

Granita Court

Noise Management Plan
(Including Noise
Assessment)

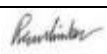
October 2023



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DISCLAIMER

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The information contained within this Report is based on Drawings and Specifications provided by the Design Team along with information assumed by NRG Consulting for the purposes of compliance.

Any budget costs or plant sizing contained within are based upon the best available information, are to be taken as an estimation and guideline only.

NRG Consulting disclaims any responsibility to the Client and others in respect of any matters outside the intended scope of this report.

EXECUTIVE SUMMARY

This report provides results of a Noise Assessment carried out for the proposed development at Granita Court, London. This is in the context of the Noise Management Plan requirement for Planning Condition 6 of the approved Decision Notice (ref: HGY/2022/2457)

The likely noise emission from the proposed outside nursery area has been assessed. The assessment shows that with the proposed mitigation shown in this report, the noise due to use of the outside nursery area is not likely to exceed the guidelines of BS 8233: 2014.

The likely noise transmission from the proposed inside nursery area has been assessed. The assessment shows that with the proposed mitigation shown in this report, the noise due to use of the inside nursery area is not likely to cause noise transfer in excess of the guidelines of BS 8233: 2014.

Compliance with the guidelines of BS 8233: 2014 combined with the Noise Management section of this report, should be sufficient to demonstrate development proposals comply with Planning Condition 6 (and, the requirements of Haringey Local Plan Policy ENV6)

Therefore, based on this, this document in the opinion of the author should allow for the discharge of the Planning Condition.

INTRODUCTION

This report has been prepared to provide a Noise Management Plan for the proposed development at Granita Court, Hornsey.

The description of development is for the:

Change of use of Commercial Unit 1, Ground Floor Block A, from Business/Offices (Use Class B1) to a children's nursery (Use Class E(f)).

At

Land to the East of, Cross Lane, London, N8.

This report is to discharge Planning Condition 6 which states:

A Noise Management Plan (NMP), setting out how noise levels from inside the premises and from the outdoor amenity area will be minimised / managed shall be submitted to and approved in writing by the Local Planning Authority prior to the first occupation of the development.

The NMP shall identify measures to reduce the impact of the noise on the amenity of neighbouring and surrounding residents. Noise management measures will need to include (but not limited to) how the outdoor areas will be used, management and supervision of the site, rules of use, the use of soft furnishings and sound absorbent materials such as the soffit underneath the existing slab, as well as the hours of operation of the outdoor space. The NMP shall be submitted to and approved prior to the commencement of the use to which this consent relates. The NMP shall be fully implemented and operated at all times in accordance with the approved details.

Reason: In order to safeguard the amenity of surrounding residents.

The nursery will have inside and outside learning and play areas as well as ancillary spaces.

A noise survey has been carried out to determine the likely ambient background noise levels at the neighbouring residential amenity and activity noise levels at an existing nursery operated by Creative Explorers. An assessment of the likely noise emission due to the proposed outside and inside nursery use has been carried out in order to determine if mitigation is necessary.

The survey and assessment have been carried out with reference to guidance in BS 8233: 2014ⁱ.

ASSESSMENT CRITERIA

Haringey Local Plan

Haringey Local Plan Strategic Policies 2013 – 2026 ⁱⁱ contains reference to policy ENV6 that relates to noise. The relevant wording of ENV6 is reproduced below.

ENV6: NOISE POLLUTION

The Council will ensure that new noise sensitive development is located away from existing, or planned sources of noise pollution. Potentially noisy developments should only be located in areas where ambient noise levels are already high and where measures are proposed to mitigate its impact.

- 3.20 Noise pollution has a major effect on amenity and health and therefore the quality of life in general. Its effect can be minimised by separating new noise sensitive development from major noise sources, by separating new noisy development from existing noise sensitive development and by taking measures to reduce any impact. The Council will support new technologies and encourage sensitive design and construction, for example by positioning buildings and landscaping as noise barriers. Noise sensitive development includes housing, schools and hospitals.
- 3.21 In assessing planning applications the Council will have regard to PPG24 'Planning and Noise' (Annex 1), and the Mayor of London's Ambient Noise Strategy and the prevention of a gradual upward creep in background noise levels. Potentially noisy developments should only be located in areas where ambient noise levels are already high. In cases where separation is not possible, the impact of noisy development on ambient noise levels should be assessed, for example by an Environmental Assessment, the application of Best Available Techniques and relevant technology and design guidance. Where new noise-sensitive development is proposed in areas already exposed to high ambient noise levels, the Council may require the submission of an acoustic report to comply with PPG 24. Mitigation measures will be secured by planning conditions or planning obligations where appropriate. The issue of measures to control noise from restaurants, cafes, drinking establishments and hot food takeaways is addressed in Policy TCR5.

Numerical values for external and internal noise levels to provide an acceptable standard are not given in ENV6. The policy states that noisy developments should only be located in areas where ambient noise levels are already high and where mitigation measures are proposed.

BS 4142: 2014 +A1: 2019 Rating for Industrial Noise in Residential and Mixed Use Areas

The document BS 4142: 2014 +A1: 2019 'Methods for rating and assessing industrial and commercial sound'ⁱⁱⁱ describes methods for rating and assessing sound of an industrial or commercial nature. It enables the effects on people nearby to be assessed and the associated risks to be minimised. It is designed to give consistent results across situations ranging from a single air-conditioning unit to a large installation such as an oil refinery. The June 2019 amendment provides inclusion for assessment of manufacturing process, mobile plant and goods loading. The scope of the British Standard lists typical noise sources for which the rating and assessing method is applicable. These are:

- a) sound from industrial and manufacturing processes;
- b) sound from fixed installations which comprise mechanical and electrical plant and equipment;
- c) sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- d) sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from fork-lift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

The British Standard lists typical noise sources rating and assessment method is not applicable:

- a) recreational activities, including all forms of motorsport;
- b) music and other entertainment;
- c) shooting grounds;
- d) construction and demolition;
- e) domestic animals;
- f) people;
- g) public address systems for speech; and
- h) other sources falling within the scopes of other standards or guidance.

The development is for the use of an existing commercial use ground floor and outdoor area to be used as a nursery. This assessment does not consider any new building service plant. The development is considered to be outside of the scope of assessment of BS 4142: 2014 +A1: 2019, as the noise sources are likely to be people talking.

BS 8233: 2014 Sound Insulation and Noise Reduction for Buildings – Code of Practice

The scope of BS 8233: 2014 includes the provision of recommendations for the control of noise in and around new and refurbished buildings. It suggests appropriate design guide noise limits for different situations, which are primarily intended to guide the design of intrusive noise levels in the building under development. The scope states that the guidance is not intended for changes in external noise levels to occupants of existing buildings.

The guideline values in Table 4 'Indoor ambient noise levels for dwellings' are stated to be relevant to noise without specific character. Noise has a specific character if it contains features such as a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content. Where noise has specific character, lower noise limits might be appropriate.

The guideline values for internal ambient noise without specific character is reproduced in Table 1 below.

Table 1: BS8233: 2014 'Indoor ambient noise levels for dwellings'

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

The standard does not provide guidance for noise limits where the noise has a specific character.

BS8233: 2014 provide some guidance for noise levels in external amenity areas. It is stated that for traditional external amenity areas it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. The values are the same as presented in the World Health Organization (WHO) 'Guidelines for Community Noise'^{iv}, which states that:

Annoyance to community noise varies with the type of activity producing the noise. Speech communication, relaxation, listening to radio and TV are all examples of noise-producing activities. During the daytime, few people are seriously annoyed by activities with L_{Aeq} levels below 55 dB; or moderately annoyed with L_{Aeq} levels below 50 dB. Sound pressure levels during the evening and night should be 5–10 dB lower than during the day

It is considered that the guideline values of 50 dB and 55 dB L_{Aeq} apply to noise with acoustic character, as speech, radio and TV are listed as typical community noise sources.

For commercial use spaces, BS 8233: 2014 provides guideline internal noise levels in Tables 2 and 6, which are reproduced below

Table 2: BS8233: 2014 'Indoor ambient noise levels when privacy is important'

Objective	Typical situations	Design range $L_{Aeq,T}$ dB
Typical noise levels for acoustic privacy in shared spaces	Restaurant	40 – 55
	Open plan office	45 – 50
	Night club, public house	40 – 45
	Ballroom, banqueting hall	35 – 40
	Living room	35 – 40

NOTE See Noise control in building services [28] and BS EN ISO 3382.

The values in Table 2 suggest that for open plan offices, a design range of 45 to 50 dB (A) is suitable.

Table 3: BS8233: 2014 'Typical noise levels in non-domestic buildings

Activity	Location	Design range dB $L_{Aeq, T}$
Speech or telephone communications	Department store	50 – 55
	Cafeteria, canteen, kitchen	
	Concourse	45 – 55
Study and work requiring concentration	Corridor, circulation space	
	Library, gallery, museum	40 – 50
	Staff/meeting room, training room	35 – 45
Listening	Executive office	35 – 40
	Place of worship, counselling, meditation, relaxation	30 – 35

The values in Table 3 suggest that for executive offices, a design range of 35 to 40 dB (A) is suitable.

SITE DETAILS

At the time of survey, the site was a vacant commercial unit with paved outside area. To the west the site is bound by a commercial property at ground floor level. Internally the site is adjacent to ancillary space on the ground floor and adjacent to commercial space on the first floor and residential space on the first floor. The external area of the site is adjacent to neighbouring residential apartments to the north east, east and to the south. To the west of the external area, there are residential balconies and windows above the site boundary.

The area is of mixed use with the ground floor of Granita Court currently vacant commercial use space. Cooper Court to the west has a large occupied commercial unit on the ground floor and 7 Cross Lane to the south of the site has commercial use throughout.

The red outline shows the approximate site boundary extent, on Figure 1 below, reproduced from Google Earth^v, for the purpose of this assessment only. The ground floor layout overlay is reproduced from drawing 'Block A – Proposed Ground Floor Plan'^{vi} authored by John Farquharson Partnership LLP.



Figure 1: Site boundary with existing site layout

NOISE LEVEL MEASUREMENTS

Noise level measurements of the acoustic conditions at the site and an operational nursery have been made by part attended survey on Friday 13th October 2023. The purpose of the survey was to provide sufficient acoustic information to establish the prevailing environmental noise levels across the site and the ambient background noise levels at the surrounding uses to the site. Noise levels were also measured at a nursery operated by Creative Explorers in order to determine typical noise levels in the indoor and outdoor spaces.

Environmental noise levels were measured at 1.4 metres above ground within the development site. Source noise level measurements were made at 2.0 meters above ground within the play area of 'rear of 101 Tottenham Lane'. Internal measurements were made on the staff desk within 2 occupied nursery rooms. The microphone location was chosen to minimise impact on child behaviour. The values are likely to include reflected sound from the desk, without any screening from direct and reverberant sound.

All noise level measurements were undertaken by a consultant certified as competent in environmental noise monitoring and in accordance with the principles of BS 7445: 2003^{vii}. The noise measurement instrumentation used conforms to the accuracy requirements of Type 1 as defined by BS EN 61672-1: 2013^{viii} and an inventory of all equipment used is given in Table 2 below.

Table 2: Inventory of measurement equipment

System	Position	Item	Make & Model	Serial Number	Last Laboratory Calibration
2	1	Sound Level Meter	NTi XL2	A2A-08541-E0	08/11/2021
2	1	Microphone & Preamplifier	BSWA OM261	154220	08/11/2021
3	1	Sound Level Meter	NTi XL2	09754	08/02/2023
3	1	Preamplifier	NTi MA220	3424	08/02/2023

3	1	Microphone	NTi MC230	9042	08/02/2023
4	3	Sound Level Meter	Svantek SV307	104975	10/07/2023
All	All	Acoustic Calibrator	Larson Davis Cal 200	9535	08/02/2023

The logging sound level meters were set to automatically average 5-minute periods measuring parameters L_{Aeq} dB, L_{Amax} dB, L_{A10} dB and L_{A90} dB. Data was also logged in 10-second periods for post processing. The Calibrator CAL-200 producing nominal 114 dB at 1000 Hz was used to check the sensitivity of the measurement systems at the start and end of the survey. There was no observed drift in sensitivity.

Meteorological conditions were changeable throughout the survey period, with some periods of wind up to 4 m/s and the temperature varied between 18 Celsius and 20 Celsius. There was a brief period of rain at the start of the survey between 9 am and 10am, with no further precipitation. Weather conditions are considered to be conducive to ambient noise level measurements in accordance with BS 7445 at both locations. Measurements were made with the hand-held Skywatch Xplorer and data from a nearby publicly accessible weather station is shown in Appendix A.

At Location 1 noise from the adjacent building site at 7 Cross Lane was dominant during the hours of 7am to 4pm. Construction noise is considered to be atypical and therefore this period has been excluded. During the remainder of the survey from 4pm to 5:30pm, noise from the wider road network and neighbouring activity in the courtyard made the most significant contributions to the noise climate. The microphone was positioned at 1.4 metres above ground, and at 2.5 metres from the wall of Granita Court. The location is likely to have a similar exposure to ambient noise as the nearest neighbouring residential windows and balconies.

At Location 2, noise from children playing made the most significant contribution to the noise climate during a period when play was directly beneath the microphone. As the children's play moved to different parts of the outdoor area, the wider road network and wind in the trees were of equivalent contribution to the noise climate. Location 2 was 2 metres above ground level in the outside nursery area of the Creative Explorers nursery at 'rear of 101 Tottenham Lane'.

At location 3 the microphone was positioned on the staff desk in a nursery room at 'rear of 101 Tottenham Lane'. Children's voices were the most significant contribution to noise levels. The measurements were in the reverberant field and had some contributions of reflected sound from the desk. The use of the nursery room at the time was equivalent to the proposed 'Cosy Room' and 'Home Corner'.

At location 4 the microphone was positioned on the staff desk in a nursery room at 'rear of 101 Tottenham Lane'. Children's voices were the most significant contribution to noise levels. The measurements were in the reverberant field and had some contributions of reflected sound from the desk. The use of the nursery room at the time was equivalent to the proposed 'Cosy Room' and 'Home Corner'.

A Google Earth image indicating the environmental noise measurement locations is given below in Figure 2 and photographs are shown in Appendix B.



Figure 2: Environmental Noise Measurement Locations

A summary of the noise survey results is given in Table 3 below.

Table 3: Summary of noise level measurements

Location	Comment	Survey Duration hours	$L_{Aeq, T}$ dB	L_{AFmax} dB	$L_{A90, T}$ dB
1: Granita Court courtyard	Construction excluded	01:30:00	51.0	75.7	44.3
1: Granita Court courtyard	Lowest values	01:30:00	45.6	59.0	41.1
1: Granita Court courtyard	Highest values	01:30:00	54.7	75.7	47.7
2: Creative Explorers – Outside	Average during play	03:32:50	64.9	75.5	52.0
2: Creative Explorers – Outside	Average at 2 metres	01:02:00	69.5	85.0	58.0
2: Creative Explorers – Outside	Average over day	06:59:00	62.3	71.2	50.0
3: Creative Explorers – Inside room 1	Reverberant	00:30:00	71.5	87.0	58.0
4: Creative Explorers – Inside room 2	Reverberant	00:20:00	67.8	91.1	48.5

The values in Table 3 show that the ambient noise levels in the absence of extraneous noise was measured to vary over the range of $L_{Aeq, 5min}$ 45.6 dB to of $L_{Aeq, 5min}$ 54.7 dB with maxima noise levels between L_{AFmax} 59.0 and 75.7 dB.

At the existing Creative Explorers outside nursery area, an average of $L_{Aeq, 7hrs}$ 62.3 dB was measured. The outside nursery area was used during roughly half of the survey period when an average of $L_{Aeq, 3.5hrs}$ 64.9 dB was measured. An average of $L_{Aeq, 1hrs}$ 69.5 dB was measured when a group of children were playing in the area 2 metres of the microphone location. These values demonstrate that the noise from the outside nursery area would vary depending on the play and learning activities.

A graph of the 5-minute noise level measurements made at Location 1 and 2 is shown in Appendix C.

NOISE MANAGEMENT PLAN

This Noise Management Plan as a standalone document, it is also part of a noise assessment report.

The intended use of the indoor space and outdoor space will make a significant difference to the noise generated. Creative Explorers provide nursery education for children from 3 months to 4 years old. Every child is allocated a key person that is always with the child, across all learning, ancillary spaces and play areas. The day is structured to ensure consistent delivery of the child's nursery learning needs. The structure is summarised in a list below.

- Arrivals are between 7:30am and 9:30 am.
- Breakfast is served from 7:30am to 9:00am at the inside dining area.
- From 9:30am learning begins with circle times or preparation for an outing.
- Learning is provided in small groups of 4 to 5 children and each group is managed by 1 key person.
- Preparation to go outside typically takes 10 to 20 minutes, which includes shoe changes, outside clothing, sun lotion and other preparations as necessary for outings both on site and off site.
- Lunch is served from 11:45am to 12:45pm at the inside dining area.
- From 12:45pm to 3:30pm learning is provided in small groups of 4 to 5 children and each group is managed by 1 key person.
- From 1:00pm to 3:00pm many children sleep in the cosy room.
- Afternoon Tea is served from 3:30pm to 4:00pm at the inside dining area.
- Learning and play in the outside area ends at 5:00pm.
- Children are collected between 4:30pm and 6:00pm and are typically collected by 5pm.

The children are given free choice to move between learning areas, within limitations of maintaining the learning group and preparing as necessary for the activities. The key person always attends to the needs of the children in their group. Children are not left unattended to play and their needs are quickly met if a child is upset. When a child is upset the key person will discuss the cause of distress with them, provide mentoring and be brought inside for care and potty use. With this structure of care provision, the children would rarely cry for more than 10 to 30 seconds be it outside or inside.

The provisions made for the children's day-to-day learning structure, limits the likely noise from high activity play in both level and duration. As all groups for learning and play are supervised by the key person, there are no periods of very high energy children screaming. The noise of children crying is not likely to be a typical persistent feature of the activity noise. Each activity session tends to last 15 minutes in a particular area, which means that noise of one activity does not persist in a location for long periods.

Should a complaint of noise be received this will be logged by the nursery management and in adherence to the noise management plan, management will request information regarding the nature of disturbing noise, time of disturbance and duration. This will be cross referenced with the activity record for the day, to assess the effectiveness of the noise management plan. A contact information sheet will be provided to complainants, which outlines the day-to-day learning structure and provision of care.

The timings set out in this Noise Management Plan are used with the measured activity noise levels to predict noise emission from the outside play area and noise transfer from the inside areas. The analysis presented in the noise assessment report demonstrates that adherence to the Noise Management Plan is likely to result in reasonable noise levels in the neighbouring amenity areas.

ASSESSMENT OF OPERATIONAL NOISE EMISISON

The assessment of operational noise from the proposed nursery has been carried out in two parts. The first part is consideration of noise transfer through the ceiling of the ground floor unit to the residential and commercial spaces above. The second part is consideration of the contribution of noise to the ambient noise climate in the external amenity space of the neighbouring residential apartments.

Noise transfer due to use of the internal space

The proposals are to use the inside space to provide multiple learning spaces, as well as spaces to rest and dine. Figure 3 below shows an indicative proposed layout, used for the purpose of assessment and is not intended to restrict the applicant to a set internal layout.

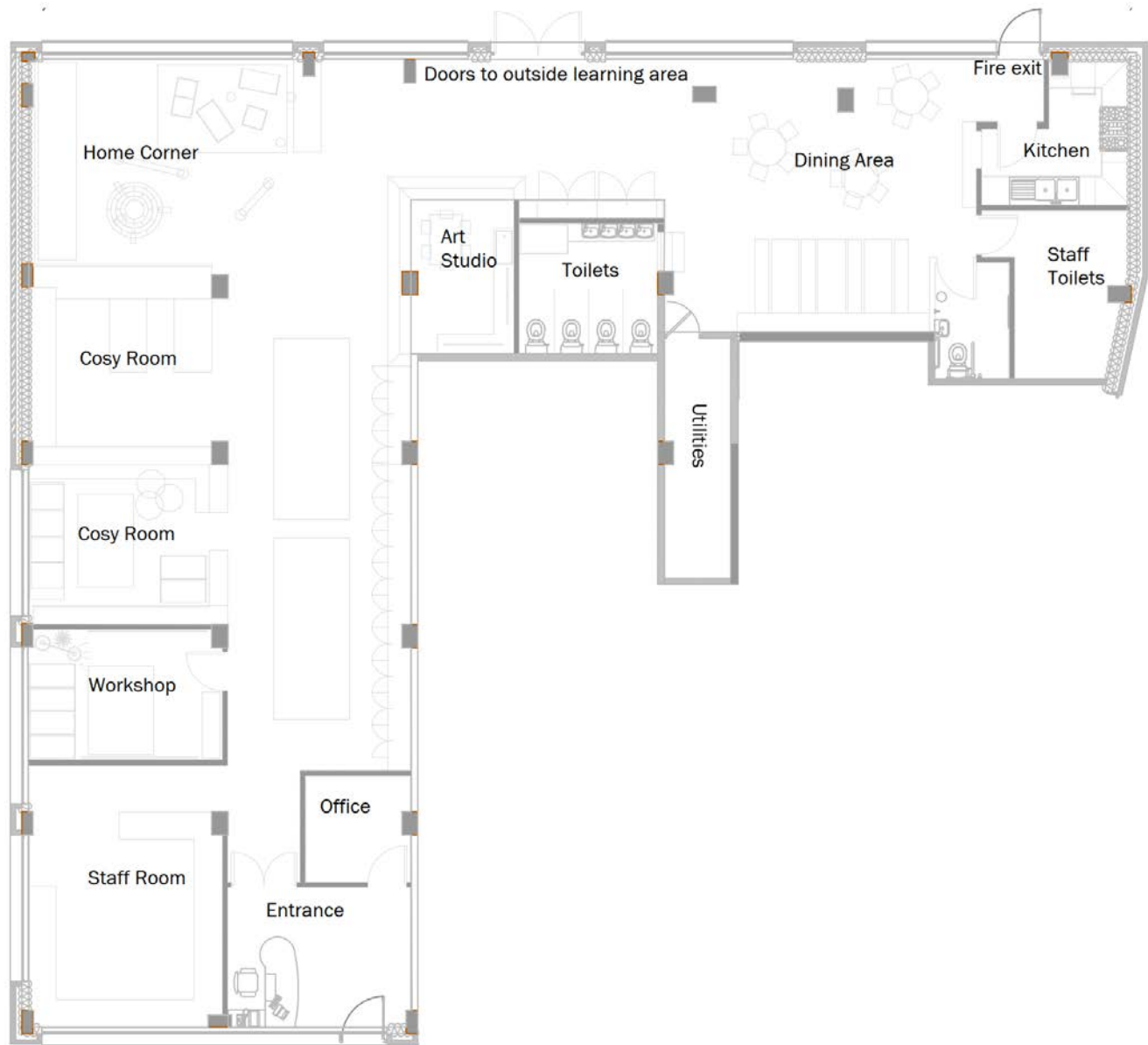


Figure 3: Indicative Proposed Inside layout drawing

Each nursery space would be partitioned, with plasterboard walls to 2 metres high and glazed or similar to ceiling height. The spaces would all be furnished and when in use the spaces would also be fitted out with materials and nursery resources. As such, none of the spaces are likely to be highly reverberant and a T_{mf} of 0.6 seconds is expected, as suggested by BB93^{ix}.

The ground floor space is separated from the first floor residential flats and commercial use space by a 225mm cast in situ reinforced concrete slab. The upper side of the slab is fitted with a 6mm Regupol resilient layer below the floor finishes. These details have been determined from Construction Specification 8700-A0^x. The floor construction is estimated to have a sound reduction of R_w 60 dB using software Insul v9. The form and predicted sound reduction in third octave bands is shown in Figure 4 below.

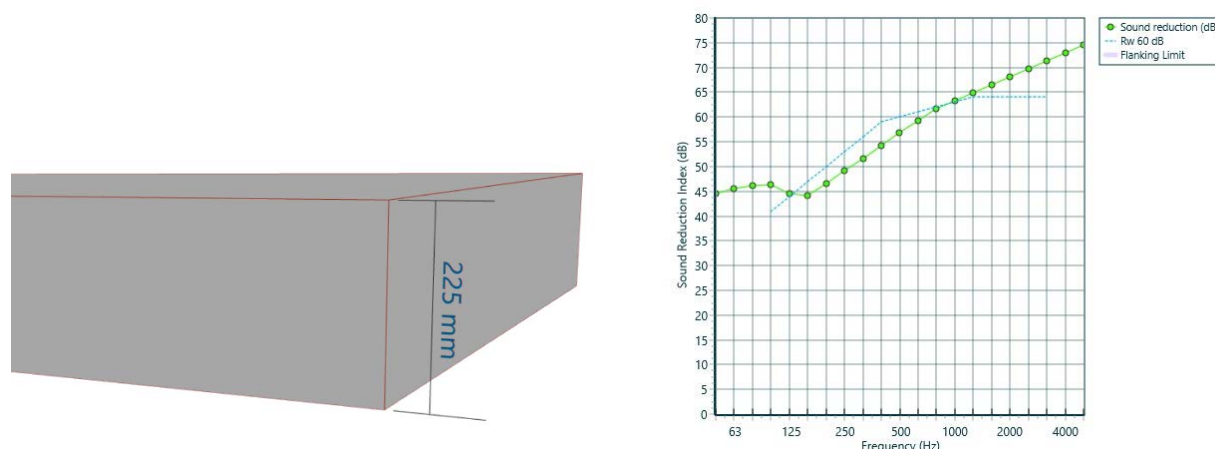


Figure 4: Insul V9 prediction of sound reduction for separating floor construction

To determine if the floor partition offers sufficient sound insulation it is necessary to calculate the likely noise transfer of reverberant noise levels from the ground floor nursery to the different types of space above

Source noise levels for the nursery are assumed to be represented by the measurements made at Locations 3 and 4, within an existing Creative Explorers indoor learning space. The noise levels used for the purpose of assessment are given in Table 4 below.

Table 4: Noise source levels used for assessment for required sound reduction, dB

Source	63 Hz dB	125 Hz dB	250 Hz dB	500 Hz dB	1000 Hz dB	2000 Hz dB	4000 Hz dB	dB (A)
Location 3	55.0	59.9	64.3	67.2	68.4	64.3	58.1	71.5
Location 4	57.4	56.0	62.0	63.0	64.1	60.8	56.2	67.8

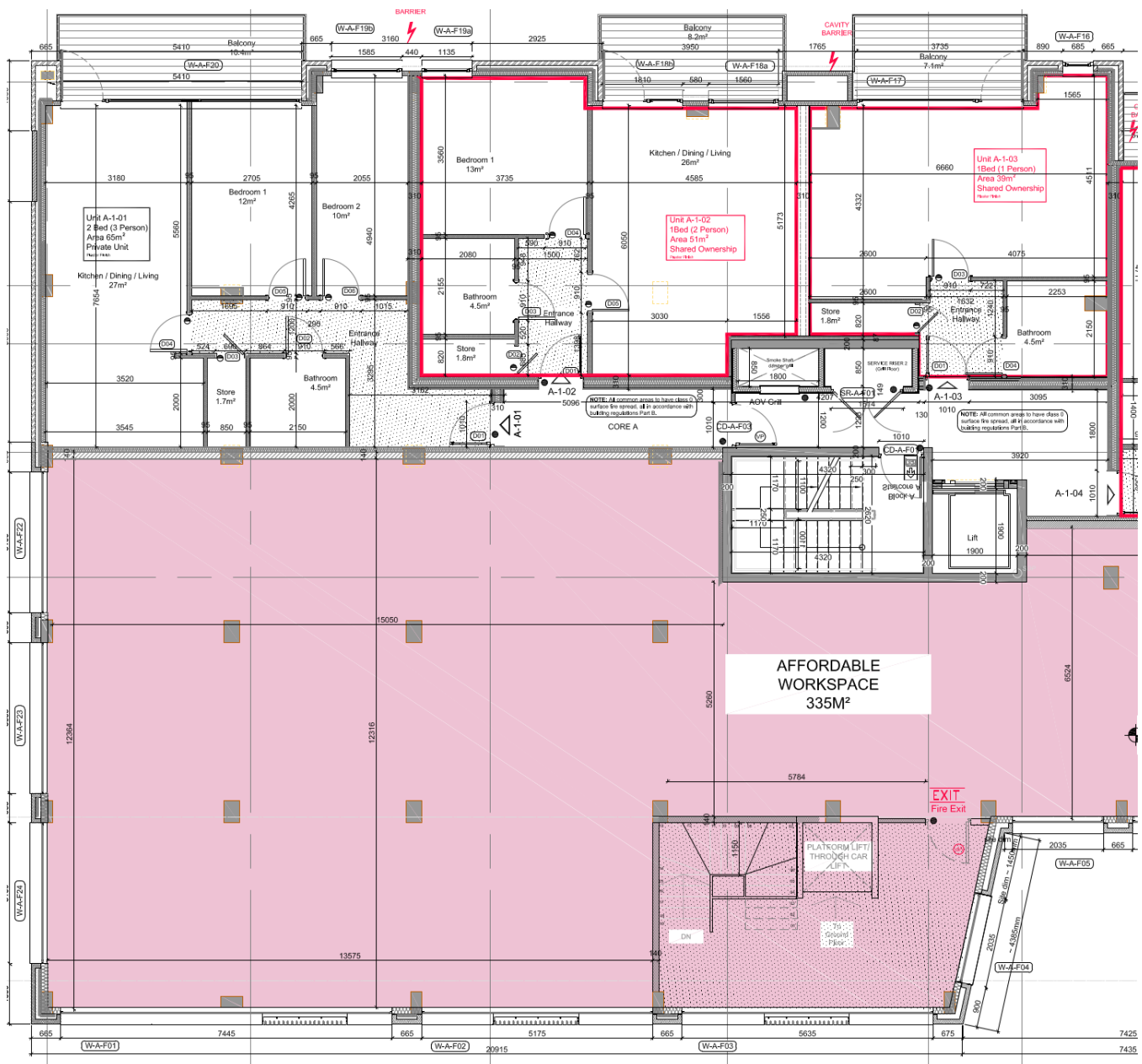
Background noise levels in the residential units are likely to be due to intrusive environmental noise and continuous mechanical ventilation noise. It is assumed that environmental noise would be controlled so that the noise levels in the apartments are lower than the BS 8233: 2014 guidelines and the mechanical ventilation noise does not exceed L_{Aeq} 30 dB, as recommended by Approved Document F^{xi}.

Noise transfer would be limited so that noise transfer from the nursery is less than the likely background noise levels. The background spectrum has been estimated, as shown in Table 5 below

Table 5: Background noise levels used for assessment of noise transfer, dB

Source	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	dB (A)
Mech. Ventilation	13	17	19	19	19	18	18	25
Environmental noise	40	28	28	27	20	13	18	28
Combined noise	40	28	28	28	23	19	21	29

The noise transfer has been calculated for Unit A-1-01 living room and bedroom, using the shared floor areas for each room. The ground to first floor partition is the same construction throughout Block A. A further calculation has been carried out for noise transfer to the 1st floor commercial space. The location of each of these spaces is shown in Figure 5, reproduced from drawing 'Proposed First Floor Plan'^{xii}.

**Figure 5:** First Floor layout plan

The predicted noise transfer levels are shown in Table 6 below, including through the floor partition and flanking pathways.

Table 6: Predicted noise transfer between nursery and first floor spaces, $L_{eq\ 30min}$ dB

Space	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	dB (A)
Unit A-1-01 bed room	24.0	23.2	25.5	22.3	17.0	7.6	-3.7	22.9
Unit A-1-01 living room	28.3	24.9	27.2	23.9	18.5	8.9	-2.6	24.5
First Floor Office	34.7	33.0	33.4	28.7	21.4	10.7	-1.6	29.4

The predicted noise levels for the adjacent bedrooms and living rooms are significantly less than BS8233: 2014 guidelines. It is likely that noise transfer from the operational use of the ground floor as a nursery will result in a contribution to internal noise levels in the residential rooms above that is at least 5 dB (A) lower than the background noise levels in the residential apartments. The noise transfer from the use of the nursery is unlikely to cause an adverse impact to the adjacent residential spaces.

The predicted noise transfer to the office space on the first floor is less than 30 dB (A). BS 8233: 2014 recommends that offices are designed to have background noise levels between 45 and 50 dB (A) for open plan areas and 35 to 40 dB for executive offices. The predicted noise transfer to the office space, from use of the ground floor as a nursery is significantly lower than the BS 8233: 2014 design ranges. Noise transfer is unlikely to cause an adverse impact to the first floor commercial use.

No further mitigation is considered necessary to control noise transfer from the proposed ground floor nursery to the adjacent residential and commercial spaces above. If a suspended plasterboard ceiling is installed for other design considerations, the sound insulation of the floor partition will be further improved.

Contribution to ambient noise due to use of the outside space

At the time of survey, the outside area was paved and enclosed by 2.4 metre high timber fence on two sides. The third side of the outside area was bound by a 1.2 metre high fence. The proposals include installation of a double door set and canopy. The canopy will provide protection from the rain and screening of noise to the balconies above. To determine the required canopy size for noise mitigation, calculation to predict noise from the outside area to the adjacent residential amenity has been carried out.

A computational model has been digitised and noise levels across the site predicted using the ISO 9613^{xiii} methodology in Lima-Predictor V2023. Architects' drawings have been used to populate the model and the footprint and elevation of wider neighbouring buildings have been assumed from Google Earth. The terrain data has been taken from OS Mapping. The noise emission from the building has been calculated using an area source emission to represent children carrying out learning and play activities.

The predicted combined noise emission for operational noise of the outside area, at 1.5 metres above local floor level, is shown in Table 7 below. Six situations have been predicted, to show the effect of changing the canopy width from 2.5 metre wide to 4.0 metres wide, with and without acoustic absorption on the fence. Table 7 shows the predicted noise from the nursery outside area numerically and Figure 6 overleaf shows the predicted day time noise contours at 1.5 metres above ground and the sample receptor locations.

Table 7: Predicted noise emission to sample receptors, for six situations, $L_{Aeq\ 30min}$ dB

Ref.	Floor level	2.5m canopy	2.5m canopy	3.0m canopy	3.0m canopy	4.0m canopy	4.0m canopy
		No absorption	Absorption	No absorption	Absorption	No absorption	Absorption
R1	First	53.5	52.5	52.8	51.5	50.2	47.8
R1	Second	53.5	52.2	53.1	51.7	52.7	51.1
R2	First	53.2	52.2	52.6	51.4	52.1	49.1
R2	Second	53.7	52.5	53.3	51.9	53.0	51.2
R3	First	57.3	55.9	55.5	53.0	49.9	47.6
R3	Second	55.9	55.1	54.8	53.6	52.5	50.7
R4	First	49.6	48.6	48.9	47.9	47.2	45.8
R4	Second	52.4	51.6	51.8	50.6	50.5	49.1
R5	Ground	48.1	48.0	48.0	48.0	48.1	48.0
R5	First	51.8	51.8	51.6	51.6	51.0	51.0

With a 2.5 metre wide canopy and no acoustic absorption, two out of the ten sample receptors are predicted to be exposed to noise from the outside nursery area less than WHO guideline value of 50 dB (A). Residual noise levels measured in the existing outside area demonstrate average noise levels of $L_{Aeq\ 1.5hrs}$ 51.0 dB, varying between of $L_{Aeq\ 5min}$ 45.6 dB to $L_{Aeq\ 5min}$ 54.7 dB.

With a 2.5 metre wide canopy and no acoustic absorption, predicted noise levels from the nursery outside area are likely to exceed the average residual noise level by 3.5 dB (A) to 6.3 dB (A) at the nearest balconies and windows. There is likely to be a 1 dB (A) reduction in noise at receptors above the nursery play area, if acoustic absorption is installed across the 2.4 metre high fence.

With a 3.0 metre wide canopy and acoustic absorption on the 2.4 metre high fence, two out of the ten sample receptors are predicted to be exposed to noise from the outside nursery area less than 50 dB (A). With this situation, noise from the nursery outside area is predicted to be 0.4 dB (A) and 3.6 dB (A) above the average residual noise level of $L_{Aeq\ 1.5hrs}$ 51.0 dB.

Where a 4.0 metre wide canopy is installed and acoustic absorption fitted to the fence, six out of ten sample receptors are predicted to be exposed to noise from the outside nursery area less than 50 dB (A). With this situation there is predicted to be a marginal excess of up to 0.2 dB(A) at three of the ten sample receptors.

According to the WHO 'Guidelines for Community Noise', the majority of people are moderately annoyed by community noise between 50 dB (A) to 55 dB (A) and seriously annoyed by community noise over 55 dB (A). The adjacent residential amenity areas are likely to be exposed to noise levels not greater than 51.2 dB (A), if a 4.0m metre wide canopy and acoustic absorption is fitted. The contribution of noise from the outside nursery area to the ambient noise climate is unlikely to cause serious annoyance or a change to the range of ambient noise levels throughout the day.

The development of a nursery outside area is in an area where noise levels currently exceed WHO Guidelines for Community Noise and will include measures to mitigate the noise impact, as required by Haringey Policy ENV6.

It is recommended that 4.0 metre wide canopy is installed with acoustically absorbent panels fitted to the fence. For this situation, noise contours at 1.5 metres above ground level are shown in Figure 6 below. A 3D view of the noise contours is shown in Appendix D.

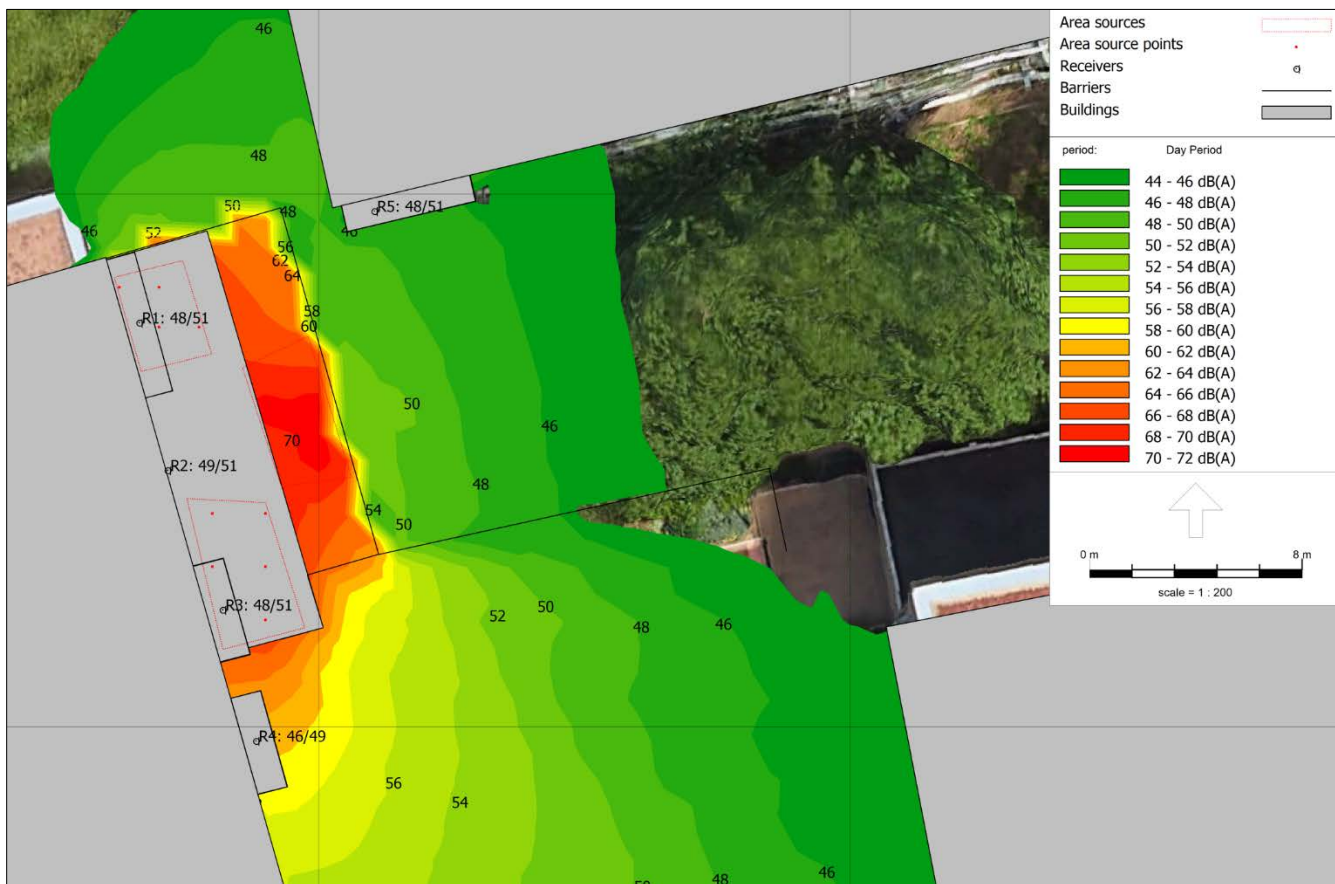


Figure 6: Noise contours at 1.5 metres above ground and sample receptor locations

The canopy is proposed to be constructed of a 35 mm thick multiwall polycarbonate sheet, supported by a steel frame. The multiwall polycarbonate sheet is made of multiple layers and internal webbing. It can be clear, translucent or opaque and provide a sound reduction of R_w 19 dB to 22 dB, depending on product selection. Suitable multiwall polycarbonate product examples are listed below, and further details are shown in Appendix E.

- Clear Amber Group - 35mm Axiome Multiwall - R_w 22 dB (3.4 kg/m²)
- Arla Plast – 35mm Multiclear Light R_w 19 dB (3.8 kg/m²)

The supporting frame could be steel or timber without effect on the effective acoustic screening. For acoustics and weather proofing, there would be no gap between canopy and the building wall. Examples of suitable canopy frame systems are:

- Setterplay timber frame monopitch
- Apex Shelters steel frame monopitch

Images of the above example canopy frame system are shown in Appendix E.

Providing acoustic absorption to the 2.4 metre high timber fence is predicted to reduce reflected noise to the balconies on the floors above the nursery outdoor area. For acoustic absorption to be effective, it should have an absorption coefficient of $\alpha 0.8$ or greater, in the octave bands 250 Hz to 4000 Hz. An example product suitable for outdoor use is listed below.

- Quietstone UK – 50mm Quietstone Light

The 50mm Quietstone Light panels would be fixed to the full face of the 2.4 metre high fence. They could be direct fixed across the 13 metre long fence panels, providing an area of 31.2 m² acoustic absorber. It is not required to provide an air gap behind the panels for sound absorption purposes. Further details of the recommended acoustic absorption is shown in in Appendix E.

The layout of the canopy and acoustic absorber panels is shown on Figure 7 below.

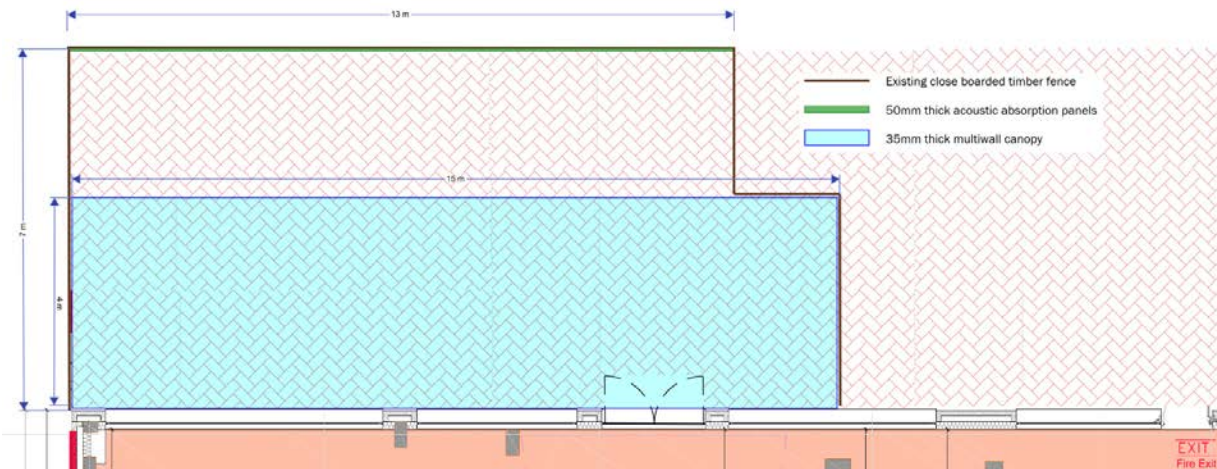


Figure 7: Proposed layout of acoustic treatments to outside area

With the proposed mitigation, noise from the operational use of the outside nursery area is likely to not exceed the average residual noise level at the neighbouring external amenity spaces. The predicted noise levels are just above the WHO guideline value of 50 dB (A), but significantly lower than the WHO guideline value of 55 dB (A), for the onset of serious annoyance. The most exposed noise sensitive receptor is predicted to receive a contribution of noise from children's voices of 51.2 dB (A), on a neighbouring balcony.

Compliance with the guidance of BS 8233: 2014 for community noise, demonstrates that the proposed development is unlikely to cause loss of amenity to nearby residents through noise. This, combined with the noise management measures within this report will ensure that the amenity of surrounding residents will be safeguarded and will not be impacted by the proposed use.

ⁱ BS 8233:2014, Guidance on sound insulation and noise reduction for buildings, BSI, February 2014

ⁱⁱ Haringey's Local Plan, Strategic Policies 2013 – 2026, London Borough of Haringey, March 2013 (2017 amendments)

ⁱⁱⁱ BS 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound, BSI, June 2019

^{iv} Guidelines for Community Noise, Birgitta Berglund, Thomas Lindvall, Dietrich Schwela, World Health Organization, April 1999

^v Landsat /Copernicus, Google Earth images, downloaded October 2023

^{vi} Block A – Proposed Ground Floor Plan, 8700-A10 Rev F, John Farquharson Partnership LLP, July 2018

^{vii} BS 7445-1: 2003 'Description and measurement of environmental noise – Part 1: Guide to quantities and procedures'

^{viii} BS EN 61672-1: 2013: 'Electroacoustics. Sound level meters. Specifications.', BSI, December 2013

^{ix} Building Bulletin 93, Acoustic design of schools: performance standards, Department for Education, February 2015

^x Upper Floors, Internal Wall Details, 2029-35 rev A, Vision Construct, March 2022

^{xi} Ventilation, Approved Document F, The Building Regulations, 2010, HM Government, 2021

^{xii} Block A- Proposed First Floor Plan – Partition Layout, 8700-A11, John Farquharson Partnership LLP

^{xiii} ISO 9613 -1 /2 :1996 'Acoustics – Attenuation of sound during propagation outdoors' Parts 1 & 2, International Organization for Standardization, December 1996

SUMMARY AND CONCLUSIONS

This report has been prepared to provide details of the noise assessment and noise management plan, undertaken for the proposed change of-use at Granita Court. A noise survey has been carried out which has quantified the existing noise climate at the site and surrounding uses and uses operational noise levels from an existing Creative Explorers nursery.

Operational noise of the proposed outdoor nursery area at the rear of Granita Court has been predicted using the methodology of ISO 9613 in computational modelling software Lima Predictor V2023. With mitigation measures shown in this report, it is predicted that the use of the outdoor seating area is not likely to cause noise levels higher than the existing ambient noise climate. The proposals are predicted not to cause an excess of the with the guidance of BS 8233: 2014 value of 55 dB (A) for community noise.

Compliance with the guidance of BS 8233: 2014 for community noise, demonstrates that the proposed development is unlikely to cause loss of amenity to nearby residents through noise. The nursery outside area is in an area where noise levels currently exceed WHO 'Guidelines for Community Noise' and will include recommended measures to mitigate noise impact from the nursery outside area.

The development proposals comply with the requirements of Haringey Local Plan ENV6 and also the relevant British Standards.

Sound insulation of the floor separation has been determined by predictive calculation using software Insul v9. The predicted noise transfer to the residential and commercial spaces above are significantly less than BS8233: 2014 guidelines. It is likely that under normal conditions, that noise transfer from use of the inside nursery space would be lower than background noise levels in the adjacent rooms of Granita Court.

Based on this document and assessment and the measures within, the requirements of Planning Condition 6 have been deemed to have been met and thus the Condition can be discharged.

APPENDIX A – WEATHER HISTORY

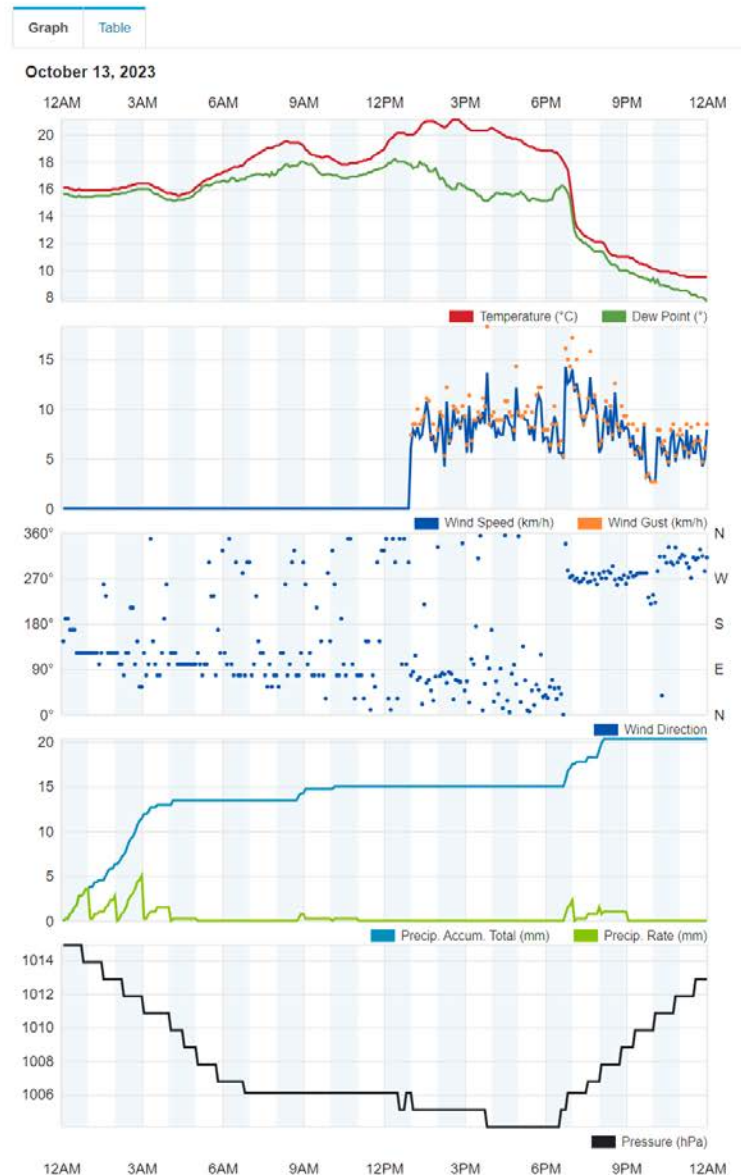
Weather History for ILONDO584

Previous
Daily Mode
October
13
2023
Next

View

Summary
October 13, 2023

	High	Low	Average		High	Low	Average
Temperature	21.1 °C	9.4 °C	16.6 °C	Wind Speed	14.3 km/h	0.0 km/h	1.7 km/h
Dew Point	18.2 °C	7.7 °C	14.9 °C	Wind Gust	18.3 km/h	--	1.8 km/h
Humidity	98 %	71 %	90 %	Wind Direction	--	--	NE
Precipitation	20.32 mm	--	--	Pressure	1,014.90 hPa	1,004.06 hPa	--



APPENDIX B – MEASUREMENT LOCATION PHOTOGRAPHS



Location 1 looking south



Location 1 looking south east



Location 1 looking west

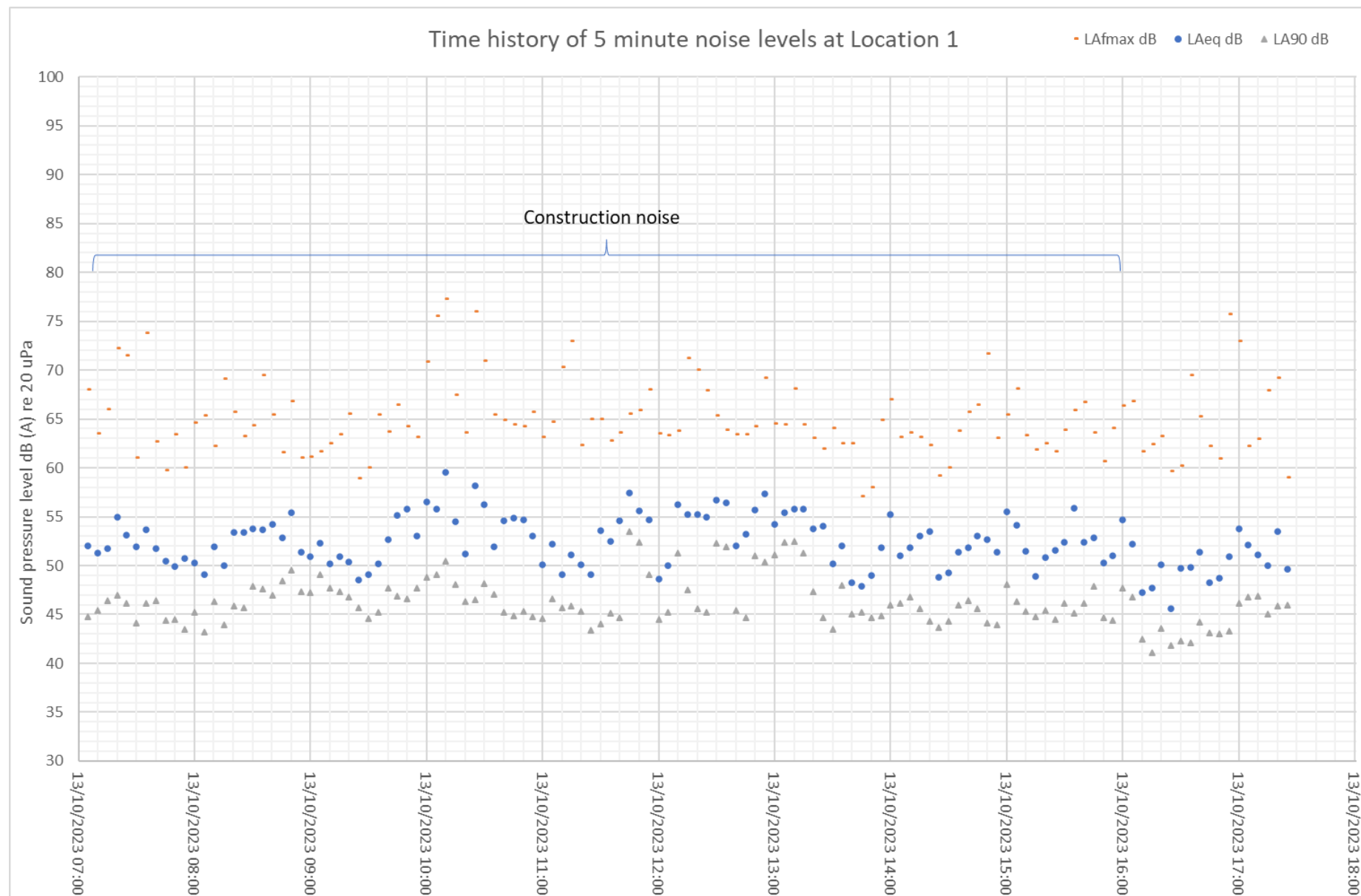


Location 1 looking north



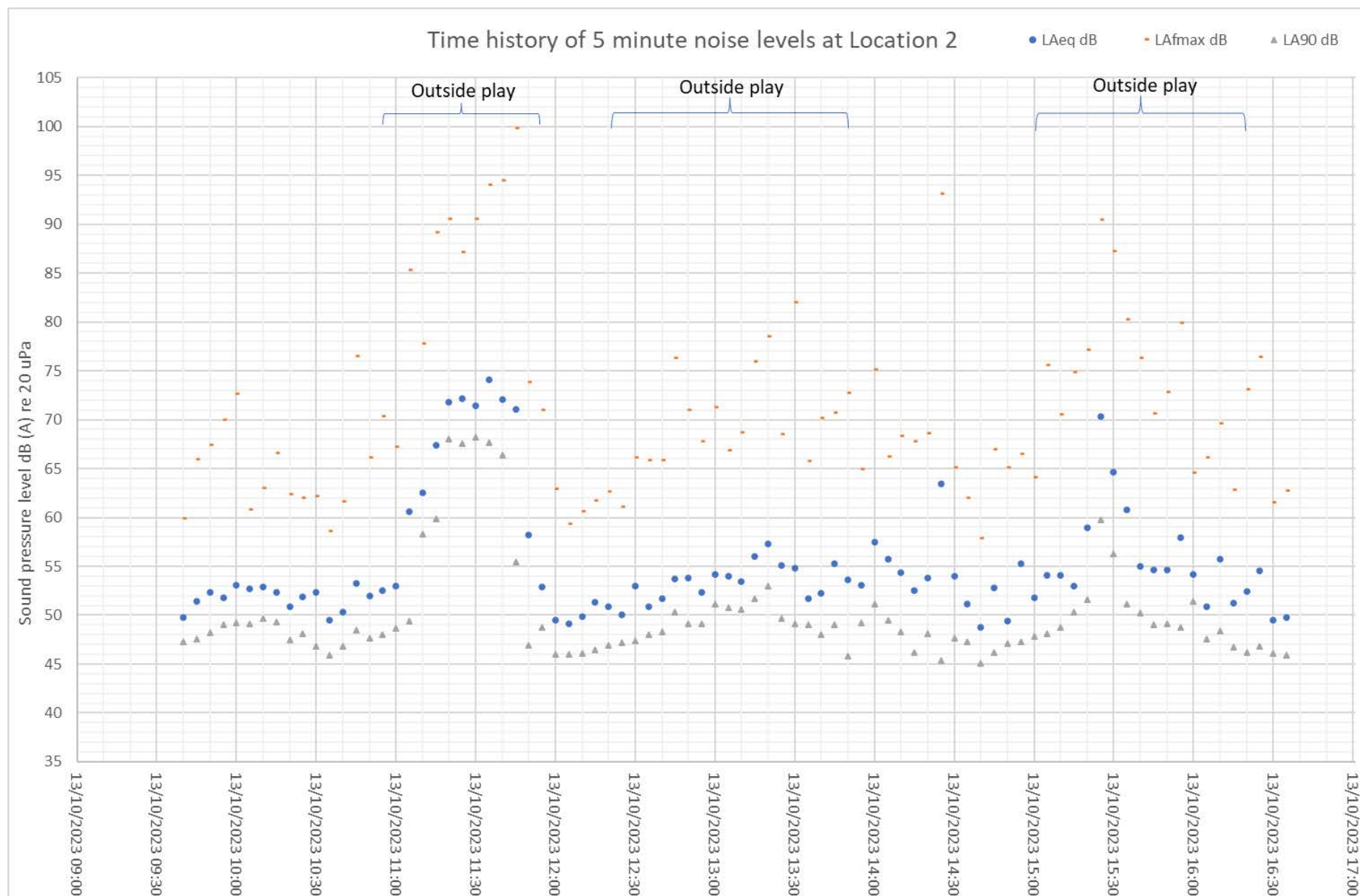
Location 2 looking east

APPENDIX C – GRAPH OF NOISE LEVEL MEASUREMENTS

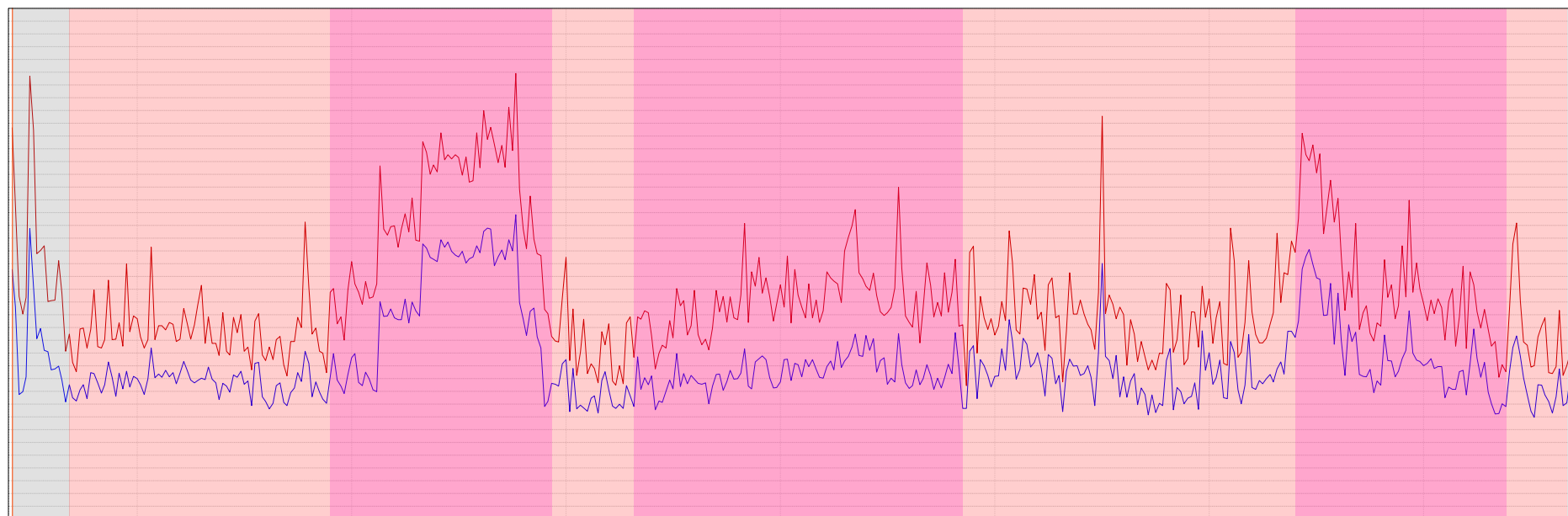


27/10/2023

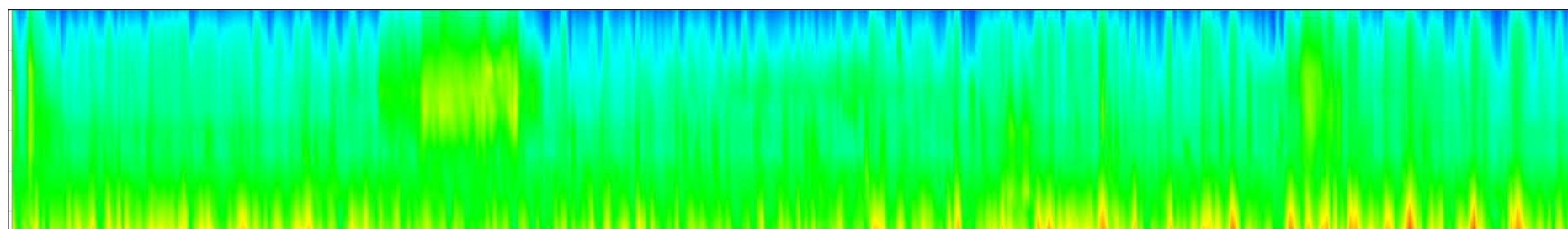
NA/GC/20231020- RK



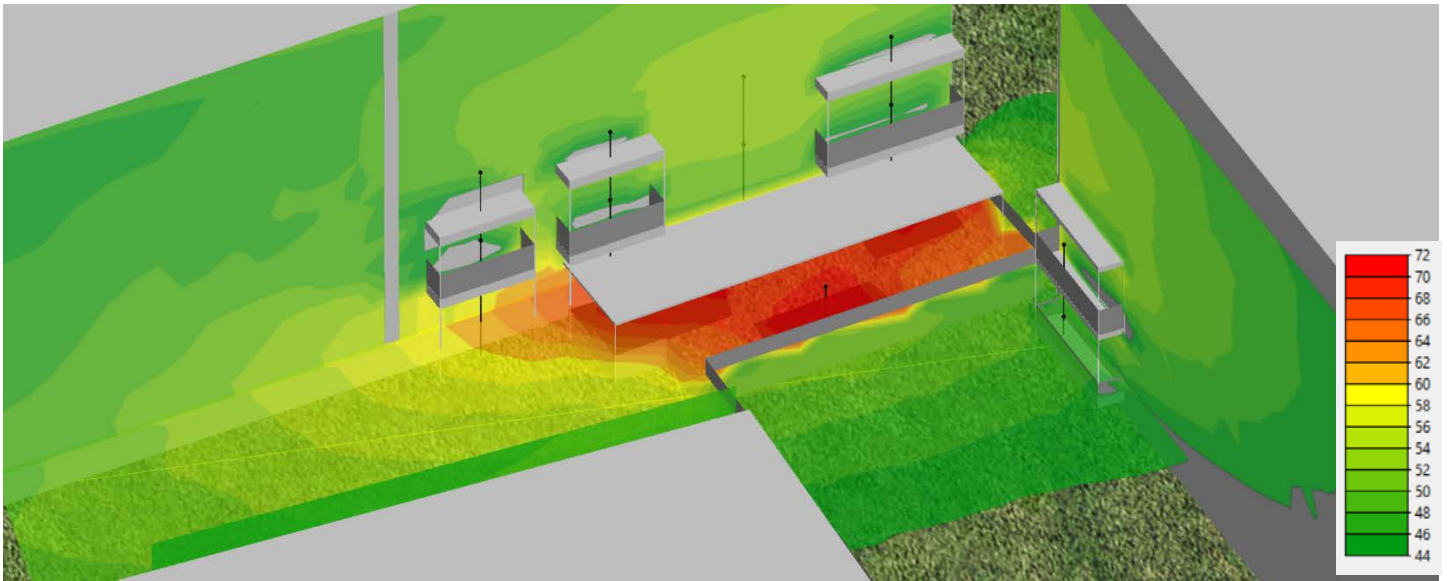
Log of 10 second time history with activity annotations at Location 2



Spectrograph of 10 second time history at Location 2



APPENDIX D – 3D VIEW OF NOISE CONTOURS



APPENDIX E – PRODUCT INFORMATION

Axiom Multiwall sheets

35mm Multiwall*



* Internal structure of all Axiome® sheets are for illustrative purposes only, and may vary from batch to batch.

AXIOME®: Compatible Glazing Bars

ALUKAP®-SS Self-Supporting Aluminium Glazing Bar System



ALUKAP BROWN

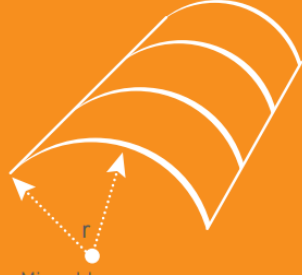


ANY RAL COLOUR



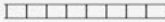
Physical Properties

Thickness	Area Weight Kg/m ²	U-Value W/m ²	Sound reduction level db	Min cold bending radius mm
AXIOME® 4mm Twinwall	0.8	–	–	–
AXIOME® 6mm Twinwall	1.3	3.5	18	1250
AXIOME® 10mm Twinwall	1.5	3.0	20	1750
AXIOME® 16mm Triplewall	2.4	2.3	20	2750
AXIOME® 25mm Multiwall	3.0	1.7	22	5000
AXIOME® 35mm Multiwall	3.4	1.3	22	7000



r = Min cold bending radius

Arla Multiwall polycarbonate sheets – Multiclear

Type	Thickness mm	Weight g/m ²	Sound insulation dB
MULTICLEAR® BOX 2 Wall 	4	800	
	6	1300	
	8	1500	18
	10	1700	18
MULTICLEAR® BOX 3 Wall 	16	2700	
MULTICLEAR® BOX 7 Wall 	16	2700	18
	20	3000	18
MULTICLEAR® STRONG 	10	1700	18
	16	2700	19
	20	3000	19
	25	3400	19
MULTICLEAR® LIGHT 	16	2700	19
	20	3000	19
	25	3400	19
	32	3600	19
	35	3800	19
	40	4000	19

Setter Play Timber frame monopitch



Apex Shelters Steel frame monopitch



Quietstone Light

Technical properties

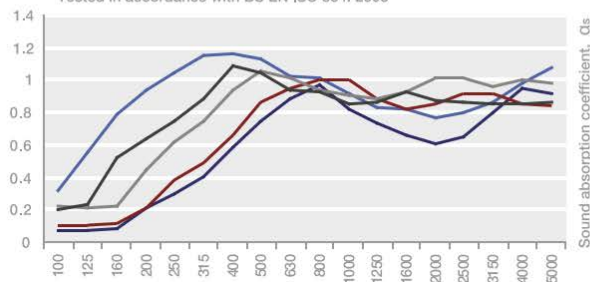
Physical properties

Standard width 600mm
 Standard length 1200mm
 Thicknesses 15 -100mm
 We can make other sizes with a maximum length of 2.4m.
 A small set up charge is incurred
 Weight at 25mm thickness: 8 kg/m²
 Weight: 320kg/m³



Acoustic Performance

Tested in accordance with BS EN ISO 354: 2003



Fire resistance

85476: Part 6: 1989 - Class 1
 85476: Part 7: 1997 - Class 0

Freeze/thaw resistance

EN 1338 - Class 0



The main constituent of Quietstone Light - expanded glass beads

Mounting parameters:

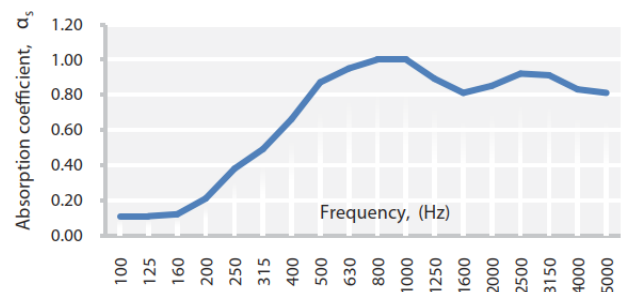
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	EN-ISO 11654, α_w
25mm panel, 50mm air gap	0.10	0.30	0.75	0.85	0.65	0.90	0.60 (M) (H) (H): class C
25mm panel, 50mm mineral fibre	0.55	1.05	1.10	0.90	0.80	0.90	0.90 (L): class A
50mm panel	0.10	0.35	0.85	0.95	0.85	0.85	0.65 (M) (H) (H): class C
50mm panel, 25mm air gap	0.20	0.60	1.00	0.90	1.00	1.00	0.90: class A
85mm panel 12 gap for fixings	0.30	0.75	1.00	0.90	0.90	0.85	0.95 : class A

50mm panel

BS EN ISO 1793-1: 1998 DL_{α} = 8 dB(A) Cat A3

BS EN ISO 11654: 1998 α_w = 0.65 (M) (H)
 Classification: C

Comments: Installation is simple when bonding with a cement based adhesive. High impact resistance achieved



Frequency, Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
α_s	0.11	0.11	0.12	0.21	0.38	0.49	0.66	0.87	0.95	1.00	1.00	0.89	0.81	0.85	0.92	0.91	0.83	0.81
α_p		0.10			0.35			0.85			0.95			0.85			0.85	

