# Gatwick Airport Northern Runway Project

## Holiday Inn Noise Report

## Book 10

**VERSION: 1.0**

**DATE: JUNE 2024**

**Application Document Ref: 10.41**

**PINS Reference Number: TR020005**

**APFP Regulations 5(2)(q)** **Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009**

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# 1 Introduction

1.1.1 Marathon Asset Management MCAP Global Finance (UK) LLP, HI (London Gatwick) Limited and HICP Limited, referred to herein as 'Holliday Inn' own and operate the Holiday Inn hotel located to the west of the A217 north of Longbridge Roundabout.

1.1.2 Holiday Inn have made representations relating to potential noise disturbance from the Northern Runway Project in their Relevant Representation and clarified and summarised these in their **Summary of Written Representation** [REP1-221] March 2024. A summary of the potential issues raised by Holiday Inn is as follows:

A. Significant increase in day-time and night-time instantaneous noise level events as a result of increased air traffic numbers;

B. Significant increase in ground noise levels during the night-time period;

C. Significant noise impact during construction works related to the widening of the A217 London Road, works to the Longbridge Roundabout and the A23 Bridgeworks;

D. Potential noise impact from the construction compound related to construction traffic movements and items of fixed equipment associated with the serviced site containers, e.g. welfare and office facilities; and

E. Potential noise impact due to changes to road traffic volumes.

1.1.3 This report summarises the engagement between Holiday Inn and the Applicant, the additional information provided to Holiday Inn by the Applicant and the additional mitigation measures offered by the Applicant to address the matters raised by Holiday Inn (where required).

1.1.4 The Applicant believes all necessary information requested by Holiday Inn has now been provided to them and that adequate mitigation has been offered to avoid significant adverse effects on the hotel during the construction and operation of the Northern Runway Project.

1.1.5 The remainder of this report is structured as follows:

- Section 2 summarises the engagement undertaken to understand and resolve Holiday Inn's concerns.
- Section 3 summarises the hotel noise environment and an acoustic test of its noise insulation carried out by the Applicant.

- Section 4 addresses concerns over air noise (item a above).
- Section 5 addresses concerns over road traffic noise (item e above).
- Section 6 addresses concerns over ground noise during the night-time period (item b above).
- Section 7 addresses concerns over construction noise (items c and d above).
- Section 8 provides a summary of the conclusions on how the Holiday Inn is expected to be affected by noise relating to the Project and of the additional mitigations which are proposed. .

## 2 Summary of Engagement

2.1.1 The Applicant and Holiday Inn have had a detailed and productive engagement on acoustic matters, and the Applicant would like to thank Holiday Inn for their assistance, including the appointment of Stantec as their acoustic advisors.

2.1.2 Stantec carried out an acoustic survey of the hotel in the summer of 2023 and supplied this to the Applicant ahead of the first meeting on 6 February 2024. The meeting covered all aspects of Holiday Inn's concerns and the Applicant provided a note of the meeting with additional information on the 13th of February.

2.1.3 Further information was provided by the Applicant on the 29th of February on road traffic noise and ground noise.

2.1.4 The Applicant attended a meeting with Holiday Inn on the 27th of March to further discuss their acoustic concerns and solutions.

2.1.5 A site visit and meeting were held at the Holiday Inn hotel on the 24th of April when the Applicant provided further detailed information on ground noise and construction noise modelling results. The contents of the 44 page presentation given are contained in this report and its 3 appendices.

2.1.6 On 8th May 2024 the applicant carried out acoustic tests of the noise installation performance of the northern facade of the hotel. The acoustic test was witnessed by Stantec and the report was shared on 29th May 2024.

2.1.7 In addition to these meetings there has been an ongoing exchange of correspondence between the applicant and Stantec providing information and further understanding the remaining concerns.

# 3 Holiday Inn

## 3.1 Hotel Location and Layout

3.1.1 The Holiday Inn hotel comprises 218 bedrooms on five floors, a restaurant, meeting rooms and associated hotel facilities. It is located approximately 450 metres north of the closest part of the airport's northern terminal apron area, beyond the river Mole and the noise bund that was constructed in the mid 1980s. The hotel is over 20 years old, and has undergone various refurbishments during its life, including changing the bedroom windows. Ventilation to the bedrooms is provided through either an openable window or a trickle vent at the top of the window. Cooling and heating are provided through ceiling mounted ventilation units within each room that can be controlled centrally. The bedrooms are all similar in size and layout, although they are arranged differently to suit different customers.

3.1.2 The building is set back from the A217 which is a busy road and contributes to ambient noise conditions, as does noise from the airport. The building is served by a Hopper Bus service to the airport that usually operates via a loop passing near the front of the hotel. The service was diverted to the rear of the hotel in recent weeks whilst the entrance areas and forecourt were undergoing renovations and construction works.

3.1.3 The hotel has a large car park, with many guests staying for one night or short periods for business trips. Of particular concern to Holiday Inn is the need for airline pilots and crew to sleep in the hotel at night and also during daytime hours, whereas most guests are transient and do not sleep in the hotel rooms during the day. This is particularly relevant to the construction phase of the project when construction works will be carried out to the north of the hotel, within its grounds and on the A217 mainly during daytime hours. There are typically about 20 crew members using the hotel at any one time, although we are advised this could rise depending on airline contracts, perhaps to 40. Not all rooms are suitable for airline crew, and we were advised about 90 bedrooms are suitable, spread roughly equally on the North and South side of the hotel. Subject to the complexities of logistical planning this allows the hotel some flexibility as to where airline crews are housed. In particular, there are enough suitable rooms for airline crew on the south side of the hotel, even in a scenario where the number of crew members using the hotel at any one time markedly increases. This is an important consideration in connection with construction noise as discussed below.

## 3.2 Hotel Building Sound Insulation

3.2.1 Acoustic tests were carried out on the 8th March to measure the sound insulation properties of the bedroom windows and external façades. The survey was carried out according to ISO 16283-3:2016[1] using a loudspeaker located outside the hotel to create a high level of pink noise adjacent to the external facades of bedrooms. Simultaneous noise measurements were conducted at external and internal locations to determine level differences. The testing procedure was repeated for three typical bedrooms at first floor level, 226, 232 and 234, on the north side of the hotel (see Figure 3.1) with trickle vents open and again with trickle vents closed. There were building works being carried out around the hotel entrance on this side of the hotel (see Figure 3.1) during testing, which created some noise, and the survey was arranged deliberately during these works to help minimise the additional disturbance of the loudspeaker noise.

[1] ISO 16283-3:2016 Acoustics - *Field measurement of sound insulation in buildings and of building elements*, Part 3: Façade sound insulation, International Organization for Standardization, 2016


**Figure 1: Sound Insulation Tests on North Facade**

3.2.2 A full account of the survey is provided at Appendix 1 which details the results in terms of the standardised level difference at 2 m using the global loudspeaker method ($D_{ls,2m,nT}$) in accordance with ISO 16283-3:2016. However, it should be noted that the standardised level difference includes a correction for the measured reverberation in comparison to a reference reverberation time of 0.5 seconds. Whilst the standardisation does make results comparable between rooms with different levels of reverberation, it underestimates the actual level difference for rooms where the reverberation time is typically less than 0.5 seconds (as is the case for the hotel bedrooms). Since the level of reverberation is likely to be much the same in all the hotel bedrooms and because the results are to be used to calculate likely internal noise levels, it is appropriate to consider the level difference ($D_{ls,2m}$) without correction for reverberation time. The survey results are summarised in terms of the $D_{ls,2m,nT}$ and the $D_{ls,2m}$ in Tables 2 and 3 respectively below.

Tests 1, 3 and 5 relate to results for rooms 226, 232 and 234 respectively with trickle vents open.

Tests 2, 4 and 6 relate to results for rooms 226, 232 and 234 respectively with trickle vents closed.

| Test No. | $D_{ls,2m,nT}$ at ⅓ Octave Band Centre Frequency (Hz) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | 800 | 1000 | 1250 | 1600 | 2000 | 2500 | 3150 | 4000 | 5000 |
| 1 | 14.3 | 17.0 | 21.4 | 25.8 | 25.1 | 18.0 | 27.4 | 30.1 | 25.7 | 26.2 | 29.9 | 32.3 | 27.7 | 19.6 | 12.4 | 17.3 | 23.7 | 29.5 | 21.2 | 24.9 | 32.6 |
| 2 | 16.3 | 19.6 | 23.6 | 27.5 | 27.7 | 20.2 | 29.7 | 36.1 | 31.8 | 32.0 | 36.9 | 39.8 | 39.9 | 36.6 | 36.8 | 43.0 | 45.8 | 44.6 | 40.3 | 38.9 | 38.5 |
| 3 | 15.4 | 14.3 | 20.5 | 25.6 | 26.6 | 18.9 | 25.2 | 27.8 | 27.4 | 27.3 | 32.2 | 31.6 | 28.1 | 22.0 | 16.3 | 17.1 | 21.0 | 28.9 | 26.7 | 25.6 | 37.1 |
| 4 | 17.9 | 17.8 | 23.6 | 27.5 | 28.1 | 19.9 | 31.6 | 33.8 | 32.8 | 34.3 | 39.4 | 39.0 | 35.6 | 30.9 | 30.6 | 33.3 | 39.2 | 46.1 | 42.0 | 39.4 | 42.3 |
| 5 | 15.8 | 15.5 | 21.7 | 26.5 | 23.4 | 16.6 | 22.0 | 25.4 | 20.7 | 21.8 | 31.4 | 35.2 | 28.0 | 19.1 | 14.0 | 19.2 | 29.1 | 26.3 | 26.4 | 25.5 | 32.1 |
| 6 | 17.7 | 17.6 | 23.5 | 27.8 | 23.7 | 18.5 | 25.3 | 27.8 | 24.4 | 23.7 | 34.9 | 38.0 | 33.8 | 24.9 | 24.8 | 33.9 | 45.3 | 42.9 | 39.6 | 35.9 | 35.0 |

**Figure 2: Standardised Level Differences (Dls,2m,nT)**

| Test No. | $D_{ls,2m}$ at ⅓ Octave Band Centre Frequency (Hz) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | 800 | 1000 | 1250 | 1600 | 2000 | 2500 | 3150 | 4000 | 5000 |
| 1 | 15.2 | 16.8 | 22.4 | 26.7 | 27.1 | 20.6 | 29.9 | 32.1 | 28.1 | 29.1 | 31.1 | 34.6 | 31.0 | 23.0 | 16.0 | 20.6 | 27.2 | 32.9 | 24.5 | 28.2 | 36.0 |
| 2 | 17.2 | 19.5 | 24.6 | 28.4 | 29.6 | 22.8 | 32.2 | 38.2 | 34.2 | 34.9 | 38.2 | 42.1 | 43.2 | 40.0 | 40.4 | 46.3 | 49.4 | 47.9 | 43.6 | 42.2 | 41.8 |
| 3 | 17.1 | 15.3 | 21.6 | 26.8 | 28.0 | 21.4 | 27.7 | 29.9 | 29.9 | 30.0 | 34.2 | 34.6 | 31.3 | 25.1 | 19.8 | 20.3 | 24.3 | 32.2 | 29.8 | 28.8 | 40.3 |
| 4 | 19.6 | 18.8 | 24.6 | 28.7 | 29.5 | 22.4 | 24.0 | 35.9 | 35.4 | 37.0 | 41.3 | 41.9 | 38.9 | 34.0 | 34.0 | 36.4 | 42.5 | 49.4 | 45.1 | 42.6 | 45.5 |
| 5 | 14.2 | 16.1 | 22.1 | 27.0 | 25.5 | 18.9 | 24.6 | 27.2 | 23.1 | 24.8 | 33.6 | 38.2 | 31.3 | 22.5 | 17.5 | 22.6 | 32.7 | 29.7 | 29.4 | 28.7 | 35.6 |
| 6 | 16.1 | 18.2 | 23.9 | 28.3 | 25.8 | 20.8 | 27.9 | 29.5 | 26.8 | 26.7 | 37.1 | 41.0 | 37.1 | 28.3 | 28.4 | 37.4 | 48.9 | 46.3 | 42.7 | 39.2 | 38.5 |

**Figure 3: Level Differences (Dls,2m)**

3.2.4 In order to determine an average overall level difference for assessing noise impacts at the hotel, the level differences have been applied to representative spectra for air noise, ground noise and construction noise to calculate overall internal noise levels for each type of noise. For the purposes of the calculation, it has been assumed that trickle vents would be closed (as discussed further below) and internal levels have been derived based on tests 2,4 and 6 before taking the mean to give an average internal level for each type of noise.

3.2.5 For air noise, a 30-second period encompassing an aircraft flyover (relatively unaffected by other noise sources) has been selected from external measurements made during the testing in order to provide a 30 second $L_{Aeq}$ spectrum of 61.6 dB.

3.2.6 For ground noise, a worst case instantaneous $L_{Aeq}$ (representative of the maximum level) spectrum has been predicted at the closest point of the hotel façade to the airport, at fourth floor level resulting in an overall level of $L_{AMax}$ 63.4 dB.

3.2.7 For construction noise, a spectrum has been taken from predicted hourly $L_{Aeq}$ for phase 1 construction at fourth floor level which results in an overall level of 67.0 dB.

3.2.8 The assumed external noise spectra and calculated average internal noise levels are shown at Figure 4 below.

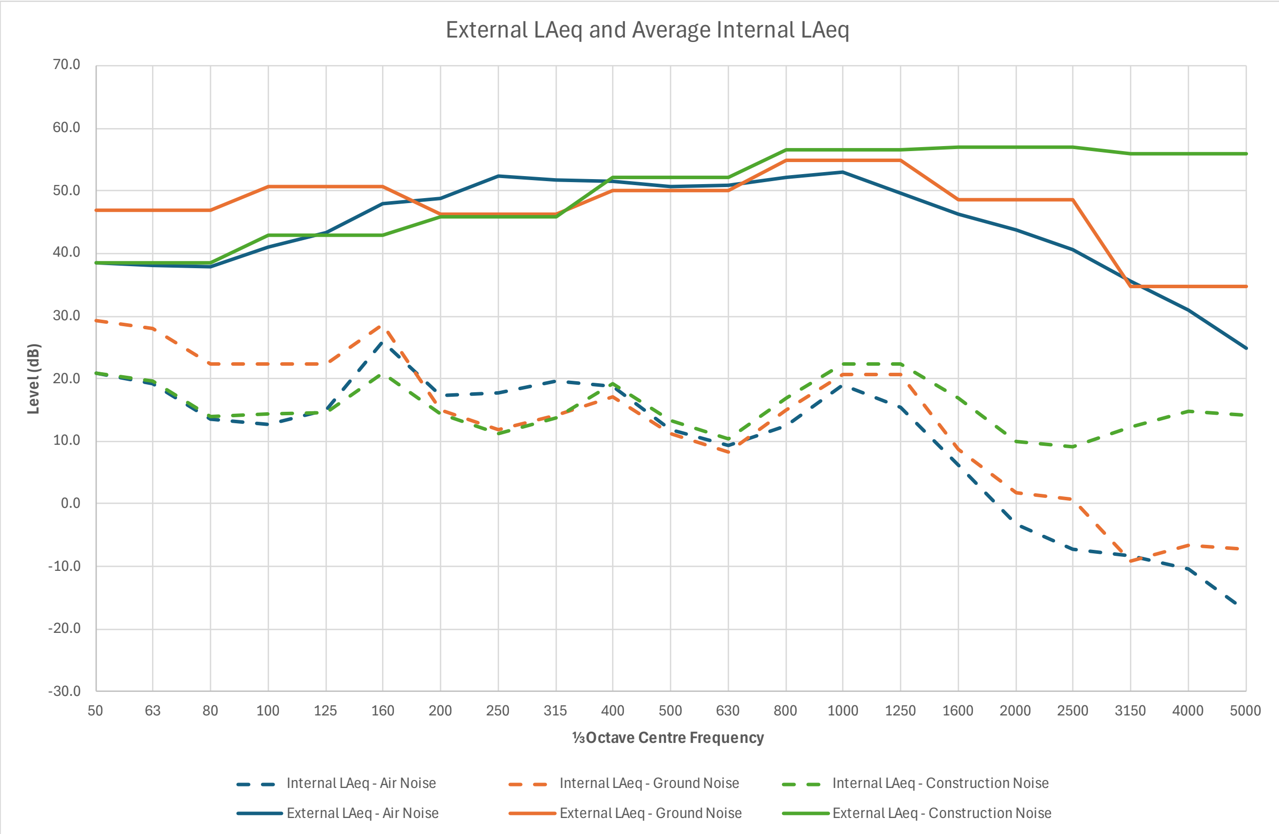



**Figure 4: External LAeq and Average Internal LAeq Levels**

3.2.9 Overall internal $L_{Aeq}$ levels have been calculated and compared with external $L_{Aeq}$ levels to provide level differences for each tested room and then averaged to give average level differences for air noise, ground noise and construction noise. The results of the overall level difference calculations are shown at Table 1 below.

**Table 1: Calculated Overall LAeq Level Differences**

| Room No. | Level Difference (dB) Air Noise | | Level Difference (dB) Ground Noise | | Level Difference (dB) Construction Noise | |
|---|---|---|---|---|---|---|
| | Vent Open | Vent Closed | Vent Open | Vent Closed | Vent Open | Vent Closed |
| 226 | 24.1 | 32.4 | 21.7 | 29.1 | 23.4 | 38.4 |
| 232 | 25.8 | 32.1 | 23.6 | 29.2 | 25.2 | 36.8 |
| 234 | 23.5 | 27.9 | 22.0 | 26.5 | 24.6 | 32.6 |
| Average | 24.5 | 30.8 | 22.4 | 28.3 | 24.4 | 35.9 |

## 3.3 Hotel External Noise Environment

3.3.1 During the sound insulation test described above the sound level meter and microphone shown in Figure 3.1 were left recording from approximately 1300 to 1630. The recordings were interrupted to move the microphone twice, but the levels measured are of interest as a baseline against which construction noise on this side of the hotel will be perceived.

3.3.2 Measured $L_{Aeq,\ 1\ sec}$ values and calculated rolling $L_{Aeq,1\ hour}$ values are shown at Figure 5 below. Periods where pink noise, generated by the loudspeaker, affected the measured levels have been excluded from the calculation of rolling $L_{Aeq,1\ hour}$ values. The results indicate that ambient noise levels immediately outside hotel room windows are typically in the region of 60 – 70 dB $L_{Aeq}$ during the day. A couple of periods of elevated noise due to construction outside the hotel entrance are identified where levels exceeded 70 dB $L_{Aeq}$ and it should be noted that several motorbike pass-bys on the A217 were also recorded which generated maximum levels in excess of 80 dB. To further put the measurements in context, a hopper bus shuttling passengers to and from the airport normally operates close to this façade of the hotel and would be likely to generate similarly high maximum levels (in the region of 70 – 80 dB) but this was operating to the rear of the building during the measurements because of the construction work at the hotel entrance.

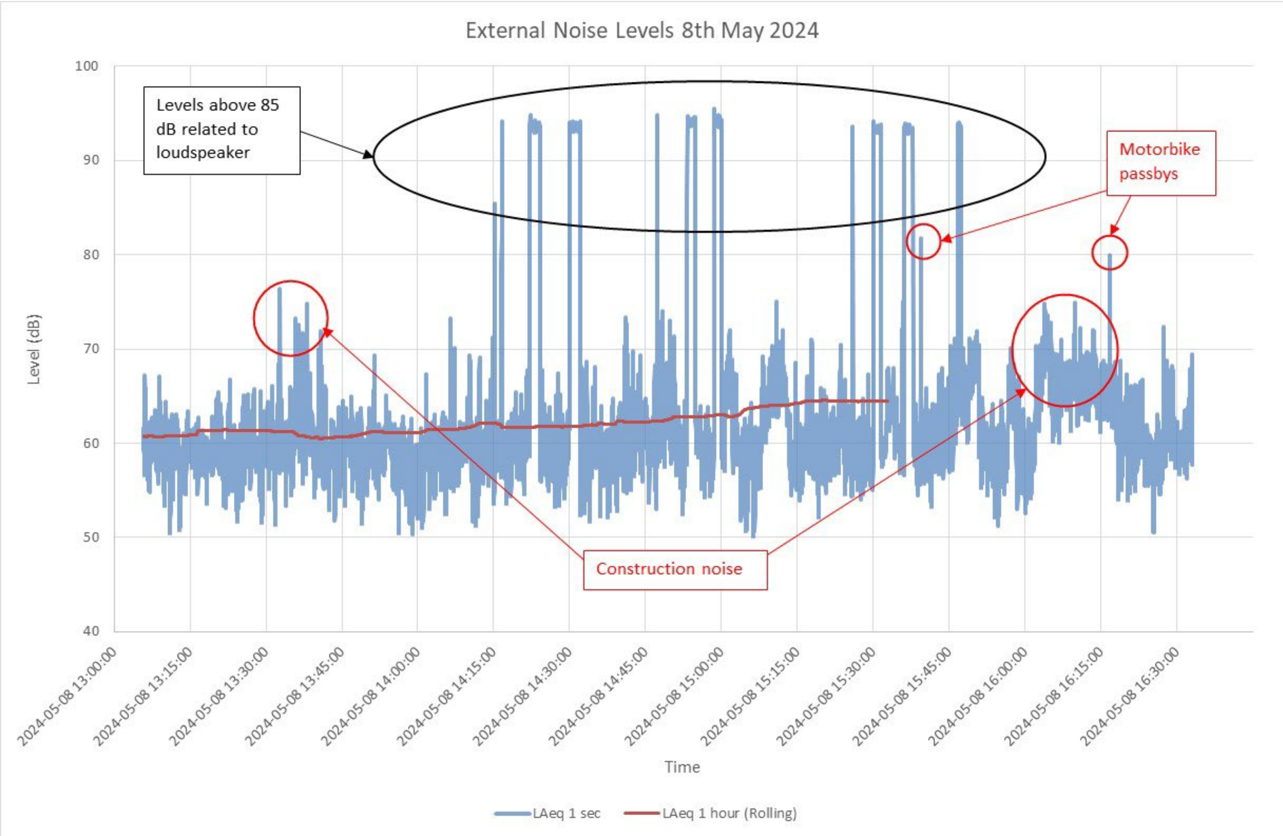



**Figure 5: External LAeq Measured Levels at Holiday Inn (2m from front façade)**

# 4 Air Noise

4.1.1 The hotel is 2 km north of the runways at London Gatwick and is not under a flight path. Air noise levels at the hotel are below the daytime and night-time LOAELs ($L_{eq\ 16\ hr}$ 51dB day and $L_{eq\ 8\ hr}$ 45dB night) used to assess residential receptors and to scope impacts at hotels, in all cases, from 2019 to 2047 with or without the Project. Figure 4.1 shows a screen shot from the Gatwick Northern Runway Project Aircraft Noise Viewer[2] with some of the noise levels showing for the hotel at postcode RH6 0BA that was used to demonstrate this in our first meeting in February 2024.

[2] https://www.gatwickairport.com/business-community/future-plans/northern-runway

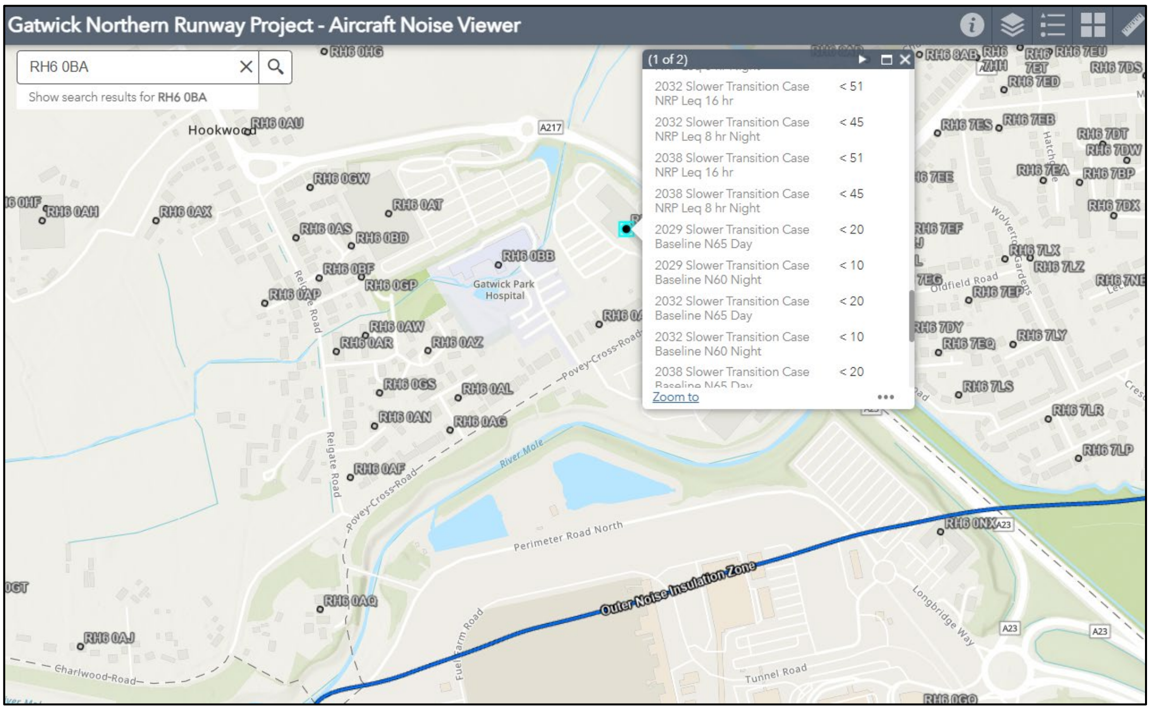



Figure 6: Gatwick Northern Runway Project Aircraft Noise Viewer - Holiday Inn

4.1.2 The noise levels at the hotel are all below the daytime LOAEL of $L_{eq\ 16\ hr}$ 51dB and the night-time LOAEL of $L_{eq\ 8\ hr}$ 45dB. They are also below the lowest noise contours modelled by the CAA for the Number Above metrics, N65 <20 and N60 <10 indicating less than 20 aircraft noise events above $L_{max}$ 65dB during the day, and less than 10 aircraft noise events above $L_{max}$ 60dB during the night. This indicates a lack of air noise impacts at the hotel in the base case, and all future cases with the Project. Reference to Section 3.3 above shows these levels are also well below levels of ambient noise including road traffic and the hotel's hopper bus.

4.1.3 The air noise impact of the Northern Runway Project is determined by the extent to which noise increases with the Project above the baseline, where it is above the LOAEL. At the Holiday Inn noise levels with the Project are below LOAEL and it is not possible to assess the impact of the change in noise that may arise due to the Project because the levels are too low.

4.1.4 It is concluded that the hotel will not be affected adversely impacted by air noise from the Project.

# 5 Road Traffic Noise

5.1.1 Changes in road traffic noise from the Project are predicted to be small (see ES Appendix 14.9.4, Table 6.3.1 and 6.3.2). The A217 is not a main route for traffic using the airport and this road dominates noise at the front of the hotel. The ES reported noise changes at Noise Sensitive Receptor 7 Povey Cross Road located just to the south of the hotel of 0.2 dB in the daytime and 0.1dB in the night in 2032. To provide further reassurance to the operators of the Holiday Inn, road traffic noise levels at the front and back of the hotel itself were provided in February, as in Table 5.1.

**Table 2: ES Road Traffic Noise Model, 2032 (2)**

| Location on Hotel/Time | 2032 Do-Minimum | 2032 With Project | Change |
|---|---|---|---|
| Front Day $L_{A10,18hr}$ | 66.9 | 66.9 | 0.0 |
| Front Night $L_{night}$ | 57.0 | 56.8 | -0.2 |
| Rear Day $L_{A10,18hr}$ | 54.3 | 54.5 | 0.2 |
| Rear Night $L_{night}$ | 46.2 | 46.2 | 0.0 |
| 1) Prediction point 1m from facade, 1.5m high | | | |

5.1.2 The results of modelling traffic noise with post-COVID flows (see 10.32 Environmental Appraisal of Post-COVID19 Road Traffic submitted to the DCO Examining Authority at Deadline 5) show a noise level 1-2dB lower in this area in the 2032 baseline and with Project cases and the daytime noise change is expected to be 0.4dB, so the road traffic noise impacts at the hotel are still expected to be negligible.

5.1.3 The reduction in modelled noise levels post-COVID19 may go some way to explain the apparent differences pointed out by Stantec between their levels measured in summer 2023 and the modelled 2018 baseline reported in the ES.

5.1.4 **ES Chapter 14: Noise and Vibration** [APP-039] (Paragraphs 14.9.66 to 14.9.69) reported that short term traffic noise changes during construction would not be significant.

5.1.5 It is concluded that the hotel will not be adversely affected by road traffic noise impacts from the Project.

# 6 Ground Noise

6.1.1 The closest receptor to the Holiday Inn identified as a modelled point in **ES Chapter 14: Noise and Vibration** [APP-039] is Gatwick Park Hospital (see figure 14.4.2 of the ES). The closest point of the Holiday Inn to the airport has been used for predictions (mentioned at paragraph 3.2.3) and whilst this is approximately 230 m from the Gatwick Park Hospital receptor, both locations are a very similar distance from the airport boundary. Predictions indicate that there is no difference between worst case maximum noise levels at the two locations confirming that predictions at Gatwick Park Hospital are representative of the Holiday Inn.

## 6.2 $L_{Aeq}$ Noise Levels

6.2.1 An error was highlighted with the ES ground noise assessment in the Applicant's recent DCO document **Supporting Noise and Vibration Technical Note to Statements of Common Ground, Appendix B - Ground Noise Fleet Assessment** [REP3-071], issued to the Examining Authority on 19th of April. Ground Noise (with project $L_{Aeq}$ only) within the ES was incorrectly reported for Runway 26 night operations, and correcting this results in a reduction within the Povey Cross assessment area. At the Gatwick Park Hospital receptor, there has been a reduction from 51 dB $L_{Aeq}$ to 49 dB $L_{Aeq}$ for Runway 26 night operation (Central Case 2032). This also means that the change relative to baseline reduces and the magnitude of impact is reduced from medium to low for all receptors in this assessment area.

6.2.2 The highest predicted $L_{Aeq}$ levels of ground noise at Gatwick Park Hospital (for central case fleet and the main assessment year of 2032) are for Runway 26 operations during the day where predicted as 16 hour $L_{Aeq}$ levels are 51 and 52 dB for the baseline and with project scenarios respectively. The change with the Project is no more than 1 dB for either Runway 26 or Runway 08 operations during day or night and there is no change to this when considering the Slower Transition Fleet.

## 6.3 Maximum Noise Levels

6.3.1 Holiday Inn has raised concerns about potential maximum noise levels and have queried whether a worst-case has really been presented within the ES given that the top floor of the hotel potentially has line of sight into the north terminal apron areas. This concern has been acknowledged and a review has been carried out of the ground noise model to investigate worst-case closest locations within the north terminal apron area that would give rise to the highest levels of taxiing noise at the Holiday Inn.

6.3.2 The location of point sources used to represent taxiing aircraft within the model for Runway 08 day (as used for modelling within the ES), are shown at Figure 7 below. It should be noted that the point source furthest to the north, when an aircraft is facing to the north, generates the highest maximum noise level at the closest fourth floor window at the Holiday Inn. There is potential for aircraft to travel slightly closer to the boundary and for most receptors, this would generally mean more shielding by the earth bund but at 4th floor level, there is scope for some increase in maximum noise levels at the Holiday Inn, so this had been investigated.

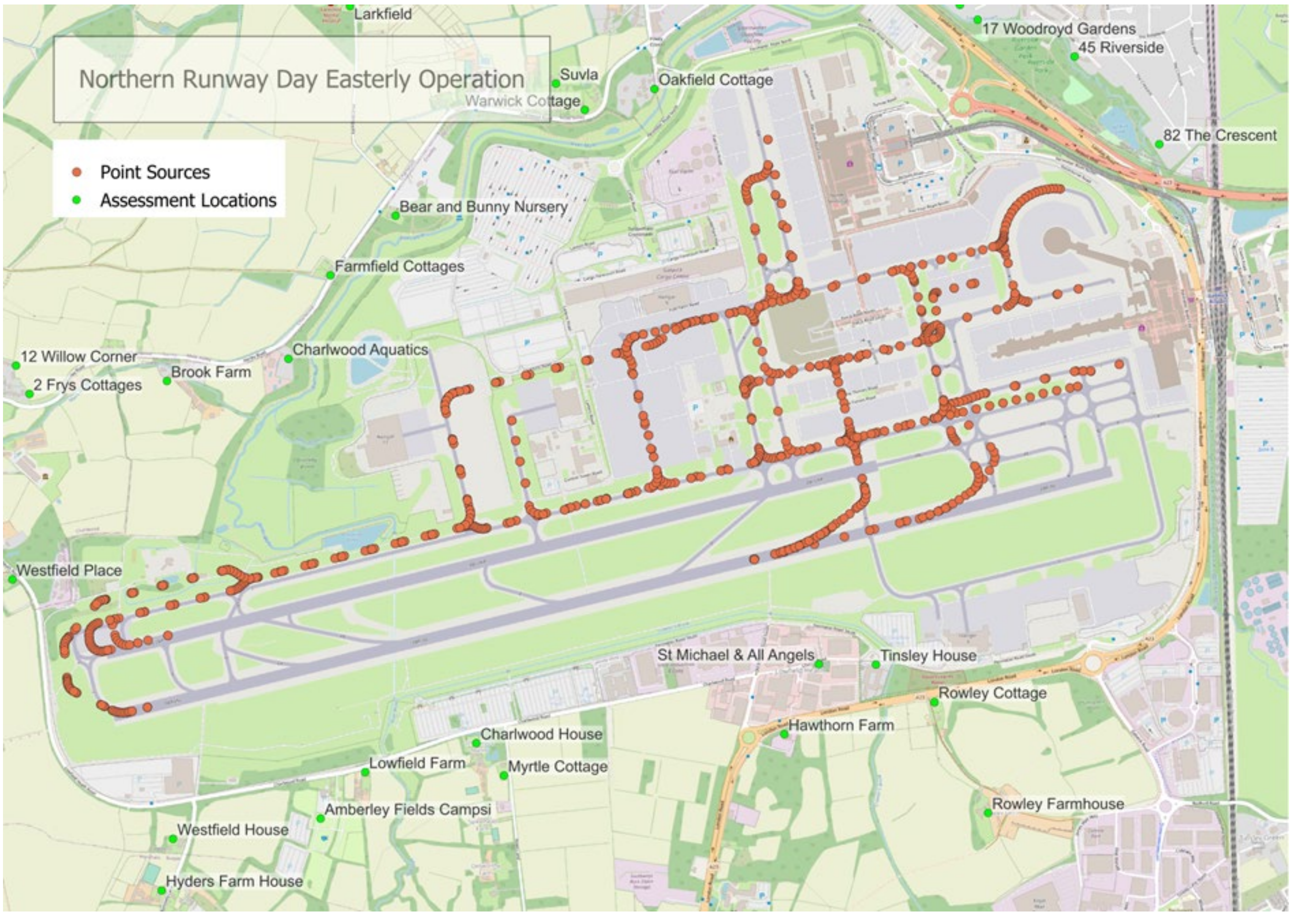



**Figure 7: Ground Noise Point Sources RW08 Day**

6.3.3 The edge of the airport apron where it borders the start of the north bund is approximately 225 m to the north of the northern most point source shown at Figure 7 above. Through review of the model, it has been determined that the highest maximum noise level at the fourth floor of the Holiday Inn would occur at a point approximately 150m to the north of the most northerly point source resulting in a level of 65 dB $L_{Amax}$. The highest reported maximum level for any receptor in the Povey Cross area is 67 dB $L_{Amax}$ for Runway 08 operation (see Table 14.9.15 of the ES) and this does not change by considering the worst-case point source location for the Holiday Inn (150m further north).

6.3.4 Whilst this worst-case location increases the highest predicted maximum noise by just under 2 dB at the Holiday Inn compared with the Gatwick Park Hospital receptor, this would be a relatively rare occurrence particularly at night, which is the period of concern to Holiday Inn, because the northern most gates are relatively infrequently used in off peak periods. It is therefore considered that average noise levels presented for the Gatwick Park Hospital receptor are still representative of the Holiday Inn.

### 6.4 Summary

6.4.1 Predicted $L_{eq}$ ground noise levels at Gatwick Park Hospital are representative of levels at the Holiday Inn. These are all below the adopted thresholds of significance for ground noise and the magnitude of change is no more than 1 dB which is considered to be 'low'. Therefore the effects expected at the Holiday Inn are negligible.

6.4.2 Predicted worst-case maximum noise levels at the Holiday Inn are below the maximum levels for receptors in Povey Cross and as such the worst-case for this assessment area has already been reported.

6.4.3 It is concluded that ground noise impacts from the Project on the hotel will be negligible and not significant.

## 7 Construction Noise

### 7.1 Background

7.1.1 The various construction works required in the vicinity of the hotel have been studied in more detail and explained to Holiday Inn, including construction of their preferred option for the new temporary access road to the hotel. The highest construction noise levels at the hotel are expected as a result of highway works at the approaches to the Longbridge roundabout. Noise modeling of these works has been refined to assess the worst-case noise levels that could arise and is presented in the remainder of this section. The compound on the opposite side of the A217 from the hotel is to be used as a welfare and works compound with no major construction activities generating noise.

7.1.2 The majority of the proposed works in the vicinity of the hotel will be carried out during the day, with the exception of brief works required on the highways to divert utilities across the highways and resurface road over approximately 6 nights, install new carriageway ducts to the traffic islands for traffic signals and lighting over approximately 8 nights and apply a high skid resistant final road surfacing over approximately 6 nights.

7.1.3 The main civils works required in the area at night is the construction of the A23 Brighton Road Bridge abutments, approximately 190 m east of the hotel. The ES assessed this, recommended mitigation and noted it is expected in approximately July 2029, with up to 20 nights programmed for sheet piling of the A23 Brighton Road Bridge Abutments (Table 14.9.4, p14-89 of **ES Chapter 14: Noise and Vibration** [APP-039]). The predicted noise level at the hotel during these works, as provided in February 2024, is $L_{Aeq,1hr}$ 57 dB (free-field). The highest noise levels from these works in the day is 64dB (free-field).

## 7.2 Construction Noise Modelling

7.2.1 Refined noise predictions have been carried out using the construction noise model described in **ES Chapter 14: Noise and Vibration** [APP-039] following the method in BS 5228, implemented using the Predictor noise model. In this area the ground is assumed to be an acoustically hard, reflective surface.

7.2.2 Noise levels have been predicted at three locations along the northeast façade of the Hotel, and at ground floor and fourth floor heights, to represent bedrooms.

7.2.3 Details of the construction programme, the location, number and type of plant required and mitigation measures likely to be implemented to produce likely worst-case predicted noise levels have been based on discussions with the GAL construction design team.

7.2.4 A number of construction activities are expected to be required during works at the Longbridge roundabout including accommodation works, site clearance, earthworks, utility diversions, removal of existing traffic island, carriageway widening, drainage: new drainage, pipework and gullies, carriageway ducts, lay kerbs and footway edgings, new road/footway surfacing, new traffic island, final road surfacing and final road finishing.

7.2.5 Construction plant teams have been produced for each activity using the database provided in BS 5228. Conservative reductions for mitigation that can reasonably be expected for the required works has been estimated based on BS 5228 Annex B. In addition, 2.5 m barriers have been assumed to be in place throughout the duration of the works and have been included in the modelling. Details are provided in Appendix 2.

7.2.6 Noise from each of the activities listed above has been modelled separately. However, it may be possible to carry out activities concurrently where a new activity is able to begin once the current activity has progressed to a different part of the work area.

7.2.7 Therefore, seven worst case modelling phases have been assessed by assuming several construction activities occur simultaneously and the noisiest activity is occurring close to the hotel. Details of the construction activities assumed for the seven phases, including figures showing details of the plant locations for each phase are provided in Appendix 2. (This has been adjusted to further address cumulative noise as commented on by Stantec in our meeting on 24 April 2024.)

7.2.8 To align with the criteria set out in the following section, one hour construction noise levels have been predicted. In order to do this, the following changes to plant teams for standard 12 hour predictions have been assumed:

- plant on-times are higher to reflect the shorter averaging period;
- half the number of equipment items would be operational; and
- in deciding which equipment to remove, the equipment resulting in the lowest predicted noise level (following the application of mitigation) have been chosen.

7.2.9 Details of the plant (including plant on-times) assumed in the modelling is provided in Appendix 2.

## 7.3 Criteria

7.3.1 In order to assess noise levels for users of the hotel it is necessary to consider a reasonable internal noise standard, and to compare the predicted noise levels with this accounting for the sound insulation performance of the building façade, as discussed, measured and reported in Section 3.

7.3.2 Stantec provided measurements of current internal noise levels generally in the range $L_{Aeq,T}$ 23 to 26dB but guidance indicates noise levels during construction works are assessed in terms of absolute levels, not related to background levels, because elevated noise levels can be acceptable so long as the use of the building can continue, when the noise is temporary.

7.3.3 Noise guidance in the UK suggests that achieving a level of 35 dB, $L_{Aeq,1h}$ represents a suitable standard for sleeping during the day and night within the hotel, as follows:

- Annex H of BS 8233 provides examples of design criteria adopted by hotel groups. Table H.3 suggests a range of internal noise levels at night from external sources, when averaged over a one hour period, of 25 – 35 dB, $L_{Aeq}$.

- Table 4 of BS 8233 presents design targets (i.e. for new buildings) and recommends, for dwellings, a level of 30 dB, $L_{Aeq,8h}$ for sleeping, noting that in situations where development is considered necessary or desirable, a level 5 dB higher will still achieve reasonable internal conditions.

- The guidance in ProPG (figure 2, note 7) adds further interpretation to Table 4 of BS 8233 as follows: "*The more often internal $L_{Aeq}$ levels start to exceed the internal $L_{Aeq}$ target levels by more than 5 dB, the more that most people are likely to regard them as "unreasonable*".

7.3.4 Therefore, it is considered that by achieving an internal level of 35 dB, $L_{Aeq,1h}$ for most of the time, this will result in reasonable conditions for sleeping within the hotel.

7.3.5 From the hotel façade insulation tests reported in Section 3, the hotel façade provides 36 dB(A) attenuation for construction noise with trickle vents closed. Adding this to this internal noise standard gives the limiting noise level outside to avoid disturbance:

- Construction noise Trigger Level 71 dB, $L_{Aeq,1hr}$ (façade)

7.3.6 It is considered relevant to adopt the façade performance with trickle vents closed for the temporary construction phase because:

- Construction noise will be temporary, and even during the works, will not be at high levels every day, so trickle vents or windows can be opened between noisy activities.
- Each room has a heating and cooling system, that can be controlled centrally to reduce any loss of comfort through overheating.
- The façade facing the construction works faces northeast so is in shade most hours of the day, reducing risk of overheating.

7.3.7 This approach is also consistent with precedent on major projects that provide noise insulation to address temporary construction noise by providing secondary glazing which remains closed, without additional ventilations provisions.

## 7.4 Modelling Results

7.4.1 The results are presented below in Table 7.1

**Table 3: Construction Noise Modelling Results**

| Phase | Predicted Façade Mitigated Construction Noise Level, $L_{Aeq,1h}$ dB(A) | |
|---|---|---|
| | **Day** | **Night** |
| **1** | 73 | - |
| **2** | 66 | 55 |
| **3** | 67 | - |
| **4** | 67 | 62 |
| **5** | 70 | - |
| **6** | 67 | - |
| **7** | - | 65 |

7.4.2 The Trigger Level 71 dB, $L_{Aeq,1hr}$ criterion is predicted to be exceeded only during the first phase of works and only by 2dB. The predicted exceedance is due to the use of a chainsaw during the clearance of trees and vegetation within the hotel grounds which is expected to last for a few days only and for which it is unlikely adequate mitigation can be provided.

## 7.5 Construction Noise Management

7.5.1 Appendix 3 provides a Noise Trigger Action Plan (NTAP) that will operate for the duration of the works to be carried out in the vicinity of the Holiday Inn hotel. Noise levels will be monitored throughout the works against the Trigger Level ($L_{eq\ 1hr}$ 71dB) described above. If the level is exceeded actions will be taken and the contractor will be required to reduce the noise levels. Noise levels will be predicted once again by the contractor before the works begin when applying for a Section 61 consent to local authority, as required by the Code of Construction Practice, and this will include further clarification of Best Practicable Means to minimise noise. If at that stage an exceedance of the trigger level is unavoidable, such as that predicted above for chainsaw work near the hotel, the contractor will define and agree with GAL a planned Exceedance Period, and the hotel will be given due notice of this.

7.5.2 The requirement for GAL (and in turn their appointed contractors) to comply with the NTAP will be added to the Code of Construction Practice when the next version of this is submitted into the Examination.

7.5.3 It is understood from the hotel manager that cabin crew who require sleeping conditions during the day can be accommodated on the South side of the hotel provided due notice is given. In this way it is expected that cabin crew can be accommodated in the hotel during such works without undue disturbance.

# 8 Conclusion

8.1.1 The Applicant has engaged with Holiday Inn and their technical advisors Stantec since February 2024 to better understand the hotel and its concerns, and to work with them to provide additional information on potential noise impact and for construction noise to develop mitigation measures (where necessary) to address those concerns. This work, as reported herein has confirmed and concluded:

8.1.2 The hotel will not be adversely affected by air noise impacts from the Project.

8.1.3 The hotel will not be adversely affected by road traffic noise impacts from the Project.

8.1.4 Ground noise impacts from the Project on the hotel will negligible and not significant.

8.1.5 Noise modelling of construction works required in the vicinity of the hotel has been refined from that carried out for the ES, to assess the worst-case noise levels that could arise at the hotel. These are expected as a result of highway works at the approaches to the Longbridge roundabout. The results have been assessed against an external façade level criterion of 71 dB, $L_{Aeq,1hr}$ which is based on achieving a reasonable internal standard for sleeping during the day and night (as presented in Section 7.3) and measurements of the building facade performance (as reported in Chapter 3).

8.1.6 The results show that the construction noise criterion will be met for all works except during the first phase of works only when it will be necessary to use a chainsaw during the clearance of trees and vegetation within the hotel grounds, which is expected to last for a few days only.

8.1.7 Noise levels will be predicted once again by the contractor before the works begin when applying for a Section 61 consent to local authority, and this will include further clarification of best practicable means to minimise noise. If at that stage an exceedance of the trigger level is unavoidable, such as that predicted above for chainsaw work near the hotel, the contractor will define and agree with GAL a planned Exceedance Period, and the hotel will be given due notice of this. It is understood cabin crew can be moved to the far side of the hotel during these periods.

8.1.8 A Noise Trigger Action Plan (NTAP) has been developed that will operate for the duration of the works to be carried out in the vicinity of the Holiday Inn hotel. Noise levels will be monitored throughout the works against the Trigger Level ($L_{eq\ 1hr}$ 71dB). If the level is exceeded actions will be taken and the contractor will be required to reduce the noise levels.

# Appendix 1: Façade Sound Insulation Testing

Hayes McKenzie
Consultants in Acoustics

# Holiday Inn Gatwick

Façade Sound Insulation Testing

Report HM: 3236_R01_EXT3

04 June 2024

hayesmckenzie.co.uk

Holiday Inn Gatwick

Façade Sound Insulation Testing

Report HM: 3236_R01_EXT31

4 June 2024

| | |
|---|---|
| Prepared for: | Gatwick Airport Limited<br>5th Floor,<br>Destinations Place,<br>Gatwick Airport,<br>West Sussex,<br>RH6 0NP |
| Report prepared by: | Seth Roberts BEng, MIOA<br>Principal Consultant |
| Checked by: | Robin Woodward BSc, MIOA<br>Principal Consultant |



Unit 3, Oakridge Office Park, Whaddon, Salisbury SP5 3HT, UK

[redacted]

# 1. INTRODUCTION

1.1 Gatwick Airport Ltd (GAL) have appointed Hayes McKenzie Partnership Ltd. to carry out airborne sound insulation tests on façade elements at The Holiday Inn London – Gatwick Airport. Tests were conducted on Wednesday 8th May 2024.

1.2 The aim of these tests is to determine a representative level of sound insulation of the façade elements of typical rooms on the northeast façade of the building.

# 2. CONSTRUCTION DETAILS

2.1 It is understood that the original building at Holiday Inn London Gatwick Airport was not a hotel and it was converted at some point when the building was acquired by Holiday Inn. Historical Aerial photography indicates that the building was constructed in the 1970s not long after the M23 was built, possibly in 1978. The main building housing all the guest rooms is a brick built 5-storey structure with what appears to be concrete floors and a concrete flat roof. The external walls appear to be of a cavity construction in excess of 300 mm thick with a dry lining on the internal leaf. There are brick-built buttresses spaced at 7.3 m centres along the external façade which are likely in place to support the weight of reinforced concrete floor structures. There are metal framed ceilings with standard ceiling tiles installed in corridors and what appears to be plasterboard ceilings within all the guest rooms. Each room has glazing separated into three approximately 1 m by 1 m (square) windows, the middle window in each room is non-openable and includes separate openable trickle ventilation slots at the top. The two windows either side are openable and do not include any trickle ventilation. The windows are all double glazed and although no measurements were taken, it is estimated that the glazing is somewhere in the region of 32 mm thick (likely 6 mm glazing either side with 20 mm gap).

# 3. TEST METHODOLOGY

3.1 Airborne sound insulation testing was conducted on the 8th May 2024 and for each room tested, two tests were undertaken: one with trickle ventilation in the open position and one with trickle ventilation in the closed position. The testing was carried out on the exterior northeast façade into rooms 226, 232 and 234 resulting in a total of six tests. The layout of the property is shown at Figure 1.

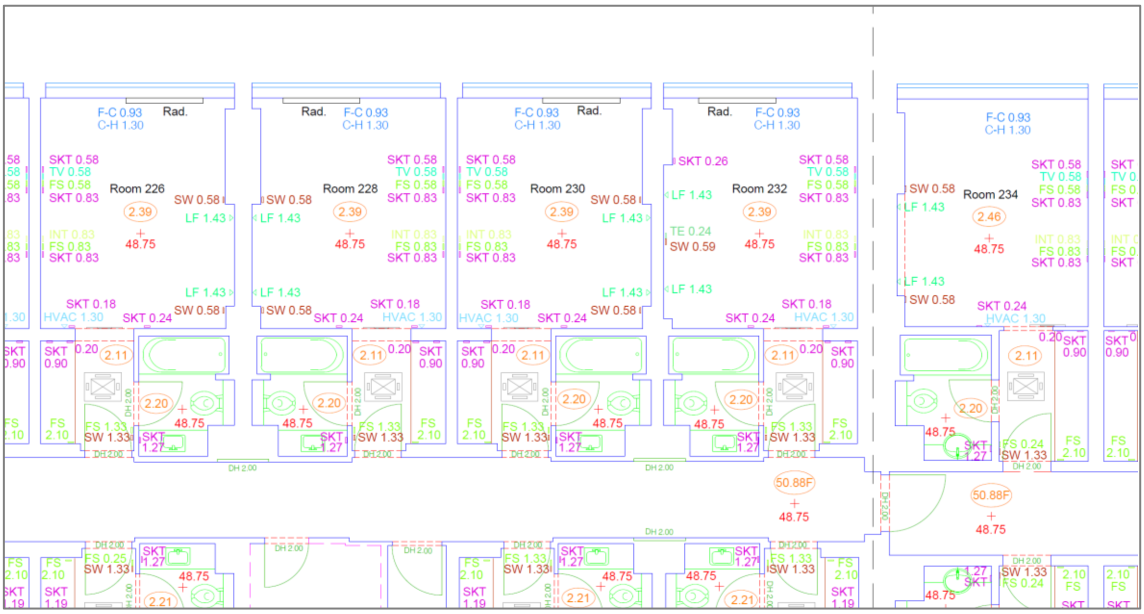



**Figure 1 – Plan of Rooms Tested**

3.2 The tests were all conducted in accordance with the global loudspeaker method defined in ISO 16283-3:2016, *Acoustics – Field measurement of sound insulation in buildings and of building elements – Part 3: Façade sound insulation.* The tests were all carried out with the sound source positioned at ground floor level measuring the sound insulation of the façades of rooms at first floor level. The only deviation to the standard was the exact height of the external microphone position which was estimated to be slightly higher that the prescribed 1.5 m above the floor level of the rooms tested. In this case the deviation in the external microphone position was due to practicality since the microphone was mounted on a fixed length pole with very little scope for adjusting the height.

### Equipment

3.3 The equipment used is listed in Appendix A. Two sound level meters were used, both of which were calibrated before and checked after measurements and no drift in calibration was found to have occurred. The equipment generally conforms to the requirements specified in ISO 16283-3, namely: an omnidirectional dodecahedron shaped loudspeaker (meeting the requirements of Annex C to the standard), a sound level meter with an accuracy class 0 or 1 (defined in IEC 61672-1:2002), a calibrator with an accuracy class 1 (defined in IEC 60942:2003), electronic filters conforming to IEC 61260:1995/AMD1:2001 and reverberation time measurement requirements defined in ISO 3382-2:2008. The only exception is that the wind shield used for the external microphone is designed for measurement in windy conditions and has an insertion loss that causes the whole system to not quite meet the requirements of class 0 (or class 1) when the sound level meter would otherwise do so.

3.4 All equipment has been calibrated at a UKAS accredited, qualified and competent laboratory and was within the recommended external calibration period at the time of the tests.

### Test Procedure

3.5 The omnidirectional sound source was placed on the ground at a distance of 5 m from the façade and the external microphone was mounted on a pole at a height of 4.3 m, positioned at 2 m from the façade as shown at Figure 2 below.

**Figure 2 – Speaker and Microphone Positions**

3.6 For each test the sound pressure levels within the receiving room were measured in ⅓rd octave bands using a moving microphone technique[1] with an averaging time of 60 seconds and one measurement position. External sound pressure levels at 2 m from the façade were measured in ⅓rd octave bands using a fixed microphone position at 4.3 m above the ground. In addition to source and receiver measurements, one internal background noise measurement and eight individual reverberation time measurements were also made.

3.7 The signal level of the sound source was not altered during measurements in the receiving room and measurements of the source were undertaken simultaneously using a second sound level meter. All tests were conducted using the same sound source and loudspeaker system throughout.

3.8 Background noise was measured in the receiving room directly after a receiver room measurement using the same moving microphone technique and the same averaging time of 60 seconds (in accordance with section 7.4.1 of ISO 16283-3).

3.9 Reverberation time measurements were carried out using interrupted pink noise, four static microphone positions and one internal source position.

*Processing Results*

3.10 Corrections for background noise are covered in section 7.4.2 of ISO 16283-3, where it is specified that corrections should be applied if the margin between background sound and receiver measurements is less than 10 dB in any of the frequency bands. The standard goes on to state that measurements where the margin between background noise and measured level is less than 6 dB should be highlighted, indicating that the measured results are at the limit of measurement. For this site, test measurements carried out with trickle vents closed were less than 6 dB above background noise in some of the higher frequency bands. The measured $D_{ls,2m,nT}$ results in frequency bands which are at the limit of measurement are denoted (in the tabular data) using asterisk symbols on the graphical illustrations of the results appended to this report.

3.11 Reverberation times (RTs) have been calculated using a spreadsheet which plots out linear regression lines for each of the measured decay curves in each of the frequency bands. The linear regression lines are manually checked to ensure they cover the correct part of the decay curve for each frequency band in each measurement and adjusted if necessary. The mean values of the eight sets of derived RTs are then used for each frequency band.

[1] This technique conforms with the circular path described for the manually scanned microphone method specified at section 7.2.3.2 of ISO 16283-3.

*Calculation of Weighted Standardised Level Difference*

3.12 ISO 16283-3 defines the formula used to derive the standardised level difference ($D_{ls,2m,nT}$) for each ⅓rd octave band when using the global loudspeaker method. The formula (at section 3.15 of the standard) used for this calculation is reproduced below:

$$D_{Is,2m,nT} = D_{Is,2m} + 10\, log_{10}\left(\frac{T}{T_o}\right) dB$$

where:

$$D_{Is,2m} = L_{1,2m} - L_2$$

$L_{1,2m}$ is the average sound pressure level at 2 m in front of the façade
$L_2$ is the average sound pressure level in the receiving room
$D_{ls,2m}$ is the level difference between outside and inside
T is the reverberation time in the receiving room (according to ISO 3382-2)
$T_o$ is the reference reverberation time (0.5 seconds for dwellings)

3.13 ISO 717-1:1997 defines the procedure for calculating the single figure Weighted Standardised Level Difference ($D_{ls,2m,nT,w}$). The ⅓rd octave $D_{ls,2m,nT}$ values are compared to the reference curve defined in ISO 717-1 and the reference curve is shifted in steps of 1 dB towards the measured curve until the sum of the unfavourable deviations is as large as possible but not more than 32 dB. The weighted level is then the value of the shifted reference curve at 500 Hz.

## 4. TEST RESULTS

4.1 The results of the airborne sound insulation tests for the master bedroom façade is shown at Table 1. A graphic illustration of the results is included at Appendix B.

**Table 1 - Test Results**

| Test No. | Test Description | Façade area ($m^2$) | Receiver Room Volume ($m^3$) | Measured $D_{ls,2m,nT,w}$ (dB) |
|---|---|---|---|---|
| 1 | Room 226<br>Vent Open | 8.1 | 32.9 | 21 |

| | | | | |
|---|---|---|---|---|
| 2 | Room 226<br>Vent Closed | 8.1 | 32.9 | 38 |
| 3 | Room 232<br>Vent Open | 8.1 | 32.9 | 23 |
| 4 | Room 232<br>Vent Closed | 8.1 | 32.9 | 36 |
| 5 | Room 234<br>Vent Open | 8.1 | 31.9 | 23 |
| 6 | Room 234<br>Vent Closed | 8.1 | 31.9 | 31 |

## 5. DISCUSSION OF TEST RESULTS AND RECOMMENDATIONS

5.1 The results of the tests are provided to quantify the current sound insulation of the façade of the building. With this data it will be possible to calculate likely internal noise levels for a given spectrum of noise incident on the external façade of the building.

5.2 Observations made of the property were conducted during the testing. It was noted that the primary areas of sound ingress from the exterior to the interior were through the trickle ventilation installed at the top of the windows even when vents were in the closed position.

5.3 The overall measured sound insulation values at Table 1 appear to be generally controlled by the level of sound ingress in the 1000 Hz and 1250 Hz frequency bands. Given the observed dominance of sound ingress through the trickle ventilation, it is considered that sound insulation in this frequency range is controlled entirely by the trickle ventilation. Test results with the vents closed show a considerable variation in the overall standardized weighted level difference (38, 36 and 31 dB for tests 2, 4 and 6 respectively) and it is considered that this variation is a direct indication of the air-tightness of the trickle vents in the closed position within each room.

5.4 Test number 2 has the highest level of sound insulation with the trickle vents closed, with a relatively minor dip in the 1000 Hz and 1250 Hz frequency bands (compared to the other two rooms). This particular test result indicates that the glazing element of the façade is likely to have a laboratory tested sound insulation value in excess of 38 dB $R_w$, offering a good level of sound insulation. Therefore, if any improvements were required to be made to the sound insulation of the façade, a significant improvement could be achieved by improving the sound insulation offered by the trickle ventilation.

# Appendix A – List of Equipment

**Table A-1 List of Calibrated Equipment**

| Equipment | Serial Number | Date of Last Calibration | Calibration Certification Number |
|---|---|---|---|
| Larson Davis 831 sound level meter | 0002007 | 23/04/2024 | UCRT24/1627 |
| PCB 377B02 Microphone | 112745 | 23/04/2024 | UCRT24/1627 |
| PCB PRM831 Pre-amplifier | 15281 | 23/04/2024 | UCRT24/1627 |
| LD-CAL200 Sound Level Calibrator | 4592 | 23/04/2024 | UCRT24/1617 |
| Bruel & Kjaer type 3207 Tapping Machine | 2481584 | 22/04/2024 | UCRT24/1635 |
| Rion NL-52 Sound Level Meter | 00420658 | 09/02/2023 | UCRT23/1182 |
| Rion UC-59 Microphone | 19109 | 09/02/2023 | UCRT23/1182 |
| Rion NH-25 Pre-amplifier | 10691 | 09/02/2023 | UCRT23/1182 |

**Table A-2 List of Other Equipment**

| Equipment | Serial Number | Date of Last Stability Test |
|---|---|---|
| ANV FTL500 - Combined Noise Generator, Amplifier and Graphic Equaliser | - | 21/07/2023 |
| ANV Dodecahedron loudspeaker | - | 21/07/2023 |

# Appendix B – Airborne Testing Measurement Results

**Standardized level difference according to ISO 16238-3**
**Field measurements of sound insulation in buldings and of building elements - Part 3: Façade Sound Insulation**

Client: GAL
Date of test: 08/05/2024
Site: Holiday Inn Gatwick
Test Ref: Room 226 Façade - Vent Open

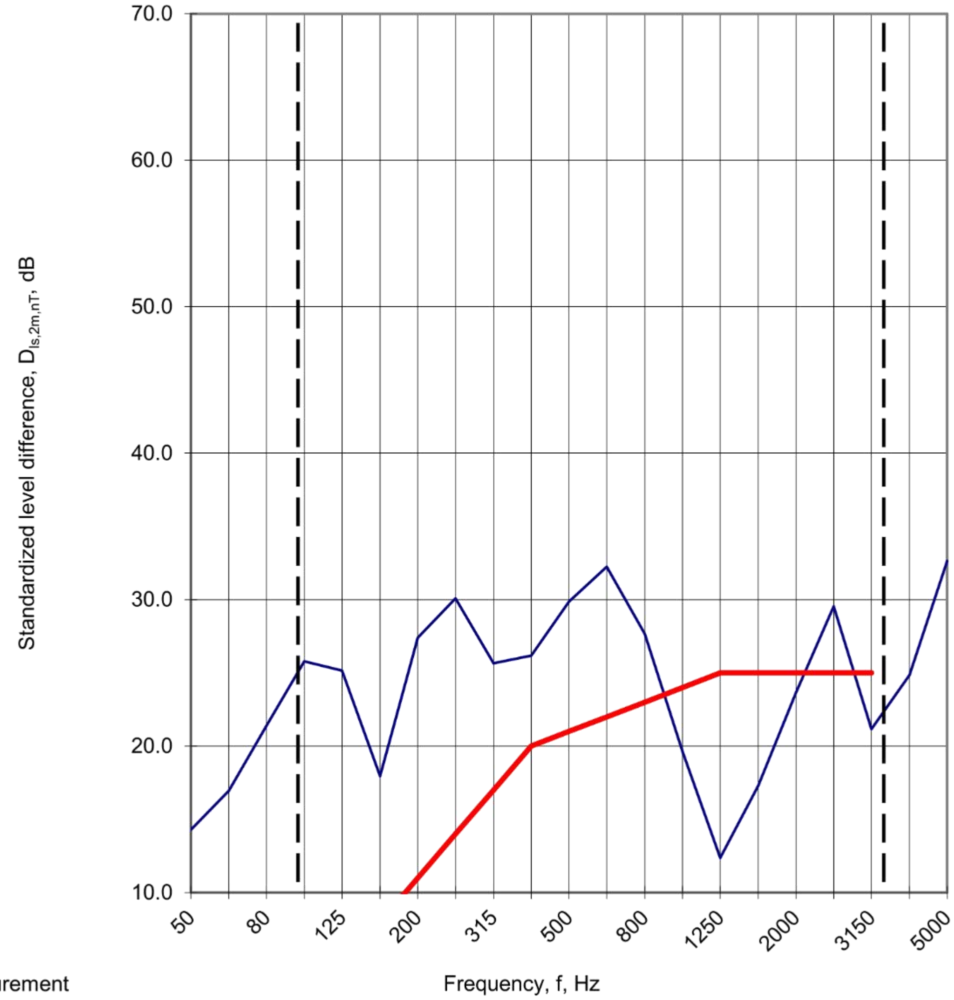
Hayes McKenzie
Consultants in Acoustics

Façade area : 8.1 $m^2$
Receiving room volume: 32.9 $m^3$

Frequency range according to the curve of reference values (ISO 717-1)

| Frequency f Hz | $D_{ls,2m,nT}$ (⅓ octave) dB |
|---|---|
| | dB |
| 50 | 14.3 |
| 63 | 17.0 |
| 80 | 21.4 |
| 100 | 25.8 |
| 125 | 25.1 |
| 160 | 18.0 |
| 200 | 27.4 |
| 250 | 30.1 |
| 315 | 25.7 |
| 400 | 26.2 |
| 500 | 29.9 |
| 630 | 32.3 |
| 800 | 27.7 |
| 1000 | 19.6 |
| 1250 | 12.4 |
| 1600 | 17.3 |
| 2000 | 23.7 |
| 2500 | 29.5 |
| 3150 | 21.2 |
| 4000 | 24.9 |
| 5000 | 32.6 |

* denotes value at limit of measurement




Rating according to ISO 717-1

$D_{ls,2m,nT,w}$ (C;Ctr) = **21 ( -2 ; -2 ) dB**

| | | | | | |
|---|---|---|---|---|---|
| $C_{50-3150}$ | -2 dB | $C_{50-5000}$ | -1 dB | $C_{100-5000}$ | -1 dB |
| $C_{tr,50-3150}$ | -2 dB | $C_{tr,50-5000}$ | -2 dB | $C_{tr,100-5000}$ | -2 dB |

Evaluation based on field measurement results obtained by an engineering method

Test No. 1
Date: 14/05/2024
Hayes McKenzie Partnership
Signature: Seth Roberts

**Standardized level difference according to ISO 16238-3**
**Field measurements of sound insulation in buldings and of building elements - Part 3: Façade Sound Insulation**

Client: GAL　　Date of test: 08/05/2024

Site: Holiday Inn Gatwick

Test Ref: Room 226 Façade - Vent Closed

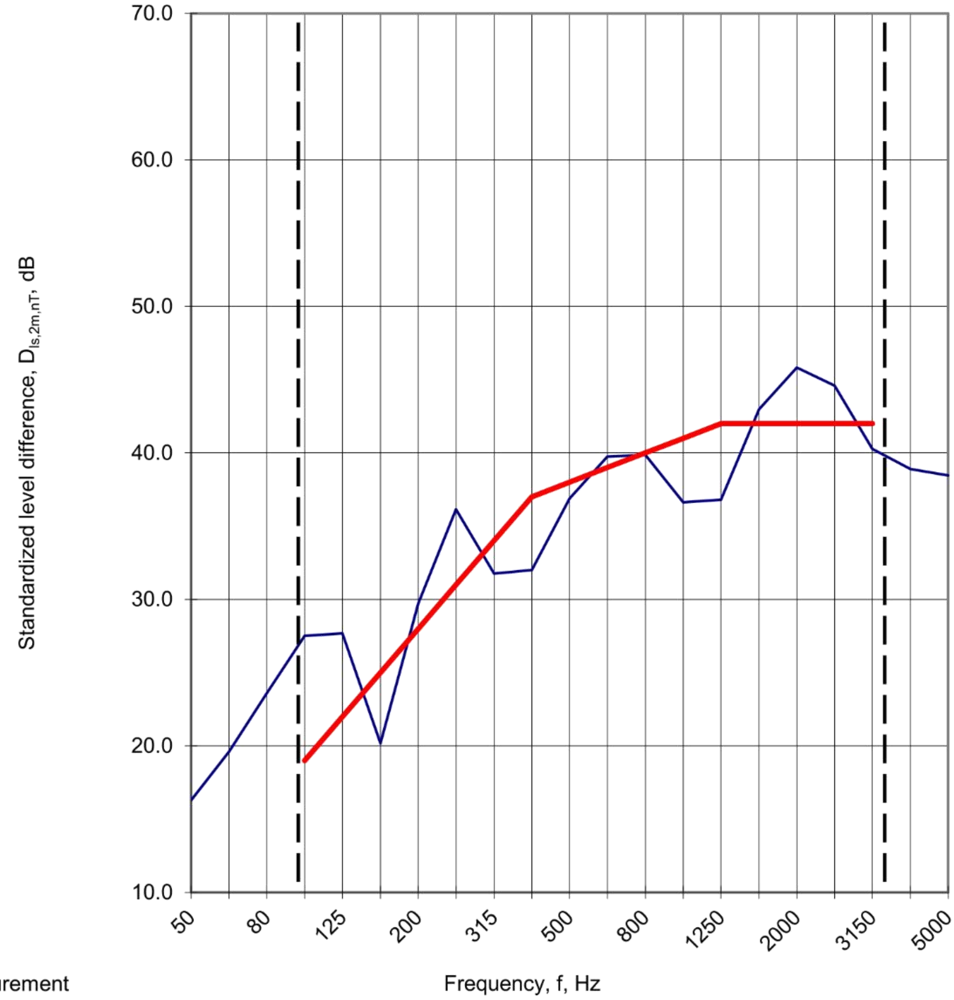
Hayes McKenzie —— Consultants in Acoustics

Façade area : 8.1 $m^2$
Receiving room volume: 32.9 $m^3$

Frequency range according to the curve of reference values (ISO 717-1)

| Frequency f Hz | $D_{ls,2m,nT}$ (⅓ octave) dB |
|---|---|
| | dB |
| 50 | 16.3 |
| 63 | 19.6 |
| 80 | 23.6 |
| 100 | 27.5 |
| 125 | 27.7 |
| 160 | 20.2 |
| 200 | 29.7 |
| 250 | 36.1 |
| 315 | 31.8 |
| 400 | 32.0 |
| 500 | 36.9 |
| 630 | 39.8 |
| 800 | 39.9 |
| 1000 | 36.6 |
| 1250 | 36.8 |
| 1600 | 43.0 |
| 2000 | 45.8 * |
| 2500 | 44.6 * |
| 3150 | 40.3 * |
| 4000 | 38.9 |
| 5000 | 38.5 |

* denotes value at limit of measurement




Rating according to ISO 717-1

$D_{ls,2m,nT,w}$ (C;Ctr) = **38 ( -1 ; -4 ) dB**　　$C_{50-3150}$ -1 dB　　$C_{50-5000}$ -1 dB　　$C_{100-5000}$ -1 dB

Evaluation based on field measurement results obtained by an engineering method　　$C_{tr,50-3150}$ -5 dB　　$C_{tr,50-5000}$ -5 dB　　$C_{tr,100-5000}$ -4 dB

Test No. 2
Date: 14/05/2024

Hayes McKenzie Partnership
Signature: Seth Roberts

**Standardized level difference according to ISO 16238-3**
**Field measurements of sound insulation in buldings and of building elements - Part 3: Façade Sound Insulation**

Client: GAL | Date of test: 08/05/2024
Site: Holiday Inn Gatwick
Test Ref: Room 232 Façade - Vent Open

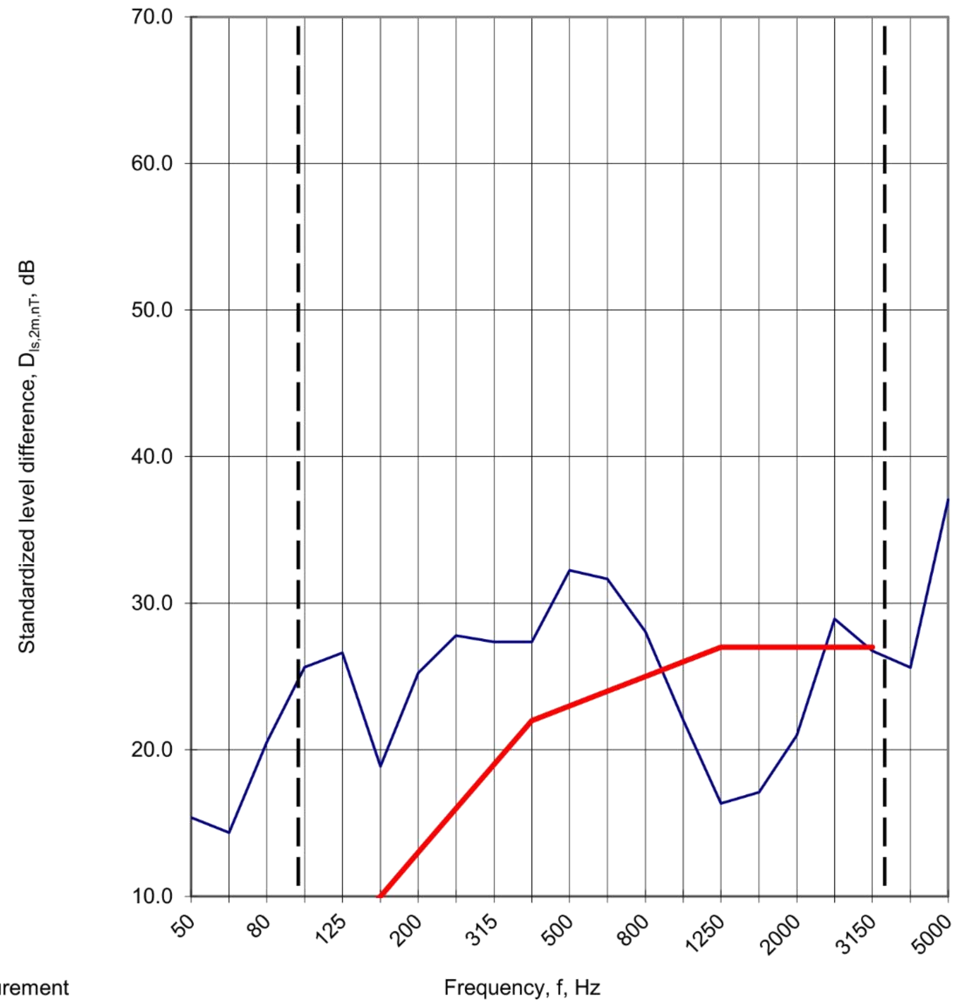
Hayes McKenzie —— Consultants in Acoustics

Façade area : 8.1 $m^2$
Receiving room volume: 32.9 $m^3$

Frequency range according to the curve of reference values (ISO 717-1)

| Frequency f Hz | $D_{ls,2m,nT}$ (⅓ octave) dB |
|---|---|
| | dB |
| 50 | 15.4 |
| 63 | 14.3 |
| 80 | 20.5 |
| 100 | 25.6 |
| 125 | 26.6 |
| 160 | 18.9 |
| 200 | 25.2 |
| 250 | 27.8 |
| 315 | 27.4 |
| 400 | 27.3 |
| 500 | 32.2 |
| 630 | 31.6 |
| 800 | 28.1 |
| 1000 | 22.0 |
| 1250 | 16.3 |
| 1600 | 17.1 |
| 2000 | 21.0 |
| 2500 | 28.9 |
| 3150 | 26.7 |
| 4000 | 25.6 |
| 5000 | 37.1 |

* denotes value at limit of measurement




Rating according to ISO 717-1

$D_{ls,2m,nT,w}$ (C;Ctr) = **23 ( -2 ; -2 ) dB**

| | | | | | |
|---|---|---|---|---|---|
| $C_{50-3150}$ | -2 dB | $C_{50-5000}$ | -1 dB | $C_{100-5000}$ | -1 dB |
| $C_{tr,50-3150}$ | -2 dB | $C_{tr,50-5000}$ | -2 dB | $C_{tr,100-5000}$ | -2 dB |

Evaluation based on field measurement results obtained by an engineering method

Test No. 3
Date: 14/05/2024

Hayes McKenzie Partnership
Signature: Seth Roberts

**Standardized level difference according to ISO 16238-3**
**Field measurements of sound insulation in buldings and of building elements - Part 3: Façade Sound Insulation**

Client: GAL    Date of test: 08/05/2024

Site: Holiday Inn Gatwick

Test Ref: Room 232 Façade - Vent Closed

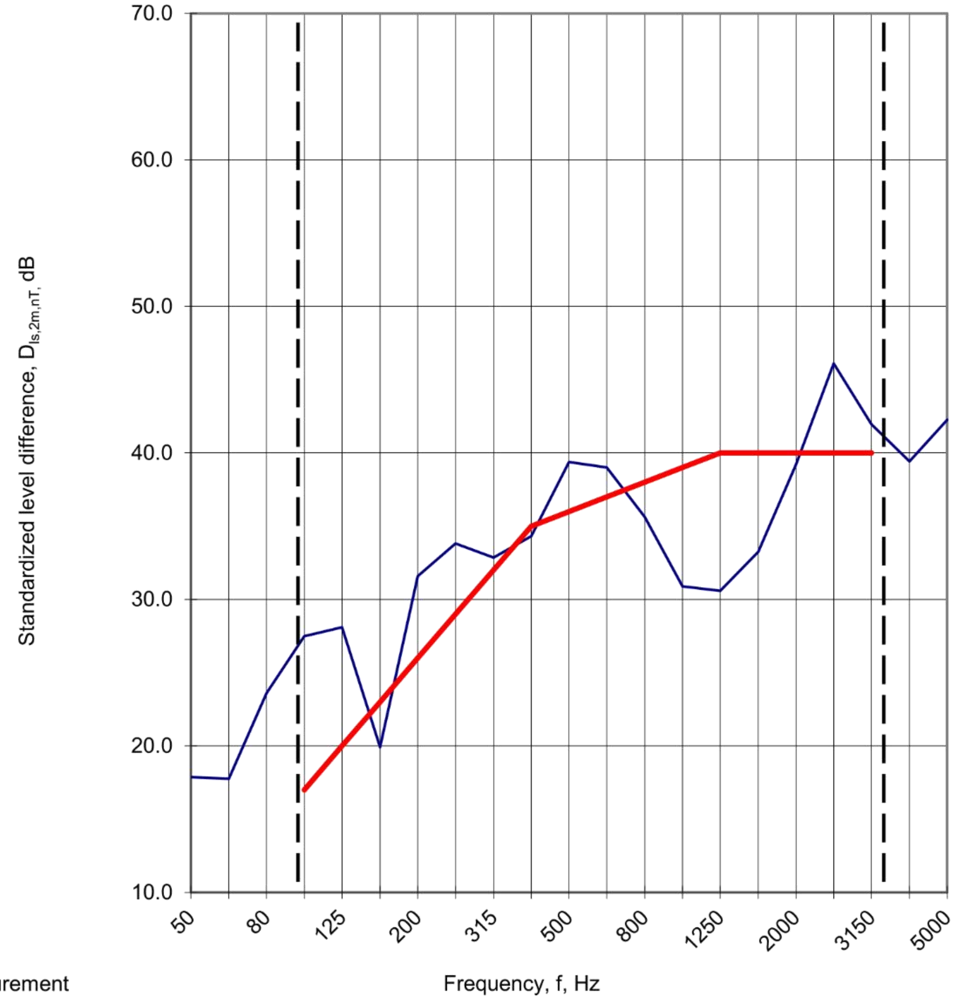
Hayes McKenzie —— Consultants in Acoustics

Façade area : 8.1 $m^2$
Receiving room volume: 32.9 $m^3$

Frequency range according to the curve of reference values (ISO 717-1)

| Frequency f Hz | $D_{ls,2m,nT}$ (⅓ octave) dB |
|---|---|
| | dB |
| 50 | 17.9 |
| 63 | 17.8 |
| 80 | 23.6 |
| 100 | 27.5 |
| 125 | 28.1 |
| 160 | 19.9 |
| 200 | 31.6 |
| 250 | 33.8 |
| 315 | 32.8 |
| 400 | 34.3 |
| 500 | 39.4 |
| 630 | 39.0 |
| 800 | 35.6 |
| 1000 | 30.9 |
| 1250 | 30.6 |
| 1600 | 33.3 |
| 2000 | 39.2 |
| 2500 | 46.1 * |
| 3150 | 42.0 * |
| 4000 | 39.4 |
| 5000 | 42.3 |

* denotes value at limit of measurement




Rating according to ISO 717-1

$D_{ls,2m,nT,w}$ (C;Ctr) = **36 ( -2 ; -4 ) dB**

| | | | | | |
|---|---|---|---|---|---|
| $C_{50-3150}$ | -2 dB | $C_{50-5000}$ | -1 dB | $C_{100-5000}$ | -1 dB |
| $C_{tr,50-3150}$ | -5 dB | $C_{tr,50-5000}$ | -5 dB | $C_{tr,100-5000}$ | -4 dB |

Evaluation based on field measurement results obtained by an engineering method

Test No. 4
Date: 14/05/2024

Hayes McKenzie Partnership
Signature: Seth Roberts

**Standardized level difference according to ISO 16238-3**
**Field measurements of sound insulation in buldings and of building elements - Part 3: Façade Sound Insulation**

Client: GAL    Date of test: 08/05/2024

Site: Holiday Inn Gatwick

Test Ref: Room 234 Façade - Vent Open

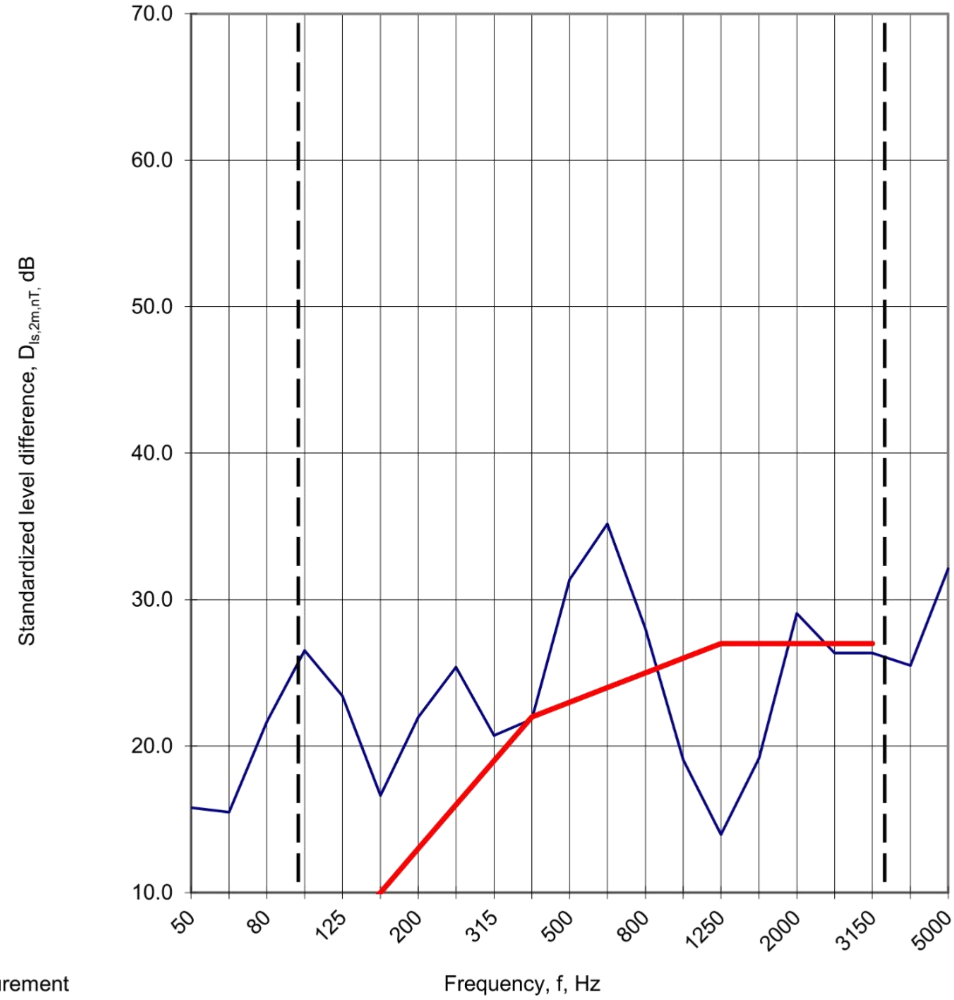
Hayes McKenzie
Consultants in Acoustics

Façade area : 8.1 $m^2$
Receiving room volume: 31.9 $m^3$

Frequency range according to the curve of reference values (ISO 717-1)

| Frequency f Hz | $D_{ls,2m,nT}$ (⅓ octave) dB |
|---|---|
| | dB |
| 50 | 15.8 |
| 63 | 15.5 |
| 80 | 21.7 |
| 100 | 26.5 |
| 125 | 23.4 |
| 160 | 16.6 |
| 200 | 22.0 |
| 250 | 25.4 |
| 315 | 20.7 |
| 400 | 21.8 |
| 500 | 31.4 |
| 630 | 35.2 |
| 800 | 28.0 |
| 1000 | 19.1 |
| 1250 | 14.0 |
| 1600 | 19.2 |
| 2000 | 29.1 |
| 2500 | 26.3 |
| 3150 | 26.4 |
| 4000 | 25.5 |
| 5000 | 32.1 |

* denotes value at limit of measurement




Rating according to ISO 717-1

$D_{ls,2m,nT,w}$ (C;Ctr) = **23 ( -3 ; -3 ) dB**

| | | | | | |
|---|---|---|---|---|---|
| $C_{50-3150}$ | -3 dB | $C_{50-5000}$ | -2 dB | $C_{100-5000}$ | -2 dB |
| $C_{tr,50-3150}$ | -3 dB | $C_{tr,50-5000}$ | -3 dB | $C_{tr,100-5000}$ | -3 dB |

Evaluation based on field measurement results obtained by an engineering method

Test No. 5
Date: 14/05/2024

Hayes McKenzie Partnership
Signature: Seth Roberts

**Standardized level difference according to ISO 16238-3**
**Field measurements of sound insulation in buldings and of building elements - Part 3: Façade Sound Insulation**

Client: GAL    Date of test: 08/05/2024

Site: Holiday Inn Gatwick

Test Ref: Room 234 Façade - Vent Closed

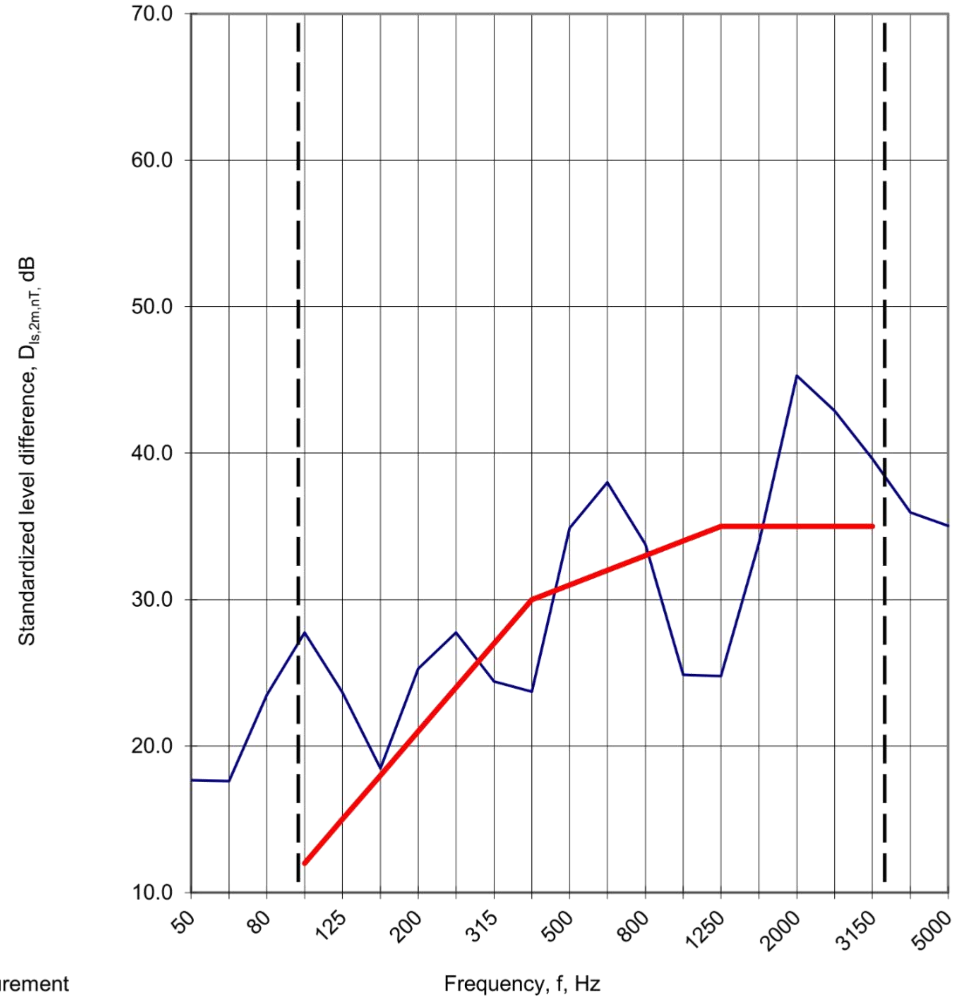
Hayes McKenzie ——
Consultants in Acoustics

Façade area : 8.1 $m^2$
Receiving room volume: 31.9 $m^3$

Frequency range according to the curve of reference values (ISO 717-1)

| Frequency f Hz | $D_{ls,2m,nT}$ (⅓ octave) dB |
|---|---|
| | dB |
| 50 | 17.7 |
| 63 | 17.6 |
| 80 | 23.5 |
| 100 | 27.8 |
| 125 | 23.7 |
| 160 | 18.5 |
| 200 | 25.3 |
| 250 | 27.8 |
| 315 | 24.4 |
| 400 | 23.7 |
| 500 | 34.9 |
| 630 | 38.0 |
| 800 | 33.8 |
| 1000 | 24.9 |
| 1250 | 24.8 |
| 1600 | 33.9 |
| 2000 | 45.3 |
| 2500 | 42.9 * |
| 3150 | 39.6 * |
| 4000 | 35.9 |
| 5000 | 35.0 |

* denotes value at limit of measurement




Rating according to ISO 717-1

$D_{ls,2m,nT,w}$ (C;Ctr) = **31 ( -2 ; -4 ) dB**    $C_{50-3150}$ -2 dB    $C_{50-5000}$ -1 dB    $C_{100-5000}$ -1 dB

Evaluation based on field measurement results obtained by an engineering method    $C_{tr,50-3150}$ -4 dB    $C_{tr,50-5000}$ -4 dB    $C_{tr,100-5000}$ -4 dB

Test No. 6
Date: 14/05/2024

Hayes McKenzie Partnership
Signature: Seth Roberts

# Appendix 2: Construction Noise Modelling

# Holiday Inn Noise Report

# Appendix 2: Construction Noise Modelling

## 1 Introduction

1.1.1 This appendix presents details of the construction noise modelling reported in Chapter 7.

## 2 Construction Activities and Modelling Phases

2.1.1 The construction activities expected to be required are listed below:

- Accommodation Works.
- Site clearance.
- Earthworks.
- Utility Diversions.
- Remove existing traffic island.
- Carriageway widening.
- Drainage: New drainage, pipework and gullies.
- Carriageway ducts.
- Lay kerbs and footway edgings.
- New road/footway surfacing.
- New traffic island.
- Final road surfacing.
- Final road finishing.

2.1.2 It may be possible carry out activities concurrently where a new activity is able to begin once the current activity has progressed to a different part of the work area. To account for this, with input from the construction design team, seven worst case modelling phases have been assessed by assuming several construction activities occur simultaneously and the noisiest activity is occurring close to the hotel. Details are provided in Table 1. Assumed plant locations are shown in Section 4.

**Table 1 Modelling phases**

| Phase | Construction activities assumed to occur concurrently |
|---|---|
| 1 | ▪ Accommodation Works: Construct new temporary access into holiday Inn<br>▪ Site clearance : Site clearance of trees and vegetation |

| | |
|---|---|
| | ▪ Site clearance : Take down and relocate of signs, lighting etc<br>▪ Earthworks: Strip topsoil and set aside for reuse<br>▪ Remove existing traffic island: Excavate / mill / remove existing traffic island and reinstate as temporary / permanent running lane. |
| 2 | ▪ Earthworks: First stage earthworks - widening verge for utilities<br>▪ Utility Diversions: Trench excavation with spoil stockpiled locally. Lay ducts and pipework for utility diversion.<br>▪ Utility Diversions: Break out road pavement for road crossings, lay ducts / pipes and backfill. |
| 3 | ▪ Utility Diversions: Construction of boxes and chambers<br>▪ Utility Diversions: Backfill trenches<br>▪ Utility Diversions: Pull cables, jointing and testing. Recover cables |
| 4 | ▪ Carriageway widening: Saw cut on road side of existing kerbs<br>▪ Carriageway widening: Excavate hard and soft material to formation level.<br>▪ Carriageway widening: Place sub base material in road<br>▪ Drainage: New drainage, pipework and gullies.<br>▪ Carriageway ducts: New cross carriageway ducts to island for traffic signals / lighting. Excavation of hard material and installation in trench, backfilling with concrete and pavement reinstatement<br>▪ Lay kerbs and footway edgings |
| 5 | ▪ New road/footway surfacing: Top up sub base in road and place in footway.<br>▪ New road/footway surfacing: Lay new bituminous material in road and footway<br>▪ New road/footway surfacing: erecting of new signage, topsoiling to verges.<br>▪ New road/footway surfacing: Temporary white lines / switch traffic.<br>▪ New traffic island: Excavate / mill existing road pavement and lay kerbs.<br>▪ New traffic island: bituminous surfacing / paving / traffic signal pole installation |
| 6 | ▪ Final road surfacing: Mill existing paved areas.<br>▪ Final road surfacing: Lay bituminous material to new levels. |
| 7 | ▪ Final road finishing: Apply high skid resistant surfacing |

# 3 Mitigation

3.1.1 BPM (Best Practicable Means) as defined by the Control of Pollution Act 1974 (CoPA) and Environmental Protection Act 1990 (EPA), will be applied during construction activities to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors.

3.1.2 The contractor has not been appointed, so it is necessary at this stage to estimate the effect of BPM that can reasonably be expected for the required works. Guidance is provided in BS 5228[1] Annex B (Noise sources, remedies and their effectiveness). As was done for the ES, this guidance has been reviewed and, in discussion with the construction design team, the BPM measures in Table 3 have been assumed.

**Table 3 BS5228 BPM Noise Mitigation Measures**

| Plant item | Noise Reduction Method |
|---|---|
| Muck away lorries | Exhaust muffler |
| 360 Exc. 10t | Exhaust muffler |
| Floor saw | Mobile barrier |
| Mini digger | Exhaust muffler |
| Small / mini breaker | Mobile barrier |
| Mini digger with small breaker. | Mobile barrier |
| White lining lorry | Exhaust muffler |

3.1.3 The BS 5228 annex explains that noise reductions of 5 to 10 dB can be achieved using these techniques. Where it is considered that BPM would reduce the noise from certain items of plant then a conservative reduction of 5 dB has been assumed within the modelling of construction noise reported below.

[1] BS 5228- 1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites - Part 1: Noise

3.1.4 In addition, several 2.5 m barriers have been assumed to be in place throughout the duration of the works and have been included in the modelling. The locations of the barriers are shown in the figures in Section 4 as purple lines. Although it is likely that it will be possible to include a barrier at the edge of the site as assumed, the exact location will be refined and included in the submission of a Section 61 of the Control of Pollution Act 1974 to the relevant local authorities for approval prior to any works commencingp.

# 4 Figures Showing Modelling Phases

**Figure 1 Phase 1, Overview**

**Figure 2 Phase 1, Detail 1**

**Figure 3 Phase 1, Detail 2**

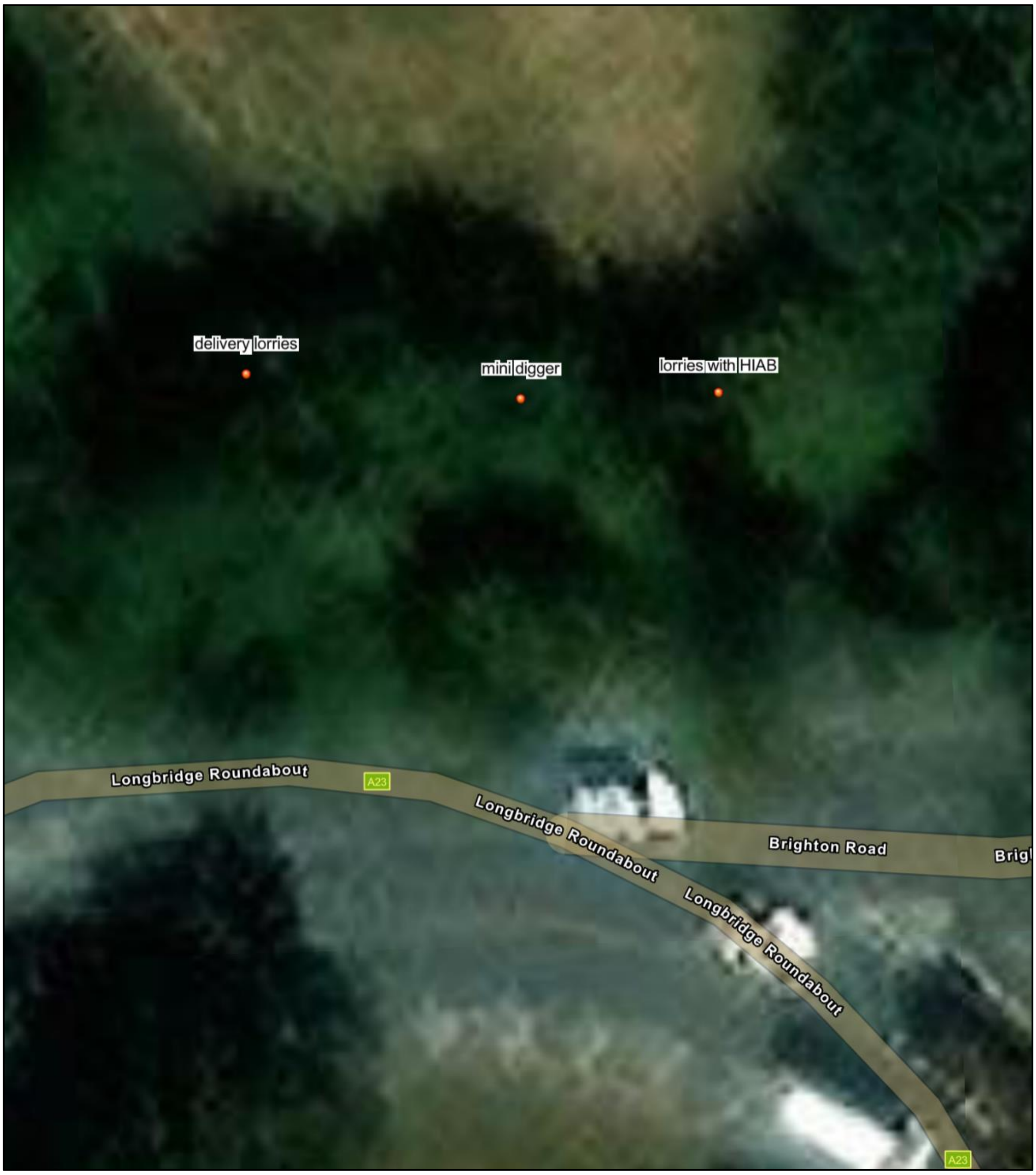


**Figure 4 Phase 1, Detail 3**

**Figure 5 Phase 1, Detail 4**

**Figure 6 Phase 2, Overview**

**Figure 7 Phase 2, Detail 1**

**Figure 8 Phase 2, Detail 2**

**Figure 9 Phase 3, Overview**

**Figure 10 Phase 3, Detail 1**

**Figure 11 Phase 4, Overview**

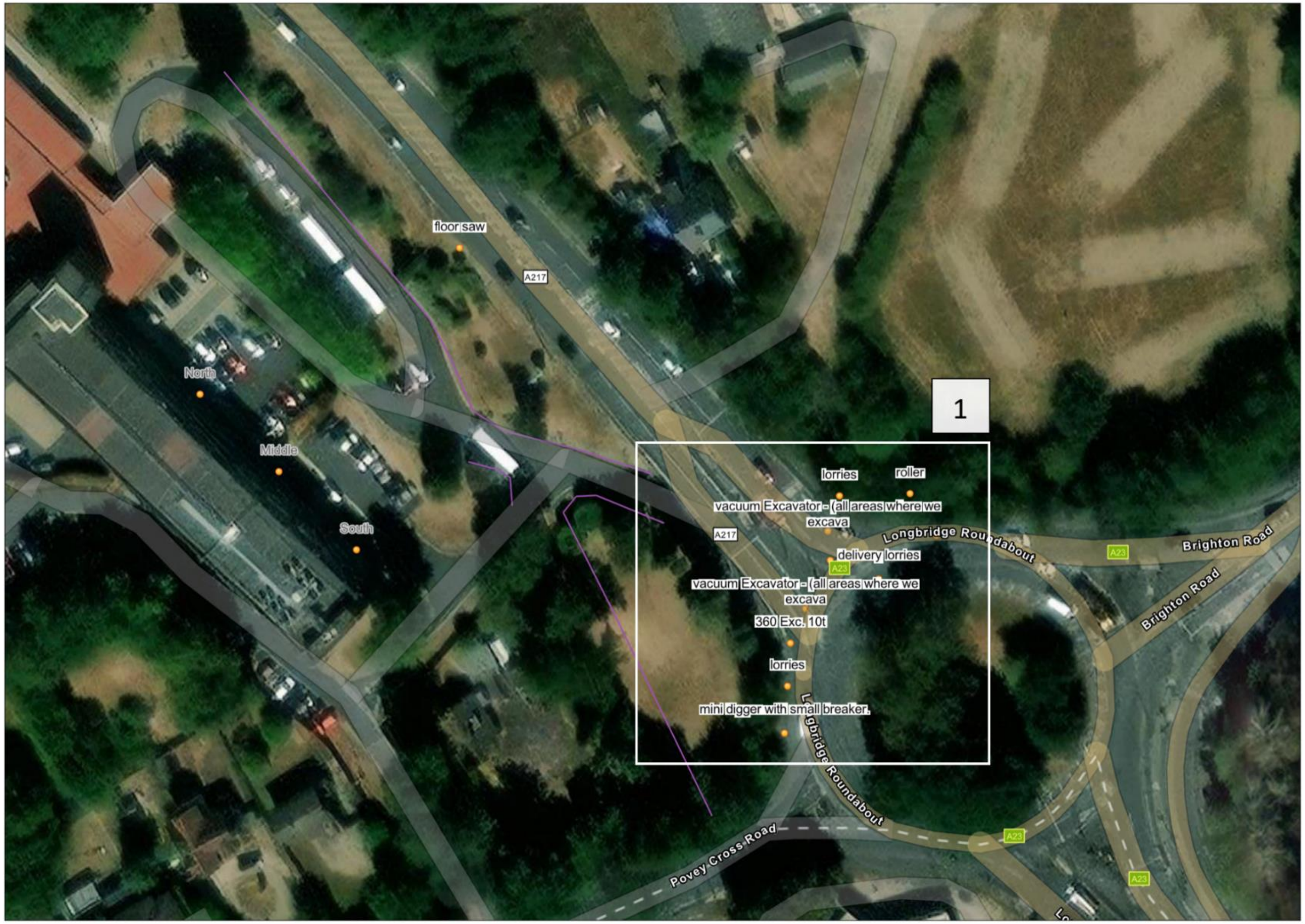


**Figure 12 Phase 4, Detail 1**

**Figure 13 Phase 5, Overview**

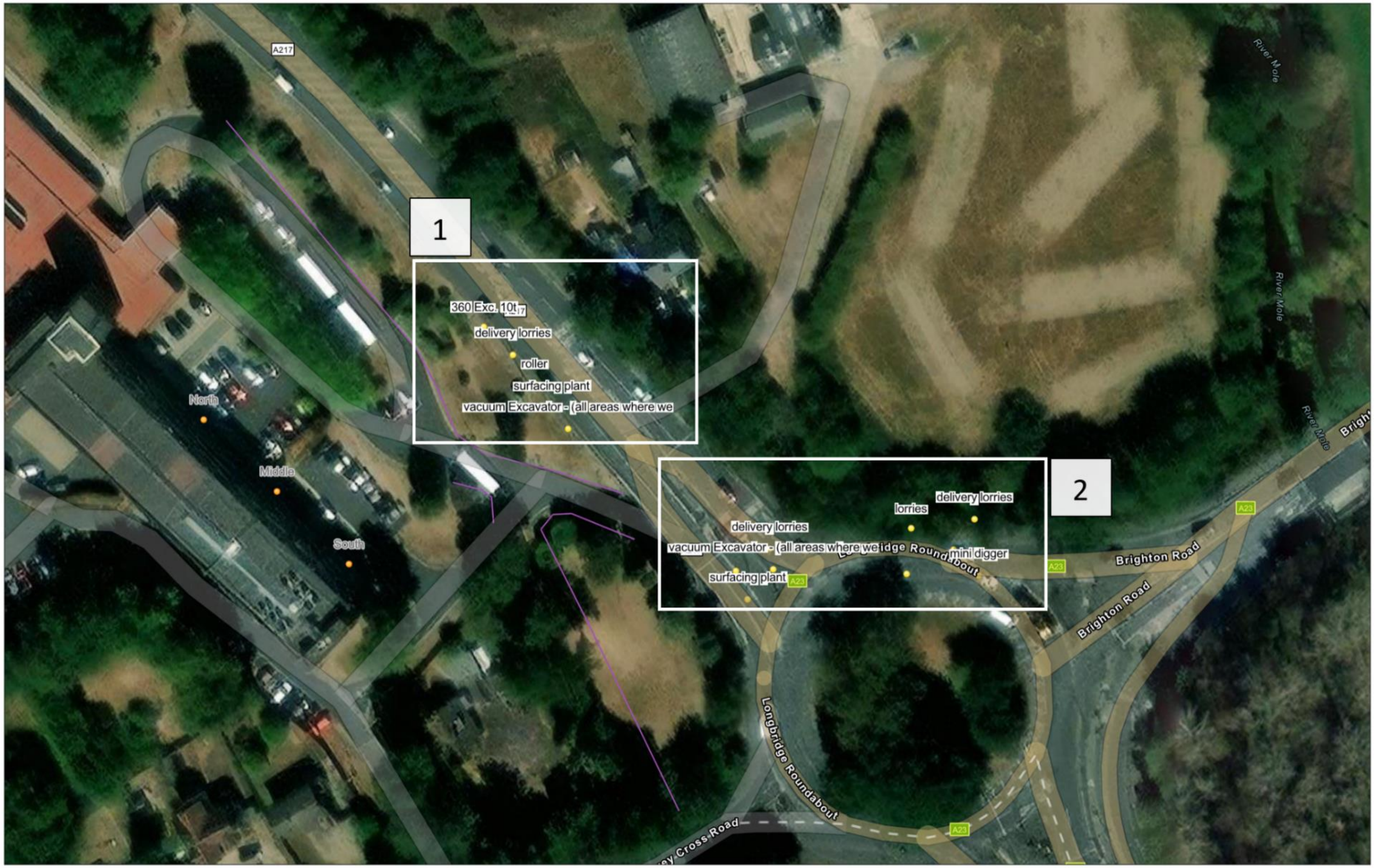


**Figure 14 Phase 5, Detail 1**

**Figure 15 Phase 5, Detail 2**

**Figure 16 Phase 6, Overview**

**Figure 17 Phase 7, Overview**

# 5 Model Input Data

The following table sets out the number of plant items, percentage on-times and noise emission levels from BS5228 assumed in the modelling.

**Table 5.1 Modelling Input Data**

| Phase / activity | Plant | 5228 Name | 5228 Reference | SPL @10m, dB $L_{Aeq,T}$ (Unmitigated) | Plant included in 1 hour prediction window | Assumed Plant On-time, % |
|---|---|---|---|---|---|---|
| 1a | 360 Exc. 10t | Tracked excavator | C.4.17 | 71 | No | 0 |
| | lorries - delivery of sub base and bituminous surfacing | Lorry* | C.2.34 | 80 | No | 0 |
| | floor saw | Circular saw (petrol) | C.5.36 | 87 | Yes | 50 |
| | Lorries | Lorry* | C.2.34 | 80 | Yes | 75 |
| | roller 1200 Wide | Vibratory roller | C.5.27 | 67 | No | 0 |
| | small / mini breaker | Mini excavator with hydraulic breaker | C.5.2 | 83 | Yes | 50 |
| | mini digger (small holes for signs etc - could also attach mini breaker) | Mini excavator with hydraulic breaker | C.5.2 | 83 | Yes | 50 |
| | Vacuum Excavator - (all areas where we excavate) | Water tanker extracting water (vacuum pump) | C.4.89 | 79 | No | 0 |
| | white lining crew | Lorry* | C.11.20 | 83 | Yes | 50 |
| 1b | chain saws | Petrol driven chain saw | D.2.14 | | Yes | 50 |
| | lorries | Lorry* | C.11.20 | 83 | No | 0 |

| Phase / activity | Plant | 5228 Name | 5228 Reference | SPL @10m, dB $L_{Aeq,T}$ (Unmitigated) | Plant included in 1 hour prediction window | Assumed Plant On-time, % |
|---|---|---|---|---|---|---|
| 1c | lorries - deliveries | Lorry* | C.2.34 | 80 | Yes | 10 |
| | lorries with HIAB | Lorry with lifting boom | C.4.53 | 77 | Yes | 75 |
| | mini digger | Mini tracked excavator | C.3.20 | 68 | No | 0 |
| 1d | 360 exc. 10t | Tracked excavator | C.4.17 | 71 | Yes | 50 |
| | lorries | Lorry* | C.11.20 | 83 | Yes | 10 |
| | Vacuum Excavator - (all areas where we excavate) | Water tanker extracting water (vacuum pump) | C.4.89 | 79 | Yes | 50 |
| 1e | 360 exc. 10t | Tracked excavator | C.4.17 | 71 | Yes | 50 |
| | delivery lorries | Lorry* | C.2.34 | 80 | No | 0 |
| | lorries | Lorry* | C.11.20 | 83 | Yes | 10 |
| | mini digger with small breaker | Mini excavator with hydraulic breaker | C.5.2 | 83 | Yes | 50 |
| | road planner (mill) | Mini planer | C.5.9 | 68 | No | 0 |
| | roller 1200 wide | Vibratory roller | C.5.27 | 67 | No | 0 |
| | Vacuum Excavator - (all areas where we excavate) | Water tanker extracting water (vacuum pump) | C.4.89 | 79 | Yes | 50 |
| 2a | 360 exc. 10t | Tracked excavator | C.4.17 | 71 | Yes | 50 |
| | lorries | Lorry* | C.11.20 | 83 | No | 0 |
| | mini digger with small breaker | Mini excavator with hydraulic breaker | C.5.2 | 83 | Yes | 50 |

| Phase / activity | Plant | 5228 Name | 5228 Reference | SPL @10m, dB $L_{Aeq,T}$ (Unmitigated) | Plant included in 1 hour prediction window | Assumed Plant On-time, % |
|---|---|---|---|---|---|---|
| | Vacuum Excavator - (all areas where we excavate) | Water tanker extracting water (vacuum pump) | C.4.89 | 79 | Yes | 50 |
| 2b | lorries | Lorry* | C.11.20 | 83 | No | 0 |
| | mini digger with small breaker | Mini excavator with hydraulic breaker | C.5.2 | 83 | Yes | 50 |
| 2c | lorries | Lorry* | C.11.20 | 83 | No | 0 |
| | mini digger with small breaker | Mini excavator with hydraulic breaker | C.5.2 | 83 | Yes | 50 |
| 3a | lorries | Lorry* | C.11.20 | 83 | Yes | 10 |
| | mini digger | Mini tracked excavator | C.3.20 | 68 | No | 0 |
| 3b | small compaction plant | Vibratory plate (petrol) | C.2.41 | 80 | Yes | 10 |
| | mini digger | Mini tracked excavator | C.3.20 | 68 | No | 0 |
| | lorries | Lorry* | C.11.20 | 83 | Yes | 75 |
| 3c | lorries | Lorry* | C.11.20 | 83 | Yes | 10 |
| 4a | floor saw | Hand-held circular saw (petrol) | C.5.36 | 87 | Yes | 50 |
| 4b | 360 exc. 10t | Tracked excavator | C.4.17 | 71 | Yes | 50 |
| | lorries | Lorry* | C.11.20 | 83 | No | 0 |
| | mini digger with small breaker | Mini excavator with hydraulic breaker | C.5.2 | 83 | Yes | 50 |

| Phase / activity | Plant | 5228 Name | 5228 Reference | SPL @10m, dB $L_{Aeq,T}$ (Unmitigated) | Plant included in 1 hour prediction window | Assumed Plant On-time, % |
|---|---|---|---|---|---|---|
| | Vacuum Excavator - (all areas where we excavate) | Water tanker extracting water (vacuum pump) | C.4.89 | 79 | Yes | 50 |
| 4c | 360 exc. 10t | Tracked excavator | C.4.17 | 71 | Yes | 50 |
| | delivery lorries | Lorry* | C.2.34 | 80 | No | 0 |
| | lorries | Lorry* | C.11.20 | 83 | Yes | 10 |
| | mini digger with small breaker | Mini excavator with hydraulic breaker | C.5.2 | 83 | Yes | 50 |
| | roller | Vibratory roller | C.5.27 | 67 | No | 0 |
| | Vacuum Excavator - (all areas where we excavate) | Water tanker extracting water (vacuum pump) | C.4.89 | 79 | Yes | 50 |
| 5a | 360 exc. in narrow areas | Tracked excavator | C.4.17 | 71 | Yes | 100 |
| | delivery lorries | Lorry* | C.2.34 | 80 | No | 0 |
| | rollers | Vibratory roller | C.5.27 | 67 | No | 0 |
| | surfacing plant - delivery / working | Asphalt paver (+ tipper lorry) | C.5.30 | 75 | Yes | 100 |
| | Vacuum Excavator - (all areas where we excavate) | Water tanker extracting water (vacuum pump) | C.4.89 | 79 | Yes | 100 |
| 5b | 360 exc. 10t, | Tracked excavator | C.4.17 | 71 | Yes | 50 |
| | delivery lorries. | Lorry* | C.2.34 | 80 | No | 0 |
| | lorries, | Lorry* | C.11.20 | 83 | Yes | 10 |

| Phase / activity | Plant | 5228 Name | 5228 Reference | SPL @10m, dB $L_{Aeq,T}$ (Unmitigated) | Plant included in 1 hour prediction window | Assumed Plant On-time, % |
|---|---|---|---|---|---|---|
| | mini digger, | Mini tracked excavator | C.3.20 | 68 | No | 0 |
| | Vacuum Excavator - (all areas where we excavate) | Water tanker extracting water (vacuum pump) | C.4.89 | 79 | Yes | 50 |
| 5c | 360 exc. in narrow areas, | Tracked excavator | C.4.17 | 71 | Yes | 50 |
| | delivery lorries, | Lorry* | C.2.34 | 80 | Yes | 10 |
| | rollers | Vibratory roller | C.5.27 | 67 | No | 0 |
| | surfacing plant - delivery / working, | Asphalt paver (+ tipper lorry) | C.5.30 | 75 | Yes | 100 |
| | Vacuum Excavator - (all areas where we excavate) | Water tanker extracting water (vacuum pump) | C.4.89 | 79 | Yes | 50 |
| 6a | floor saw, | Hand-held circular saw (petrol) | C.5.36 | 87 | Yes | 50 |
| | road planner (mill) | Mini planer | C.5.9 | 68 | No | 0 |
| 6b | delivery lorries, | Lorry* | C.2.34 | 80 | Yes | 10 |
| | mini digger. | Mini tracked excavator | C.3.20 | 68 | No | 0 |
| | rollers, | Vibratory roller | C.5.27 | 67 | No | 0 |
| | surfacing plant, | Asphalt paver (+ tipper lorry) | C.5.30 | 75 | Yes | 100 |
| 7 | delivery lorries, | Lorry* | C.2.34 | 80 | No | 0 |
| | road sweepers, | Road sweeper | C.4.90 | 76 | Yes | 75 |
| | tanker, | Fuel tanker Lorry* | C.4.15 | 76 | Yes | 75 |

* Drive-by maximum sound pressure level, $L_{Amax}$

# Appendix 3: Construction Noise Trigger Action Plan

# Holiday Inn Noise Report

# Appendix 3: Construction Noise Trigger Action Plan

## 1 Introduction

1.1.1 This noise Trigger Action Plan sets out the procedures to be followed by the contractor carrying out works in the vicinity of the Holiday Inn hotel, so as to ensure acceptable noise levels are achieved within the hotel.

1.1.2 Noise modelling carried out for the ES and during the DCO Examination has predicted likely levels of construction noise from the works and identified the potential for disturbance to hotel guests including cabin crew sleeping in bedrooms during the daytime. In order to protect guests using the hotel bedrooms on the north side of the hotel from excessive noise the contractor is required to take all reasonable measures to reduce noise in accordance with the Northern Runway Project (NRP) Code of Construction Practice (CoCP) (**ES Appendix 5.3.2: Code of Construction Practice** [REP4-007] as amended). These measures are to be further clarified by the appointed contractor through an application for consent pursuant to Section 61 of the Control of Pollution Act 1974 to the local authority, as required by the CoCP.

1.1.3 Noise monitoring will be carried out throughout the works outside bedrooms on the north facade of the hotel. A Tigger Level has been derived at these locations based on achieving acceptable internal noise levels accounting for the acoustic performance of the building façade which has been measured. If the Trigger Level is breached the contractor must take actions to reduce noise.

1.1.4 Any works predicted to exceed the Trigger Level, with full mitigation on site, will require due notice to be given to the hotel as discussed herein.

## 2 Monitoring

2.1.1 A permanent noise monitor logger will be installed at fourth floor level adjacent to the bedrooms on the north side of the hotel so that the microphone is 1m from the façade of the building.

2.1.2 The logger will sample $L_{Aeq,\ 1\ hour}$ permanently, with levels fed directly to Gatwick Airport Ltd and its appointed contractor.

2.1.3 The Trigger Level will be $L_{Aeq,\ 1\ hour}$ 71dB (façade).

2.1.4 If the Trigger Level is exceeded, an alert is be sent to Gatwick Airport Ltd and its contractor.

# 3 Action Plan

3.1.1 If the Trigger Level is exceeded the contractor will investigate the exceedance in the first instance to check that the exceedance is likely to be as a result of the Gatwick Airport NRP's construction activity.

3.1.2 If the exceedance was caused by Gatwick Airport NRP's construction activity the relevant contractor(s) will notify GAL.

3.1.3 Then the contractor will be required to investigate the cause of the exceedance and check that all Best Practicable Means (BPM) measures identified in the Section 61 consent are being followed. The contractor shall also reduce noise levels as far as reasonably practicable so as to be within the external noise Trigger Level.

3.1.4 If the contractor predicts an exceedance of the Trigger Level, even after considering all Best Practicable Means (BPM) measures, they must arrange the works to minimise the duration of this exceedance, and fix the programme for the 'Exceedance Period' and agree this with GAL. Once agreed the contractor must notify Holiday Inn of any planned Exceedance Period, at least 2 weeks in advance. An Exceedance Period may only be programmed for works in normal daytime hours, as defined in the CoCP. An Exceedance Period will not exceed one week in duration unless in exceptional circumstances.

3.1.5 Monthly meetings with Holiday Inn and the contractor will be held to discuss and review noise control measures.

3.1.6 In addition to the above steps, Holiday Inn may call an urgent meeting if they are being exposed to prolonged exceedance of agreed levels from Gatwick construction activities.