

# London Biggin Hill Airport



Response to the Airports Commission's Discussion Paper No.5 –  
Aviation Noise

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# **RESPONSE TO THE AIRPORTS COMMISSION'S DISCUSSION PAPER NO.5: AVIATION NOISE**

**BY LONDON BIGGIN HILL AIRPORT**

6 September 2013

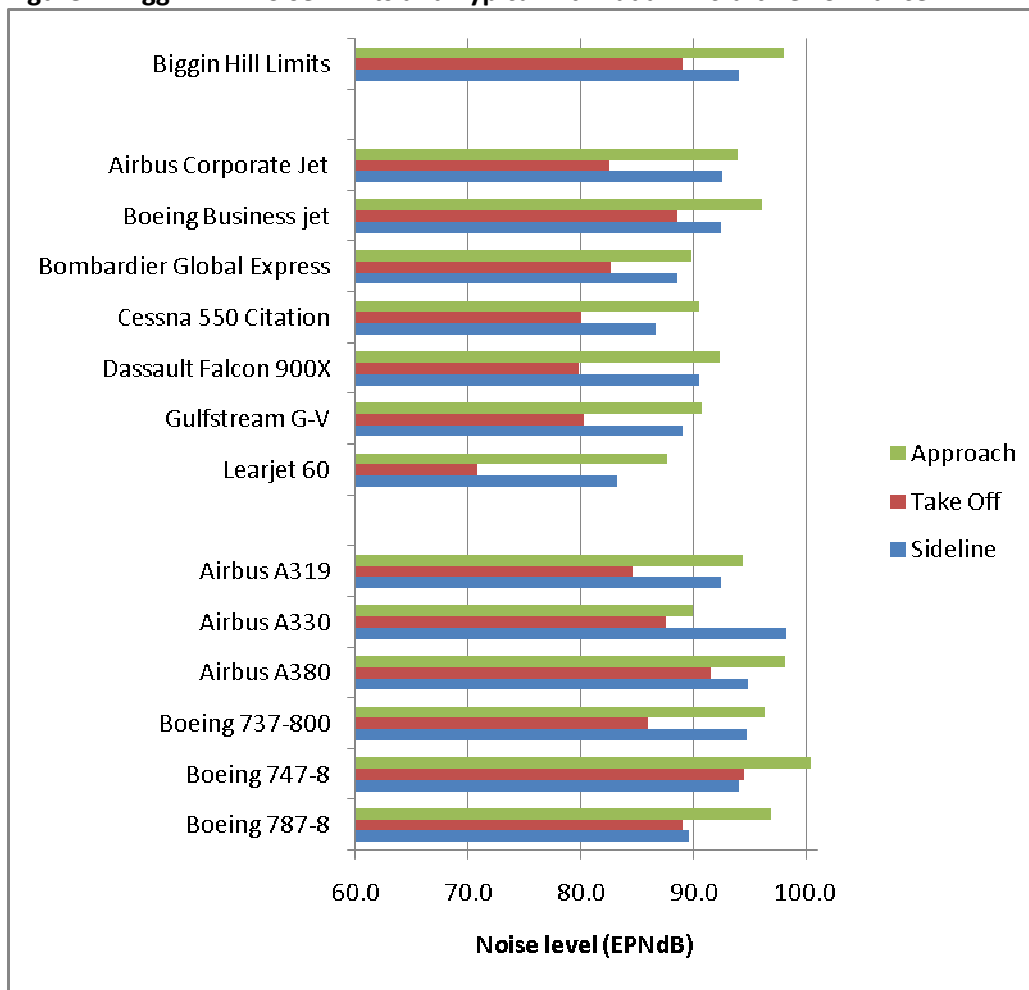
## Introduction

1. This response to the Airports Commission's Discussion Paper on Aviation Noise has been prepared on behalf of London Biggin Hill Airport (LBHA) and its principal shareholder Regional Airports Ltd. As in previous submissions, its primary purpose is to highlight to the Commission the importance of factoring the Business Aviation community, not just scheduled airlines and airports, into its thinking and ultimately its recommendations to Government. In this case, and given the Commission's slightly extended remit on this issue as described in the introduction to the Paper, we are concerned that your core remit on long term capacity will draw the Commission towards a 'one size fits all' approach, so beloved of policy makers in the aviation field and of such an explicit qualification regarding small and non-scheduled airports, is arguably present in the Aviation Policy Framework.
2. We are hopeful, however, that the Commission's independence and the analytical approach it has adopted to its task will result in a more *nuanced* output that will be able to embrace the complexity of the subject area. It will be important to ensure for example that the growth vs noise trade-offs needed to make substantive capacity enhancements at large scheduled airports with substantial noise profiles, are not applied in the same way to small/non-scheduled airports, which have very different and typically much smaller noise profiles, to their operational and commercial detriment. What would concern us greatly, is recommendations for evaluating/mitigating and controlling/compensating for noise emissions, which may be adopted where large increments of capacity are supported at one of the large scheduled airports, also being applied by default by to somewhere like LBHA and Farnborough whose circumstances are materially different.
3. With this in mind, this response begins with an explanation of why Business Aviation differs from scheduled airline operations in terms of noise, before going on to answer some of the Commission's questions with specific information about Biggin Hill.

## Noise Emissions from Business Aviation vs Scheduled Commercial Aircraft

4. Business Aviation aircraft differ from aircraft used for scheduled services, mainly in size, but also in noise characteristics. Typical certified noise values (EPNdB) are shown in Figure 1 overleaf, together with the limits that are applied at Biggin Hill.

**Figure 1: Biggin Hill Noise Limits and Typical Individual Aircraft Performance**



5. Despite dramatic reductions in the level of noise energy generated by the most modern scheduled aircraft compared to their counterparts of 30-40 years ago (as outlined in the Discussion Paper), 'single event' emissions of these aircraft and some business jets remain material, especially if there are sensitive receptors located in immediate proximity to the close-in approach and departure track from an airport. However, given that the relative size of the airframe, wingspan and engines of most of the business jet fleet is materially different to the most ubiquitous commercial aircraft models (e.g. the Boeing 787 has a wingspan of 60 metres and is 57 metres long; the B737-800 is 35.7m and 39.5m respectively, whereas the Dassault Falcon has a wingspan of 21 metres and is 20 metres long), the resultant noise emissions also vary substantially, especially when the logarithmic scales applied in noise measurement are taken into account (see Figure 1)
6. As in the case of their larger scheduled orientated cousins, business aircraft and engine manufacturers have also made significant improvement in reducing business aircraft noise levels. As an example, the noise levels of older and newer models of the Gulfstream are as shown in Table 1.

**Table 1: Noise Levels of Different Gulfstream Models**

<b>Model</b>	<b>MTOW (kG)</b>	<b>Sideline</b>	<b>Take off</b>	<b>Approach</b>
Gulfstream II	30,000	103.0	92.5	98.3
Gulfstream III	32,000	103.4	91.1	97.2
Gulfstream IV	34,000	86.6	77.5	92.0
Gulfstream V	41,000	89.1	80.3	90.8

## Noise Profile at Biggin Hill

7. ICAO has developed a 'Balanced Approach to Noise Management', which in the EU has been enshrined into law through the 'Operating Restrictions Directive' (2002/30/EC). In the APF the Government noted that it "fully recognises the ICAO Assembly 'balanced approach' principle to aircraft noise management."
8. The balanced approach consists of identifying the noise issues at an airport and then reducing it through the exploration of four principal elements, with the goal of addressing the noise problem in the most cost-effective manner. The elements are:
  - reduction at source;
  - land-use planning and management;
  - noise abatement operational procedures; and
  - operating restrictions.
9. LBHA has an approach to noise that is in line with the balanced approach:
  - The airport is benefitting from the improved performance of new aircraft.
  - It has sought to work with the London Borough of Bromley to ensure developments containing new noise sensitive receptors are not added to areas currently (or potentially) likely to be subject to significant noise energy.
  - It has a series of agreed departure and arrival tracks that minimise noise impacts.
  - There are restrictions in terms of operating hours, although we believe these can be amended slightly to optimise the balance between environmental and economic demands.
10. We believe it offers a sound basis for future noise management and the flexibility to be adapted to the needs of small airports as well as larger ones and we would not wish to see anything more dirigist imposed by UK Government on small airports. However, like the AoA, we would like to see new noise sensitive developments receive special consideration to ensure, where feasible, they are not built within the airport 57 Leq 16hr noise contour. By doing this, the benefits of quieter aircraft and operational techniques should be fully realised by those living near airports. Where this is not possible due to current development, the AOA would like to see a planning assumption to prevent further encroachment in these areas unless those likely to use the developments are clear and happy to accept the higher noise levels.

## Measuring Aviation Noise

### Questions:

*What is the most appropriate methodology to assess and compare different airport noise footprints? For example:*

- *What metrics or assessment methods would an appropriate ‘scorecard’ be based on?*
- *To what extent is it appropriate to use multiple metrics, and would there be any issues of contradiction if this were to occur?*
- *Are there additional relevant metrics to those discussed in Chapter 3 which the Commission should be aware of?*

11. LBHA supports the continued use of the LAeq16hr contour as a key measure of the extent of noise on local communities, albeit not the only one. LAeq16hr has been used for a number of years and is there important in demonstrating the change of noise over time, or between different scenarios, or between different airports. Other average measures, such as Lday, Levening, Lnight and Lden are useful where there are 24-hour operations, which there are not at Biggin Hill. The number of aircraft movements per hour at Biggin Hill is relatively small, particularly in some hours, and therefore the Single Event Level (SEL) measure is also useful. Finally, Biggin Hill's operations are restricted by individual aircraft noise limits for take off, approach and sideline and as measured according to ICAO criteria, so it is also relevant to look at these individual measures.

12. Overall, this leads us to a conclusion that multiple metrics are appropriate, but crucially they may not be the same at every airport.

13. Noise contours at Biggin Hill give the results as shown in Table 1 that can be compared with other airports in Table 3.5 of the Discussion Paper. The scenarios are as follows:

- LB Bromley UDP: this is the scenario used by the local planning authority for development control purposes based on the maximum permitted number of movements (125,000) assuming that 44,000 of these are by larger aircraft
- 2009 actual: when aircraft movements were 58,000, of which 10,000 were by Business Aviation aircraft
- 2020 forecast: a range of forecasts has been used assuming business aviation growth of around 5% per annum but a decline in other aircraft movements.

**Table 1: Noise efficiency of Biggin Hill under various scenarios**

Scenario	Aircraft movements	Number of persons affected within 57L <sub>Aeq16hr</sub> contour	Number of aircraft movements per person affected within 57L <sub>Aeq16hr</sub> contour
LB Bromley UDP	125,000	2,322	54
2009 actual	58,000	245	237
2020 forecast	57,000-61,000	308-397	154-185

14. It is clear from this table, therefore, that the noise efficiency of Biggin Hill is significantly better than any of the airports listed in Table 3.5 of the Discussion Paper, and consequently should not be subject to significant new policy impositions designed for large increments of new capacity at major airports.

## Mitigation

### Questions:

- *To what extent is the use of a noise envelope approach appropriate, and which metrics could be used effectively in this regard?*
15. A noise envelope approach is appropriate as the headline measure with which to compare airports with different scenarios over time. The 57 LAeq16hr is the best top line metric but other levels (eg. 63 and 69 dBA) should also be used to demonstrate other effect, particularly related to noise insulation schemes.
16. However, the Single Event Level (SEL) and Noise Quota Count (QC) metrics are also useful to demonstrate the effects of particular aircraft or operations. For example, to demonstrate the effect of a single aircraft operation at different times of day, the SEL for certain types of aircraft used at Biggin Hill are shown in Figure 2.
17. It shows that typical business aviation aircraft that operate at Biggin Hill have a 90 dB SEL that is mostly contained within the airport boundary and does not include any residential properties. The 90 dB SEL is assessed as the level below which there is no significant risk of sleep disturbance.
18. The QC levels of these aircraft are either very low or even exempt; this means that these aircraft would be permitted to operate at night at Heathrow, Gatwick and Stansted Airports. In the case of exempt aircraft, these would not count towards those airports Night Quota limits.



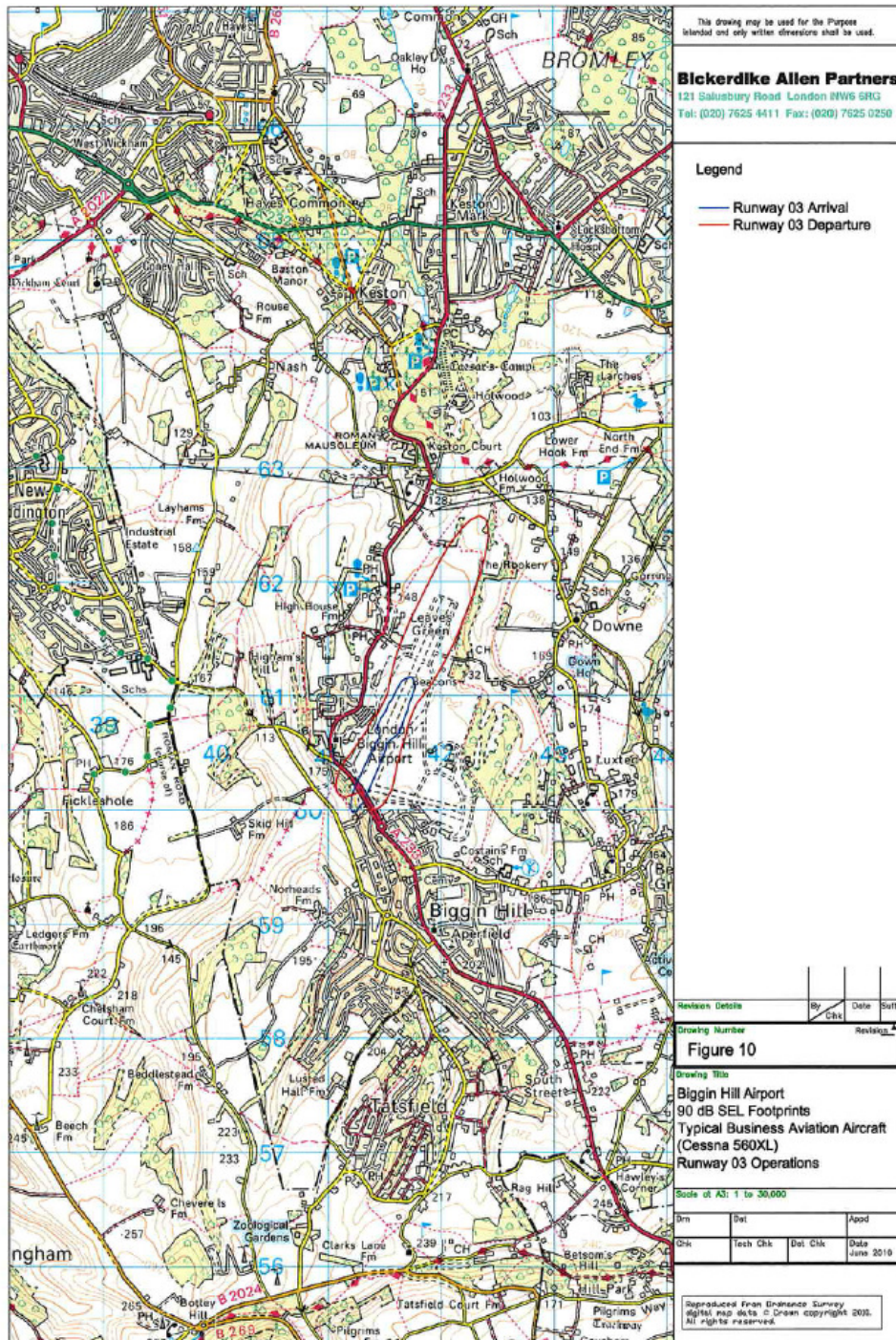


Figure 2: SEL footprints for typical business aviation aircraft

## Conclusions

- When considering aviation noise, the Airports Commission should bear in mind that smaller airports serving Business Aviation have a very different noise environment compared with larger airports, not only because of the numbers of aircraft movements, but also because of the type of operation. While it is useful for the same metrics to be used for comparison purposes between airports and for the long-term measurement of

change, it is also relevant to consider specific metrics for small airports, and dedicated Business Aviation airports in particular, relating to individual aircraft noise levels.

20. We also think that it is crucially important that policy is introduced to ensure new noise sensitive developments receive special consideration to ensure, where feasible, they are not built within the airport 57 Leq 16hr noise contour. By doing this, the benefits of quieter aircraft and operational techniques should be fully realised by those living near airports and we consider this a key element of the balanced approach advocated by ICAO, for which there is widespread support. At Biggin Hill, this would certainly be a significant component of an overall strategy for the airport taking on a leading role as a Business Aviation feeder reliever airport for London, in line with our recent 'twinning' agreement with Teterboro Airport, which has the same role for New York.