AECOM Imagine it. Delivered.

Hartfields Place, Swords Road

Acoustics Design Statement

Project number: 60601744

29 March 2022

Quality information

Prepared by	Checked by	Verified by	Approved by
			
Georgia Zepidou Principal Acoustics Consultant	Yuyou Liu, Regional Director	Yuyou Liu, Regional Director	Anne Elliott, Principal Acoustics Consultant

Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	28/2/20	Issue	AE	Anne Elliott	Principal Acoustics Consultant
1	29/03	Final Issue	AE	Anne Elliott	Principal Acoustics Consultant

Distribution List

# Hard Copies	PDF Required	Association / Company Name

Prepared for:

Eastwise Construction Swords Limited

Prepared by:

Georgia Zepidou
Principal Acoustics Consultant
E: georgia.zepidou@aecom.com

AECOM Limited
Sunley House
4 Bedford Park, Surrey
Croydon CRO 2AP
United Kingdom

T: +44 20 8639 3500
aecom.com

Table of Contents

Figures

Tables

1. Introduction

AECOM Acoustics has been instructed to provide acoustic design advice for the Hartfields Place development in Swords Road, Dublin. The proposed development comprises a mixture of residential units, commercial spaces, a leisure space (gym) and car parking area at basement level.

This report sets out the acoustic design criteria and design recommendations for acoustics in relation with the above development.

A glossary of acoustic terminology can be found in Appendix A.

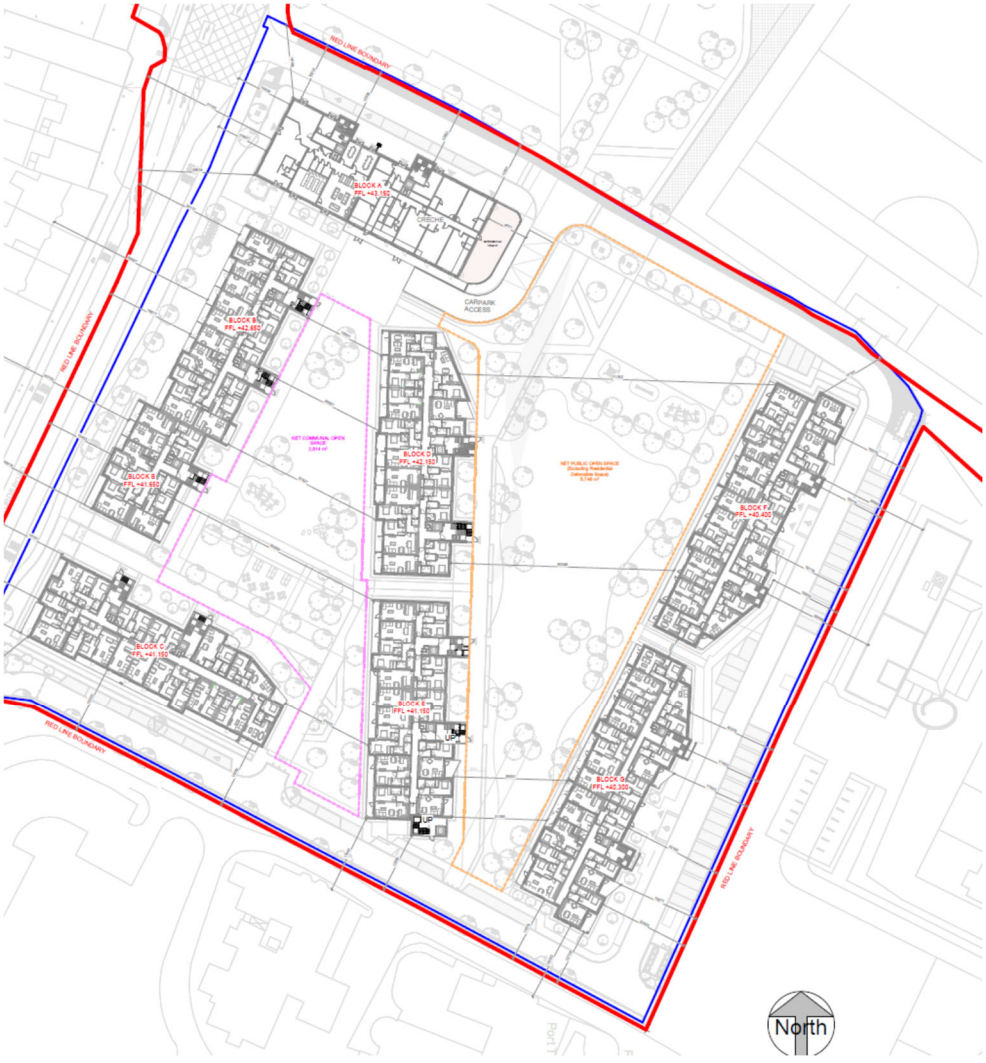
2. Site Description

The proposed Hartfields Place is located on Swords Road, Whitehall, Dublin 9.

Main traffic routes surrounding the site are Swords Road (R132) and Colling Avenue (R103) located to the west and north side of the development respectively. The development comprises a total of 472 residential units over 7 Blocks (Block A to Block G), commercial units on the ground floor of Block A as well as a leisure space (communal gym), a large car park area and plant/bin/cycle storage areas at basement level below Blocks A-E.

The indicative location of the proposed site of the Hartfields Place in relation to the surrounding area is shown in Figure 1.

Figure 1 Proposed site plan



3. Noise Guidance and Assessment Criteria

A summary of applicable criteria with regards to noise and vibration is presented below. Criteria are provided for the following:

- Indoor Ambient Noise (external sources);
- Building services noise (internal and external sources); and
- Internal sound insulation and reverberation time

Detailed information on the reference noise guidance is provided in Appendix B.

3.1 Indoor Ambient Noise (External Noise Sources)

The recommended noise criteria relating to internal ambient noise resulting from external noise sources within the Hartfields Place residential and non-residential spaces and associated reference noise guidance is given in Table 1 and Table 2 below.

Table 1 Indoor ambient noise levels in dwellings

Location	Criteria (dB)		Reference
Residential living room	Daytime (07:00-23:00)	35 dB $L_{Aeq,16h}$	BS 8233:2014
Residential bedroom	Night time (23:00-07:00)	30 dB $L_{Aeq,8h}$	ProPG / BS 8233:2014
		45 dB $L_{Amax,fast}$	

Table 2 Indoor ambient noise levels in non-domestic buildings

Location	Criteria (dB)	Reference
Corridor, circulation spaces, entrance lobby	45-55 dB $L_{Aeq,T}$	BS 8233:2014
Restaurant	40-55 dB $L_{Aeq,T}$	
Department store/Cafeteria	50-55 dB $L_{Aeq,T}$	
Gym	45 $L_{Aeq,T}$	Building Bulletin 93 (BB93)[1] – Sports Hall
	NR40 (L_{eq})	Sport England[2]

[1] Acoustic design of schools: performance standards - Building Bulletin 93, Department for Education and Education Funding Agency, February 2015
[2] Sport England, Design Guidance Note – Fitness and Exercise Spaces, March 2008, Revision 002

3.2 Building Services Noise

3.2.1 Indoor building services noise

Environmental Design Guide A by Chartered Institution of Building Services Engineers (CIBSE) provides internal services noise design criteria for different room types. Table 3 presents the NR criteria relevant to the development.

Table 3 Indoor building services ambient noise levels for dwellings and non-domestic buildings

Location	Criteria (dB)	Approximate Equivalent* $L_{Aeq,T}$	Reference
Bedroom	NR25	30	CIBSE Guide A Environmental Design (2015)
Living Room	NR30	35	
Kitchen	NR40 (kitchen area with extract hood operating at normal duty)	45	
	NR45 (Kitchen area with extract hood operating at maximum flow)	50	
General building areas: Corridor	NR40	45	
General building areas: Entrance halls/lobbies	NR35-40	40-45	
Restaurant	NR35-40	40-45	
Retailing: (small shops, department stores)	NR35-40	40-45	
Gym	NR40	45	

* Approximate equivalent $L_{Aeq,T}$ value as given within CIBSE Guide A

The above noise ratings apply to typical background ventilation settings. During boost duty the above design noise criteria may be relaxed.

3.2.2 Lift noise

The maximum noise levels within living accommodation due to lift operation should be limited to the values given in Table 4.

Table 4 Lift noise

Location	Criteria (dB)	Reference
Residential bedroom	≤25 $L_{Amax,fast}$	BS 8233:2014
Other areas	≤35 $L_{Amax,fast}$	

These levels relate to the highest noise levels during any part of the lift cycle and number of people in the lift between zero and the manufacturers recommended maximum number of people.

The values in Table 4 should be regarded as upper guideline values and every effort should be made in the design of the lift systems and components to minimize noise and vibration at source such that lower levels result in practice.

In addition to the above, lift operation during any part of the lift cycle, including announcements, and with any occupancy level should not normally exceed 55 dB $L_{Amax,fast}$ when measured in the lift lobby.

The lift motor and associated equipment should be installed on suitable anti-vibration mountings to prevent the transmission of excessive vibration and/or structure-borne noise to any parts of the residential accommodation.

3.2.3 External building services noise

The Dublin City Council (DCC) issued comments on the Stage 2 pre-application which included a report from the Environmental Health Office (EHO) dated 9th November 2021 To control noise from building services plant affecting sensitive receptors the EHO has requested that cumulative noise emissions from building services units associated with the proposed development are limited to no greater than 5dB above the measured background noise level (L_{A90}) outside nearest noise sensitive receptors. The noise rating limits apply to the cumulative noise level, rated in accordance with BS4142 outside nearest residential windows from the operation of all plant associated with the Hartfields Place.

In the absence of detailed day and night time background noise information around the site, it is proposed that a survey is carried out during next design stage to determine typical background noise levels around the site during a period of at least 5 days (to include a weekend).

3.3 Internal Sound Insulation and Reverberation in Common Areas

3.3.1 Sound insulation criteria for separating walls and floors between residential units

Requirement E1 of the Technical Guidance Document E of the Irish Building Regulations 2014 relates to walls, floors and stairs which have a separating function. Table 5 presents the required performance standards.

Table 5 Technical Document E performance standards

		Airborne sound insulation $D_{nT,w}$ dB (Minimum values)	Impact sound insulation $L'_{nT,w}$ dB (Maximum values)
Dwellings	Walls	53	-
	Floors (including stairs with a separating function)	53	58

3.3.2 Internal walls and floors sound insulation criteria

Technical Document E of the Building Regulations 2014 does not set a minimum sound insulation performance requirement for internal walls and floors within residential dwellings.

As a guidance only, requirement E2 of Approved Document E (ADE) of the Building Regulation 2010 for England and Wales is given below:

"…the normal way of satisfying Requirement E2 will be to use constructions for new walls and floors within a dwelling-house, flat or room for residential purposes that provide the laboratory sound insulation values set out in Table 2…. It is not intended that performance should be verified by testing on site."

ADE Table 2: Laboratory values for new internal walls and floors within: dwelling-house, flats and rooms for residential purpose, whether purpose built or formed by material change of use.

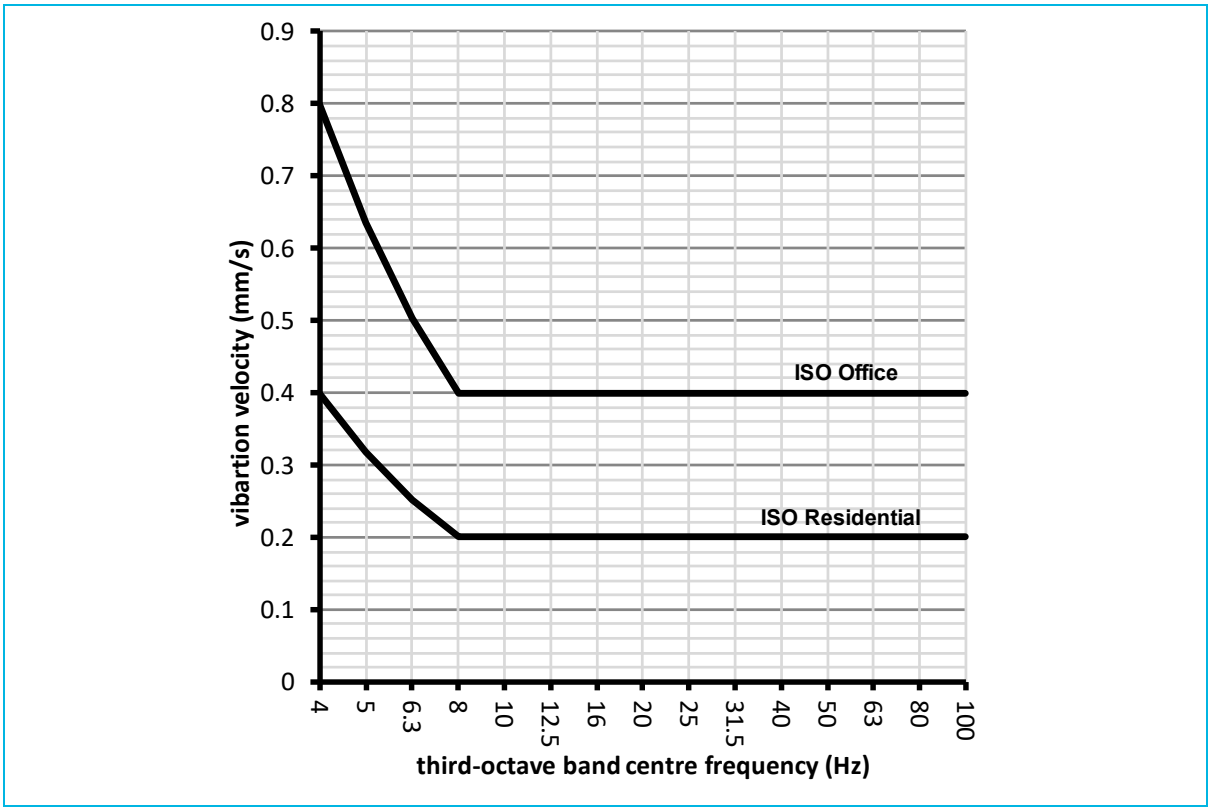
	Airborne Sound Insulation R_w dB (Minimum values)
Walls	40
Floors	40

3.3.3 Residential to non-residential areas criteria

The sound insulation performance requirements for separating walls/floors between residential areas and non-residential uses (gym uses, commercial/ancillary areas, including plant rooms), depends on the level of expected noise activity within the commercial/ancillary space and should be assessed separately. Nevertheless, the following guidelines are proposed as means of controlling the risk of disturbance from these adjacencies:

- Separating floors between non-residential and residential areas must achieve a minimum on-site airborne sound insulation of 50 dB $D_{nTw}+C_{tr,}$ at shell and core, to prevent residents being overly disturbed from noise arising within the commercial areas below;
- It is recommended that a noise limit of NR15 (L_{eq}) within bedrooms and NR20 (L_{eq}) within living room from the operation of the commercial units and ancillary spaces (and associated plant) is incorporated into tenancy agreements to ensure that sufficient sound insulation and noise control measures are carried out by the prospective tenants;
- Separating walls between adjacent commercial units to achieve minimum airborne sound insulation of R_w 50 dB
- To control noise and vibration transfer between the residents gym and the flats above (Block A), noise from the operation of the gym should not exceed NR20 (L_{eq}) assuming daytime operation of the gym only (07:00-23:00);
- Vibration amplitudes in the adjacent areas of the building resulting from activities in the gymnasium shall be below those given in and below. The values given are the maximum instantaneous allowable vibration velocities measured in third octave bands using exponential averaging with a time constant of 125 ms. These values are derived from ISO 263.1 part 1

Figure 2 Maximum instantaneous vibration velocity levels for building type areas



3.3.4 Reverberation in common areas

Requirement E2 of the Technical Document E states that the common internal parts of the building which provides direct access to a dwelling shall be designed and constructed so as to limit reverberation in the common part to a reasonable level.

Two methods are given in ADE to satisfy Requirement E3; Method A and Method B.

Method A: Cover a specified area with an absorber of an appropriate class that has been rated according to BS EN ISO 11654:1997 Acoustics - Sound absorbers for use in buildings - Rating of sound absorption.

Method B: Determine the minimum amount of absorptive material using a calculation procedure in octave bands. Method B is intended only for corridors, hallways and entrance halls as it is not well suited to stairwells.

3.4 Ground-borne vibration

BS 6472-1:2008 'Guide to Evaluation of Human Exposure to Vibration in Buildings Part 1: Vibration Sources other than Blasting' presents recommended frequency weighted vibration spectra (for continuous vibration) and vibration dose values (VDV) (for intermittent vibration) above which adverse comment is likely to occur in residential properties.

The VDV criteria for assessing human response to vibration in residential buildings are presented in Table 6 below.

Table 6 Criteria for assessing human response to vibration in residential buildings (BS6472-1:2008)

Period	Low Probability of Adverse Comment (VDV) $m/s^{1.75}$	Adverse Comment Possible (VDV) $m/s^{1.75}$	Adverse Comment Probable (VDV) $m/s^{1.75}$
Daytime (07:00-23:00)	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Night time (23:00-07:00)	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

4. External Ambient Noise Levels

4.1 Baseline Noise Survey

4.1.1 Noise survey methodology

The noise climate in the vicinity of the proposed development was established by undertaking short-term (ST) monitoring on Swords Road during the day of the 11th November 2020

Noise measurements were carried out in accordance with BS 7445/1:2003 'Description and Measurement of Environmental Noise'.

A description of the monitoring location is outlined below:

- Along Swords Road to the west of the site. The microphone was positioned 1.5 meters above ground level and 1.2m from the site hoarding (non-free field measurements). The dominant noise source at this location was traffic on Swords Road.

4.1.2 Noise survey equipment

The equipment used during the noise survey is presented in Table 7. The sound level meter is calibrated every two years by a UKAS Accredited Calibration Laboratory to IEC 61672-3 :2006. The sound level meter was checked with field calibrators immediately before and after the survey with no changes noted in the calibration level following the monitoring period. UKAS calibration certificates are available upon request.

Table 7 Instrumentation

Equipment	Manufacturer / Model	Serial Number
Class 1 Sound Level Meter	01dB / DUO	12029
Class 1 Field Calibrator	Rion NC-74	35173436

4.1.3 Weather conditions

Weather conditions throughout the monitoring period were noted and suitable for noise monitoring. i.e. wind speeds less than 5m/s and no rainfall. Temperatures during the measurements were recorded approximately 7°C.

4.2 Baseline Noise Survey Results

Short term noise monitoring results on Swords Road are presented in Table 8. Noise levels were affected by traffic noise sources such as cars, trucks, buses and motorcycles.

Table 8. Short term noise monitoring results (non-free field)

Location	Date and Time	$L_{Aeq,T}$ (dB)	$L_{A90,T}$ (dB)	$L_{Amax,T}$ (dB)
Swords Road	19/11/2020 11:30	75	63	86
	19/11/2020 11:45	75	60	85
	19/11/2020 12:00	73	61	85
	19/11/2020 12:15	73	64	83
	19/11/2020 12:30	79	63	100
	19/11/2020 12:45	74	63	85
	19/11/2020 13:00	74	62	85
	19/11/2020 13:15	74	61	86
	19/11/2020 13:30	72	63	86
	19/11/2020 13:45	73	64	82
	19/11/2020 14:00	71	63	86
	19/11/2020 14:15	77	63	102
	19/11/2020 14:30	72	64	86

5. External Building Envelope Specifications

5.1 Summary Noise Levels

For the purposes of the façade design, noise levels as a result of external noise sources are summarised below in Table 9.

Table 9. Summary predicted noise levels around the development (free-field data)

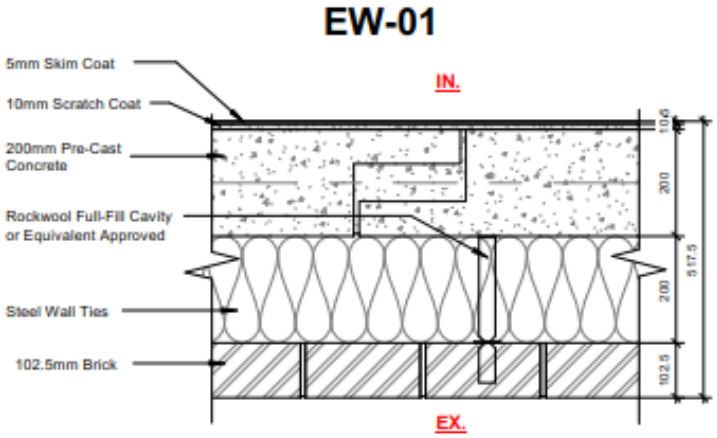
Facade	Period	Noise Parameter	External Noise Level (dB)
Swords Road residential facades / Residential facades close to Swords Road with direct line of sight to the traffic	Daytime	$L_{Aeq,16hr}$	72
	Night time	$L_{Aeq,8hr}$	69
		L_{AFMax}	81
Remaining residential facades and commercial areas	Daytime	$L_{Aeq,16hr}$	62
	Night time	$L_{Aeq,8hr}$	59
		L_{AFMax}	71

5.2 External Façade Design

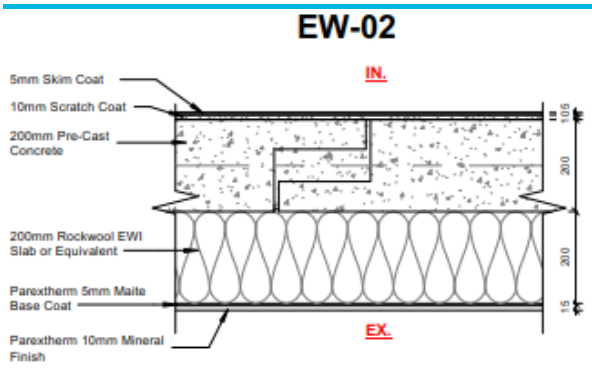
The external wall constructions proposed for the development is presented in Figure 3.

The estimated sound insulation performance of the proposed external wall constructions is presented in Table 10. These sound reduction values, together with appropriate external noise levels per façade, have been used to determine the minimum sound insulation performance of the glazing systems which are presented in Table 11.

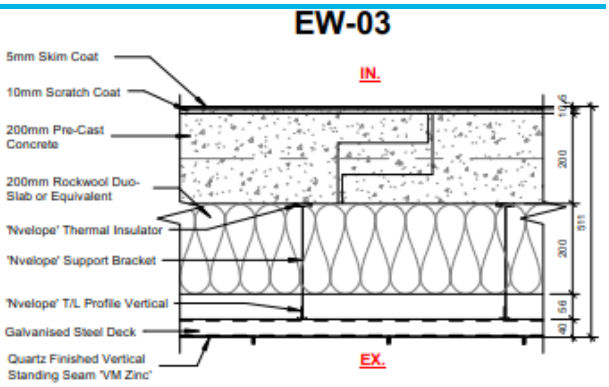
Figure 3 External wall types



External Brick Wall Type



Render Wall Type Drawing



Zinc Cladding Wall Type

Table 10. Predicted minimum sound reduction values of the proposed external wall constructions

Building Element	Minimum *R* at octave band centre frequencies (Hz)							R_w (-*C*;-C_{tr}) (dB)
	63	125	250	500	1000	2000	4000	
External wall	35	45	52	55	55	55	55	56 (-2;-6)

Table 11. External glazed systems minimum acoustic performance requirements

Building element		Minimum *R* at octave band centre frequencies (Hz)							R_w /D_{new} (-*C*;-C_{tr}) (dB)
		63*	125	250	500	1000	2000	4000	
Glazed systems (glazing + frame etc)	Type 1	26	29	36	40	40	44	60	41 (-1;-5)
	Type 2	20	23	27	34	40	41	43	36 (-1;-5)

* Estimated value

Mark-up drawings indicating the locations of the proposed glazed system types around the development can be found in Appendix C.

The performance data set out in Table 11 (overall R_w and frequency performance data) would provide sufficient noise reduction to meet the internal ambient noise criteria specified in section 3.1 of this report.

For guidance, Table 12 provides example glazing and ventilation systems that would typically meet the acoustic performances set out in Table 11.

Table 12. Typical glazed/ventilation systems

Building Element		Typical Construction / Product
Glazed systems	Type 1	64.1 (10.38) PVB laminated glass / 16mm air cavity / 44.1 (8.38mm) PVB laminated glass
	Type 2	4mm float glass / 16mm air cavity / 33.1 (6.38mm) PVB laminated glass

NOTES ON TABLE 12:

- The sound insulation requirements for the glazing systems within residential areas are based on the use of an Exhaust Air Heat Pump (EAHP) ducted system throughout the development with no open trickle vents on or above proposed glazed systems. Should the façade/ventilation proposals change and the use of trickle vents is proposed, then trickle vents should also meet the minimum sound insulation performance requirements of the glazed system in Table 11.
- Glazed system performance is dependent on elements of the glazing unit including the frames, seals, wall interface, etc. Weak non-glass elements will require the use of higher performance glass units to maintain the required sound insulation. Test reports of a typical framed element performance (side hung doors, windows and sliding doors as appropriate) must be submitted from independent test authorities.

literature.

6. Building Services Noise and Vibration

6.1 Internal Building Services Noise

Internal building services noise, e.g. noise from extract systems proposed for the development, should be controlled to meet the CIBSE Guide A noise ratings in Table 3 .

We understand that the proposed MEP design does not allow for any in-duct silencers to control noise from the ventilation system due to the low noise output. Nevertheless, we recommend that an assessment of the design of selected apartments should be carried out during next stage to confirm compliance with the relevant criteria.

6.2 External Building Services Noise

To control noise from building services plant affecting sensitive receptors the Environmental Health Office (EHO) has requested that cumulative noise emissions from building services units associated with the proposed development are limited to no greater than 5dB above the measured background noise level (L_{A90}) outside nearest noise sensitive receptors. The noise rating limits apply to the cumulative noise level, rated in accordance with BS4142 outside nearest residential windows from the operation of all plant associated with the Hartfields Place.

In the absence of detailed day and night time background noise information around the site, it is proposed that a survey is carried out during next design stage to determine typical background noise levels around the site during a period of at least 5 days (to include a weekend).

Once the design is finalised, an assessment of the noise impact of all plant (cumulative noise levels) on nearest sensitive windows should be carried out.

6.3 Building Services Vibration

All plant items, whether located in plant rooms or occupied spaces, lifts, lift motors and ductwork/pipework systems must be sufficiently isolated from the building structure in order to ensure that vibration does not exceed the BS6472-1:2008 limits; see section 3.4.

Suitable anti-vibration measures must be based on manufacturer’s recommendation and best practice guidance from CIBSE and ASHRAE for vibration isolation near to occupied spaces.

Recommended measures include an appropriate selection of vibration isolation system taking into account the duty and mass of the machinery and the natural resonant frequency of the supporting structure. Connecting pipework and ducts should include appropriate flexible connections and supports.

Installations should be carried out in accordance with the manufacturer’s instructions and recommendations as well as following best practice guidance from CIBSE and ASHRAE.

Adopting appropriate anti-vibration measures should be capable of minimise structure-borne noise transfer to levels to below the BS6472-1:2008 limits.

7. Summary and Conclusions

This acoustics design statement has demonstrated that desired indoor ambient noise levels for future occupant of the proposed development can be achieved through appropriate acoustic design of external building fabric. The outline sound insulation requirements of the external building elements have been provided in the statement. These are based on the results of the noise survey.

Recommendations for building services noise and vibration are provided in order to achieve suitable internal noise and vibrations levels. Noise emission limits has been provided based on DCC EHO requirement in order to avoid impact on adjoining properties.

Appendix A Acoustic Glossary

Term	Definition
Decibel (dB)	The range of audible sound pressures is approximately 2 x 10^{-5} Pa to 200 Pa. Using decibel notation presents this range in a more manageable form, 0dB to 140dB. Mathematically Sound Pressure level = 20 log {p(t)/p_0} Where P_0 = 2 x 10^{-5} Pa.
A" Weighting (dB(A))	The human ear does not respond uniformly to different frequencies. "A" weighting is commonly used to simulate the frequency response of the ear. It is used in the assessment of risk of damage of hearing due to noise.
Frequency (Hz)	The number of cycles per second, for sound this is subjectively perceived as pitch.
Frequency Spectrum	Analysis of the relative contributions of different frequencies that make up a noise.
Ambient Sound	Totally encompassing sound in a given situation at a given time usually composed of sound from many sources near and far (*The ambient sound comprises the residual sound and the specific sound when present)*.
Ambient Sound Level $L_a = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
Background Sound Level $L_{A90,T}$	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.
Equivalent Continuous A-weighted Sound Pressure Level $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, T = $t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time, and is given by the following equation: $$L_{Aeq,T} = 10lg_{10}\left\{\left(\frac{1}{T}\right)\int_{t1}^{t2}\left[p_A\frac{(t)^2}{{p_0}^2}\right]dt\right\}$$ Where p_0 is the reference sound pressure (20μPA); and $P_A(t)$ is the instantaneous A-weighted sound pressure level at time t
Measurement Time Interval T_m	Total time over which measurements are taken (*This may consist of the sum of a number of non-contiguous, short-term measurement time intervals)*
Rating level $L_{Ar,Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound
Reference Time Interval, T_r	Specified interval over which the specific sound level is determined (*This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h*)
Residual Sound	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound
Residual sound level $L_r = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the residual sound in a given situation at the assessment location over a given time interval, T.
Specific sound level $L_s = L_{Aeq,Tr}$	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given time interval, T.
Specific Sound Source	Sound source being assessed
$L_{A10,T}$	The A-weighted sound pressure level of the residual noise in decibels exceeded for 10% for a given time interval. This is the parameter defined by the government to describe road traffic noise
L_{AFmax}	The maximum RMS A-weighted sound pressure level occurring within a specified time period. Fast time weighting indicates sound pressure level measurements undertaken using a 125-millisecond moving average time weighting period
Weighted sound reduction index R_w	A single-figure value of sound reduction index, derived according to procedures given in BS5821, used for rating and comparing partitions and based on the values of sound reduction index at different frequencies.

Appendix B Planning Policy Context / Noise Guidance

B.1 BS 8233: 2014 Guidance on Sound Insulation and Noise Reduction for Buildings

The standard provides criteria for the assessment of internal and external noise levels for various uses including dwellings and commercial properties. Criteria for provision of suitable living conditions inside dwellings, in terms of day and night time $L_{Aeq,T,}$ are provided in Table 4 of the BS 8233:2014[3]. BS 8233 also provides criteria and guidance on the design of non-domestic buildings and recommends typical internal ambient noise levels that should be achieved.

B.2 Professional Practice Guidance: Planning and Noise, 2017

(ProPG)[4] has been produced by the Institute of Acoustics (IoA), the Association of Noise Consultants (ANC) and the Chartered Institute of Environmental Health (CIEH) to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England. ProPG provides planning guidance for the consideration of new residential development that will be exposed predominantly to airborne noise from transport sources.

Recommended ProPG indoor ambient noise levels are identical to those within BS8233:2014. In addition, with regards to sleep quality and well-being, and the affects regular individual noise events, ProPG indicates that on-set of sleep disturbance effects is observable when the internal levels exceed 45 dB L_{AFMax} more than 10 times (from all sources) per night.

ProPG allows some flexibility with reference to the BS 8233:2014 internal $L_{Aeq,T}$ noise criteria and individual noise events for areas where development is considered necessary or desirable.

B.3 CIBSE Guide A Environmental Design (2015)

Environmental Design of CIBSE Guide A is the principal reference source for designers of low energy sustainable buildings. It is perceived as a guide to current good practice. With regards to noise, Table 1.5 of CIBSE Guide A provides internal building services noise design criteria for different room types to achieve a comfortable and healthy environment.

Criteria provided are in terms of NR (Noise Rating) and apply to typical background ventilation settings; during boost duty, noise criteria may be relaxed.

B.4 Building Regulations 2014 Part E - Technical Guidance Document

The Technical Guidance Document E of the Building Regulations 2014 (Ireland) aims to ensure that dwellings achieve reasonable levels of sound insulation sound transmission emanating from adjoining buildings or differently occupied parts of the same building. The Requirements of the Regulations are:

- E1 Protection against sound from another dwelling or dwellings, other parts of the building and adjoining buildings.
- E2 The common internal part of a building that provides direct access to a dwelling should be designed and constructed so as to limit reverberation in the common part to a reasonable level

[3] British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings, BSI, 2014
[4] Association of Noise Consultants/ Institute of Acoustic/ Chartered Institute of Environmental Health (2017); Professional Planning Guidance: Planning and Noise.

B.5 Building Regulations Part E - Approved Document E Performance Standards (ADE)

Approved Document Part E (ADE) of The Building Regulations 2010 for England and Wales defines a range of acoustic conditions within dwellings and rooms for residential purpose, such as hotels and student halls of residence. The Requirements of Part E of the Regulations are:

- E1 Protection against sound from other parts of the building and adjoining buildings.
- E2 Protection against sound within a dwelling house, flat or room for residential purpose etc.
- E3 That reverberation in the common internal parts of buildings containing flats or rooms for residential purpose should be controlled.

Any development of these types must comply with the minimum performance standards set out in ADE.

Please note, where houses, flats or rooms for residential purpose adjoin non-domestic spaces, such as commercial, food & drink or industrial buildings, Section 0.8 of ADE advises that an increased level of sound insulation may be required for the building elements between spaces, including flanking construction.

B.6 BS 6472-1:2008 Guide to Evaluation of Human Exposure to Vibration in Buildings Part 1: Vibration Sources other than Blasting

BS 6472-1:2008 ‘Guide to Evaluation of Human Exposure to Vibration in Buildings Part 1: Vibration Sources other than Blasting’ presents recommended frequency weighted vibration spectra (for continuous vibration) and vibration dose values (VDV) (for intermittent vibration) above which adverse comment is likely to occur in residential properties.

Appendix C Façade Acoustic Mark-up

aecom.com