MEASURING NOISE

Whilst different people perceive noise in very different ways, we recognise the need to measure and compare noise in a consistent, fair and clear way. Measuring noise is commonly undertaken by measuring sound energy, in decibels, as an indicator of loudness. The sound energy of some typical noise sources are:

- Electric toothbrush - 50 - 60 decibels
- Dishwasher - 55 - 70 decibels
- Road traffic - 70 - 85 decibels
- Whistling kettle - 80 decibels
- Blender - 80 - 90 decibels
- Leaf blower - 110 decibels

MEASURING AIRCRAFT NOISE

At Stansted Airport we have a sophisticated noise monitoring system that uses 8 microphones. These microphones are located underneath the departure flight paths used by aircraft, at a distance of approximately 6.5km from the point on the runway where an aircraft begins its take-off. We choose this point as it coincides with the internationally agreed monitoring point at which noise from an aircraft is measured as it is certified before entering service. By measuring at this point we can therefore ensure that noise from an aircraft when it is flying at Stansted Airport is no more than when it was certified before entering service.

On average, an aircraft at this point in its flight will record 75 decibels, though some aircraft will be in excess of 90 decibels and some below 65 decibels. In general, larger and older aircraft are noisier whilst smaller and more modern aircraft are quieter. Many other factors will influence aircraft noise, particularly weather and wind direction.

At Stansted Airport we have a noise penalty scheme to fine aircraft that exceed maximum noise limits, these limits are set at 94 decibels, 89 decibels and 87 decibels for daytime, late evening and nighttime periods respectively. Aircraft exceeding these noise limits must pay a fine, which is transferred to our Community Trust Fund and invested in local projects. More information about the Trust Fund is available on the ‘Community Section’ of our website.

In addition to measuring noise under our flight paths, we also have mobile noise monitoring equipment, which is used to measure noise in local communities and to assess how the impact of aircraft noise changes over time. The results from our monitoring are published on the ‘Our Noise Performance’ section of our website.

ASSESSING THE IMPACT OF AIRCRAFT NOISE

Estimating the impact of aircraft noise is complex as there is a need to consider both the number of aircraft noise events and the loudness of each, which can vary widely between different aircraft types. For many years the most common way to estimate noise impact has been to use noise contours. An example of a recent noise contour is shown below.

ABOVE: Example noise contour; showing daytime 57dBAEQ 16h.
A noise contour is a line of equal noise, so the average aircraft noise at all points on the line will be the same. The use of noise contours to describe noise ‘footprints’ has been very helpful to assess and visualise the extent of noise impacts and the likelihood that they will lead to community intrusion. Within the UK, long standing Government policy has been that areas within the 57 decibel daytime contour are likely to experience a significant impact. At nighttime, areas within the 55 decibel contour are likely to experience a significant impact on sleep disturbance. This does not suggest that everyone will react in the same way to aircraft noise and the exact values are themselves the subject of much debate, but in principle, areas within higher noise contours will experience higher noise levels and the impact is likely to be greater. The Government has published noise contours for Stansted Airport for many years and the results can be seen on the ‘Our Noise Performance’ section of our website. In recent years we have seen noise contour areas remaining largely the same, despite an increase in aircraft movements, as airlines introduce more modern and quieter aircraft.

ALTERNATIVE WAYS OF ASSESSING AIRCRAFT NOISE

Noise contours provide a highly visual way to show where noise impacts are greatest. They are also a good way to show how aircraft noise changes in the long term. As a result, Stansted Airport has agreed with Uttlesford District Council a legally binding agreement to ensure that the area of our 57 decibel daytime contour encompasses an area of 33.9 sq. km or less. Average noise contours only show long term average noise and as such they do not do not always closely reflect people’s day to day experience of aircraft noise. They also give no indication of the number of aircraft operations that give rise to the average noise. In response to these limitations, we have worked closely with the Stansted Airport Consultative Committee (STACC) to develop additional ways of measuring and reporting aircraft noise, to improve the information that we make publicly available and to allow people to better understand the character of aircraft noise impacts close to the airport.

Beginning in 2016, in addition to publishing average noise contours we will also publish details of the number of aircraft that exceed 70 decibels, a moderate noise level similar to day to day road traffic noise. An example of a ‘number above’ contour is included below.

The advantage of a ‘number above’ noise contour is that, for any location, it simply and clearly shows the number of aircraft that will exceed a noise level of 70 decibels on any typical day. As it is simpler and clearer to interpret, it can be a useful addition to our suite of noise reports. We will update all of our noise contours annually. For anyone interested to learn more about a specific aircraft operation, we continue to offer the WebTrak radar replay service, allowing users to replay the flight profile of any aircraft operation to or from Stansted Airport. WebTrak is available at: http://webtrak5.bksv.com/stn.

The publication of ‘number above’ noise contours will provide local communities with better and more targeted information and as such we believe it is another significant improvement in how we manage and communicate aircraft noise.

If you have any questions about measuring noise or about any of our environmental programmes please do not hesitate to get in touch via stn_communityrelations@stanstedairport.com. Alternatively there is an opportunity to meet the airport team at one of our regular community outreach meetings. The current list of dates is available at www.stanstedairport.com/community/community-outreach-sessions.
ABOVE: Example of N70, showing daytime noise at bands of 10, 20 and 50 events per day at Stansted Airport.

Year 2014 Average Summer Day N70 Contours - 20, 50, 100, 200 events

Standard Runway Modal Split 70% SW / 30% NE

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RIGHT: Example of N70, showing daytime noise at bands of 10, 20 and 50 events per day at Stansted Airport.