Date: 3rd September 2026

142143/FO/2025 SHAMROCK INN, 17-21 BENGAL STREET, MANCHESTER
POST COMPLETION TESTING AND TECHNICAL NOTE ON NOISE

1. INTRODUCTION

1.1. BACKGROUND & OBJECTIVES

E3P have undertaken a Noise Impact Assessment for the above application (Demolition of existing single storey side and rear extensions and erection of new single storey side extension and two storey rear extension for form additional accommodation in association with existing public house (Sui Generis), together with elevational alterations, new external fire escape, new boundary treatment, plant and associated works). Planning permission was granted in June 2025.

As part of the planning permission, conditions 20 and 22 are to be discharged. As the development has now been completed, the post completion testing can be undertaken. The conditions are as follows:

> *20) (a) The plant shall be installed in accordance with the Noise Impact Assessment (ref. 51-415-R1-6) received by the City Council, as Local Planning Authority, on the 29 May 2025.*
>
> *Externally mounted plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 dB (Laeq) below the typical background (LA90) level at the nearest noise sensitive location.*
>
> *(b) Prior to the first use of the plant hereby approved, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition.*
>
> *Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority. Any measures shall thereafter retained and maintained in situ.*
>
> *Reason - To minimise the impact of plant on the occupants of nearby developments pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).*
>
> *22) (a) The development shall be acoustically insulated in accordance with the Noise Impact Assessment (ref. 51-415-R1-6) received by the City Council, as Local Planning Authority, on the 29 May 2025.*

Where entertainment noise is proposed the LAeq (entertainment noise) shall be controlled to 5dB below the LA90 (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63HZ and 125Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47dB and 41dB (Leq,5min), respectively.

The limiter will need to be set accordingly for background level music to ensure there is no breakout if the bifold doors are open in the daytime.

(b) Prior to the first use of the development, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition (including that the setting and validating of the limiter). The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition.

Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority. Any measures shall thereafter retained and maintained in situ.

Reason - In order to limit the outbreak of noise from the commercial premises pursuant to policies SP1 and DM1 of the Core Strategy (2007) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).

It is noted that the bi-fold doors were not installed and so any noise limits for internal music noise will be tested on the doors closed scenario.

As such, post completion noise testing has been conducted for internal music noise and external plant in accordance with the findings and recommendations of the NIA and planning condition.

This note has been completed by Lee Faulkner, Associate Director at E3P and full corporate member of the Institute of Acoustics.

2. CONDITION 20 - PLANT NOISE

> *20) (a) The plant shall be installed in accordance with the Noise Impact Assessment (ref. 51-415-R1-6) received by the City Council, as Local Planning Authority, on the 29 May 2025.*
>
> *Externally mounted plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 dB (Laeq) below the typical background (LA90) level at the nearest noise sensitive location.*
>
> *(b) Prior to the first use of the plant hereby approved, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition.*
>
> *Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority. Any measures shall thereafter retained and maintained in situ.*
>
> *Reason - To minimise the impact of plant on the occupants of nearby developments pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).*

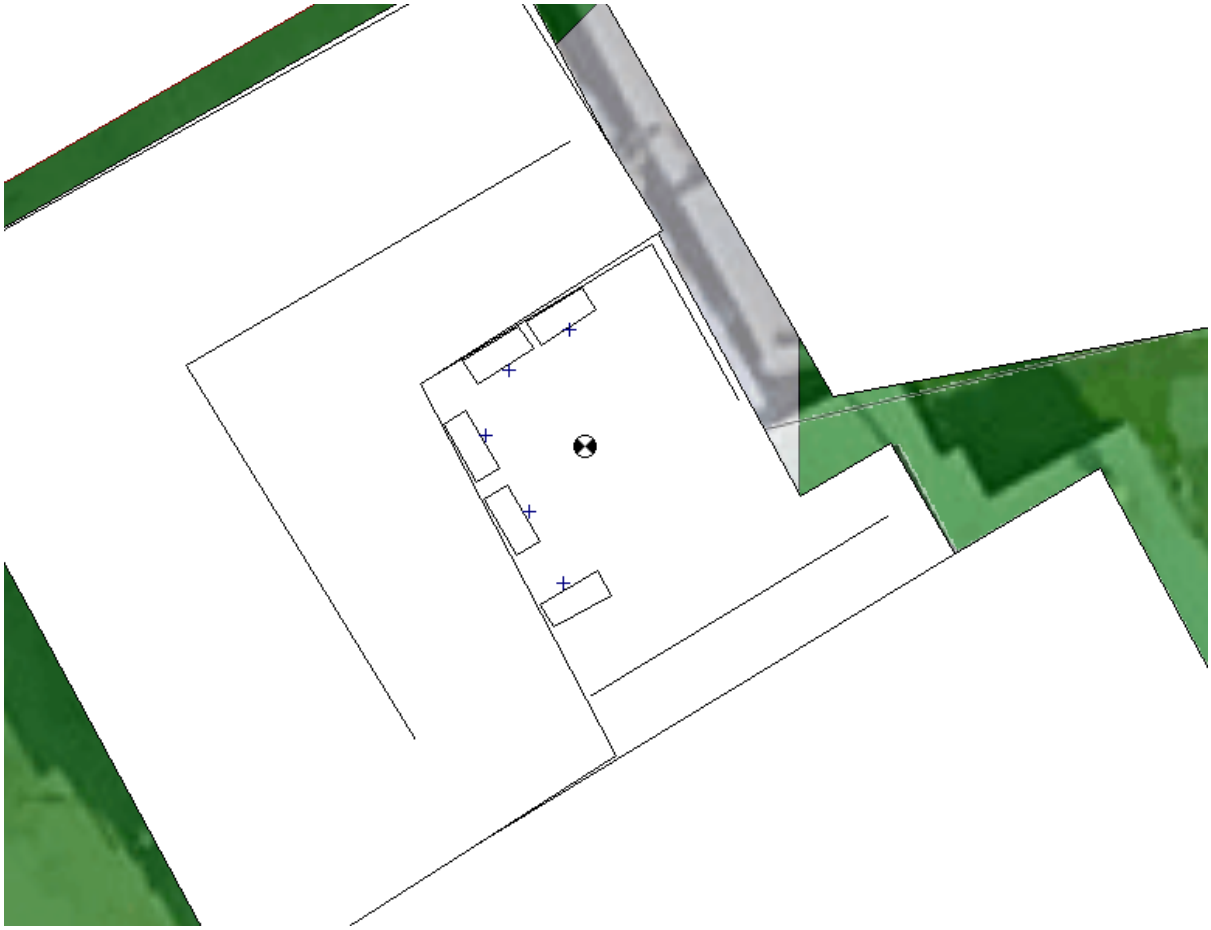
In order to achieve the 5 dB below the background sound level, it must be shown that the plant noise output is equal to or less than that modelled.

As receptors impact by the plant noise are at height, i.e. third floor and above, tests at the receptor locations is not possible. However, measurements and observations have been made at ground level around the site and at numerous receptor frontages during worst-case periods.

Additionally, measurements on the roof with the plant has been undertaken and verified against receivers within the noise model to ensure the output of the noise model was correct and thus achieving 5 dB or below the background. Measurements were conducted during the daytime and night-time periods.

It is noted from the NIA that the worst-case assessment was with all plant running at night. As such, a measurement of all plant running has been undertaken on the roof space to ensure compliance with the outcome of this noise model.

A position central on the roof was chosen (Noise Measurement Position 1 (NMP1)). This is shown below along with the corresponding receiver for the noise model.



For reference, at this position in the noise model with all plant operational, the specific noise level is 56 dB. The following plant was running/installed as per the NIA:

- 4no. Mitsubishi AC condensing units and 1No JE Hall condensing unit will be installed at high level on a flat roof behind all the pitched roofs facing the large electrical substation at the rear.

2.1. DAYTIME MEASUREMENTS

E3P attended site on 3rd July 2026 between 11:50 and 12:00 to measure plant noise during the daytime periods. E3P liaised with the operator to ensure all plant items were running at the same time and E3P confirmed this visually at the time of the measurement.

Given all the plant items were running continuously, a 10-minute measurement was deemed appropriate.

The results of the noise survey are given below:

Table 1 Measured Plant Noise - Daytime

Date	Measurement Start Time	Measured specific sound level, $L_{Aeq,1min}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)	Measured background sound level, $L_{A90,1min}$ (dB)
3rd July 2026	11:50	56.8	57.8	56.1
	11:51	57.4	61.4	55.9
	11:52	54.5	61.3	51.6
	11:53	53.4	57.8	52.0
	11:54	52.8	55.2	51.7
	11:55	52.5	58.5	50.9
	11:56	55.4	56.0	54.6
	11:57	55.2	56.1	54.7
	11:58	55.5	57.5	54.9
	11:59	55.3	57.9	52.8

From the above, the 10-minute L_{Aeq} is noted to be 55.1 dB.

This falls below the modelled value of 56 dB at the same position. Given the potential for +/- 2 dB uncertainty in measurement and modelling, this is considered acceptable and supports the noise model outputs.

Accordingly, the measurements have verified the output of the noise model which confirmed achievement of the -5 dB criterion at the facades.

2.2. NIGHT-TIME MEASUREMENTS

E3P attended site between 23:00 Wednesday 3rd September to 00:30 Thursday 4th September 2026 to measure plant noise on the roof and to undertake measurements and observations at the receptor locations. E3P liaised with the operator to ensure all plant items were running at the same time until 00:00 and E3P confirmed this visually at the time of the measurement. After 00:00 only the beer cooler plant was operational and this cycled during the survey period with on and off periods.

For the entire period, a noise monitor was left installed at the above position to capture the plant noise. For the beer cooler measurement after 00:00, the monitor was moved to within 1.5 m of the single plant item to capture the source (NMP2).

Whilst running, attended measurements were conducted at the receptors, as noted after Table 2.

The results of the plant noise survey are given below:

Table 2 Measured Plant Noise – Night-time

Date	Measurement Start Time	Measured specific sound level, $L_{Aeq,15min}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)	Measured background sound level, $L_{A90,15min}$ (dB)
2nd September – All Plant	23:00	52.1	57.6	45.1
	23:15	53.7	59.4	45.3
	23:30	53.9	60.7	45.6
	23:45	52.5	60.5	44.9
3rd September – only beer cooler at 1.5 m	00:06	52.7	63.2	45.2

From the above, the highest measured 15-minute L_{Aeq} is noted to be 53.9 dB with all plant running between 23:00 and 00:00.

This falls below the modelled value of 56 dB at the same position. Given the potential for +/- 2 dB uncertainty in measurement and modelling, this is considered acceptable and supports the noise model outputs.

Accordingly, the measurements have verified the output of the noise model which confirmed achievement of the -5 dB criterion at the facades.

For the beer cooler, the JE Hall condensing unit has a sound power level of 62 dB(A) based on a measured sound pressure level of 34 dB at 10 m as noted within the report. The measured value of 52.7 dB at 1.5 m, equates to an expected level of 36.2 dB at 10 m. Given the likely reflections on the roof and allowance for the +/- 2 dB uncertainty, this is within an acceptable range. Furthermore, at night, the plant noise assessment determined a difference of between -9 and -16 dB for just the beer cooler. As such, a 2 dB difference does not impact the outcome of the assessment.

2.3. REASSESSMENT OF BS 4142 OUTCOMES

With the above measured values, E3P have repeated the BS 4142 assessments as noted in the NIA with application of the differences found from the measured plant.

2.3.1. DAYTIME ASSESSMENT – 07:00-23:00

Given the above, a worst-case -1 dB correction is applied to the rating level from the daytime source. The plant is in the exact locations and heights as modelled previously so the only discrepancy is the noise output from the plant.

Table 3 Calculation of Rating Level and Comparison with Background Sound Level – Daytime

Receptor	Calculated rating level, $L_{A,r}$ (dB)	Background sound level, $L_{A,901hr}$ (dB)	Difference +/- (dB)
One Silk Street	30	41	-11
Bengal Street West	21		-20
Residential to the east	25		-16

The assessment has determined that the predicted rating level from the fixed plant items would fall comfortably below the background sound level during the daytime period. They also fall below the MCC criterion of -5 dB.

2.3.2. NIGHT-TIME ASSESSMENT – 23:00-07:00 – CELLAR CONDENSER ONLY

Given the above, a worst-case +2 dB correction is applied to the rating level. The plant is in the exact locations and heights as modelled previously so the only discrepancy is the noise output from the plant.

Table 4 Calculation of Rating Level and Comparison with Background Sound Level - Night

Receptor	Calculated rating level, $L_{A,r}$ (dB)	Background sound level, $L_{A90,1mins}$ (dB)	Difference +/- (dB)
One Silk Street	28	35	-7
Bengal Street West	17		-18
Residential to the east	21		-14

The assessment has determined that the predicted rating level from the fixed plant items would fall comfortably below the background sound level during the night-time period at all receptors.

2.3.3. NIGHT-TIME ASSESSMENT – 23:00-00:00 – ALL PLANT

Given the above, a worst-case -1 dB correction is applied to the rating level from the daytime source. The plant is in the exact locations and heights as modelled previously so the only discrepancy is the noise output from the plant.

Table 5 Calculation of Rating Level and Comparison with Background Sound Level - Night

Receptor	Calculated rating level, $L_{A,r}$ (dB)	Background sound level, $L_{A90,1mins}$ (dB)	Difference +/- (dB)
One Silk Street	30	36	-6
Bengal Street West	21		-15
Residential to the east	25		-11

The assessment has determined that the predicted rating level from the fixed plant items would fall comfortably below the background sound level during the night-time period at all receptors. They also fall below the MCC criterion of -5 dB.

2.4. AMBIENT SOUND MEASUREMENTS AT RECEPTORS

In order to determine whether the rating level is achieved at the receptors as well as on the roof area, E3P have attended the receptors between 23:00 and 23:45 on Wednesday 2nd September. The following Noise Measurement Positions were used:



Table 6 below details the measured noise levels. At all NMPs, the microphone was at a height of 1.5 m above ground level and in free-field conditions. Two surveyors attended simultaneously.

Table 6 Measured Ambient Sound Levels

NMP	Measurement Start Time	Measured ambient sound level, $L_{Aeq,15min}$ (dB)	Measured background sound level, $L_{A90,15min}$ (dB)	Commentary
NMP3	23:00	52.2	41.8	Road traffic dominant from Oldham Road with occasional traffic on local roads. No plant audible.
NMP4	23:18	48.6	40.6	
NMP5	23:00	49.9	42.5	
NMP6	23:24	48.6	40.4	

No plant was audible at any position. Furthermore, the roof measurements have shown noise levels to be within +/- 2 dB of those modelled with no material change to the assessment outcome. Indeed, a betterment is found when all plant is running.

The equipment outlined in Table 7 was used for the noise survey.

Table 7 Noise Measurement Equipment and Calibration Dates

Measurement position	Equipment description	Manufacturer & type number	Serial number	Calibration due date
NMP3 and NMP4	Sound Level Meter	01dB Fusion	12039	5th August 2027
	Pre-amplifier	01dB Pre22	1805124	
	Microphone	GRAS 40CD	330832	
	Calibrator	Cirrus CR 515	87281	6th February 2027
NMP1 and NMP2	Sound Level Meter	01dB Fusion	14226	17th December 2027
	Pre-amplifier	01dB Pre22	2135072	
	Microphone	GRAS 40CD	470570	
	Calibrator	Cirrus CR 515	99204	19th August 2027
NMP5 and NMP6	Sound Level Meter	01dB Fusion	14616	6th June 2028
	Pre-amplifier	01dB Pre22	20951	
	Microphone	GRAS 40CD	494264	
	Calibrator	Cirrus CR 515	99206	6th June 2027

3. CONDITION 22 – MUSIC NOISE LIMITS

22) (a) The development shall be acoustically insulated in accordance with the Noise Impact Assessment (ref. 51-415-R1-6) received by the City Council, as Local Planning Authority, on the 29 May 2025.

Where entertainment noise is proposed the LAeq (entertainment noise) shall be controlled to 5dB below the LA90 (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63HZ and 125Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47dB and 41dB (Leq,5min), respectively.

The limiter will need to be set accordingly for background level music to ensure there is no breakout if the bifold doors are open in the daytime.

(b) Prior to the first use of the development, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition (including that the setting and validating of the limiter). The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition.

Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority. Any measures shall thereafter retained and maintained in situ.

Reason - In order to limit the outbreak of noise from the commercial premises pursuant to policies SP1 and DM1 of the Core Strategy (2007) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).

Table 8 below details the originally set limits for internal music. As the bi fold doors no longer form part of the application, the music limits tested are based on the closed door scenario only. The operator noted that due to the use of an air conditioning system inside the pub, any external access doors will remain closed except for access.

Table 8 Internal Music Noise Limits – Doors Closed

Hz	63	125	250	500	1K	2K	4K
Lowest Median measured Background sound level, $L_{90,T}$ (dB)	52.5	42.2	39.8	35.3	34.9	28.4	18.9
MCC Criterion (-5 dB) (dB)	47.5	37.2	34.8	30.3	29.9	23.4	13.9
Distance (m)	20	20	20	20	20	20	20

Hz	63	125	250	500	1K	2K	4K
Corrected for distance (m)	60.5	50.2	47.8	43.3	42.9	36.4	26.9
Door/Glazing SRI (dB)	21	21	20	33	42	46	39
Unweighted Limit Inside Venue (dB)	**81.5**	**71.2**	**67.8**	**76.3**	**84.9**	**82.4**	**65.9**
A-weighted Limit inside Venue (dBA)	**55.3**	**55.1**	**59.2**	**73.1**	**84.9**	**83.6**	**66.9**

E3P attended site on 8th July 2026 between 10:22 and 10:32 to measure music noise whilst two tracks ran. The results of the noise survey are given below:

Table 9 Measured Internal Music Noise

Hz	63	125	250	500	1K	2K	4K
Measured Music sound level, L_{eq} (dB)	69.5	70.6	67.2	65.4	70.2	63.8	53.9
Unweighted Limit Inside Venue (dB)	**81.5**	**71.2**	**67.8**	**76.3**	**84.9**	**82.4**	**65.9**
Difference, +/- (dB)	-12.0	-0.6	-0.6	-10.9	-14.7	-18.6	-12.0

The noise level of the music is set and locked to the volume level on the system that cannot be overridden by the down stairs controls. As such, the current limits are considered acceptable and achievable at the venue.

The equipment outlined in Table 10 was used for the noise survey.

Table 10 Noise Measurement Equipment and Calibration Dates

Measurement position	Equipment description	Manufacturer & type number	Serial number	Calibration due date
All measurements	Sound Level Meter	01dB Fusion	12039	5th August 2027
	Pre-amplifier	01dB Pre22	1805124	
	Microphone	GRAS 40CD	330832	
	Calibrator	Cirrus CR 515	87281	6th February 2027

The sound level meter was field calibrated before and after measurements with no significant drift witnessed.

4. CONCLUSION

As part of the planning permission, conditions 20 and 22 are to be discharged. As the development has now been completed, the post completion testing can be undertaken.

It is noted that the bi-fold doors were not installed and so any noise limits for internal music noise will be tested on the doors closed scenario.

As such, post completion noise testing has been conducted for internal music noise and external plant in accordance with the findings and recommendations of the NIA and planning condition.

The measured plant noise level was noted to be 55.1 dB with all plant running. This falls below the modelled value of 56 dB at the same position. Given the potential for +/- 2 dB uncertainty in measurement and modelling, this is considered acceptable and supports the noise model outputs. Further measurements were made at night and found all plant operating to be lower than modelled as above. However, the beer cooler was found to be marginally higher than modelled but the assessment still determined a low impact and is below the MCC criterion.

Accordingly, the measurements have verified the output of the noise model which confirmed achievement of the -5 dB criterion at the facades due to plant noise.

Ambient measurements and observations were made at the receptors and plant noise was found to be inaudible at all locations.

Internally measured music noise has been found to be at an acceptable level and is audible for patrons above ambient sound levels. The noise level of the music is set and locked to the volume level on the system that cannot be overridden by the down stairs controls. As such, the current limits are considered acceptable and achievable at the venue.

Accordingly, sufficient information has bene provided in order to discharge conditions 20 and 22 of the planning permission.

I trust the information provided in this letter report is satisfactory however if there is anything further please do not hesitate to contact me.

Yours sincerely,
For and on behalf of E3P Ltd

Lee Faulkner
Associate Director