

Heineken Manchester, Denmark Road Manchester

Acoustic Commissioning Report
Report 23102.AC.06

Norder Design Associates Ltd
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Green lane
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1.0 INTRODUCTION

KP Acoustics Ltd has been commissioned by Norder Design Associates Ltd, Beech Lawn, Green Lane, Belper, Derbyshire, DE56 1BY to undertake commissioning noise measurements of a completed plant equipment installation and change to a façade in the HV/LV Area at Heineken, Denmark Road, Manchester. Norder project reference 8767.

This report presents commissioning measurements to demonstrate the plant unit installation complies with the emissions criteria at the closest noise-sensitive receivers. This report follows an earlier report, reference '23102.PCR.01', which assessed the impact of plant more widely across the site.

2.0 SITE SURVEYS

2.1 Site Description

As shown in Figure 2.1, the site is bounded by Greenheys Lane to the North, Princess Road to the West, Moss Lane to the South and local roads to the East. There are commercial buildings to the west of the site over the road and a mix of commercial, residential and civil buildings in other directions.

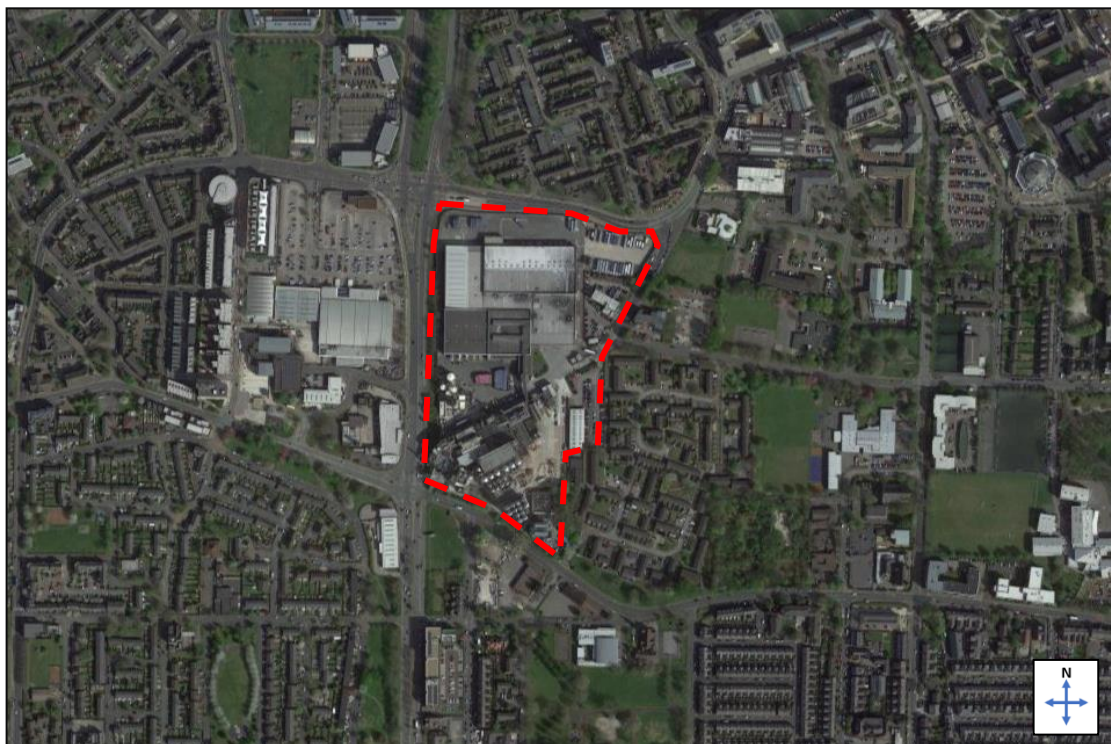


Figure 2.1 Site Location Map (Image Source: Google Maps)

2.2 Previous Assessment

A full study of the noise environment was carried out and detailed in KP Acoustics report with reference 23102.PCR.01, dated 23/12/2021.

In the above study, the noise impact of the site was found to be acceptable after the implementation of noise mitigation measures recommended to bring down the noise levels of some elements, which had been complained about or were otherwise found to require mitigation.

3.0 NOISE ASSESSMENT GUIDANCE AND TARGETS

3.1 Local Authority Guidance

The requirements of Manchester City Council in this instance is described in Planning Decision Notice: 39894/FO/2024:

“4) a. The premises shall be acoustically insulated and treated to limit the break out of noise in accordance with a noise study of the premises and a scheme of acoustic treatment that has been submitted to and approved in writing by the City Council as local planning authority. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.

b. Prior to occupation of the development a verification report shall be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that acceptable criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.”

3.2 Targets

The targets for noise level external to receivers 1-5 were set in report reference ‘23102.PCR.01’, and are listed below in Table 3.1.

Receiver	Criterion, dB(A), Day 07:00-23:00 (Upper Limit)	Criterion, dB(A), Night 23:00-07:00 (Upper Limit)
1	57	50
2	57	50
3	57	41
4	55	44
5	58	46

Table 3.1 Criteria at nearest noise sensitive locations

The location of receivers are explained in detail in report reference '23102.PCR.01', but in summary they are:

- R1 - Quinney Crescent to the southwest of the site
- R2 - Barnhill Street to the south of the site
- R3 - Charles Halle Road to the east of the site
- R4 - Greenheys Lane to the north of the site
- R5 - Westwood Street to the southeast of the site

4.0 PLANT INSTALLATION

It is understood that the plant installation is comprised of the following units:

- 2 No. Wilson T2 Ecotrans Transformers - 2000KVA- Tier 2
- HV Switchgear – understood not to produce significant noise

The installation location is in the Engineering Workshop building, in a room on the northwest façade, as shown marked in red in Figure 4.1 below, and in Figure 4.2. The noise emission levels as provided by the manufacturer for the units are shown in Table 4.1.

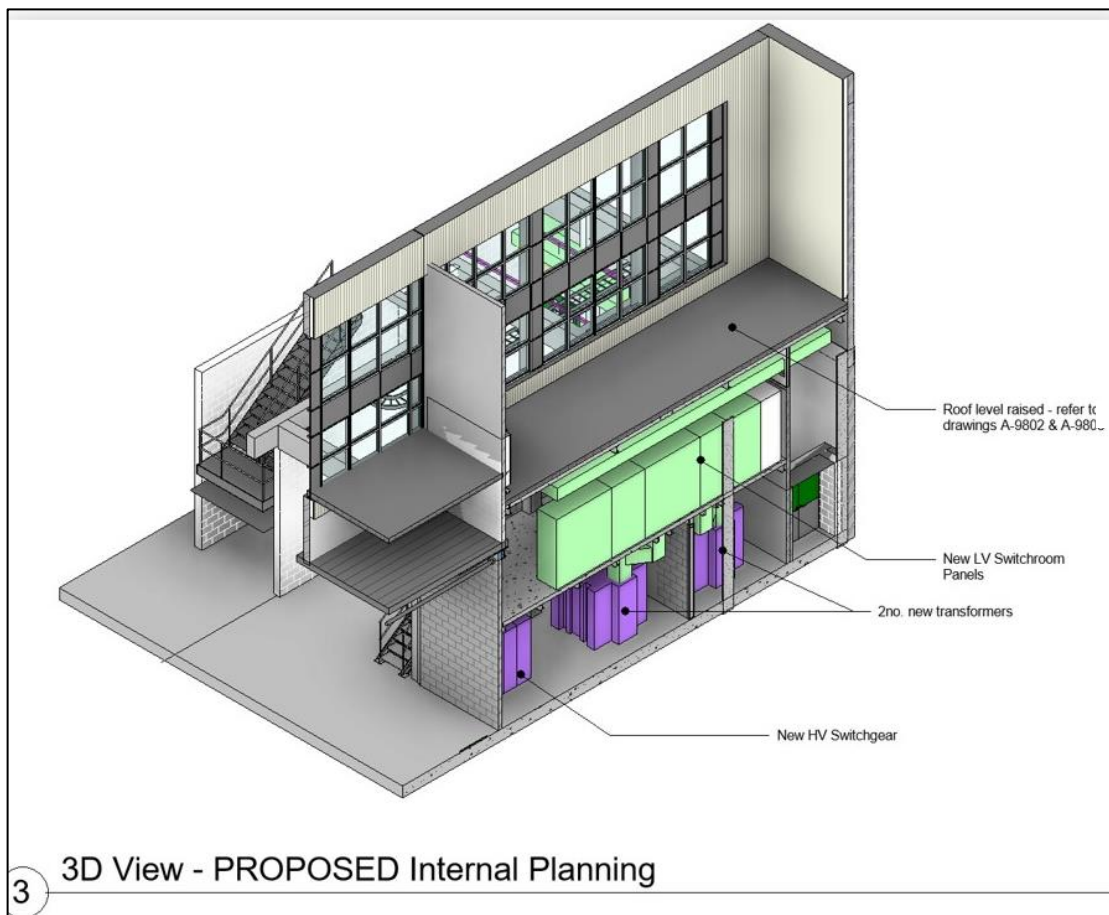
Unit	Descriptor	Octave Frequency Band (Hz)								Overall (dBA)
		63	125	250	500	1k	2k	4k	8k	
Wilson T2 Ecotrans Transformers - 2000KVA- Tier 2	SWL (dBA)	Spectral data not provided by manufacturer								100

Table 4.1 Plant Units Noise Emission Levels as provided by the manufacturer

The façade changes are shown in Figure 4.3



Figure 4.1 Plant location (red) (Source: Google Maps)



3 3D View - PROPOSED Internal Planning

Figure 4.2 Proposed plant locations (Source: Norder)

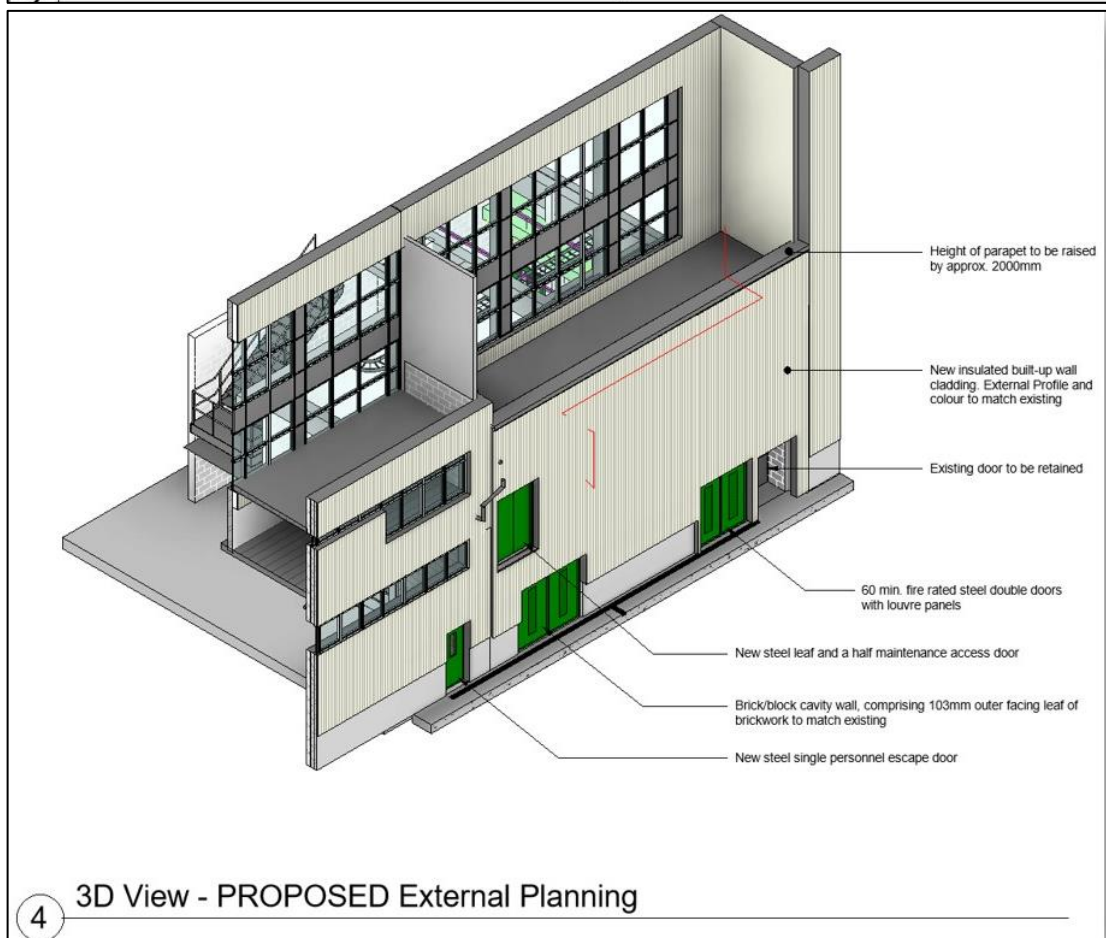
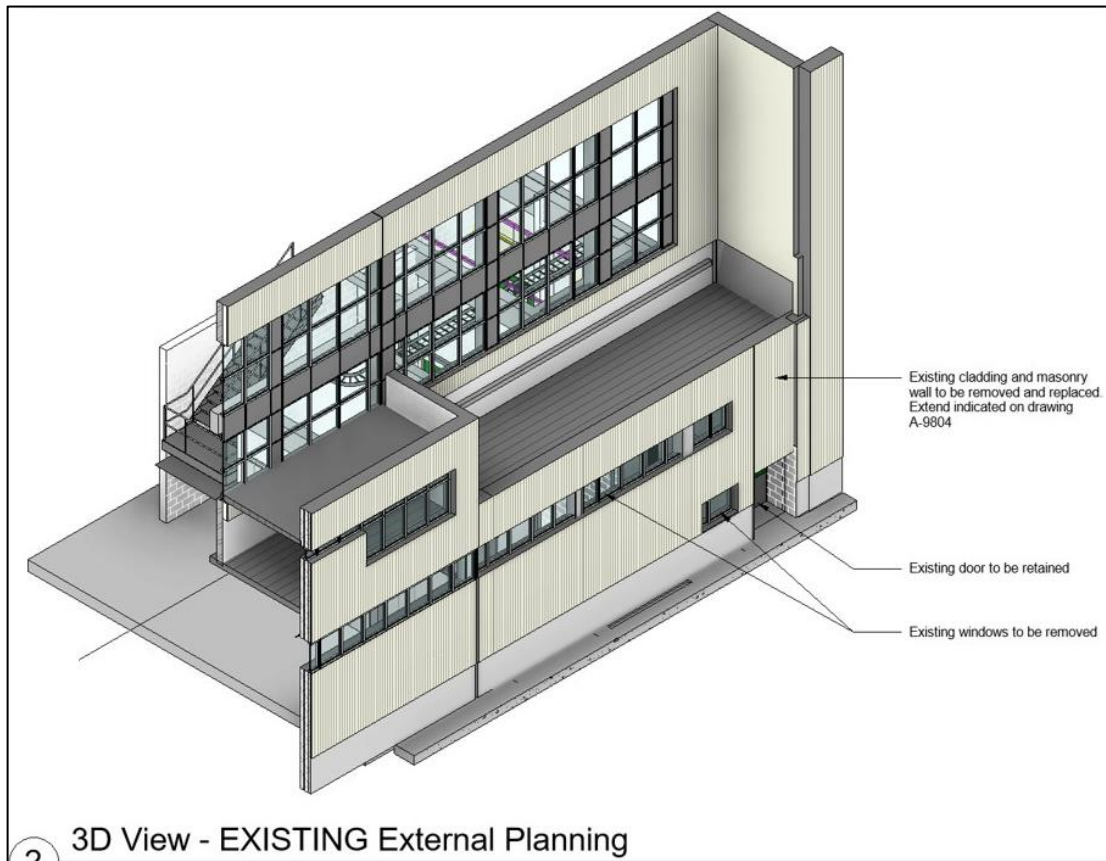


Figure 4.3 Existing view and proposed façade changes (Source: Norder)

5.0 COMMISSIONING MEASUREMENTS

5.1 Procedure

The site was attended on 27 June 2025 to undertake commissioning measurements. Source noise measurements were undertaken at a distance of 1.5 m from each specific plant item.

Weather conditions were generally dry with light winds and therefore suitable for the measurement of noise.

5.2 Equipment

The equipment calibration was verified before and after use and no abnormalities were observed. The equipment used is described below.

Measurement Instrumentation	Manufacturer and Type	Serial Number
SLM4 Precision integrating sound level meter & analyser	NTi Audio, XL2-TA Calibration No: TCRT24/ 1627 Calibration Dates: 20/07/2023 Calibration Due: 19/07/2025	A2A-09207-E0
CAL3 – KP North Calibrator 3	Larson Davies CAL200 Calibration No: UCRT24/2065 Calibration Date: 07/08/2024 Calibration Due: 06/08/2025	8932

Table 5.1 Measurement instrumentation

5.3 Results

The measured source noise level data is provided below.

Source	Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Louvred transformer room door (1.5m)	61	60	59	58	54	50	48	38	59
Background (no influence from transformer)	59	60	58	57	54	52	48	40	60

Table 5.2 Measured source noise level data

Subjectively, there was no noise audible from the transformer room door over and above the general background noise other than when listening at a distance of less than 0.5 m from the door itself. This correlates to the noise level measurements of the source not being above the general background noise level measurement. Regardless, all subsequent assessment has been based on the measured level with no correction for background noise, which would represent an extremely pessimistic assessment.

6.0 ASSESSMENT

6.1 Closest Noise Sensitive Receivers

The closest noise sensitive receiver to the plant installation is as follows:

- **R1** - Quinney Crescent to the southwest of the site (approximately **220 m**)
- **R3** - Charles Halle Road to the east of the site (approximately **130 m**)

6.2 Calculations

Taking all acoustic corrections into consideration and based on the source noise measurements undertaken in Section 5.0, the noise level contribution expected at the closest receiver from the proposed plant would be as shown in Table 6.1.

The calculated noise level at each receptor has been assessed against the night-time criteria for each individual receptor to facilitate a worst-case assessment.

The subjective impression on site was that the source noise was constant and free of acoustic features such as tonality or impulsivity. It should also be noted that the measured noise levels also do not indicate tonality when assessed objectively in accordance with the guidance of BS 4142:2014. Whilst the need for character corrections should be assessed based on the noise level at the receivers, this is a positive indication that no corrections are required.

Description	Receiver	
	R1	R3
Measured source noise level at 1.5 m	59 dB L_{Aeq}	59 dB L_{Aeq}
Distance correction	-39 dB (130 m)	-43 dB (220 m)
Predicted Rating Level at receiver	20 dB $L_{Ar,15min}$	16 dB $L_{Ar,15min}$
Criteria (23:00 – 07:00)	50 dB $L_{Ar,15min}$	41 dB $L_{Ar,15min}$

Table 6.1 Predicted noise level and criterion at nearest noise sensitive location (night-time)

As shown above, the above indicates compliance with the requirements of the Local Authority. Further to the above, the predicted noise level is at least 20 dB below the criteria such that there should be effectively no contribution to 'background noise creep' at the nearest receptors.

7.0 CONCLUSION

Using measured source noise data of the installed plant unit installation, noise levels have been predicted at the nearby noise sensitive receivers for compliance with local planning requirements.

The assessment has shown that noise emissions from the plant unit installation comfortably meet the requirements of Manchester City Council.

GENERAL ACOUSTIC TERMINOLOGY

Decibel scale - dB

In practice, when sound intensity or sound pressure is measured, a logarithmic scale is used in which the unit is the 'decibel', dB. This is derived from the human auditory system, where the dynamic range of human hearing is so large, in the order of 10^{13} units, that only a logarithmic scale is the sensible solution for displaying such a range.

Decibel scale, 'A' weighted - dB(A)

The human ear is less sensitive at frequency extremes, below 125Hz and above 16Khz. A sound level meter models the ears variable sensitivity to sound at different frequencies. This is achieved by building a filter into the Sound Level Meter with a similar frequency response to that of the ear, an A-weighted filter where the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq} . The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for no more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise.

L_{90}

This is the level exceeded for no more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 11 such octave bands whose centre frequencies are defined in accordance with international standards. These centre frequencies are: 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 8000 and 16000 Hertz.

Environmental noise terms are defined in BS7445, *Description and Measurement of Environmental Noise*.

APPLIED ACOUSTIC TERMINOLOGY

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than a single source and 4 sources produce a 6dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3dB for each doubling of distance.

Subjective impression of noise

Hearing perception is highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a guide to explain increases or decreases in sound levels for many scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud

Transmission path(s)

The transmission path is the path the sound takes from the source to the receiver. Where multiple paths exist in parallel, the reduction in each path should be calculated and summed at the receiving point. Outdoor barriers can block transmission paths, for example traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and construction.

Ground-borne vibration

In addition to airborne noise levels caused by transportation, construction, and industrial sources there is also the generation of ground-borne vibration to consider. This can lead to structure-borne noise, perceptible vibration, or in rare cases, building damage.

Sound insulation - Absorption within porous materials

Upon encountering a porous material, sound energy is absorbed. Porous materials which are intended to absorb sound are known as absorbents, and usually absorb 50 to 90% of the energy and are frequency dependent. Some are designed to absorb low frequencies, some for high frequencies and more exotic designs being able to absorb very wide ranges of frequencies. The energy is converted into both mechanical movement and heat within the material; both the stiffness and mass of panels affect the sound insulation performance.