Community Noise Report

St Albans (Jersey Farm) June – September 2022



London Luton Airport



Introduction

As part of the ongoing noise monitoring programme and NADP Trial*, 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 the westerly Match departure. The Noise Preferential Route (NPR) is shown on the map.

The noise monitor was located at a property near Jersey Farm at St Albans, approximately 880m south of the westerly Match route's extended centerline, at an altitude of 302 feet above sea level. The red pinpoint on the map shows the location of the noise monitor.

The noise monitor in St Albans was in place between 30th June and 28th September 2022.

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.

*See glossary



LLA Operations

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 wind direction.

During the monitoring period, the direction of operation was 68% westerly and 32% easterly. The 5-year average for this time of year is 72% westerly vs 28% easterly.

There were 6,888 aircraft which departed on the westerly Match route whilst the noise monitor was in St Albans. In terms of total air transport movements, LLA was operating at 88% of pre-pandemic level.



■ Westerly ■ Easterly





Daily Movements

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





Operations

The graph below represents the average number of departures 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, local residents of St Albans may notice more frequent aircraft movements. In general, the morning peak starts at 0600 and may last up to 4 hours. On a day of westerly operation which occur approximately 70% of the time annually, residents may notice more aircraft flying close to north St Albans.

During the night period of 23:00 – 06:00 in the monitoring period, there was an average of 10 departures.



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Aircraft Tracks

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 St Albans. At this location it is nearby westerly Match departures.







Altitude Gate Analysis

The altitude analysis for St Albans 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 Match NPR until reaching release altitude of 4,000ft at all times. Aircraft may then leave the NPR after passing the railway line. Due to the close proximity of St Albans to the departure routes, local residents may see aircraft flying near the north of St Albans at an altitude of above 4,000ft.





Altitude Gate Analysis

The graphs below show the altitude spread when aircraft reach the noise monitor. For westerly departures, the average altitude of aircraft in this area was 6,892 feet above sea level (ASL) (6,590 feet above ground level [AGL]). The bar chart shows the majority of the flights departed on westerly Match route were above 4,000 feet ASL at Jersey Farm.



Aircraft Type	Number of movements	Average Alt (AMSL in
A306	69	7,191
A319	271	7,061
A320 CE0	1,372	6,936
A320 NEO (A20N)	420	6,936
A321 CEO	1,095	6,740
A321 NEO (A21N)	754	6,855
B737-800 NG (B738)	488	6,451
B737 Max 8 (B38M)	111	6,580
Global Express (GLEX)	122	6,613
Cessna 560X (C56X)	86	6,826
Gulfstream G560 (GLF6)	55	7,035
All	5,718	6,892







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 St Albans, the noise monitoring terminal collected readings from 2,672 westerly Match departing aircraft. During the period, there were total of 6,888 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. In addition, not all aircraft flew near the noise monitor. 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, it was ensured that there is no unusual noise event present which might not be caused by aircraft (i.e. vehicles, wildlife or construction). Some recording were excluded from the analysis for the above reasons.



Noise Results

During the monitoring period, 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 (d
A306	41	64.6
A319	101	62.9
A320 CE0	651	62.4
A20N (A320 NEO)	56	62.4
A321 CEO	710	62.9
A21N (A321 NEO)	467	63.0
B738	402	64.3
B739	33	64.6
B38M (B737 Max 8)	14	60.6
GLEX (Global Express)	37	63.2
All Aircraft Types	2,672	63.1



*The noise results shown in the analysis are only for those aircraft types that recorded more than 30 events per aircraft (B38M included for comparison).

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Noise Results

- are more aircraft flying near the area on the days of westerly operation which average around 70% of the year.
- ambient background noise. In addition, some dataset was excluded from analysis due to construction near the noise monitor.
- size (95% confidence interval).
- From the results, Luton's most popular aircraft Airbus A320 CEO and A321 CEO have an average noise of 62.4dB and 62.9dB respectively in St Albans.
- NEOs are quieter as shown by the 95% confidence interval (green bar).
- have skewed the noise data.
- period.
- more in-depth analysis and results will be published in the NADP report which can be found on the LLA Noise webpage once published.
- increase as operators at LLA operate more greener aircrafts into and out of Luton.

At Jersey Farm in St Albans, residents may experience aircraft noise as Jersey Farm is nearby the westerly MATCH departure route. Residents may notice there

The average westerly departure noise in St Albans is 63.1 dB. During the monitoring period, the noise monitor was only able to capture 2,672 aircraft sound events from 5,718 movements passing through the gate as shown in the previous section. This is due to the high altitude of aircraft at a wider spread location and the

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

The departure noise from the newer generation aircraft, A320 NEO, and its predecessor, A320 CEO had the same average noise level. On some occasion, the A320

From the noise data available, there were only 56 A320 NEO noise events captured out of the 378 flights (15%) from the 1km gate analysis whereas 651 noise events out of 1,209 A320 CEO flights (54%) were captured. 85% of quieter NEO aircraft departures were not able to be captured by the noise monitor. This may

All B739 departures within 1km of the noise monitor were captured. The B739 and the A306 were the noisiest aircraft type at St Albans during the monitoring

During the monitoring period, LLA conducted a NADP trial on the westerly Match departure route. This may change the noise effect on the ground at St Albans. A

In Q3 2022, LLA recorded 16% of all transport movements were the newer generation aircraft which are more fuel efficient and quieter. This will continue to

Conclusion

- A mobile noise monitor was installed at a residential property on Jersey Farm for three-month period. \bullet
- \bullet
- 302 feet ASL, aircraft will typically be 6,590 feet above ground level (AGL) in this area.
- generation aircraft, A320 NEO and A321 NEO, registering average departing noise events of 62.4dB and 63.0dB respectively.
- \bullet
- ullet<u>https://www.london-luton.co.uk/corporate/community/community-trust-fund</u>.
- \bullet published in the NADP report which can be found on the LLA Noise webpage once published.
- website <u>https://www.London-luton.co.uk/corporate/community/noise</u>.

For St Albans, it specifically related to westerly Match departures. During the monitoring period, the airport was using westerly operations for 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 average altitude of westerly departing aircraft in St Albans is 6,892 feet above sea level (ASL), and as St Albans is already approximately

The main aircraft type operating at London Luton Airport is the Airbus A320 CEO and A321 CEO which produced an average noise of 62.4dB and 62.9dB respectively in St Albans on a day of westerly operation. 16% of the noise events recorded in St Albans were created by the newer

Almost half of noise events by quieter NEO aircraft were not able to be captured by the noise monitor. This may have skewed the noise data.

In Q3 2022, 70 aircraft (both westerly and easterly) were investigated as part of the Noise and Track violation scheme. 19 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

During the monitoring period, LLA conducted a NADP trial on the westerly Match departure route. A more in-depth analysis and results will be

• LLA also publish other monitoring reports on a regular basis. These reports can be viewed and downloaded from the Noise webpage on the LLA



Glossary of Terms

NADP Trial: At London Luton Airport, operators use a mix of Noise Abatement Departure Procedures. These are known as Noise Abatement Departure Procedure 1 (NADP1) and Noise Abatement Departure Procedure 2 (NADP2). These procedures are designed to distribute the noise from an aircraft in different ways. For more details, please read the <u>NADP Project Plan</u> which is available on the <u>LLA Noise webage</u>.

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 St Albans.

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.

