

Noise monitor positions at Heathrow, Gatwick and Stansted Airports

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Revision History

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Updated to include noise monitor positions used by ERCD for model validation in 2017. Minor editorial changes have also been incorporated.

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Chapter 1

Introduction

The amount of aircraft noise experienced by people living around Heathrow, Gatwick and Stansted Airports during the summer of each year is estimated by the Environmental Research and Consultancy Department (ERCD) of the Civil Aviation Authority. The noise exposure contours are generated by the UK civil aircraft noise contour model (ANCON), which calculates the emissions and propagation of noise from arriving and departing air traffic.

In order to validate the computer model, ERCD routinely collects and analyses noise measurements from the Noise and Track Keeping (NTK) systems installed at each airport. ERCD obtains data from the airports' NTK systems via a link to the remote servers. At present there are 12 fixed (permanent) noise monitor sites at Heathrow, 5 at Gatwick and 8 at Stansted. ERCD may also utilise available data from other suitably positioned mobile monitors to supplement measurements from the fixed sites for model validation.

For the production of the standard L_{Aeq} 16 hr daytime noise contours, there is no requirement to have noise data at any great distance outside those contours, so generally noise measurements tend to be restricted to locations within and just beyond the 54 dB contours¹. However, mobile monitors are, on occasions, deployed at more distant locations to measure the noise of specific operations, for example to study departure noise along a specified route.

This report describes the airport noise monitor positions used by ERCD for model validation between 2007 and 2017. It should be noted that this document does not provide information on every airport noise monitor; only those locations deemed suitable for model validation are described. Future editions of this report will be published to describe new monitor positions as they become known. The techniques used to acquire the noise data are described separately in ERCD Report 0406 (Ref 1).

¹ The L_{Aeq} 16-hour daytime noise contours are generally plotted from 54 to 72 dBA in 3 dB steps. The Survey of Noise Attitudes 2014 (www.caa.co.uk/cap1506) found that the degree of annoyance (based on % of respondents highly annoyed) previously occurring at 57 dBA, now occurs at 54 dBA.

Chapter 2

Fixed monitor positions

The locations of the fixed sites are shown in Figures 1, 2 and 3 respectively for Heathrow, Gatwick and Stansted. Also illustrated for reference in each figure are the Noise Preferential Routes (NPRs) which form the initial part of the conventional Standard Instrument Departure (SID) routes. The standard modal split 54 dB L_{Aeq} 16 hr contours for 2016 are also shown (Refs 2, 3 and 4).

Although sited principally to monitor departure noise², some of the fixed monitors are located close to the extended runway centrelines and can also be used to measure noise from aircraft landing in the opposite direction.

The layout of the runways and locations of the thresholds at each airport are shown in Figures 4 to 6. For each fixed monitor, the distance from the nominal start-of-roll (SOR) position on the relevant runway and, where applicable, the distance to the touchdown position, is provided for Heathrow, Gatwick and Stansted in Tables 1, 2 and 3, respectively³ (all distances are approximate).

At Heathrow, fixed site B provides suitable noise data for arrivals at 2.8 km to touchdown. Likewise, site 1 at Gatwick provides data for arrivals at 3.6 km to touchdown. At Stansted, site 5 provides noise data for arrivals at 4.3 km to touchdown.

² The noise limits and positional adjustments that apply at the fixed monitors are set out in the Section 78 Notices for each airport and published in the UK Aeronautical Information Publication (AD 2-EGLL-1, AD 2-EGKK-1 and AD 2-EGSS-1).

³ For modelling purposes, the start-of-roll position is assumed to be 150 metres in from the start of the runway (i.e. from the 'end of concrete') and the touchdown position is assumed to be approximately 300 metres in from the runway threshold.

Chapter 3

Mobile monitor positions

Heathrow

The locations of the mobile sites used at Heathrow are shown in Figure 1. The corresponding track distances from the relevant start-of-roll and touchdown positions are provided in Table 4.

In 2017, departure measurements were acquired between 4.8 and 21.6 km from SOR, and between 1.7 and 13.2 km to touchdown for arrivals. In previous years, departure noise measurements were acquired between 3.9 and 25.6 km from SOR, and between 1.1 and 17.5 km to touchdown for arrivals. By comparison, the 2016 54 dB contour extended up to 19 km and 21 km for departures and arrivals respectively.

Gatwick

The locations of the mobile sites used at Gatwick are shown in Figure 2. The corresponding track distances from the relevant start-of-roll and touchdown positions are provided in Table 5.

In 2017, departure measurements were acquired between 13.6 and 28.7 km from SOR, and between 11.3 and 27.6 km to touchdown for arrivals. In previous years, departure noise measurements were acquired between 8.2 and 30.0 km from SOR, and between 11.3 and 29.6 km to touchdown for arrivals. By comparison, the 2016 54 dB contour extended up to 17 km and 20 km for departures and arrivals respectively.

Stansted

The locations of the mobile sites used at Stansted are shown in Figure 3. The corresponding track distances from the relevant start-of-roll and touchdown positions are provided in Table 6.

In 2017, departure noise measurements were acquired at 12.6 km from SOR. In previous years, departure noise measurements were acquired between 3.8 and 22.2 km from SOR, and between 1.3 and 17.5 km to touchdown for arrivals (in 2008 and 2012 there were no suitably positioned mobile monitors at Stansted). By comparison, the 2016 54 dB contour extended up to 11 km and 13 km for departures and arrivals respectively.

APPENDIX A

References

1. *Techniques used by ERCD for the Measurement and Analysis of Aircraft Noise and Radar Data*, ERCD Report 0406, Civil Aviation Authority, January 2005
2. *Heathrow Airport 2016 Summer Noise Contours and Noise Action Plan Contours*, ERCD Report 1701, Civil Aviation Authority, November 2017
3. *Noise Exposure Contours for Gatwick Airport 2016*, ERCD Report 1702, Civil Aviation Authority, January 2018
4. *Noise Exposure Contours for Stansted Airport 2016*, ERCD Report 1703, Civil Aviation Authority, April 2017

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