

Planning Noise Impact Assessment

YIF Stirling Centre

Scotland Hall Road

M40 2RF

Stroma Built Environment Ltd.

SBE Ref: OP-F312 – AC - 1v1

I. Revision History

Revision	Date	Description	
1v1	26/09/2025	First Issue	
		Compiled By	Authorised By
		Ben Reed MIOA Senior Acoustic Consultant	Tom Chaffer MSc MIOA Associate Director

This report shall not be reproduced except in full and with the written approval of Stroma Built Environment Ltd.

III. Contents

I.	Revision History	2
III.	Contents	3
1.	Introduction	4
2.	Relevant Acoustic Standards	5
	National Planning Policy Framework (December 2024) (NPPF)	5
	IEMA Guidelines for Environmental Noise Assessments, 2014	5
	BS 8233:2014 Guidance on sound insulation and noise reduction for buildings	6
	BS 4142:2014 'Methods for rating and assessing industrial and commercial sound'	6
	BS 7445: 1991 – 'Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use'	7
	Local Authority Requirements	7
3.	Baseline Conditions	9
	Site Summary	9
	Noise Survey	10
	Background Sound Level	10
4.	Façade Sound Insulation	12
5.	Noise Impact Assessment	13
	Fixed Plant Noise Limits Assessment	13
	Noise Breakout	13
6.	Conclusions	15
Appendix I.	Noise Survey Information and Data	16
Appendix II.	Proposed Site Plan and internal layout	17
Appendix III.	Acoustic Glossary	19
Appendix IV.	SBE Acoustic Credentials	22
Appendix V.	Report Conditions	23

1. Introduction

- 1.1 Stroma Built Environment (SBE) has been appointed by Premier Modular Ltd (the client) to undertake a planning noise assessment in support of a proposed Youth Centre at the Stirling Centre, Scotland Hall Road, Manchester, M40 2RF.
- 1.2 The proposed development comprises a single storey building with a Main Hall, Meeting Room and ancillary spaces. A site layout plan is presented in Appendix II.
- 1.3 The purpose of this report is to provide a review of the noise climate around the development site based upon the proposed site layout provided by the client. Noise levels measured during the site noise survey have been used to assess the sound insulation requirements of the building envelope in order to meet guidance set out in British Standard BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings*.
- 1.4 The report also considers future operational noise generated by the new development and the acoustic impact of new fixed building services plant on the existing noise climate at the nearest identified Noise Sensitive Receptors (NSR) to meet the requirements of the Local Authority, namely Conditions 20 and 21.
- 1.5 This document has been prepared for the sole use, benefit, and information of the client for the purposes set out in this report. The liability of SBE in respect of the information contained herein shall not extend to any third party.
- 1.6 This report is limited to addressing the specific issues described and is based on information and drawings provided. Whilst every effort has been made to ensure that this report is easy to understand, it is technical in nature. A glossary of terminology is included in Appendix III.

2. Relevant Acoustic Standards

National Planning Policy Framework (December 2024) (NPPF)

- 2.1 The current planning guidance for the assessment of the potential environmental noise impact is outlined in the National Planning Policy Framework (NPPF). Whilst the NPPF does not set criteria that must be achieved, the NPPF states the following in relation to the appropriate control of potential noise impacts (paragraph 187):

"Planning policies and decisions should contribute to and enhance the natural and local environment by:[...]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;[...]"

- 2.2 In addition to the above, paragraph 198 states that:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; [...]"*

- 2.3 Therefore the policy requires that new developments are not affected to an unacceptable degree by environmental noise and existing development is not put at an unacceptable risk from noise due to adjacent new development.

IEMA Guidelines for Environmental Noise Assessments, 2014

- 2.4 The IEMA guidelines address the key principles of assessing noise effects and are applicable to all development proposals where noise effects may occur.
- 2.5 The guidance provides advice with regard to the collection of baseline noise data, prediction of noise levels and how noise should be assessed. The guidance recognises that the impact associated with a particular noise source will be dependent on a number of factors including, but not limited to the sensitivity of the receptor, the frequency and duration of the noise source and the time of day at which it occurs.

- 2.6 However, it stops short of providing specific assessment criteria which developments should achieve but instead suggests that the methodology adopted should be selected on a site-by-site basis with reference to relevant national and local standards.

BS 8233:2014 Guidance on sound insulation and noise reduction for buildings

- 2.7 BS 8233 provides design guidance for internal acoustic environments within buildings according to their end use. It addresses noise transfer from outside the building, internal sound insulation, room acoustics and noise from plant services.
- 2.8 Internal ambient noise level criteria is given for non-residential buildings as design ranges to achieve for both contributions from external noise intrusion via the façade/building envelope, plus any additional noise contribution from M&E building services.
- 2.9 The relevant BS 8233:2014 design ranges are detailed in Table 1.

Table 1: Relevant BS 8233:2014 internal ambient noise level guidance criteria

Location	Design range $L_{Aeq,T}$ (dB)
Meeting Room	35 - 45
Library, gallery, museum	40 - 50

BS 4142:2014 'Methods for rating and assessing industrial and commercial sound'

- 2.10 BS 4142:2014 describes a method for assessing noise arising from commercial noise sources including external plant, on-site vehicle movements and loading at residential receptors. The assessment methodology is based upon determining a 'rating level' for the equipment being assessed, which is the level of noise from the item or items of plant being assessed (measured as an $L_{Aeq,T}$). The rating level is then compared with the underlying background sound level (measured as an L_{A90}) in the absence of noise from the item or items of plant being assessed.
- 2.11 BS 4142 states that a penalty should be added for any plant which gives rise to noise features that may increase disturbance such as tonal, impulsive, or intermittent characteristics. With respect to the acoustic feature correction, BS 4142 states:

"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level."

- 2.12 BS 4142 also notes that in instances where more than one acoustic character is present, the individual corrections should be summed. A rating penalty for a sound may be applied based on a subjective assessment of its characteristics.

BS 7445: 1991 – ‘Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use’

- 2.1 BS 7445 provides guidance on the collection and reporting of environmental noise affecting land on which new developments are planned. It contains guidance on suitable measurement equipment, monitoring locations and averaging periods, and provides a method for determining a ‘rating level’ in order to characterise the measured noise levels.
- 2.2 The standard states that where sounds contain tonal or impulsive characteristics an adjustment may be applied, however, the magnitude of the adjustment to be made is not quantified absolutely. More specific guidance is available in BS 4142:2014, as discussed below, which states that a penalty may be added for any plant which gives rise to noise features that may increase disturbance such as tonal or impulsive characteristics.

Local Authority Requirements

- 2.3 Planning approval for the development has been granted by Manchester City Council (MCC) under planning reference 142987/VO/2025. The decision notice dated 19th May 2025 sets out conditions for the development, those relating to noise which are addressed within this report are set out below.

20) a) The building hereby approved shall be acoustically insulated and treated to limit the break-out of noise with a noise study of the premises and a scheme of acoustic treatment shall be 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.

b) Upon completion of the development and within 3 months of first occupation, a Verification Report is 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 has 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.

Reason - In order to safeguard the amenity of existing and future occupiers of nearby residential accommodation, pursuant to saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies SP1 and DM1 of the Manchester Core Strategy.

21) a) Externally mounted ancillary 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 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Prior to commencement of the use hereby approved the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site. 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 the operation of the scheme a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of non-conformity with the recommendations in the verification report shall be detailed along with any measures required to be undertaken prior to operation of the scheme to ensure compliance with the agreed noise criteria.

Reason - To minimise the impact of the development and to prevent a general increase in pre-existing background noise levels around the site, pursuant to saved UDP Policy DC26 and Policy DM1 of the Manchester Core Strategy.

Noise Survey

- 3.5 Noise monitoring was undertaken at the site between Wednesday 17th and Friday 19th September 2025 to assess prevailing noise levels at the vicinity of the development site. Noise levels were measured using an NTi XL2 Class 1 sound level meters fitted with weather protection kit and mounted on a tripod or pole. The sound level meter was field calibrated prior to the survey period and no significant drift was detected. Noise was measured in terms of broadband A-weighted indices and octave band spectral terms.
- 3.6 Weather conditions during the attended survey period were fine and dry, with wind speeds of <5 ms⁻¹.
- 3.7 The general noise climate at the site was found to be primarily controlled by road traffic noise, with frequent vehicle movements within the residential car park on Croydon Drive to the west. Maximum noise events were noted from the railway line to the south. Some additional noise was also noted from the surrounding residential properties.
- 3.8 Figure 1 presents the site location, noise survey measurement positions (MP) and nearest identified NSRs.
- 3.9 Table 2 presents a summary of the survey results.

Table 2: Noise survey summary

Position	Duration	Measured Sound Pressure Level (dB)		
		L_{AFmax} (dB) ^[1]	$L_{Aeq, T}$ (dB) ^[2]	$L_{A90, T}$ (dB) ^[2]
LT	17.09.25 14:30 - 23:00	75	50	42
	17.09.25 23:00 - 07:00	78	52	38
	18.09.25 07:00 - 23:00	90	54	45
	18.09.25 23:00 - 07:00	73	44	38
	19.09.25 07:00 - 09:15	77	51	45
	17.09.25 13:41 – 14:14	74	51	46
ST				

Notes to Table 2:

[1] Highest measured $L_{AFmax, 15min}$ events over period

[2] Logarithmic average over period

Background Sound Level

- 3.10 A statistical analysis of the measurement data has been conducted to determine the background sound level representative of the daytime and night time period following the guidance in BS 4142 as shown in Figure 2 and Figure 3 respectively.

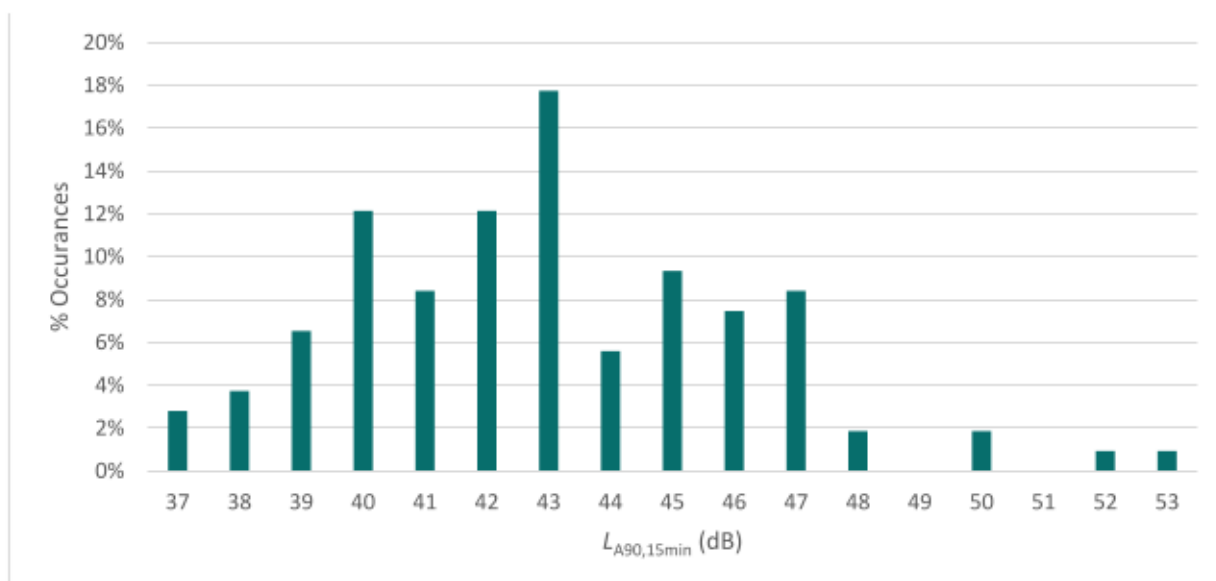


Figure 2: Statistical analysis of background sound pressure levels, daytime

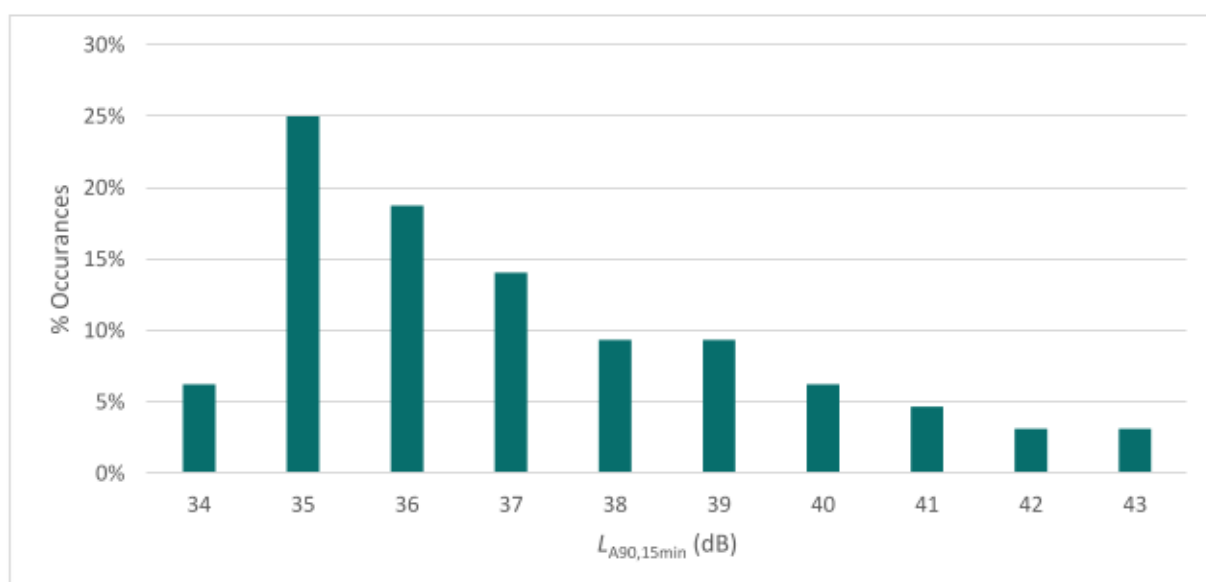


Figure 3: Statistical analysis of background sound pressure levels, night-time

3.11 The representative background sound level selected from the statistical analysis is shown in Table 3.

Table 3: Representative background sound levels for daytime and night-time periods

Period	Representative Background Sound Level $L_{A90,7}$ (dB)
Daytime (07:00 – 23:00)	40
Night-time (23:00 – 07:00)	35

4. Façade Sound Insulation

- 4.1 The future building façade(s) shall need to mitigate external noise transfer so that internal ambient noise levels (IANL) are in accordance with the relevant BS 8233:2014 guidance criteria. IANLs include the contribution from external noise intrusion via the façade/building envelope, plus any additional noise contribution from M&E building services.
- 4.2 As per the proposed internal layouts provided by the client, relevant BS 8233:2014 design ranges are detailed in Table 4.

Table 4: Relevant BS 8233:2014 internal ambient noise level guidance criteria

Internal Space	Design range $L_{Aeq,T}$ (dB)
Meeting Room	35 - 45
Main Hall	40 - 50

- 4.3 External measured noise levels at ST have been used to establish the noise levels at the future façade.
- 4.4 Based on the above, noise levels at the façade are predicted to be 51 dB $L_{Aeq,T}$. Based on this, and a 13 dB reduction allowed for a partially open window, the internal ambient noise level criteria shown in Table 4 above are expected to be met when using open windows for normal ventilation. As such no acoustic specification of glazing is warranted and standard thermal double glazing would be suitable.
- 4.5 Any mechanical ventilation systems should be specified to meet the lower IANL criteria in the design range for each space shown in Table 4 to ensure that IANL criteria will still be achieved when any such system is operating.

5. Noise Impact Assessment

Fixed Plant Noise Limits Assessment

- 5.1 Based on the representative background sound levels shown in Table 3, noise rating level limits are provided in Table 5 below. These have been set in line with the requirements of Condition 21 and such that when noise from fixed plant items are designed to be no higher than this at the identified NSR (including any acoustic character corrections) will result in a low impact in line with BS 4142 guidance.

Table 5: Plant noise rating level limits

Location	Period	Representative background sound level, $L_{A90,T}$ (dB)	BS 4142 Rating level Limits $L_{A,T}$ (dB)
NSR A and B	Weekday Daytime (07:00-23:00)	40	≤ 35
	Weekday Night-time (23:00-07:00)	35	≤ 30

- 5.2 Mechanical engineers should be made aware of the proposed plant noise limits in order to inform plant unit specification and selection. The rating level should be assessed in accordance with BS 4142, including appropriate consideration of any tonal or impulsive characteristics of the proposed mechanical services plant.
- 5.3 Location and positioning of external plant on the development (such as condenser units and duct terminations of air handing equipment etc.) should be carefully considered to reduce the noise impact on the NSRs.

Noise Breakout

- 5.4 The future use of the community centre will include the playing of amplified music, though this is understood to not be typical and would be limited to a small number of times throughout the year and be no more than 3 hours per event. As such assessment is carried out to determine the potential impact and to ensure compliance with Condition 20.
- 5.5 Normal use of the building would include youth groups, community groups, elderly residents and families which would not be anticipated to have any significant noise generation as such is not expected to result in any noise impacts.
- 5.6 Condition 20 does not provide any specific noise criteria to achieve, however in line with other similar recent approvals, MCC are seen to typically require that entertainment noise levels are controlled to be at least 5 dB below the measured background noise level at the façade of the nearest NSR. As such this is considered to be an appropriate criteria to adopt for the assessment of entertainment noise breakout and to allow compliance with Condition 20.

- 5.7 The Youth Centre operating hours are proposed to be from 10am to 9pm Monday to Sunday, with the most sensitive period being the evening, as such background noise levels measured between 6pm and 9pm have been reviewed where statistical analysis of the measured background $L_{A90,15min}$ noise levels identified the background noise level for the assessment to be 42 dB. This is seen to be 2 dB higher than that already determined throughout the daytime period, as such the daytime background noise level of 40 dB $L_{A90,T}$ has been used to inform the assessment, being the more onerous of the two.
- 5.8 Based on the above background noise level, entertainment noise from the proposed building shall not exceed 35 dB at the façade of the nearest NSR.
- 5.9 The external façade is understood to comprise 12mm Cedral Click weatherboard fixed on timber battens and steel levelling angles fixed back to SFS with cement particle board, 100mm steel frame cavity filled with mineral wool insulation (which shall be $>30\text{kg/m}^3$) and 2 no. layers of 15mm BG Fireline plasterboard. This is calculated to provide a sound reduction of at least 49 dB R_w .
- 5.10 Detailed calculations have been carried out to determine noise breakout from the building based on anticipated internal finishes and dimensions as per the drawings provided by the client. Glazing is assumed to be standard, non-acoustic double glazing (6mm/16mm/6mm) providing 33 dB R_w .
- 5.11 In order to ensure the requirements of Condition 20 are met at all NSRs, internal broadband Sound Pressure Levels (SPL) should not exceed broadband level of 98 dBA $L_{Aeq,5min}$ within the Main Hall. A noise limiter should be installed to ensure compliance with this limit. Assuming a conservative 10 dB reduction from a partially open window, noise levels at the NSR 2 are predicted to be 52 dBA with the above internal noise level limit from amplified music. It is noted that there are no openable windows facing NSR 1, as such would be screened by the building itself from any noise emissions from an open window.
- 5.12 External doors and windows should remain closed whilst amplified music is being played to ensure that sound insulation provided by the façade is maintained. It is understood that the building will be mechanically ventilated, thereby allowing windows to remain closed whilst providing normal ventilation.
- 5.13 It is also recommended that a noise management plan should be developed by the building operator and followed by all staff members. This should include:
- Permitted hours of amplified music
 - No amplified music should be played externally
 - Patrons shall not be allowed to congregate outside the premises. - Patrons using the external areas will be made aware that the site has residential neighbours and that shouting and raised voices are unacceptable.
 - All staff to be made aware of the surrounding noise sensitive properties and the effects of noise on residential amenity
 - A complaints procedure should be implemented to record and investigate any noise complaints

6. Conclusions

- 6.1 Stroma Built Environment (SBE) has been appointed by Premier Modular Ltd (the client) to undertake a planning noise assessment in support of a proposed Youth Centre at the Stirling Centre, Scotland Hall Road, Manchester, M40 2RF.
- 6.2 A baseline noise survey has been undertaken at the site over a representative period to assess the prevailing noise climate.
- 6.3 Noise rating level limits have been based on the background sound level survey data to control the noise impact from any external mechanical services associated with the development. The proposed noise limits have been selected such that they are in line with Condition 21 and such that a BS 4142 classification of a 'low noise impact' can be achieved when selecting future external plant for the development. Condition 21 requires that commissioning measurements are undertaken for the condition to be fully discharged, which should be undertaken once fixed plant items are installed and operational.
- 6.4 Internal noise limits to control noise break out have been developed based on the proposed building envelope to ensure compliance with Condition 20. A noise limiter should be installed within the Main Hall to ensure that these are complied with. Part b of Condition 20 requires that verification measurements are made to confirm compliance, however given the recommendation of a noise limiter being installed to ensure compliance with the internal limit, it is considered that this is not necessary, however this is subject to agreement from MCC.
- 6.5 Noise levels at the site have been used to inform the sound insulation requirements for the proposed development having regard to relevant guidance. Calculations indicate that good practice internal noise levels provided in BS 8233 can be met when relying on open windows for normal ventilation.

Appendix I. Noise Survey Information and Data

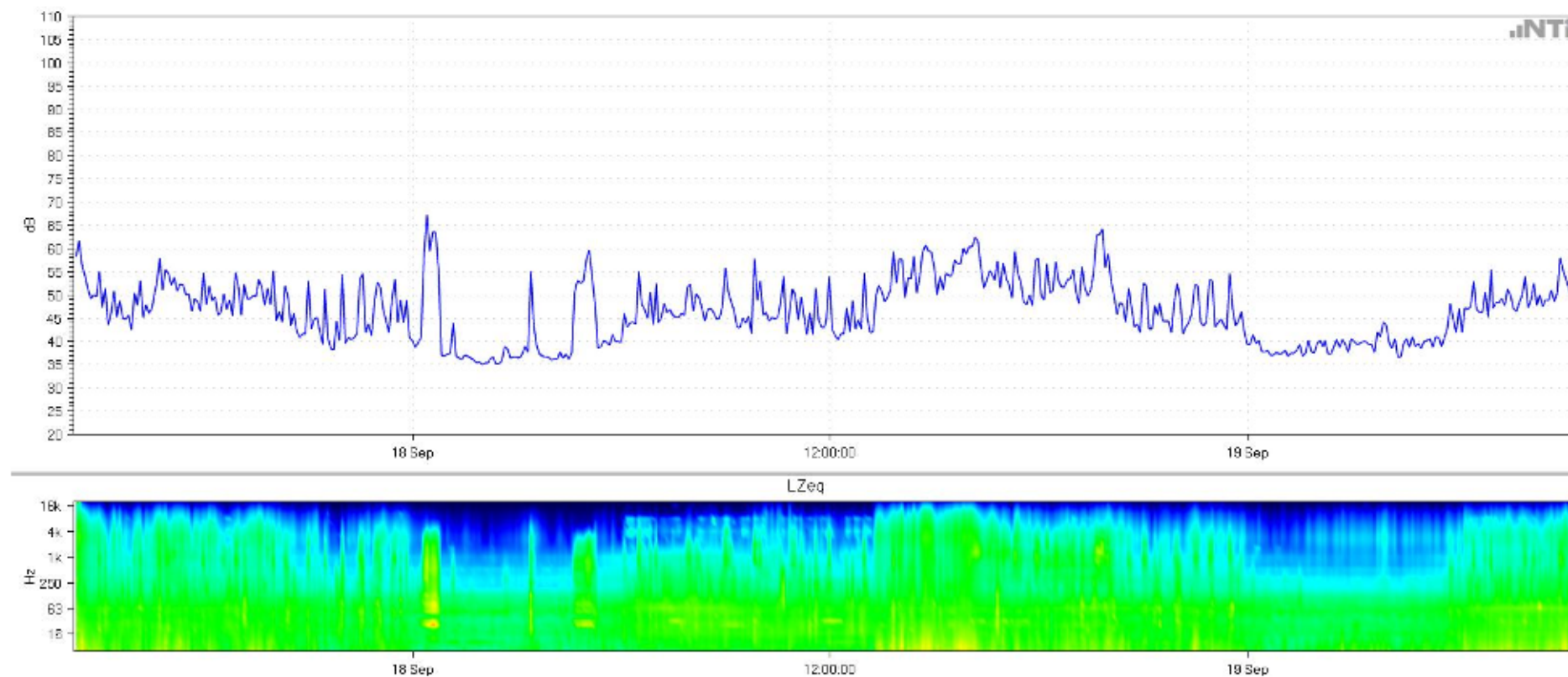


Figure A1: LT Noise Survey Data

Appendix II. Proposed Site Plan and internal layout







The copyright of this drawing is vested with Corstorphine & Wright Ltd and must not be copied or reproduced without the consent of the company.

P-01	External lobby added and connection to existing building shown.	07.02.20	LC	CH
P-02	Planning Issue	07.08.24	NM	LC
Rev	Description	Date	Drawn	Check

Design in accordance with modular provider constraints

Client
YIF
Youth Investment Fund
Project
Modular Youth Hub
The Stirling Centre M20 2RF
Drawing Title
Proposed Floor Plan
Drawing Status
PLANNING

Corstorphine & Wright
Townsville Studio
5 Ashgate, Townsville, QLD 4810
0800 671 133
corstorphine-wright.com
Drawing No.
23519-0374
Revision
P-01

Drawn	Checked	Paper Size	Scale	Date
NM	LC	A2	1:100	07.08.2024

Appendix III. Acoustic Glossary

Sound pressure level and the decibel, dB

A sound wave is a small fluctuation of atmospheric pressure. The human ear responds to these variations in pressure, producing the sensation of hearing. The ear can detect a very wide range of pressure variations. In order to cope with this wide range of pressure variations, a logarithmic scale is used to convert the values into manageable numbers. The decibel is the logarithmic unit used to describe sound (or noise) levels. The usual range of sound pressure levels is from 0 dB (threshold of hearing) to 120 dB (threshold of pain).

Frequency and hertz, Hz

Frequency is a measure of the rate of fluctuation of a sound wave. The unit used is cycles per second, or hertz (Hz). Sometimes large frequency values are written as kilohertz (kHz), where 1 kHz = 1000 Hz. The human range of hearing is commonly accepted to be 20 Hz to 20,000 Hz. Additionally, an octave can be used to describe the interval between a frequency in Hz and either half or double that frequency.

Frequency weighting

Different weighting networks can be applied to a given sound level in each stated octave band by a specified amount, in order to better represent the response of the human ear. The most commonly used weighting network is the 'A' weighting, and the letter 'A' will be included within a descriptor to indicate that the value has been 'A' weighted, e.g. $L_{Aeq,T}$ or L_{A90} . An 'A' weighted noise level may also be written as dB(A). Other weightings less commonly used are 'C' and 'D' weighting.

Noise indices

When a noise level varies with time, the measured 'A' weighted dB level will vary as well. In this case it is therefore not possible to represent the noise climate with a simple 'A' weighted dB value. In order to describe noise where the level is continuously varying, a number of other indices, including statistical parameters, are used. The various indices used are described as below:

$L_{Aeq,T}$	The 'A' weighted 'equivalent continuous noise level' which is an average of the total sound energy measured over a specified time period, T
L_{Amax}	The maximum 'A' weighted noise level that was recorded during the monitoring period.
L_{A10}	The 'A' weighted noise level that was recorded for at least 10% of the monitoring period.
L_{A90}	The 'A' weighted noise level that was recorded for at least 90% of the monitoring period, usually taken as the underlying 'background' noise level.

Sound level difference, D

The sound level difference between two internal spaces, or between internal and external spaces. The ' D ' value is used to denote the differences at each third octave or octave band, with a single figure 'weighted' value to

describe an overall performance. Note that the 'D' value will always describe an in-situ or on-site acoustic performance. All values are described using the decibel.

D_w	Single figure weighted sound level difference, simply the measured source noise level minus receiver noise level, not adjusted to reference conditions
$D_{nT,w}$	Weighted normalised sound level difference – a single, weighted sound insulation value, normalised to a reference reverberation time using the measured reverberation time in the receive room
$D_{nT,w} + C_{tr}$	As above, with a spectral adaptation term applied to account for the effects of low frequency noise, and based on urban traffic noise
$D_{nf,w}$	Overall flanking normalised level difference - A parameter that defines the flanking transmission of sound from room to room where a dividing partition or floor construction abuts a flanking building element common to both rooms, such as the building façade or ceiling
$D_{n,e,w}$	Element normalised level difference. A level difference level derived transmission through the small technical element only, irrespective of area. This value is used to represent the sound insulation of façade ventilators.
$D_{n,e,w} + C_{tr}$	As above, with a spectral adaptation term applied to account for the effects of low frequency noise, and based on urban traffic noise

Sound reduction index, R

This describes the sound transmitted through a material or building element, such as a wall, door or window. It is measured in a laboratory with suppressed flanking transmission. The 'R' value is used to denote the differences at each third octave or octave band, with a single figure 'weighted' value to describe an overall performance. All values are described using the decibel.

R_w	Weighted single figure sound reduction index
$R_w + C_{tr}$	As above, with a spectral adaptation term applied to account for the effects of low frequency noise, and based on urban traffic noise
R'_w	The 'apparent sound reduction index', a field measurement to obtain the sound reduction index of a material or element, with all effects of site installation accepted.

Standardised impact sound pressure level, $L'_{nT,w}$

$L'_{nT,w}$ is the single figure used to characterise the impact sound pressure level in a receiving room, normalised to a reference reverberation time. Impact noise can be classified as (but is not limited to) the result of footfall impact on a separating floor to a habitable space below. All values are described using the decibel.

Reverberation time, T and T_{mf}

The reverberation time of a space is a measure of the rate at which sound decays, measured in seconds. It is defined as the time taken for the sound pressure level to reduce by 60 dB from its original impulse level.

Reverberation time is commonly quoted in terms of the mid-frequency reverberation time, T_{mf} , the arithmetic average of the reverberation times in the 500 Hz, 1 kHz and 2 kHz octave bands.

Absorption Coefficient

The acoustic absorption provided by a surface is defined as the sound absorption coefficient α , which denotes the fraction of sound energy absorbed between 0 (no absorption) and 1 (no reflection). The absorption coefficient of a material varies with the frequency of incident sound waves, therefore is considered for different frequencies.

Absorption Class

Based on the absorption coefficients, the overall sound absorption of a material is classified from Class A to Class E as defined in BS EN ISO 11654:1997, with Class A providing the highest level of acoustic absorption.

Noise rating, NR

The noise rating or NR system is commonly used in the design of noise emitted by internal building services systems. The system is frequency dependent, and was empirically derived to prevent disturbance to occupants in habitable or working areas from building services noise that exhibits 'tonal' elements, e.g. rumbles, whines, whistles etc. There is no direct relationship between the average 'A' weighted noise level in dB and the NR. However, as a guide, and assuming the absence of strong low frequency content in a given noise, the NR could generally be said to be 6 dB less than the average 'A' weighted dB value.

Privacy

Privacy is the addition of the level of sound insulation between two rooms and the background noise within a receiving room. It can be used to assess the level of privacy afforded in the 'receiving room' for speech from the 'source room'. The 'privacy factor' is a unit-less value that is the combination of the average 'A' weighted background noise level in dB and the weighted sound level difference (D_w) in dB.

Appendix IV. SBE Acoustic Credentials

SBE have specialised in providing the UK Construction Industry with a range of acoustics services since 2006. Specialising in Building Acoustics, all SBE acousticians are members of the Institute of Acoustics.

SBE is accredited for on-site acoustic testing by United Kingdom Accreditation Service (UKAS) (Testing Laboratory Number 2731).

SBE meet the relevant acoustic requirements typically required in the UK, including for sound insulation testing as defined in Approved Document E for the purposes of testing for Part E to the Building Regulations 2010.

This report has been compiled by Ben Reed, Senior Acoustic Consultant who meets the BREEAM requirements for a suitably qualified acoustician (SQA) as follows;

1. Holds a BEng(Hons) degree in Acoustics from the University of Salford
2. Has been an Acoustic Consultant for more than three year's (within the last five years). This experience includes a practical understanding of factors affecting acoustics in relation to construction and the built environment; including, acting in an advisory capacity to provide recommendations for suitable acoustic performance levels and mitigation measures.
3. Holds Membership of the Institute of Acoustics - MIOA membership.

This report has been read and reviewed and has been found to;

1. Represent sound industry practice
2. Be appropriate given the building being assessed and scope of works proposed
3. Avoid invalid, biased and exaggerated recommendations.

Appendix V. Report Conditions

This document has been prepared for the sole use, benefit and information of the Client. The liability of Stroma Built Environment Ltd. in respect of the information contained herein will not extend to any third party unless prior agreement is obtained in writing from Stroma Built Environment Ltd.

This report is limited to addressing the specific acoustic issues contained herein. Advice has been provided for acoustic reasons only and it is recommended that appropriate expert advice be sought on all the ramifications, e.g. safety, fire, structural, CDM etc., associated with any proposals contained herein.

The in-situ performance of acoustic measures is influenced to a large extent by the quality of workmanship and compliance with the specifications on-site during construction, as such, Stroma Built Environment Ltd. accepts no liability for issues with acoustic performance arising from such factors.

Acoustic survey and testing work carried out for the project is representative of the prevailing conditions at the time of the work. Conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

In particular, it should be noted that where calculations are carried out that are based on assumptions regarding certain aspects where information has not been supplied, these are provided for indicative purposes only and should be treated as such.