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Appeal by BAA Ltd and Stansted Airport Ltd following the refusal by
Uttlesford District Council of planning application UTT/0717/06/FUL

Revised Analysis of Ground Noise Impact at Ten Locations Around Stansted Airport

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REVISED ANALYSIS OF GROUND NOISE IMPACT AT TEN LOCATIONS AROUND STANSTED AIRPORT

In ES Volume 8 Ground Noise [CD/11], BAA provided its overall assessment of the impact of the 35mppa case for ten locations around the airport and summarised this in Table 7. SSE did not agree with this assessment and submitted Proof of Evidence SSE/12/a and SSE/12/b to demonstrate that the adverse impacts were understated by BAA.

A meeting of SSE representatives, Martin Peachey and Chris Bennett, with BAA's acoustics consultant, Dr Ian Flindell, was held in September 2007 where the differences between the two parties were discussed. As a result, SSE believes that some issues were agreed, some were not agreed and other issues could be described as differences of interpretation. Overall the meeting was helpful in clarifying a number of issues.

This subsequent further SSE analysis of the impact of 35mppa at the ten locations has taken advantage of those issues for which there now appears to be agreement and has used these in the calculations and tables attached.

The presentation of this analysis follows wherever possible the format used by BAA in its original ES Volume 8 in order to assist comparison. The following three tables for the ten locations are set out in a similar way with the same westerly and easterly operation, for the same day/evening/night periods and showing the respective benchmark exceedance figures in bold type.

The SSE analysis starts with the 2004 baseline background sound levels used by BAA and compares them with the 35mppa calculated figures used by BAA. It then adjusts these calculated figures for the effect of tonality and then further adjusts them for the effect of wind direction. In the case of the effect of wind direction, SSE has taken the adjustment values used by BAA. The benchmark value used by SSE differs from that used by BAA for day and evening, but is the same value as used by BAA for night-time.

The following three tables show this analysis for the day, evening and night periods respectively. The final column shows where the adjusted 35mppa sound levels exceed the background noise levels by more than 10 dB. BS 4142 *Method for rating industrial noise affecting mixed residential and industrial areas 1997* [CD/411] provides an assessment method for the likelihood of complaints. In para 9, it states that 'A difference of around +10 db or more indicates that complaints are likely'.

It can be seen from the following three tables that not only do a large number of the locations exceed this 10 dB difference, and in some cases by a significant amount, but also a larger number exceed the benchmark value. It is SSE's firm belief that the most appropriate method of noise assessment is to compare the calculated 35mppa noise against background level, using the WHO benchmarks as additional yardsticks, since this most closely represents what the local community will actually experience. This analysis clearly shows a worse impact than that assessed by BAA.

TABLE 1**DAY (0700-1900)****Combined Taxiing and APU Sound Levels (LAeq) for 35mppa case compared with WHO benchmark and Background level**

| Receiver location | | 2004 Baseline Background ¹ L _{A90, 1 hour} | Calculated 35mppa ² | Adjusted for Tonality ³ | Further adjusted for Downwind / Upwind ⁴ | Background exceeded by more than 10dB ⁵ |
|---------------------------------------|-------------------------|---|--------------------------------|------------------------------------|---|--|
| WHO Benchmark⁶ | | | 50 | 50 | 50 | |
| Westerly operation (Runway 23) | | | | | | |
| 1 | Tye Green | 48.7 | 55.3 | 60.3 | 60.3 | YES |
| 2 | Fullers End | 51.7 | 30.9 | 35.9 | 35.9 | |
| 3 | Gaunts End | 48.4 | 59.4 | 64.4 | 67.4 | YES |
| 4 | Molehill Green | 52.0 | 54.5 | 59.5 | 62.5 | YES |
| 5 | Coopers Villas, Takeley | 51.4 | 53.3 | 58.3 | 58.3 | |
| 6 | Bambers Green | 46.7 | <25 | <30 | <30 | |
| 7 | Garnetts, Takeley | 47.4 | <25 | <30 | <30 | |
| 8 | Takeley Street | 47.4 | 47.2 | 52.2 | 42.2 | |
| 9 | Birchanger Lane | 54.1 | <25 | <30 | <25 | |
| 10 | Burton End | 48.4 | 57.9 | 62.9 | 62.9 | YES |
| Easterly operation (Runway 05) | | | | | | |
| 1 | Tye Green | 44.9 | 51.6 | 56.6 | 46.6 | YES |
| 2 | Fullers End | 42.8 | <25 | <30 | <25 | |
| 3 | Gaunts End | 43.5 | 52.5 | 57.5 | 47.5 | YES |
| 4 | Molehill Green | 45.1 | 54.3 | 59.3 | 49.3 | |
| 5 | Coopers Villas, Takeley | 47.0 | 53.5 | 58.5 | 48.5 | YES |
| 6 | Bambers Green | 37.4 | <25 | <30 | <25 | |
| 7 | Garnetts, Takeley | 45.3 | 25.2 | 30.2 | <25 | |
| 8 | Takeley Street | 47.5 | 49.9 | 54.9 | 57.9 | YES |
| 9 | Birchanger Lane | 58.9 | 30.8 | 35.8 | 38.8 | |
| 10 | Burton End | 47.6 | 55.3 | 60.3 | 60.3 | YES |

¹ Baseline background sound levels from BAA ES Volume 8, Table 2 [CD/11] and consistent with BS 4142 *Method for rating industrial noise affecting mixed residential and industrial areas* [CD/411] as stated in BAA ES Volume 8, para 5.3.19 [CD/11].

² Calculated 35 mppa combined aircraft taxiing and APU sound levels from BAA ES Volume 8, Table 4 [CD/11].

³ Tonality penalty of +5dB from BS 4142 *Method for rating industrial noise affecting mixed residential and industrial areas*, para 8 [CD/411].

⁴ Adjustment for downwind (+3 dB), upwind (-10 dB) or side on (0 dB) from BAA ES Regulation 19 Response. Para 2.4.11 [CD/22].

⁵ Background exceeded by more than 10 dB adjusted for tonality in neutral conditions or for combined tonality and wind direction.

⁶ Where calculated 35mppa sound levels exceed WHO benchmark, these are shown in bold figures. Benchmark of 50 dB LAeq from WHO *Guidelines for Community Noise* Chapter 4, Table 4.1 for moderate annoyance [CD/286].

TABLE 2**EVENING (1900-2300)****Combined Taxiing and APU Sound Levels (LAeq) for 35mppa case compared with WHO benchmark and Background level**

| Receiver location | | 2004 Baseline Background ⁷ LA90, 1 hour | Calculated 35mppa ⁸ | Adjusted for Tonality ⁹ | Further adjusted for Downwind / Upwind ¹⁰ | Background exceeded by more than 10dB ¹¹ |
|---------------------------------------|-------------------------|---|--------------------------------|------------------------------------|--|---|
| WHO Benchmark¹² | | | 50 | 50 | 50 | |
| Westerly operation (Runway 23) | | | | | | |
| 1 | Tye Green | 50.5 | 54.9 | 59.9 | 59.9 | |
| 2 | Fullers End | 51.7 | 30.4 | 35.4 | 35.4 | |
| 3 | Gaunts End | 50.6 | 59.0 | 64.0 | 67.0 | YES |
| 4 | Molehill Green | 50.9 | 53.8 | 58.8 | 61.8 | YES |
| 5 | Coopers Villas, Takeley | 50.7 | 54.2 | 59.2 | 59.2 | |
| 6 | Bambers Green | 47.6 | <25 | <30 | <30 | |
| 7 | Garnetts, Takeley | 46.4 | 26.2 | 31.2 | 31.2 | |
| 8 | Takeley Street | 44.3 | 47.7 | 52.7 | 42.7 | |
| 9 | Birchanger Lane | 52.6 | <25 | <30 | <25 | |
| 10 | Burton End | 48.4 | 57.6 | 62.6 | 62.6 | YES |
| Easterly operation (Runway 05) | | | | | | |
| 1 | Tye Green | 47.4 | 49.8 | 54.8 | 44.8 | |
| 2 | Fullers End | 43.3 | <25 | <30 | <25 | |
| 3 | Gaunts End | 44.8 | 52.0 | 57.0 | 47.0 | YES |
| 4 | Molehill Green | 42.0 | 53.7 | 58.7 | 48.7 | YES |
| 5 | Coopers Villas, Takeley | 46.7 | 54.5 | 59.5 | 49.5 | YES |
| 6 | Bambers Green | 35.9 | <25 | <30 | <25 | |
| 7 | Garnetts, Takeley | 43.1 | 26.3 | 31.3 | <25 | |
| 8 | Takeley Street | 45.1 | 49.4 | 54.4 | 57.4 | YES |
| 9 | Birchanger Lane | 55.1 | 30.3 | 35.3 | 38.3 | |
| 10 | Burton End | 50.3 | 55.1 | 60.1 | 60.1 | |

⁷ Baseline background sound levels from BAA ES Volume 8, Table 2 [CD/11] and consistent with BS 4142 *Method for rating industrial noise affecting mixed residential and industrial areas* [CD/411] as stated in BAA ES Volume 8, para 5.3.19 [CD/11].

⁸ Calculated 35 mppa combined aircraft taxiing and APU sound levels from BAA ES Volume 8, Table 4 [CD/11].

⁹ Tonality penalty of +5dB from BS4142 *Method for rating industrial noise affecting mixed residential and industrial areas*, para 8 [CD/411].

¹⁰ Adjustment for downwind (+3 dB), upwind (-10 dB) or side on (0 dB) from BAA ES Regulation 19 Response. Para 2.4.11 [CD/22].

¹¹ Background exceeded by more than 10 dB adjusted for tonality in neutral conditions or for combined tonality and wind direction.

¹² Where calculated 35mppa sound levels exceed WHO benchmark, these are shown in bold figures. Benchmark of 50 dB LAeq from WHO *Guidelines for Community Noise* Chapter 4, Table 4.1 for moderate annoyance [CD/286].

TABLE 3**NIGHT (2300-0700)****Combined Taxiing and APU Sound Levels (LAeq) for 35mppa case compared with WHO benchmark and Background level**

| Receiver location | | 2004 Baseline Background ¹³ LA90, 1 hour | Calculated 35mppa ¹⁴ | Adjusted for Tonality ¹⁵ | Further adjusted for Downwind / Upwind ¹⁶ | Background exceeded by more than 10dB ¹⁷ |
|---------------------------------------|-------------------------|--|---------------------------------|-------------------------------------|--|---|
| WHO Benchmark¹⁸ | | | 45 | 45 | 45 | |
| Westerly operation (Runway 23) | | | | | | |
| 1 | Tye Green | 43.3 | 46.4 | 51.4 | 51.4 | |
| 2 | Fullers End | 44.0 | <25 | <30 | <30 | |
| 3 | Gaunts End | 42.4 | 50.4 | 55.4 | 58.4 | YES |
| 4 | Molehill Green | 41.3 | 47.0 | 52.0 | 55.0 | YES |
| 5 | Coopers Villas, Takeley | 41.8 | 47.6 | 52.6 | 52.6 | YES |
| 6 | Bambers Green | 38.1 | <25 | <30 | <30 | |
| 7 | Garnetts, Takeley | 37.5 | <25 | <30 | <30 | |
| 8 | Takeley Street | 36.5 | 41.8 | 46.8 | 36.8 | YES |
| 9 | Birchanger Lane | 46.6 | <25 | <30 | <25 | |
| 10 | Burton End | 43.2 | 53.2 | 58.2 | 58.2 | YES |
| Easterly operation (Runway 05) | | | | | | |
| 1 | Tye Green | 39.2 | 43.5 | 48.5 | 38.5 | |
| 2 | Fullers End | 37.2 | <25 | <30 | <25 | |
| 3 | Gaunts End | 35.3 | 45.8 | 50.8 | 40.8 | YES |
| 4 | Molehill Green | 25.2 | 46.9 | 51.9 | 41.9 | YES |
| 5 | Coopers Villas, Takeley | 39.0 | 47.9 | 52.9 | 42.9 | YES |
| 6 | Bambers Green | 25.1 | <25 | <30 | <25 | |
| 7 | Garnetts, Takeley | 35.5 | <25 | <30 | <25 | |
| 8 | Takeley Street | 36.9 | 40.5 | 45.5 | 48.5 | YES |
| 9 | Birchanger Lane | 44.4 | <25 | <30 | <40 | |
| 10 | Burton End | 41.6 | 50.4 | 55.4 | 55.4 | YES |

¹³ Baseline background sound levels from BAA ES Volume 8, Table 2 [CD/11] and consistent with BS 4142 *Method for rating industrial noise affecting mixed residential and industrial areas* [CD/411] as stated in BAA ES Volume 8, para 5.3.19 [CD/11].

¹⁴ Calculated 35 mppa combined aircraft taxiing and APU sound levels from BAA ES Volume 8, Table 4 [CD/11].

¹⁵ Tonality penalty of +5dB from BS4142 *Method for rating industrial noise affecting mixed residential and industrial areas*, para 8 [CD/411].

¹⁶ Adjustment for downwind (+3 dB), upwind (-10 dB) or side on (0 dB) from BAA ES Regulation 19 Response. Para 2.4.11 [CD/22].

¹⁷ Background exceeded by more than 10 dB adjusted for tonality in neutral conditions or for combined tonality and wind directions.

¹⁸ Where calculated 35mppa sound levels exceed WHO benchmark, these are shown in bold figures. Benchmark of 45 dB LAeq from WHO *Guidelines for Community Noise* Chapter 4, Table 4.1 for sleep disturbance [CD/286].