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PROJECT TECHNICAL MEMORANDUM

JOB TITLE : Plot P1 Hotels
REF : HT: 27732/PTM13
DATE : 27 April 2022
FROM : Jake Howarth
ISSUED TO : BCEGI Construction

RE: PLOT P1 HOTELS – HOLIDAY INN – CONDITION 14

We understand that MCC are requesting information relating noise egress from the proposed kitchen extract fan at the new Holiday Inn at Manchester Airport to discharge Condition 14.

The wording of the condition is presented below:

14) Within three months of the commencement of development a scheme for the extraction of any fumes, vapours and odours from the premises hereby approved shall be submitted to, and approved in writing by, the City Council as local planning authority. The approved scheme shall be implemented prior to occupancy and shall remain operational thereafter.

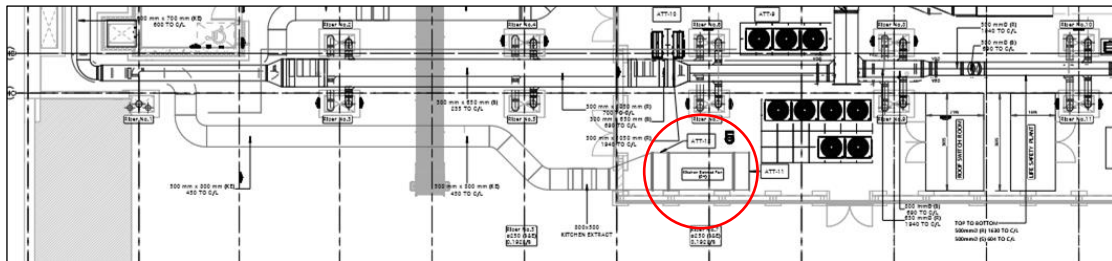
Reason - In the interests of the amenities of the occupiers nearby properties in order to comply with policies SP1 and DM1 of the Core Strategy.

Although the above does not specifically mention noise, DM1 of the Core Strategy does relate to noise. As such, the following provides an assessment of the proposed extract fan and associated attenuation measures considering:

- Noise egress to neighbours (ie the adjacent Ibis Budget)
- Noise Break-in to the Holiday Inn itself through the roof.

1.0 Proposed Extract Fan

The location of the proposed extract fan is shown on Ameen drawing AP1-AME-HI-ZZ-DR-M-57-0003 Rev C05. For reference the location is shown in the image below:



The specification of the unit is detailed on Ameen Technical Submittal AP1-AME-HI-XX-TS-M-0021 Rev P02 and the unit itself is a AirHandlers fan with a unit No. A15057-04-I.

The sound power level data for the proposed fan is presented below which has been taken directly from the Technical Submittal.

AHU ACOUSTIC DATA EXHAUST SECTIONS								
Frequency	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
SWL @ AHU Inlet (dB)	60	71	86	85	86	84	81	76
SWL @ AHU Outlet (dB)	15	30	45	44	41	37	36	12
Case Radiated SPL @ 1m (dB)	44	53	52	49	48	52	46	36

The unit has an attenuator on the atmosphere side. A 600mm Caice attenuator is proposed, however, given the sound power level data for the outlet side of the fan, it is unlikely that this would need to be considered to show compliance with MCC plant noise egress criteria.

2.0 Assessment of Noise Egress

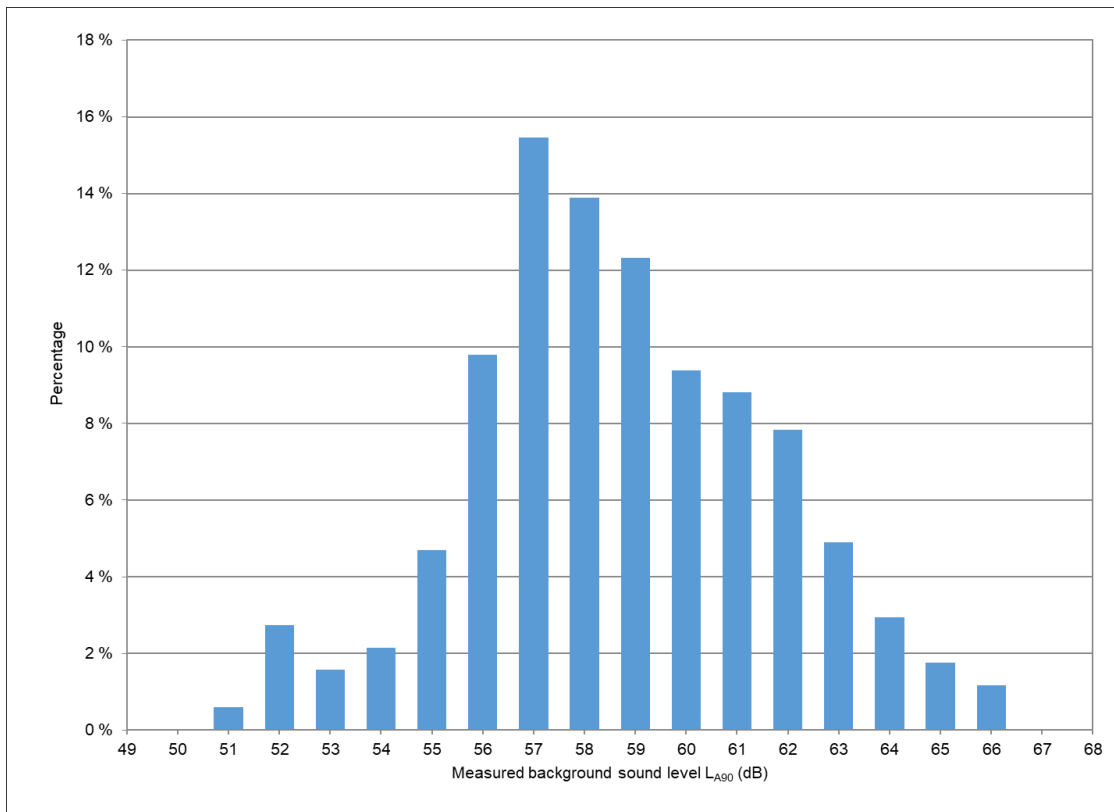
2.1 Previous Noise Survey and Egress Limits

An environmental noise survey was carried out at the proposed site by MLM Consulting between Wednesday 14 2018 and Monday 19 March 2018.

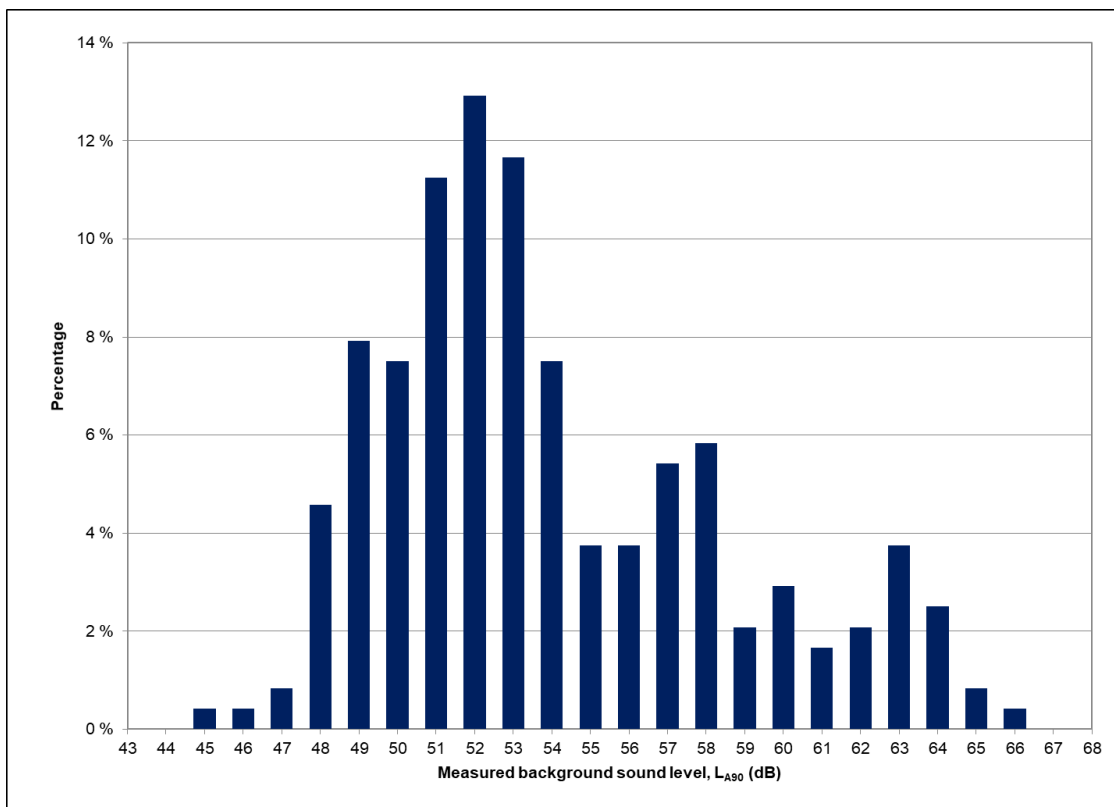
The raw noise data for the above survey was received from MLM and Hann Tucker carried out analysis to establish the Stage 4 design specifications.

In-line with the requirements of BS4142:2014 the plots below show the statistical analysis of the measured background noise levels with a view to establishing the typical background noise levels at the site.

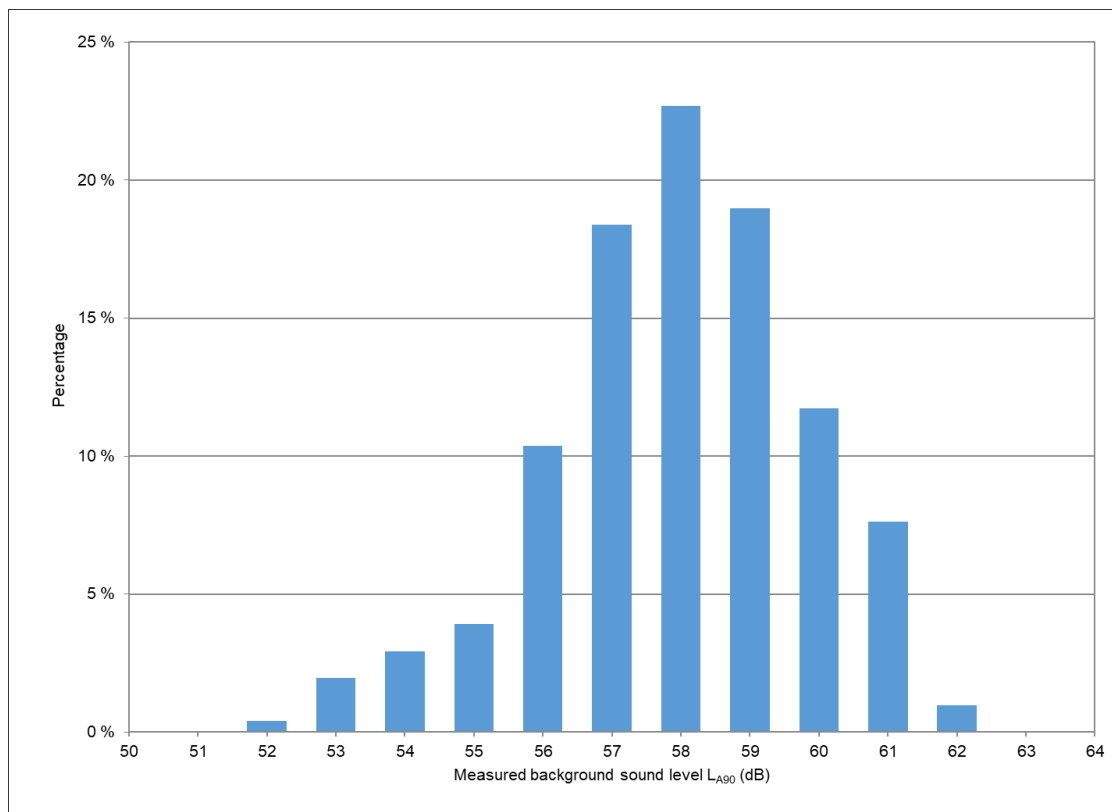
Based on the plots below, we proposed that background noise levels of 57 dB L_{A90} during the day and 52 dB L_{A90} at night would be typical for the site.



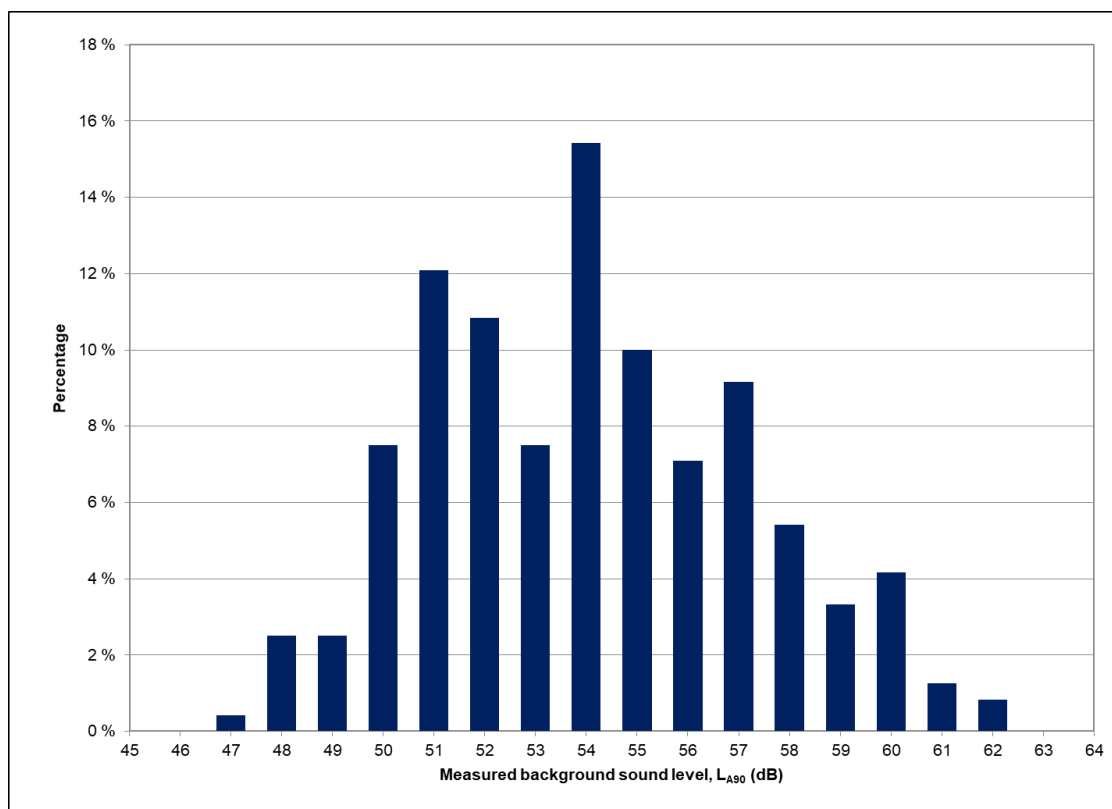
MP1 – Statistical Analysis of Measured Daytime Background Noise Levels (07:00 to 23:00)



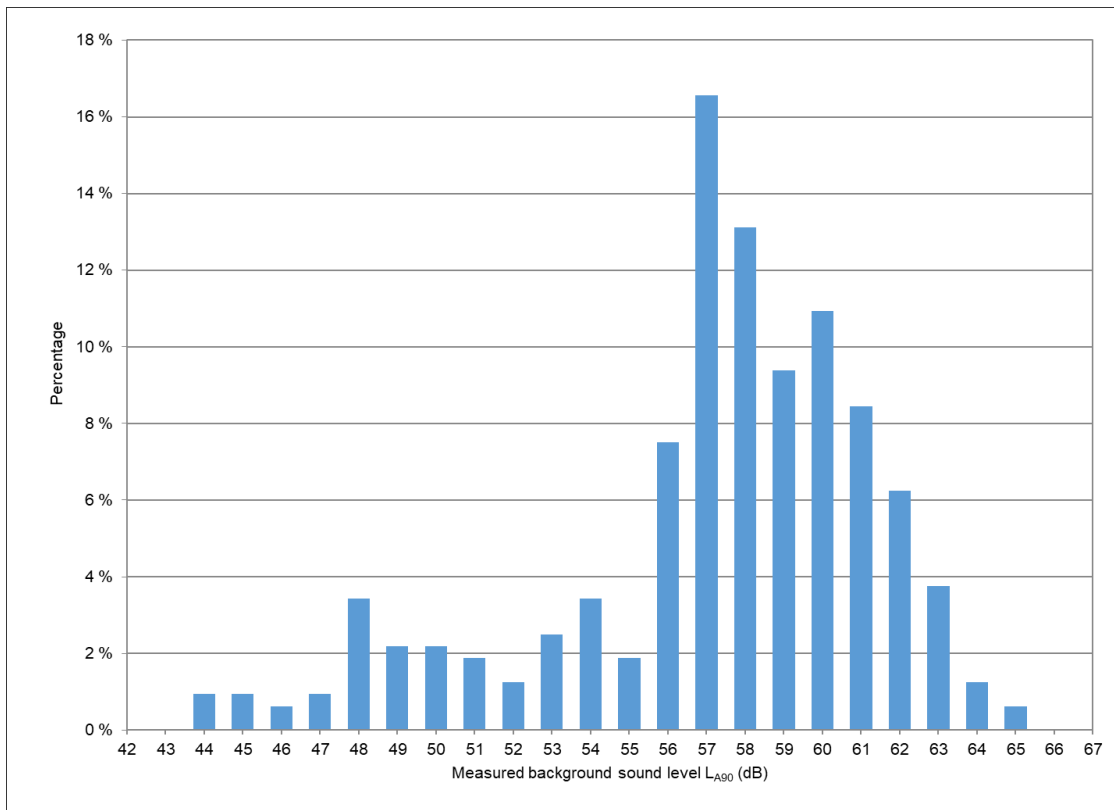
MP1 – Statistical Analysis of Measured Night-time Background Noise Levels (23:00 to 07:00)



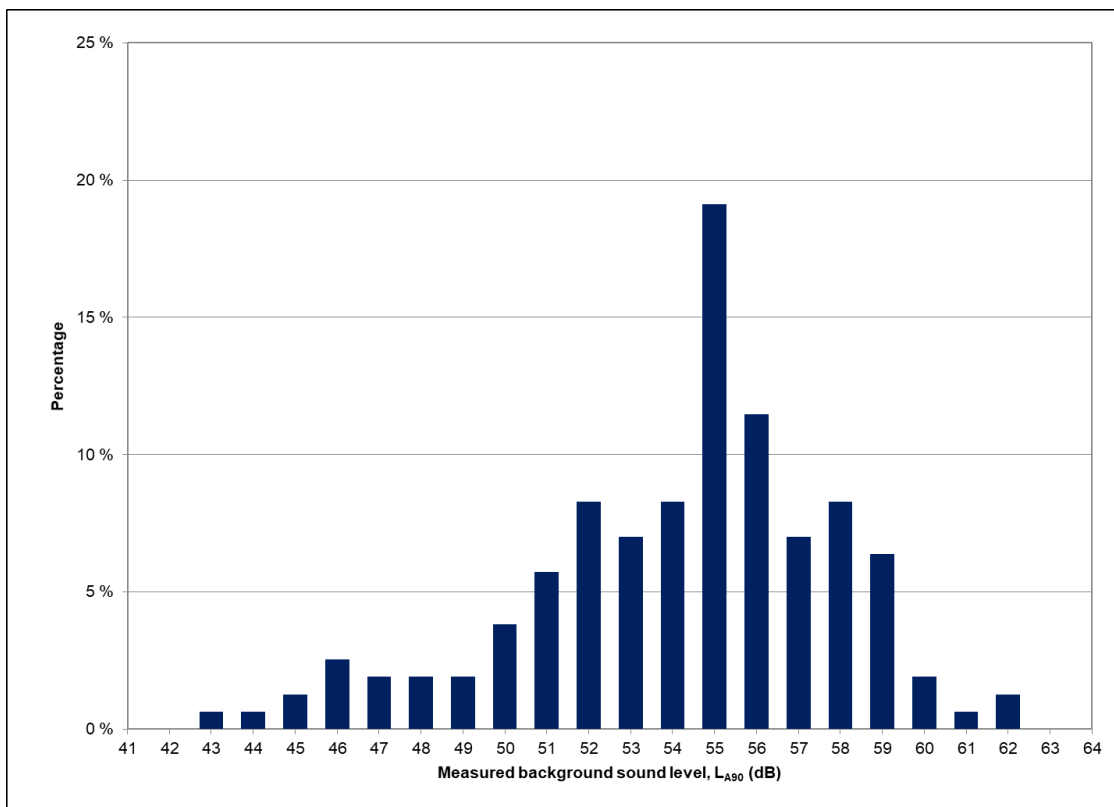
MP2 – Statistical Analysis of Measured Daytime Background Noise Levels (07:00 to 23:00)



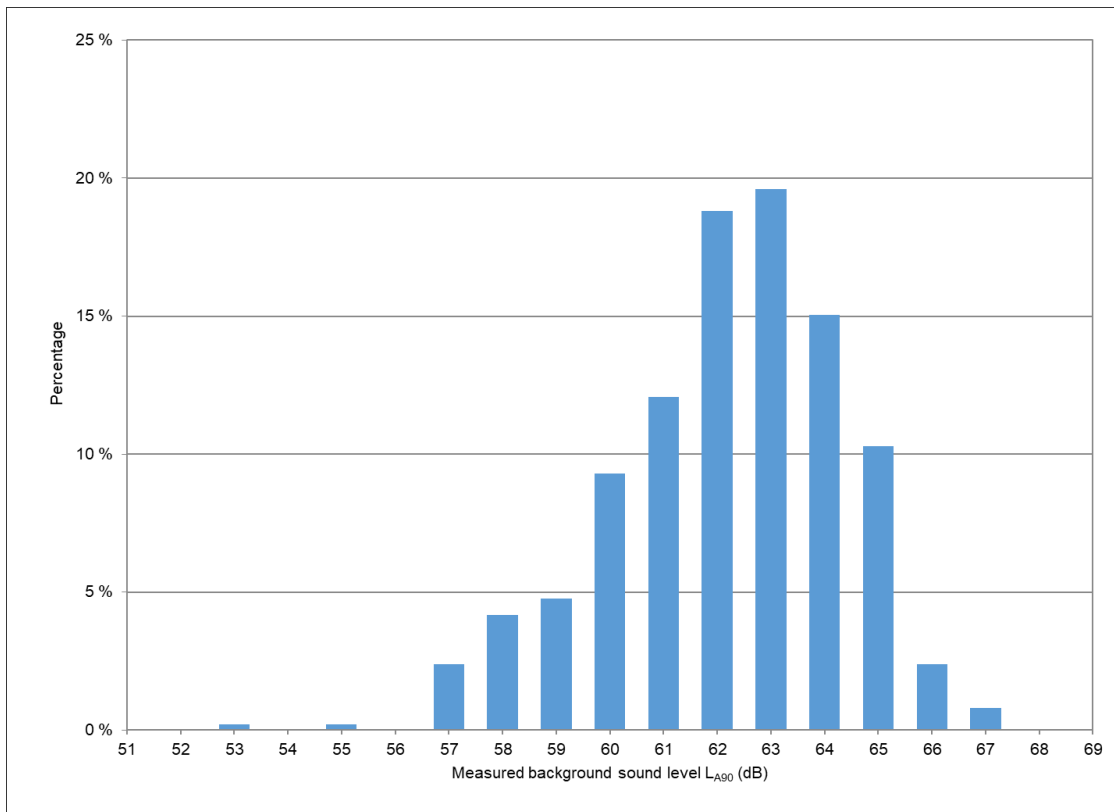
MP2 – Statistical Analysis of Measured Night-time Background Noise Levels (23:00 to 07:00)



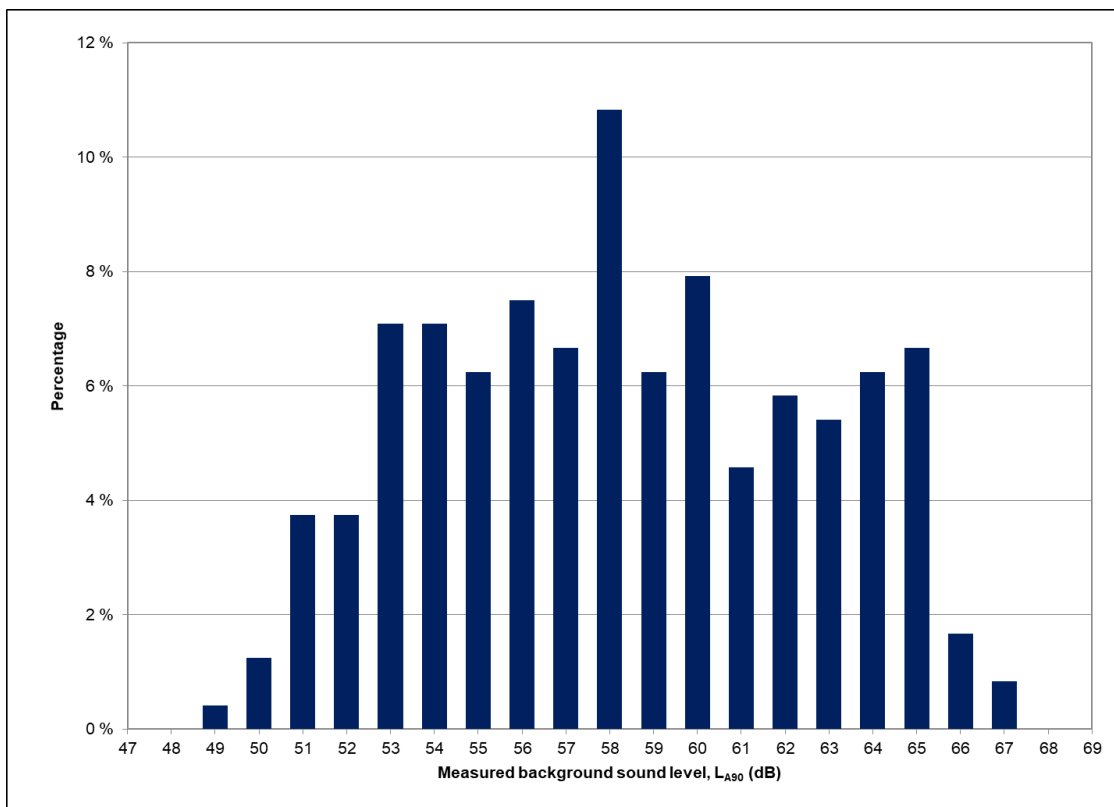
MP3 – Statistical Analysis of Measured Daytime Background Noise Levels (07:00 to 23:00)



MP3 – Statistical Analysis of Measured Night-time Background Noise Levels (23:00 to 07:00)



MP4 – Statistical Analysis of Measured Daytime Background Noise Levels (07:00 to 23:00)



MP4 – Statistical Analysis of Measured Night-time Background Noise Levels (23:00 to 07:00)



Based on the typical requirements of MCC, noise from the extract fan being considered should not exceed the following at any nearby noise sensitive receptor:

- Daytime (07:00 – 23:00) - 52 dB L_{ArTr}
- Night-time (23:00 – 07:00) - 47 dB L_{ArTr}

Please note that the above are free-field limits (ie in the absence of a façade correction).

2.2 Plant Noise Aggress Assessment

Based on the noise data provided for the extract fan the outlet side (ie atmosphere side) sound power levels have been used to calculate the levels of environmental noise egress to the nearest neighbour. The nearest neighbour is considered to be the adjacent Ibis Budget hotel being considered as part of the same development location approximately 25m away.

The plant noise egress calculations are presented below. Please note that no feature corrections have been applied due the calculated egress levels being well below the background noise level so any feature corrections would unlikely be perceptible.

	Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
Sound Power Level (Outlet)	15	30	45	44	41	37	36	12	-
Distance Correction, SWL to 25m	-36	-36	-36	-36	-36	-36	-36	-36	-
Barrier Correction	0	0	0	0	0	0	0	0	-
Directionality	+1	+1	+2	+3	+4	+4	+4	+4	-
Calculated Noise Level at Receptor	-20	-5	11	11	9	5	4	-20	14
Sound Pressure @ 1m	44	53	52	49	48	52	46	36	-
Distance Correction, SPL at 1m to 25m	-23	-23	-23	-23	-23	-23	-23	-23	-
Barrier Correction	0	0	0	0	0	0	0	0	-
Directionality	0	0	0	0	0	0	0	0	-
Calculated Noise Level at Receptor	21	30	29	26	25	29	23	21	32

It can be seen from the above that the levels of plant noise egress, even without considering the proposed attenuator are well below both the day and night-time criterion.



3.0 Assessment of Noise Break-in

The roof of the Holiday Inn is formed of a 275mm reinforced concrete slab with a mass barrier ceiling below (Ceiling Type P) which consists of 100mm mineral wool within 100mm cavity, 2x15mm SoundBloc supported on resilient hangers (NBS: K10/215H).

The sound insulation performance of this construction has been calculated to be more than R_w 70 dB.

The octave band sound pressure level data for the break-out of the proposed fan relates to a noise level of 56 dBA at a distance of 1m.

Based on the above the levels of extract noise transfer is likely to be inaudible in the guestrooms below.

Yours sincerely

Jake Howarth

for HANN TUCKER ASSOCIATES