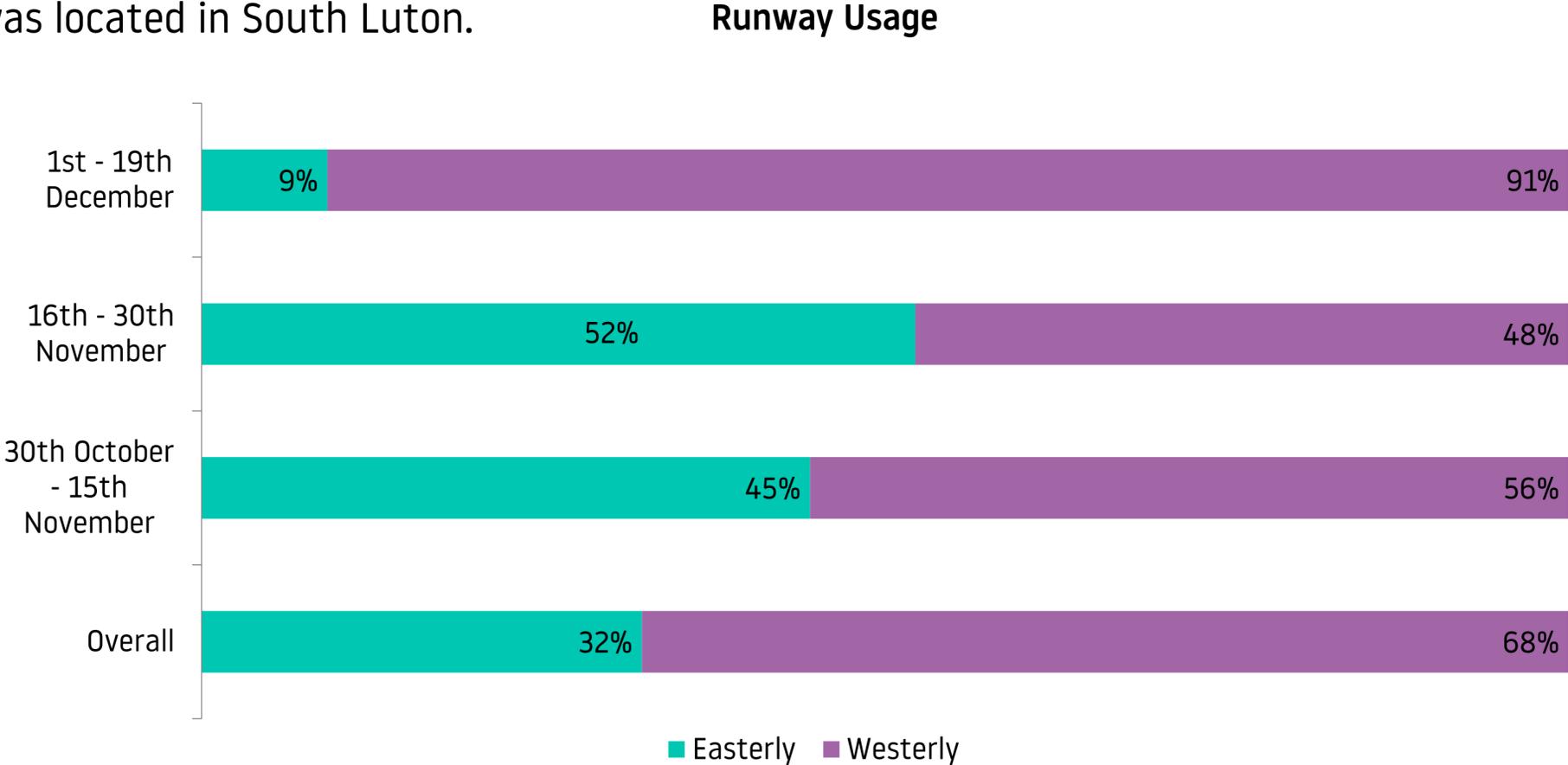


# LLA Operations During the Monitoring

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 32% easterly and 68% westerly. The 5 year average for this time of year is 25% easterly vs 75% westerly.

There were 2,752 aircraft landed on Runway 08 (easterly operation) and 5,812 aircraft departed on westerly SIDs operated from the airport whilst the noise monitor was located in South Luton.



# Daily Movements During Monitoring Period

The chart below shows the number of daily westerly departures and easterly arrivals that passed near the noise monitor. Due to the location of South Luton, all flights that departed on our Standard Instrument Departure (SID) routes during westerly operations or flights that landed on the easterly Runway 08 would have flown over near the monitor. The busiest day in terms of total easterly arrival and westerly departure during the monitoring period was the 13<sup>th</sup> of December – total movement of 211. Residents in the area may experience more frequent aircraft noise on busier days. Residents may experience quieter noise from aircraft when the airport operates in easterly operation due to quieter arrival noise – shown by the green bars. The recorded noise level between departure and arrival flights will be compared in this report.



# Operations During the Monitoring Period

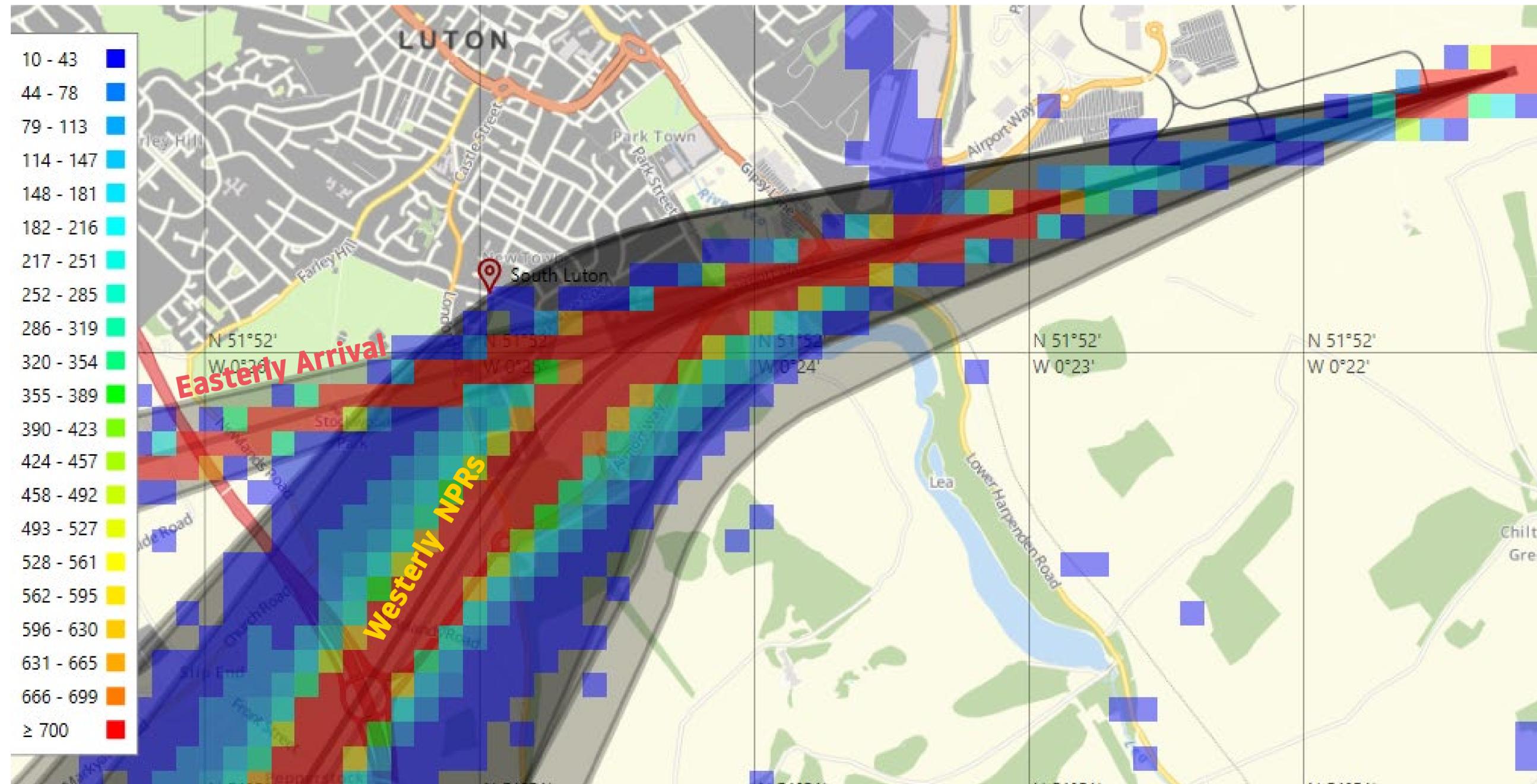
The graph below represents the average number of air transport movement during the monitoring period. Depending the operating direction on the day, residents in South Luton may experience different flight patterns and times of peak period. During the peak periods, local residents of South Luton may notice more aircraft. In general, the morning peak starts at 0700 and last for a longer period on a day of westerly operation which occur approximately 70% of the time yearly. On a day of easterly operation (30% of the time annually), South Luton may see more arrival aircraft between 2000-2300.

During the night period of 23:00 – 06:00 in the monitoring period, there was an average of 23 air transport movements and the same amount of air transport movement in the previous year.



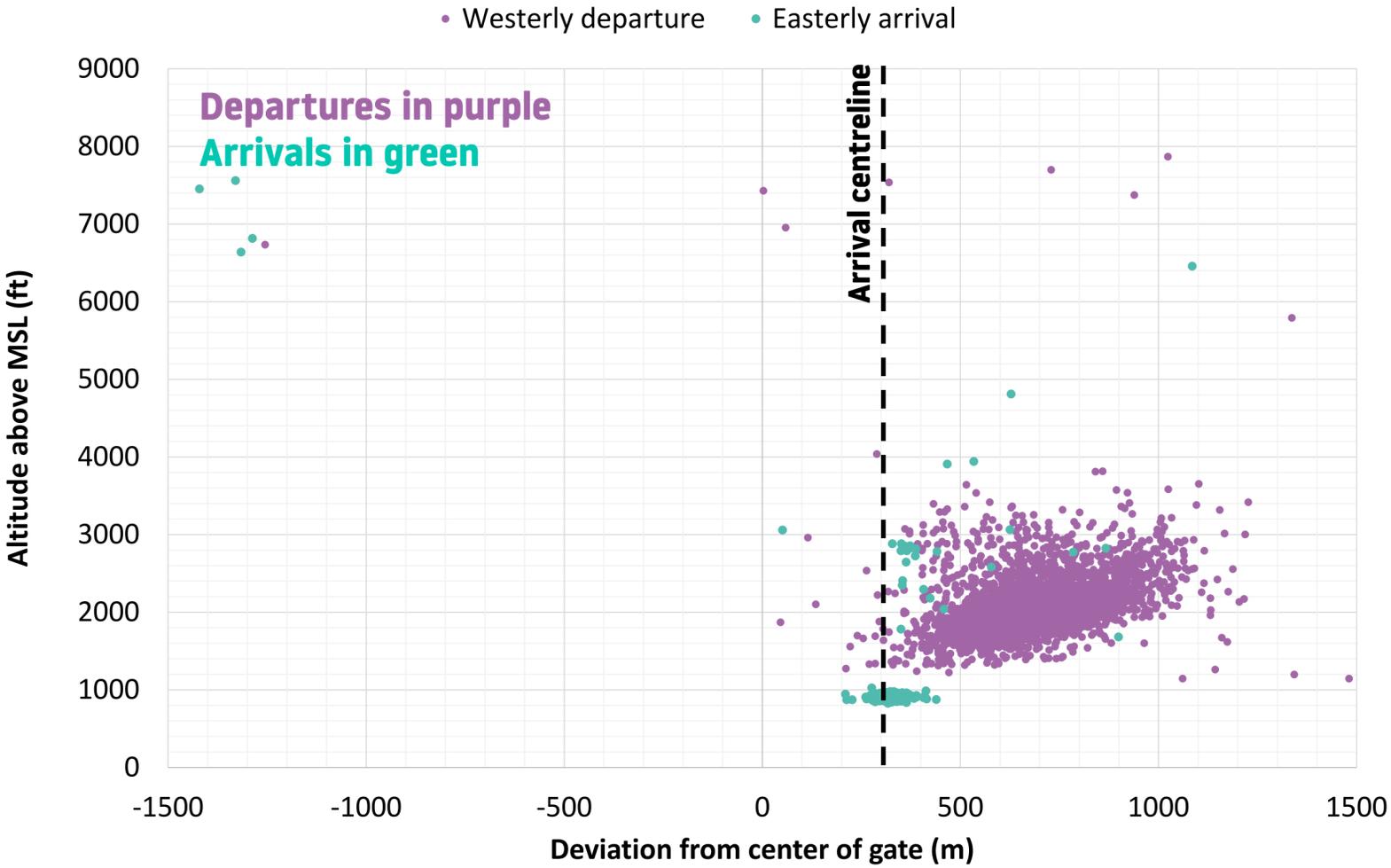
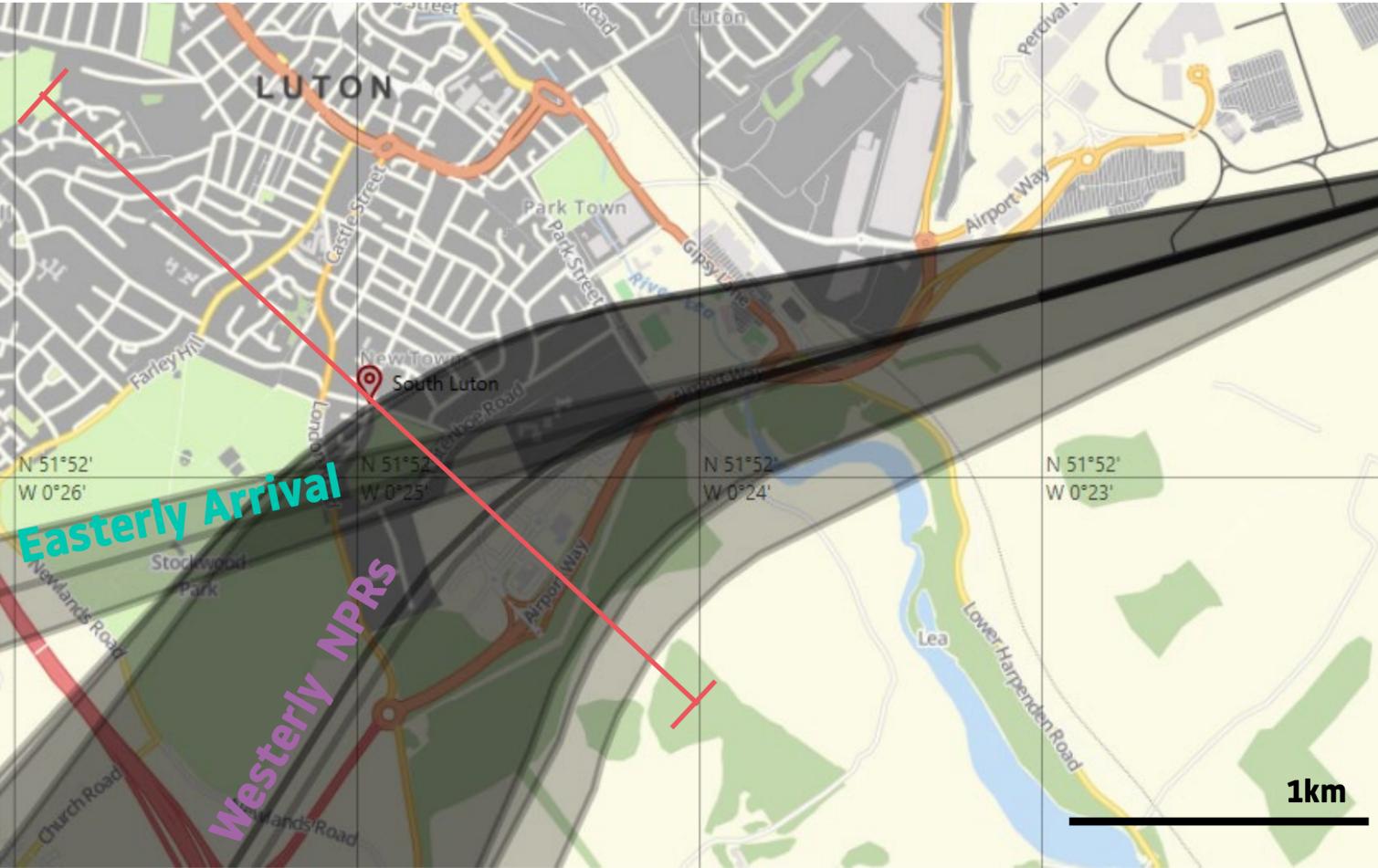
# Aircraft Tracks During the Monitoring Period

The heat maps below show the representative flight tracks that passed near the noise monitor terminals during the monitoring period. The red pinpoints indicate the location of the noise monitor in South Luton.



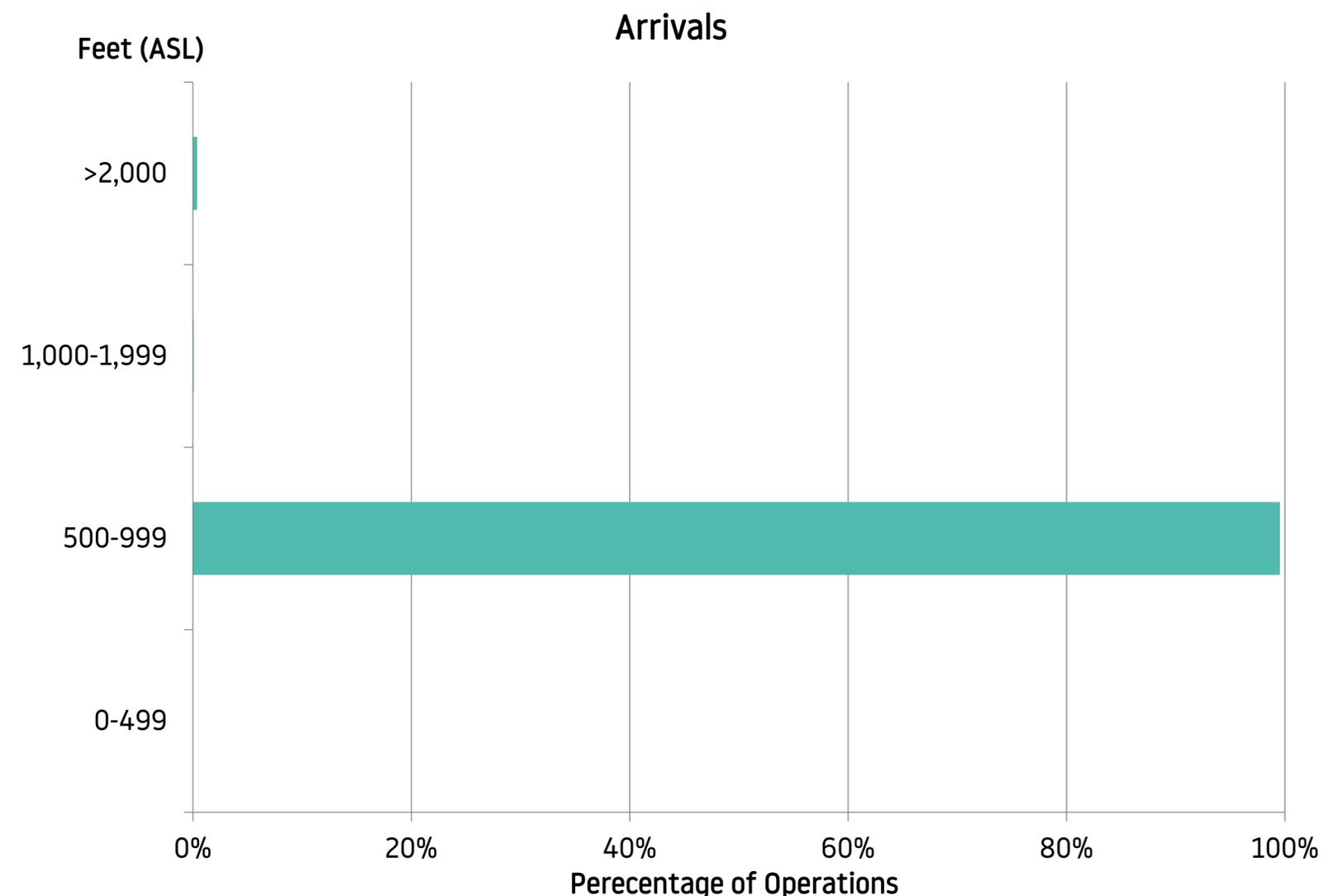
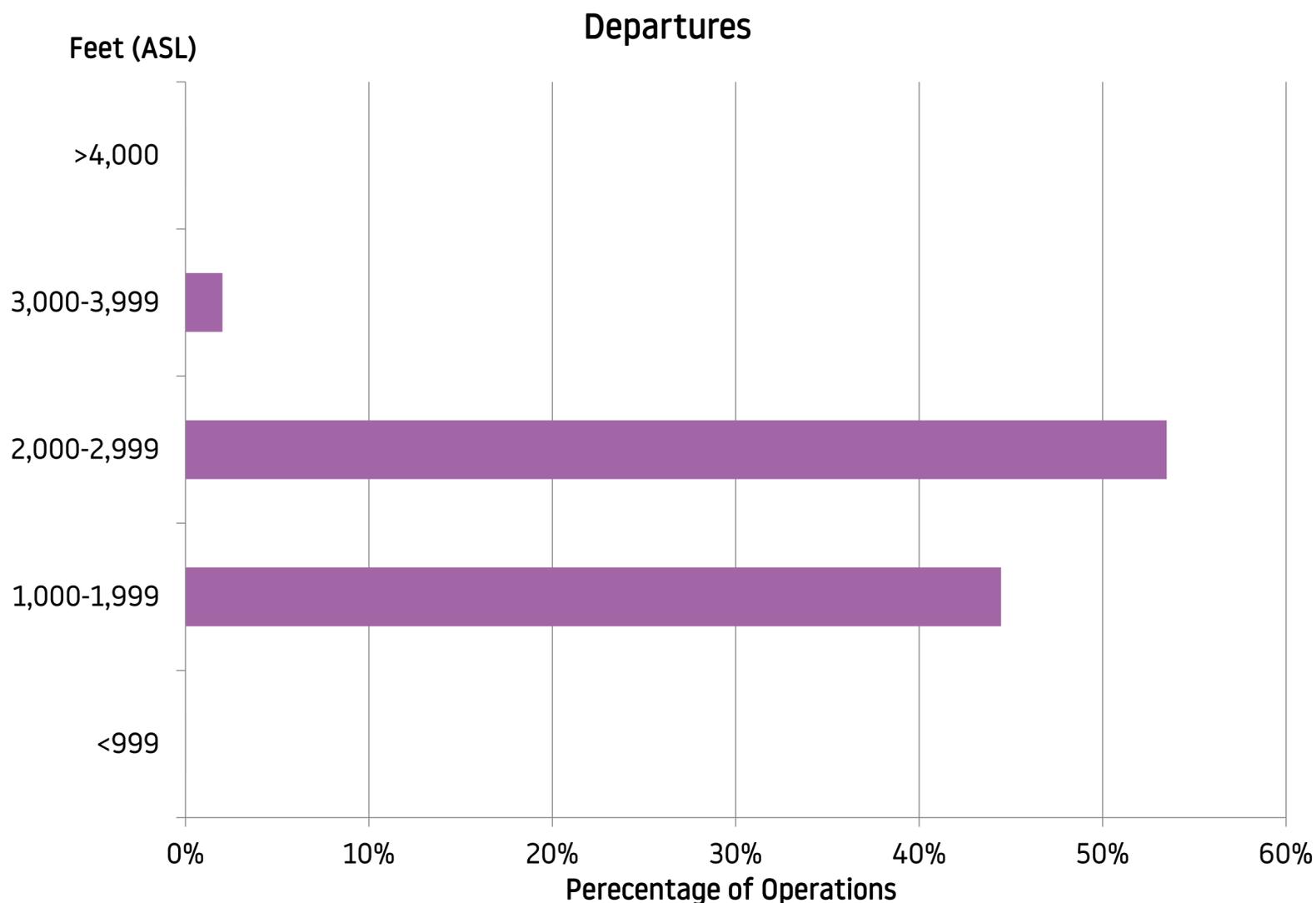
# Altitude Analysis During Monitoring Period

The altitude analysis for South Luton 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 across perpendicular to the NPRs from north-west to south-east and will gather information about 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 noise preferential routes (NPRs) and the easterly arrival route are displayed by the shaded area. Departing aircraft must remain within the NPR until reaching release altitude of 3,000ft during the day or 4,000ft at night (4,000ft at all times for Match route). Due to the close proximity of South Luton to the airport, local residents may see aircraft flying near South Luton at a low altitude.



# Altitude Analysis During Monitoring Period

The altitude analysis is split into two parts in this South Luton report – Departures and Arrivals. The below bar charts show the spread of the altitude when aircraft reach the noise monitor in South Luton. For departures, the average altitude of aircraft in this area was 2,076 feet above sea level (ASL) (1,548 feet above ground level [AGL]). The purple bar chart shows majority of the departing flights were above 1,000 feet ASL. For arrivals, aircraft tend to be at much lower altitude due to the close proximity to the runway touchdown area at South Luton. The average altitude of aircraft in this area was 919 feet ASL (391 feet AGL). Although the arriving flights are lower than the departing aircraft but the noise from arriving aircraft tend to be at a lower noise level. The noise data is discussed in the next chapter.



# 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).

During the monitoring period in South Luton, the noise monitoring terminal collected readings from 7,974 departing and arriving aircraft. During the period, there were total of 5,812 westerly departures and 2,752 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. During the monitoring period, 28 recordings need to be excluded from the analysis for weather reason.

The purpose of the monitoring programme is to understand the typical noise levels created in the local community. For South Luton, it specifically related to westerly departures and easterly arrivals. For this reason, the data analysis is split into two parts – Departures and Arrivals.

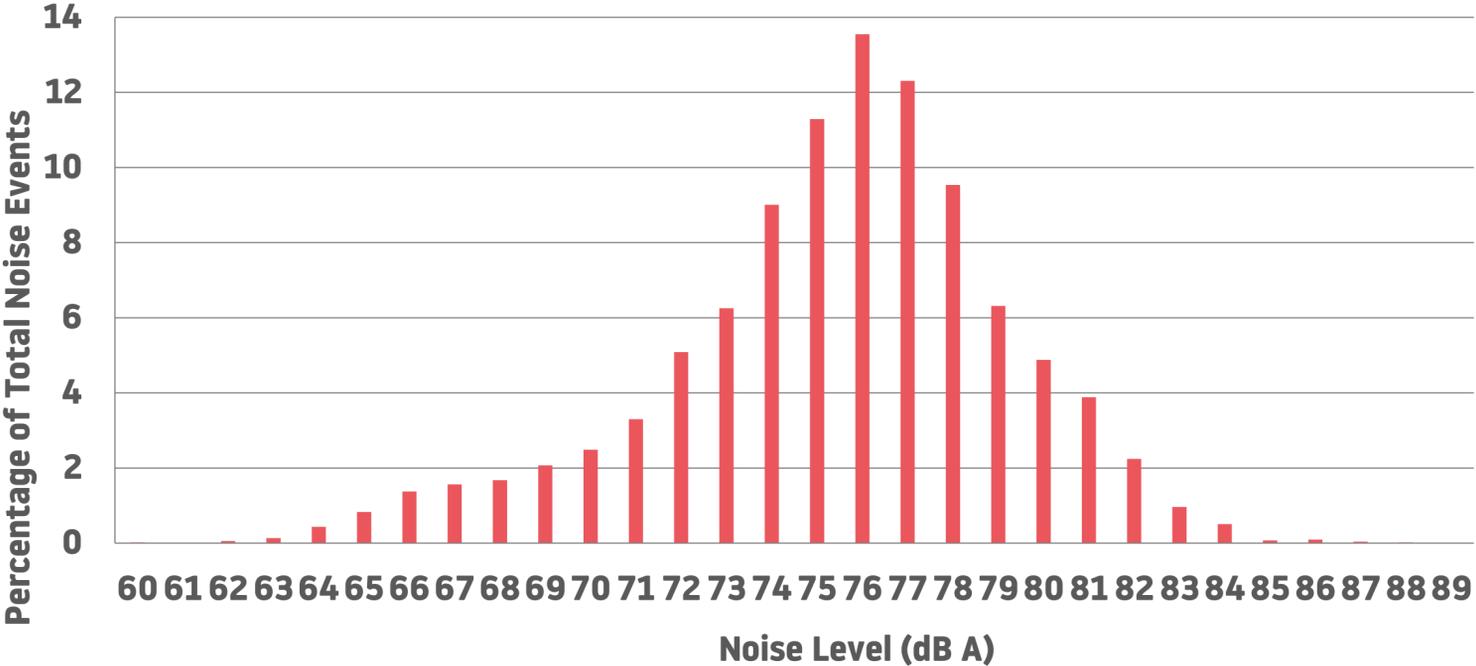
# Departures - Noise Results During Monitoring Period

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 departing aircraft noise are shown on this page.

Aircraft Type	Number of movements	Average Noise (dB)
A306	110	77.0
A319	740	76.2
A320 CEO	1,342	75.6
A20N (A320 NEO)	318	72.1
A321 CEO	946	77.1
A21N (A321 NEO)	85	74.9
B738	606	79.6
GLEX	177	73.8



The average departure noise in South Luton is 75.4dB, based on a sample size of 5,306. The table shows the average noise 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). From the results, Luton’s most popular aircraft Airbus A320 CEO has an average noise of 75.6dB in South Luton. The departure noise from A320 NEO and A321 NEO produced less noise than A320 and A321 CEOs. The B738 was the noisiest aircraft type at South Luton on days of westerly operation during the monitoring period.

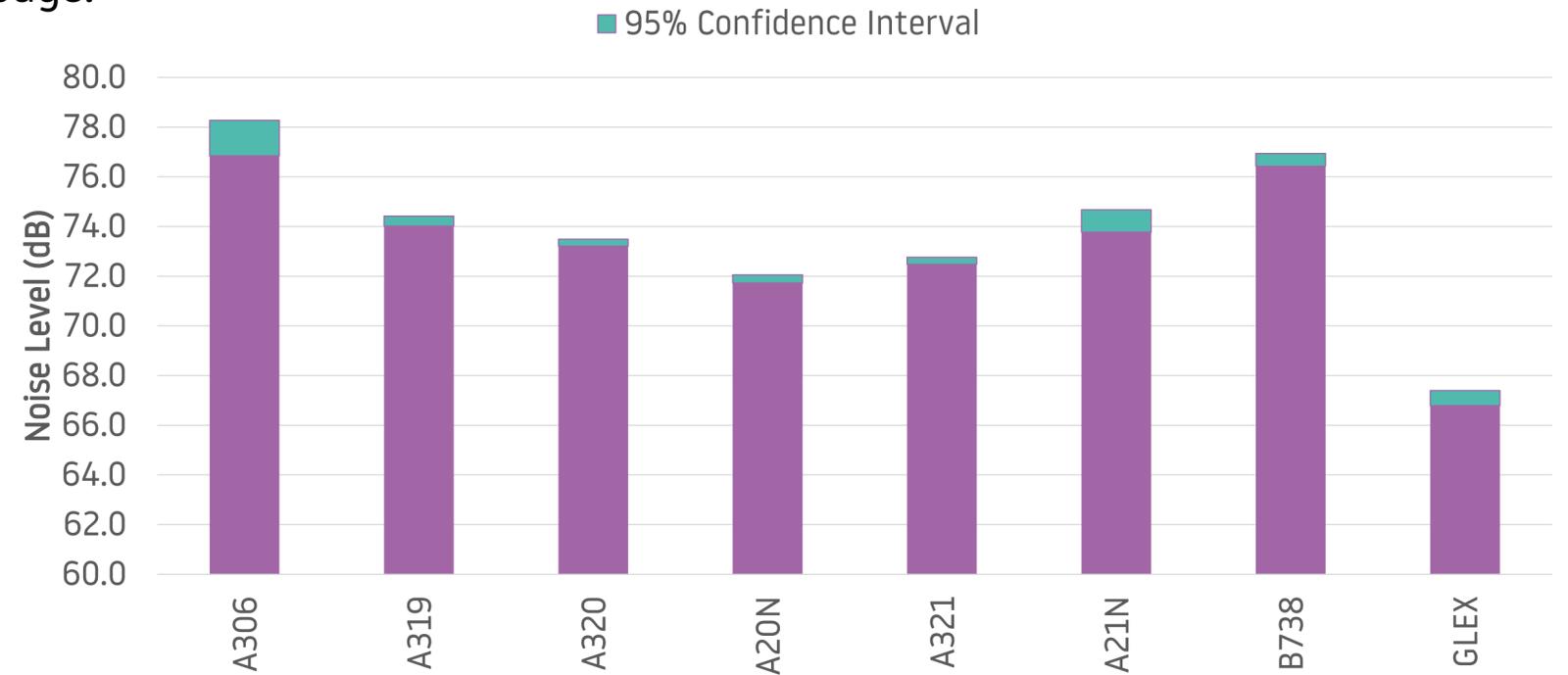


\*The noise results shown in the analysis are only for those aircraft types that recorded more than 100 events per aircraft (A321 NEO included for comparison).

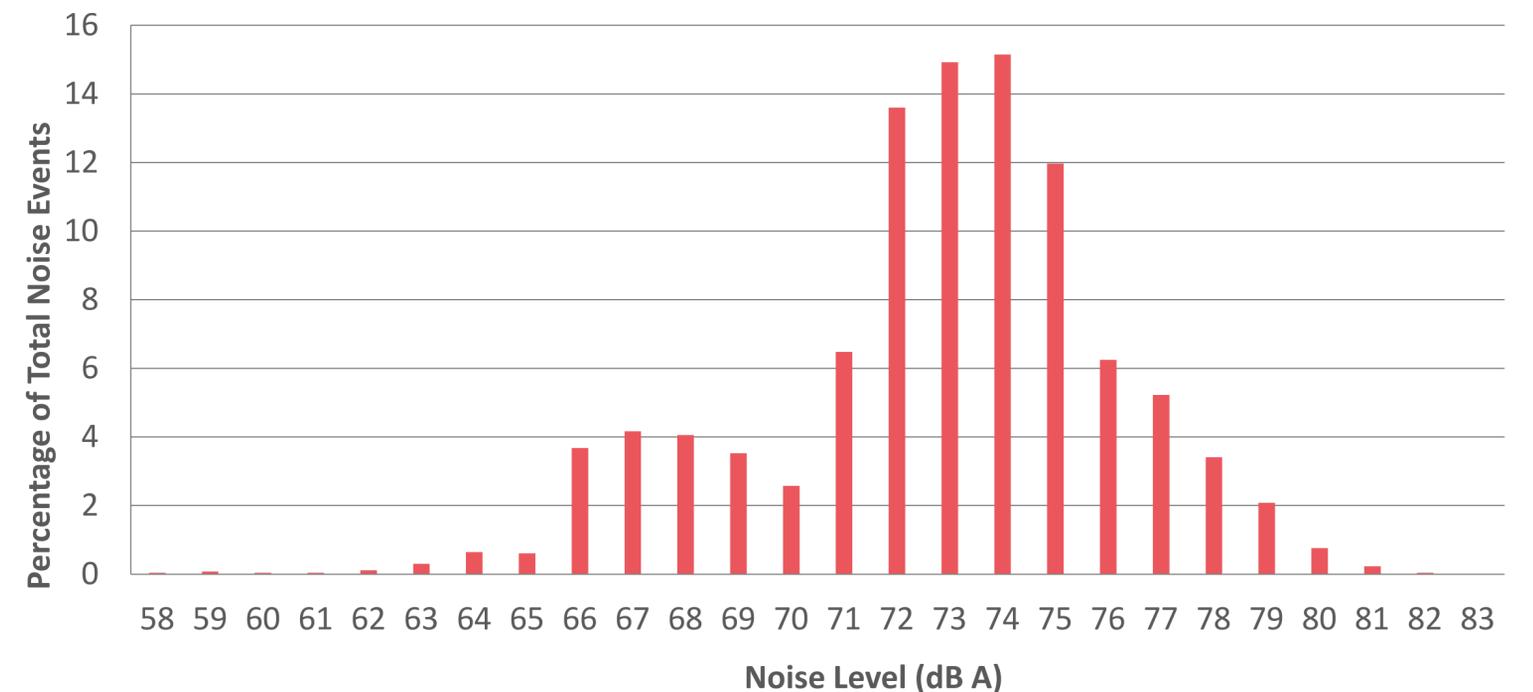
# Arrivals - Noise Results During Monitoring Period

During the monitoring period, noise recording samples were gathered from the most popular aircraft types at London Luton Airport\*. The summary of the results of arriving aircraft noise are shown on this page.

Aircraft Type	Number of movements	Average Noise (dB)
A306	67	77.6
A319	346	74.2
A320 CEO	612	73.3
A20N (A320 NEO)	182	71.9
A321 CEO	486	72.6
A21N (A321 NEO)	42	74.2
B738	332	76.7
GLEX	87	76.7



The average arrival noise in South Luton is 72.7dB, based on a sample size of 2,640. The table shows the average noise 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). From the results, Luton's most popular aircraft Airbus A320 CEO has an average noise of 73.3dB in South Luton. The A321 NEO has an average noise of 74.2dB, nosier than the A321 CEO. LLA will continue to investigate into this further as we collect more A321s' arrival noise events from the fixed noise monitor located in Frogmore. As seen from the altitude analysis in the previous chapter, arriving aircraft tend to be at a lower altitude. The noise data show the average arrival noise is lower than departure noise. During the noise monitoring period, LLA operated in easterly operation for 32% of the time.



\*The noise results shown in the analysis are only for those aircraft types that recorded more than 80 events per aircraft. (A306 and A321 NEO included for comparison)

# Conclusion



- For South Luton, it specifically related to westerly departures and easterly arrivals. During the monitoring period, the airport was using westerly operations for 68% of the time, this is less than the five year average of this time period.
- The average altitude of departing aircraft in South Luton is 2,076 feet above sea level (ASL), and as South Luton is already approximately 528 feet ASL, aircraft will typically be 1,548 feet above ground level (AGL) in this area. For the arrivals, the average altitude is 919 feet ASL or 391 feet AGL.
- Most aircraft shown in the altitude analysis flew within or above the NPR/approach corridor.
- The main aircraft type operating at London Luton Airport is the Airbus A320 CEO which produced an average noise of 75.6dB and 73.3dB for departures and arrivals respectively in South Luton. 7.6% of the noise events recorded in South Luton were created by the newer generation aircraft, A320 NEO and A321 NEO, registering average departing noise events of 72.1dB and 74.9dB respectively, quieter than the Airbus CEO departures. On the other hand, for the arrivals, the data show that the A321 NEO were noisier than the A321 CEO. LLA will continue to investigate into this further as we collect more A321 NEO's arrival noise events from the fixed noise monitor located in Frogmore. For the A320 NEOs, its arrival noise are quieter than the A320 CEOs.
- In general, the noise data show the average arrival noise is lower than departure noise. During the noise monitoring period, LLA operated in easterly operation for 32% of the time. But on a day of easterly operations, residents in the South Luton area may experience more frequent arriving aircraft between 2000-2300, than on a day of westerly operations.
- In Q4 2019, 57 aircraft (both westerly and easterly) were investigated as part of the Noise and Track violation scheme. 11 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](mailto: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 South Luton.

**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.

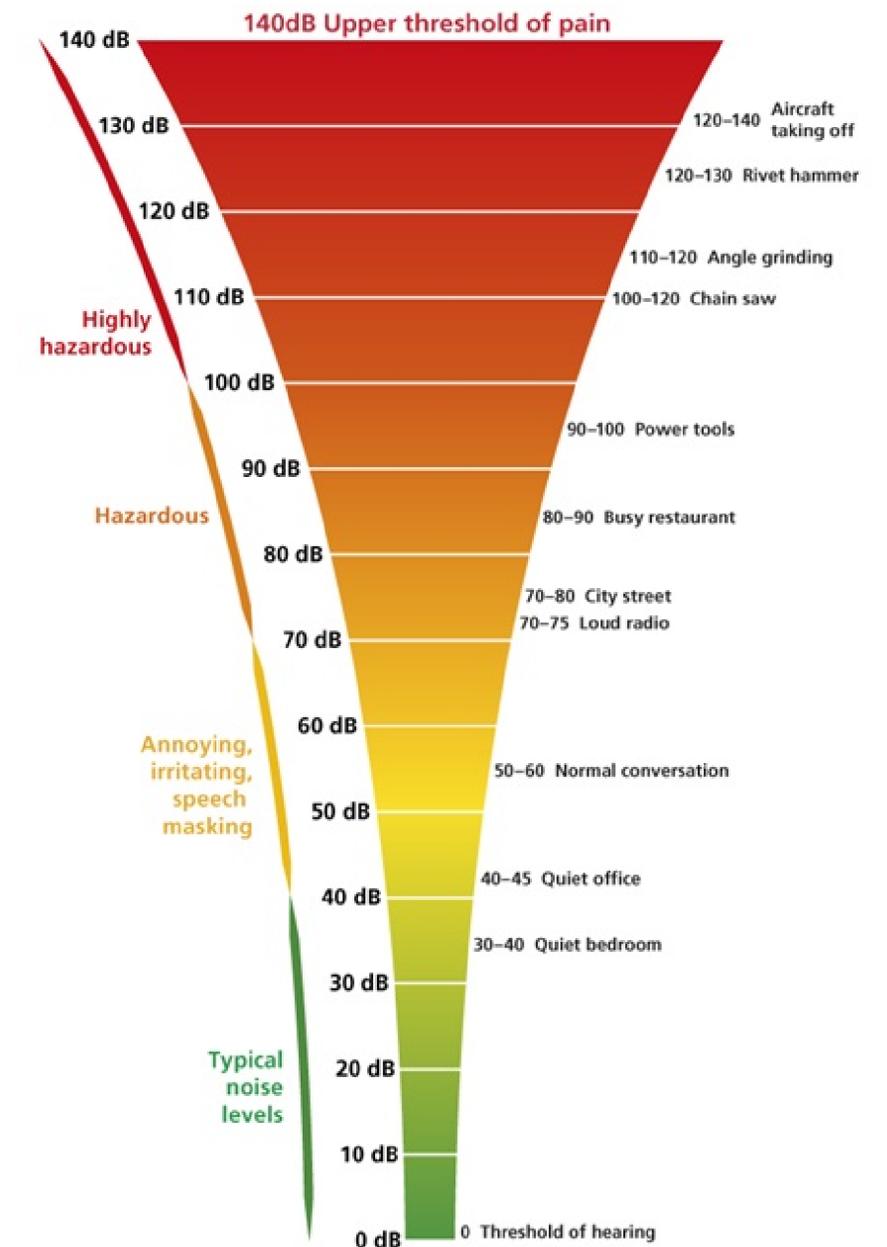
**Gate Analysis:** A gate which is drawn across an area and will gather information about every aircraft passing through the gate area.

**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