PLANNING CONDITION 11 DISCHARGE

19-37 HIGHGATE ROAD, KENTISH TOWN

GM LONDON

MARCH 2022

PLANNING CONDITION 11 DISCHARGE

19-37 HIGHGATE ROAD, KENTISH TOWN

Our Ref: 5608_001R_1-0_MG

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1.0	First issued version	17/03/2022	MG	JB

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APPENDICES

1 INTRODUCTION

A part 5, part 7 storey mixed-use development, comprising 42 residential units and a commercial space at ground floor level, at 19-37 Highgate Road, Kentish Town, London NW5 1JY, was granted planning permission in 2014 by London Borough of Camden (LBC) Council (reference 2013/5947/P).

GM London is seeking a S73 variation to the above planning permission. The current proposal is for a mixed-use development comprising 48 residential units, a basement and a social enterprise space at ground floor level.

Anderson Acoustics Ltd has been commissioned by GM London to carry out a Noise Impact Assessment (NIA) to assist in discharging condition 11 of the decision notice dated 18/06/2014 (please see Section 3.1 for the condition details).

An ambient noise survey and NIA for the development have been carried out in 2013 [1]. However, the noise environment could have significantly changed since then, as well as the industry standards the assessment was based upon. It was therefore deemed necessary to re-establish baseline conditions and carry out a new NIA.

A brief description of the site is given in Section 2. The noise criteria relevant to the assessment are presented and briefly discussed in Section 3. Section 4 provides an assessment of the proposed design. The report is summarised in Section 5.

Appendix A contains noise survey details, detailed calculations can be found in Appendix B, example drawings in Appendix C and noise units and acoustic terminology in Appendix D.

2 SITE DESCRIPTION

The site is located at 19-37 Highgate Road, Kentish Town, London NW5 1JY. The site is bound by the mixed-use development Linton House to the north, AA Self Storage to the west, Christ Apostolic Church to the south, and residential properties at the other side of B518 Highgate Road to the east.

Figure 2.1: Site location plan

The building will comprise a basement, a social enterprise space on the ground floor and residential apartments between ground and sixth floors. All apartments will be mechanically ventilated with a separate MVHR unit serving each apartment. On this basis, windows can be assumed to be closed for the purposes of the assessment. Windows will be openable for purge ventilation during which noise criteria do not apply.

Example drawings of the floor layouts are presented in Appendix C.

3 ASSESSMENT CRITERIA

3.1 Planning Condition 11

Planning condition 11 is reproduced below:

> 11 No work shall commence on the Highgate Road Residential Building until a detailed scheme for noise insulation and/or mitigation has first been submitted to and approved in writing by the local planning in respect of the following:
>
> a) a scheme of sound insulation and attenuated ventilation so as to ensure that noise from external sources shall not exceed 30dB(A) LAeq (23:00-07:00 hours) in any habitable room
>
> b) sound mitigation measures to be incorporated to terraces and balconies such that the external noise climate does not exceed 55dB LAeq,t
>
> The buildings shall not be occupied until completed fully in accordance with such scheme(s) as will have been approved.
>
> Reason: To safeguard the premises against the transmission of external noise in accordance with the requirements of policy CS5 of the London Borough of Camden Local Development Framework Core Strategy and policies DP26 and DP28 of the London Borough of Camden Local Development Framework Development Policies.

3.2 BS 8233:2014 – Guidance on sound insulation and noise reduction in buildings

Although condition 11 does not apply to the social enterprise space on the ground floor, for the robustness of the assessment, it has been deemed necessary to assess noise ingress to the proposed space. Table 2 from the BS8223:2014 [2] sets desirable indoor ambient noise levels for commercial spaces as follows:

Table 2 **Indoor ambient noise levels in spaces when they are unoccupied and privacy is also 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

In line with the above, the indoor ambient noise level criterion for the social enterprise space at ground floor is set to 45 dB $L_{Aeq,8h}$ (09:00 - 17:00).

4 EXISTING NOISE ENVIRONMENT

The prevailing noise conditions in the area were determined by a detailed environmental noise survey undertaken over a 7-day period at two measurement locations, between Tuesday 2th and Tuesday 9th November 2021. Full details of the survey can be found in Appendix A.

Monitoring locations are presented in Figure 4.1 below, results of the survey are presented in Table 4.1.

Figure 4.1: Monitoring Locations

Table 4.1: Measured noise levels summary

Location	Period, metric [dB]	
	Nights 23:00-07:00 $L_{Aeq,8h}$	Office hours 09:00-17:00 $L_{Aeq,8h}$
NM1	60	67
NM2	54	n/a

Note 1: Presented levels are façade values for NM1 and free-field values for NM2

5 NOISE ASSESSMENT

5.1 Façade Sound Reduction Performance

Noise break-in calculations in accordance with BS EN ISO 12354-3:2017 [3] have been carried out in order to assess required sound reduction performance of glazing required to achieve the Internal Ambient Noise Levels (IANLs) in line with planning condition 11 requirements, as described in Section 3.1. Detailed calculations can be found in Appendix B. The following sections present a summary of the assessment.

5.1.1 Assumptions

The assessment is based on following drawings:
- HR-AHR-B1-(00-07)-DR-A-20-(100-107) P7 – Ground to 7th floor plans
- HR-AHR-B1-ZZ-DR-A-20-(221-224) P1 – Elevation drawings
- HR-AHR-B1-ZZ-DR-A-20-(311-312) P1 – Sections

Noise levels measured at location NM1 have been considered representative for the East façade, overlooking Highgate Road. Noise levels measured at location NM2 have been considered representative for all other façades.

All flats are to be mechanically ventilated with an MVHR unit serving each apartment. No vents are to be located in the façades below the suspended ceiling line.

External walls have been assumed to be of brick-block cavity construction, providing 52 (-4) R_w (C_{tr}) sound reduction performance.

5.1.2 Required glazing performance

Table 5.1: Required sound reduction performance of glazed elements

Façade element	R_w [dB]	R_w+C_{tr} [dB]
Glazed elements along East façade not leading to winter gardens	30	27
Glazed elements along other façades not leading to winter gardens	26	21
Winter gardens glazing along East façade	25	20
Winter gardens glazing along other façades	22	17
Glazed elements leading to winter gardens	n/a*	
Social enterprise glazing at ground floor	25	20

**As the winter gardens are fully glazed, windows and doors leading to the gardens do not need to achieve sound reduction performance above than what is achieved by the most basic products.*

Please note the above requirements apply for the whole system, i.e. glass and a frame, not glass in isolation.

5.2 Outdoor amenity areas

Residents of the flats which will not have access to winter gardens (mostly flats located on the ground floor) will have to their disposal two communal outdoor spaces: a 123 m^2 terrace on the 5th floor and a 171 m^2 space on the rooftop level.

To assess noise levels in the communal outdoor spaces, a 3D acoustic model has been built using the noise-modelling suite CadnaA 2020. The predictions have been carried out in accordance with ISO 9613 [4] prediction methodologies, which allow consideration of the effects of surface absorption, atmospheric absorption, acoustic reflections and acoustic screening provided by the existing and future structures of the proposed development.

Modelling shows daytime noise levels at the 5th floor terrace at 45 dB $L_{Aeq,16h}$ and 52 dB $L_{Aeq,16h}$ at the rooftop space (predicted in the middle of these spaces; noise levels can be higher locally, i.e. close to the plant enclosure or at the edge of the building, directly overlooking traffic), meeting requirements of condition 11. Noise levels include noise from the heat pumps proposed on the roof level.

5.3 Control of noise transfer from social enterprise space

As the social enterprise space is likely to be limited to daytime operation (07:00-23:00) and is not expected to have music or noise-generating activities, we recommend the separating floor between the community space and the flats above to achieve a minimum airborne sound insulation performance of 50 $D_{nT,w}+C_{tr}$. This is 5 dB over the minimum requirements stated in the Building Regulations Approved Document E [5] for separating walls and floors between dwellings. Should the operation of the social enterprise space include background music or any relatively noisy activities (i.e. typical internal ambient noise levels around 80 dB L_{Aeq}), this target should be increased to 55 dB $D_{nT,w}+C_{tr}$.

It is understood that the floor construction between the ground floor communal area and first floor flats will consist of a 750 mm reinforced concrete slab with a 100 mm screed based floor finish on top. This floor build-up is expected to comply with the 55 dB $D_{nT,w}+C_{tr}$ target performance outlined above.

6 CONCLUSIONS

Anderson Acoustics Ltd has undertaken a noise assessment to assist in discharging a condition 11 of Planning Application reference 2013/5947/P for the development at 19-37 Highgate Road, Kentish Town, London NW5 1JY.

The assessment gives required sound reduction performance for glazed elements of the façade in order to sufficiently control external noise break-in to habitable rooms, glazed terraces/balconies and ground floor social enterprise space, summarised in Table 5.1.

In terms of outdoor amenity areas, the assessment showed that noise levels in the community gardens at 5th and 7th floor will be within the limit of 55 dBA required by the condition 11.

In addition, separating floor construction between social enterprise and flats above has been analysed and found robust enough to control noise transfer from the commercial to residential spaces.

Based on our assessment and on the recommendations set out in this report, the scheme should achieve compliance with the requirements of Planning Condition 11 and should therefore be discharged.

7 REFERENCES

1 Resource & Environmental Consultants Ltd. *Noise Impact Assessment. Greenwood Place and Highgate Road Site: Community Resource Centre, Centre for Independent Living and Residential Units.* REC Report 90225r7. 9th September 2013.

2 British Standard BS 8233:2014. *Guidance on sound insulation and noise reduction in buildings.*

3 British Standard BS EN ISO 12354-3:2017. *Building acoustics. Estimation of acoustic performance of buildings from the performance of elements. Airborne sound insulation against outdoor sound.*

4 ISO 9613-2:1996. *Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation.*

5 Building Regulations: *Approved Document E: Resistance to sound.* March 2015

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APPENDIX A

NOISE SURVEY DETAILS

A.1 - Instrumentation

All noise measurements were undertaken by a consultant certified as competent in noise monitoring. All acoustic measurement equipment used during the noise survey conformed to Type 1 specification of British Standard 61672 [8]. A full inventory of this equipment is shown in Table A.1 below. All equipment calibration certificates are available on request.

Table A.1 Inventory of Measurement Equipment

Equipment ID	Item	Make and Model	Serial Number	Calibration	
				Certificate number	Expiry Date
1 (NM1)	Sound Level Meter	01 dB DUO	10667	1500295-1	30/04/2023
	Preamplifier	Integrated	-		
	Microphone	01 dB MCE212	39854		
2 (NM2)	Sound Level Meter	01 dB DUO	10927	1500966-2	29/09/2023
	Preamplifier	Integrated	-		
	Microphone	GRAS 40CD	136961		
3	Calibrator	Rion NC-74	34304643	1500367-1	24/05/2022
4	Calibrator	Rion NC-74	34625646	UCRT21/1138	29/01/2022

The noise measurement equipment used during the survey was calibrated at the start and end of each measurement, using a Rion NC-74 sound calibrator to generate a calibration level of 94.0 dB at 1 kHz. No significant drift in calibration was found to have occurred.

The calibrators used have themself been calibrated by a UKAS accredited calibration laboratory within the twelve months preceding the measurements.

A.2 - Unattended Noise Survey NM1

Measurements were obtained using the 'F' time weighting and A-weighting frequency network. Consecutive 125 ms measurements of $L_{Aeq,T}$, $L_{Amax,F}$ and $L_{A90,T}$ noise levels were obtained between 12:15 hrs on Tuesday 2nd November and 10:20 hrs on Tuesday 9th November 2021.

A microphone fitted with a protective windshield was mounted on a pole attached to a tree, 2 m above ground level and approximately 1.5 metres from the façade of the existing building, on the Highgate Road side. Noise levels monitored at this position were façade levels. The location of the measurement position is identified in Figure 4.1 in the report.

A.3 - Unattended Noise Survey MP2

Measurements were obtained using the 'F' time weighting and A-weighting frequency network. Consecutive 125 ms measurements of $L_{Aeq,T}$, $L_{Amax,F}$ and $L_{A90,T}$ noise levels were obtained between 13:00 hrs on Tuesday 2nd November and 10:35 hrs on Tuesday 9th November 2021.

A microphone fitted with a protective windshield was mounted on a pole attached to a tree, approximately 4 m above ground level attached to a site fence, in the south-east corner of the site. Noise levels monitored at this position were free-field levels. The location of the measurement position is identified in Figure 4.1 in the report.

A.3 - Weather Conditions

Weather conditions during the survey period were obtained from internet sources www.wunderground.com (weather station at Holloway, ID ILONDO328), which indicated that the weather conditions for the measurement period were mostly dry and with moderate winds, no greater than 5 m/s. It is then considered that weather conditions have not significantly affected the noise survey.

Figure A.1: Photograph of Location NM1

Figure A.2: Photograph of Location NM2

Figure A.3: Measurement Time History – NM1

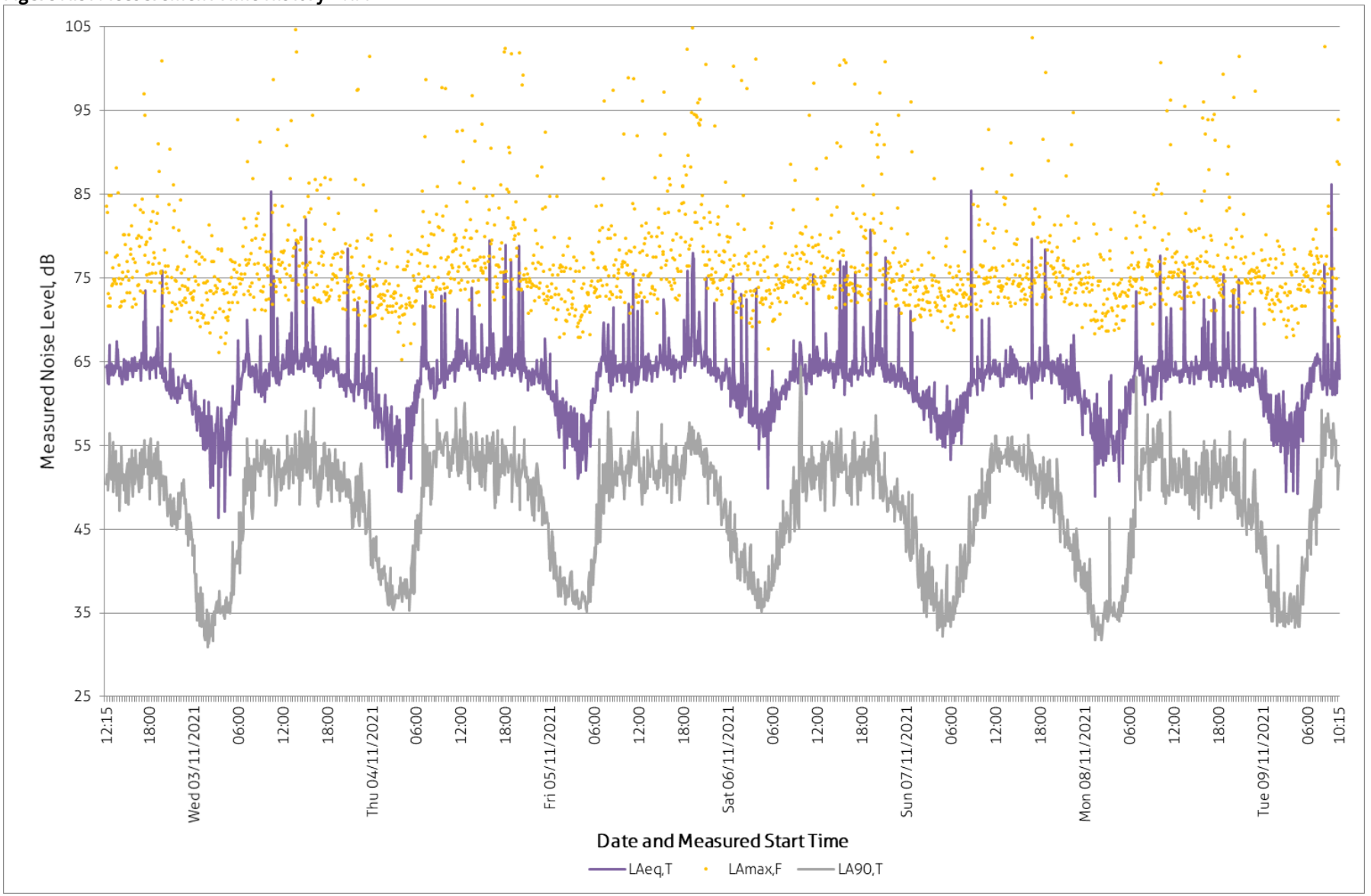
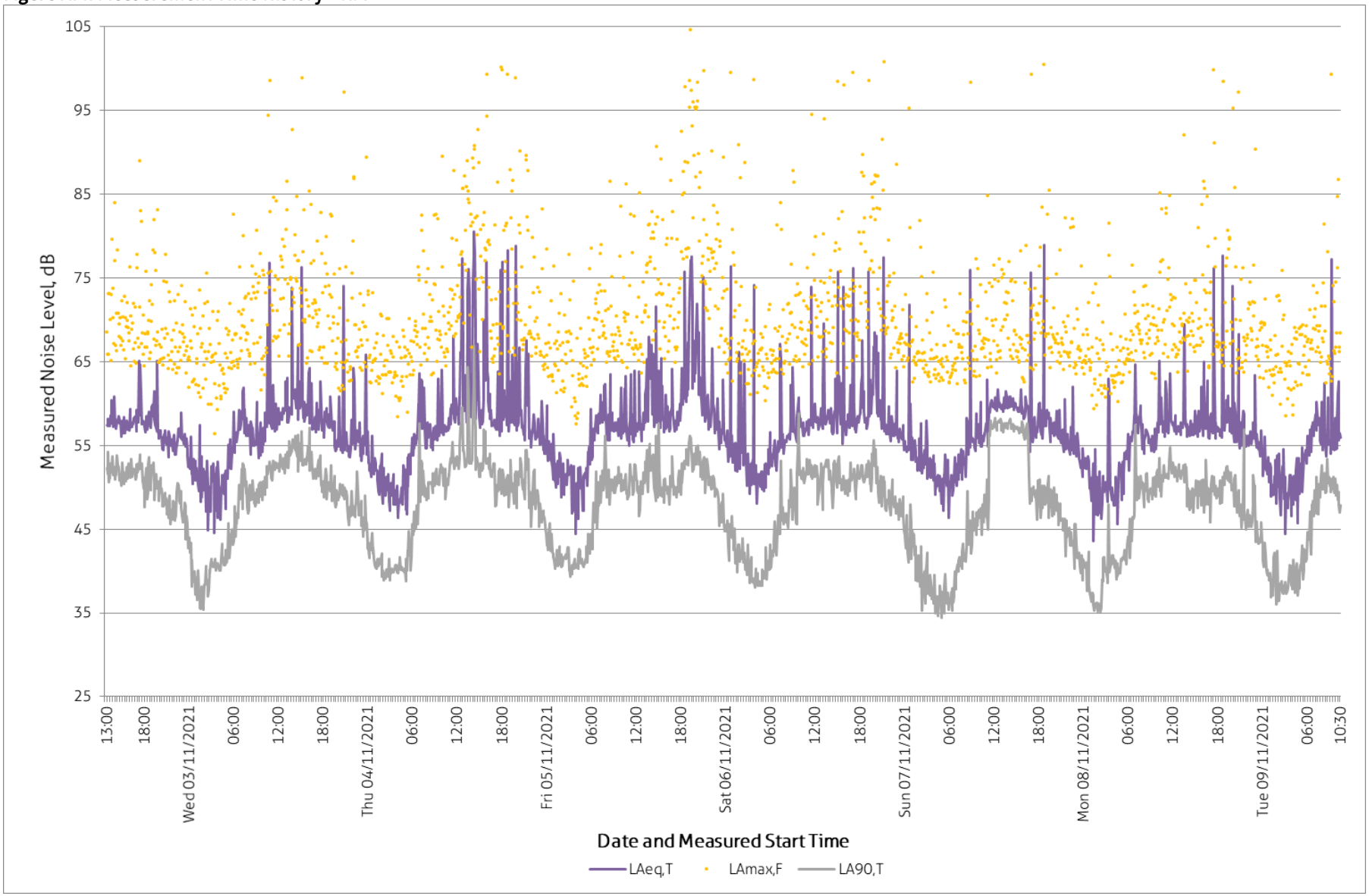


Figure A.4: Measurement Time History – NM2



APPENDIX B

DETAILED CALCULATIONS

Table B.1: IANL Calculation for worst case room on the East façade

Job name:	19-37 Highgate Rd, Kentish Town			**RESULT SUMMARY:**	LAeq Night						
Job no.:	5608				Predicted Internal Level:		**30**	**dB $L_{A\ eq,T}$**			
Façade:	East				Criterion:		30	**dB $L_{A\ eq,T}$**			
					Difference:		**0**	**dB $L_{A\ eq,T}$**			
SOUND INSULATION BY ELEMENT											
Formula	**Description**	**Data**	**Units**	**Octave band centre frequency, Hz**							
				125	**250**	**500**	**1000**	**2000**	**4000**	**dB(A)**	
	Reverberation Time	0.8	s	0.8	0.8	0.8	0.8	0.8	0.8		
	Receiver Room Volume	74.6	m^3								
Element 1				Façade							
L1	Wall (database)	Leq		57	56	55	57	53	48	60	
-R	Brick-block cavity wall			41	45	45	54	58	58		
+10logS	Element Area	3.2	m^2	5	5	5	5	5	5		
-10logA	where A=0.16V/T			12	12	12	12	12	12		
+0				0	0	0	0	0	0		
=L2				10	4	3	-4	-11	-17	**3**	
L2tot	Running total			10	4	3	-4	-11	-17	3	
Element 2											
L1	Window (database)	Leq		57	56	55	57	53	48		
-R	5mm single pane			19	22	29	33	29	31		
+10logS	Element Area	9.6	m^2	10	10	10	10	10	10		
-10logA	where A=0.16V/T			12	12	12	12	12	12		
+0				0	0	0	0	0	0		
=L2				37	32	24	22	23	15	**30**	
L2tot	Running total			37	32	24	22	23	15	30	

Table B.2: IANL Calculation for worst case room on the other façades

Job name:	19-37 Highgate Rd, Kentish Town			**RESULT SUMMARY:**	LAeq Night						
Job no.:	5608				Predicted Internal Level:		**30**	**dB $L_{A\ eq,T}$**			
Façade:	West				Criterion:		30	**dB $L_{A\ eq,T}$**			
					Difference:		**0**	**dB $L_{A\ eq,T}$**			
SOUND INSULATION BY ELEMENT											
Formula	**Description**	**Data**	**Units**	**Octave band centre frequency, Hz**							
				125	**250**	**500**	**1000**	**2000**	**4000**	**dB(A)**	
	Reverberation Time	0.5	s	0.5	0.5	0.5	0.5	0.5	0.5		
	Receiver Room Volume	23.9	m^3								
Element 1				Free-field							
L1	Wall (database)	Leq		54	51	49	51	46	37	54	
-R	Brick-block cavity wall			41	45	45	54	58	58		
+10logS	Element Area	2.7	m^2	4	4	4	4	4	4		
-10logA	where A=0.16V/T			9	9	9	9	9	9		
+3				3	3	3	3	3	3		
=L2				11	4	3	-5	-13	-23	**3**	
L2tot	Running total			11	4	3	-5	-13	-23	3	
Element 2											
L1	Window (user data)	Leq		54	51	49	51	46	37		
-R	26 dB Rw 21 dB Rw+Ctr			11	16	22	26	30	22		
+10logS	Element Area	2.7	m^2	4	4	4	4	4	4		
-10logA	where A=0.16V/T			9	9	9	9	9	9		
+3				3	3	3	3	3	3		
=L2				42	33	26	23	15	13	**30**	
L2tot	Running total			42	33	26	23	15	13	30	

Table B.3: IANL Calculation for worst case glazed balcony/terrace on the East façade

Job name:	19-37 Highgate Rd, Kentish Town			**RESULT SUMMARY:**	LAeq Day								
Job no.:	5608				Predicted Internal Level:		**55**	**dB $L_{A\ eq,T}$**					
Façade:	East				Criterion:		55	**dB $L_{A\ eq,T}$**					
					Difference:		**0**	**dB $L_{A\ eq,T}$**					
SOUND INSULATION BY ELEMENT													
Formula	**Description**	**Data**	**Units**	**Octave band centre frequency, Hz**									
				125	**250**	**500**	**1000**	**2000**	**4000**	**dB(A)**			
	Reverberation Time	2.0	s	2.0	2.0	2.0	2.0	2.0	2.0				
	Receiver Room Volume	27.1	m^3										
Element 1				Façade									
L1	Wall (database)	Leq		63	62	60	63	62	53	67			
-R	Brick-block cavity wall			41	45	45	54	58	58	**52 Rw**	**48 Rw+Ctr**		
+10logS	Element Area	2.3	m^2	4	4	4	4	4	4				
-10logA	where A=0.16V/T			3	3	3	3	3	3				
+0				0	0	0	0	0	0				
=L2				23	17	16	9	4	-4	**16**			
L2tot	Running total			23	17	16	9	4	-4	16			
Element 2													
L1	Window (user data)	Leq		63	62	60	63	62	53				
-R	25 dB Rw 20 dB Rw+Ctr			10	15	21	25	29	21	**25 Rw**	**20 Rw+Ctr**		
+10logS	Element Area	26.1	m^2	14	14	14	14	14	14				
-10logA	where A=0.16V/T			3	3	3	3	3	3				
+0				0	0	0	0	0	0				
=L2				64	58	50	49	43	43	**55**			
L2tot	Running total			64	58	50	49	43	43	55			

Table B.4: IANL Calculation for worst case glazed balcony/terrace on other façades

Job name:	19-37 Highgate Rd, Kentish Town			**RESULT SUMMARY:**	LAeq Day								
Job no.:	5608				Predicted Internal Level:		**55**	**dB $L_{A\ eq,T}$**					
Façade:	West				Criterion:		55	**dB $L_{A\ eq,T}$**					
					Difference:		**0**	**dB $L_{A\ eq,T}$**					
SOUND INSULATION BY ELEMENT													
Formula	**Description**	**Data**	**Units**	**Octave band centre frequency, Hz**									
				125	**250**	**500**	**1000**	**2000**	**4000**	**dB(A)**			
	Reverberation Time	2.0	s	2.0	2.0	2.0	2.0	2.0	2.0				
	Receiver Room Volume	27.1	m^3										
Element 1				Façade									
L1	Wall (database)	Leq		61	60	57	58	58	46	63			
-R	Brick-block cavity wall			41	45	45	54	58	58	**52 Rw**	**48 Rw+Ctr**		
+10logS	Element Area	2.3	m^2	4	4	4	4	4	4				
-10logA	where A=0.16V/T			3	3	3	3	3	3				
+0				0	0	0	0	0	0				
=L2				20	15	12	5	0	-12	**13**			
L2tot	Running total			20	15	12	5	0	-12	13			
Element 2													
L1	Window (user data)	Leq		61	60	57	58	58	46				
-R	22 dB Rw 17 dB Rw+Ctr			7	12	18	22	26	18	**22 Rw**	**17 Rw+Ctr**		
+10logS	Element Area	26.1	m^2	14	14	14	14	14	14				
-10logA	where A=0.16V/T			3	3	3	3	3	3				
+0				0	0	0	0	0	0				
=L2				65	59	50	47	43	39	**55**			
L2tot	Running total			65	59	50	47	43	39	55			

Table B.5: IANL Calculation for the social enterprise space

Job name:	19-37 Highgate Rd, Kentish Town			**RESULT SUMMARY:**	LAeq Day								
Job no.:	5608				Predicted Internal Level:		**45**	**dB $L_{A\ eq,T}$**					
Façade:	East				Criterion:		45	**dB $L_{A\ eq,T}$**					
					Difference:		**0**	**dB $L_{A\ eq,T}$**					
SOUND INSULATION BY ELEMENT													
Formula	**Description**	**Data**	**Units**	**Octave band centre frequency, Hz**									
				125	**250**	**500**	**1000**	**2000**	**4000**	**dB(A)**			
	Reverberation Time	1.2	s	1.2	1.2	1.2	1.2	1.2	1.2				
	Receiver Room Volume	284.5	m^3										
Element 1				Façade									
L1	Wall (database)	Leq		63	62	60	63	62	53	67			
-R	Brick-block cavity wall			41	45	45	54	58	58	**52 Rw**	**48 Rw+Ctr**		
+10logS	Element Area	21.9	m^2	13	13	13	13	13	13				
-10logA	where A=0.16V/T			16	16	16	16	16	16				
+0				0	0	0	0	0	0				
=L2				20	15	13	6	1	-7	**14**			
L2tot	Running total			20	15	13	6	1	-7	14			
Element 2													
L1	Window (user data)	Leq		63	62	60	63	62	53				
-R	25 dB Rw 20 dB Rw+Ctr			10	15	21	25	29	21	**25 Rw**	**20 Rw+Ctr**		
+10logS	Element Area	44.1	m^2	16	16	16	16	16	16				
-10logA	where A=0.16V/T			16	16	16	16	16	16				
+0				0	0	0	0	0	0				
=L2				54	48	40	38	33	33	**45**			
L2tot	Running total			54	48	40	38	33	33	45			

APPENDIX C

DRAWINGS

Figure C.1: Ground floor layout

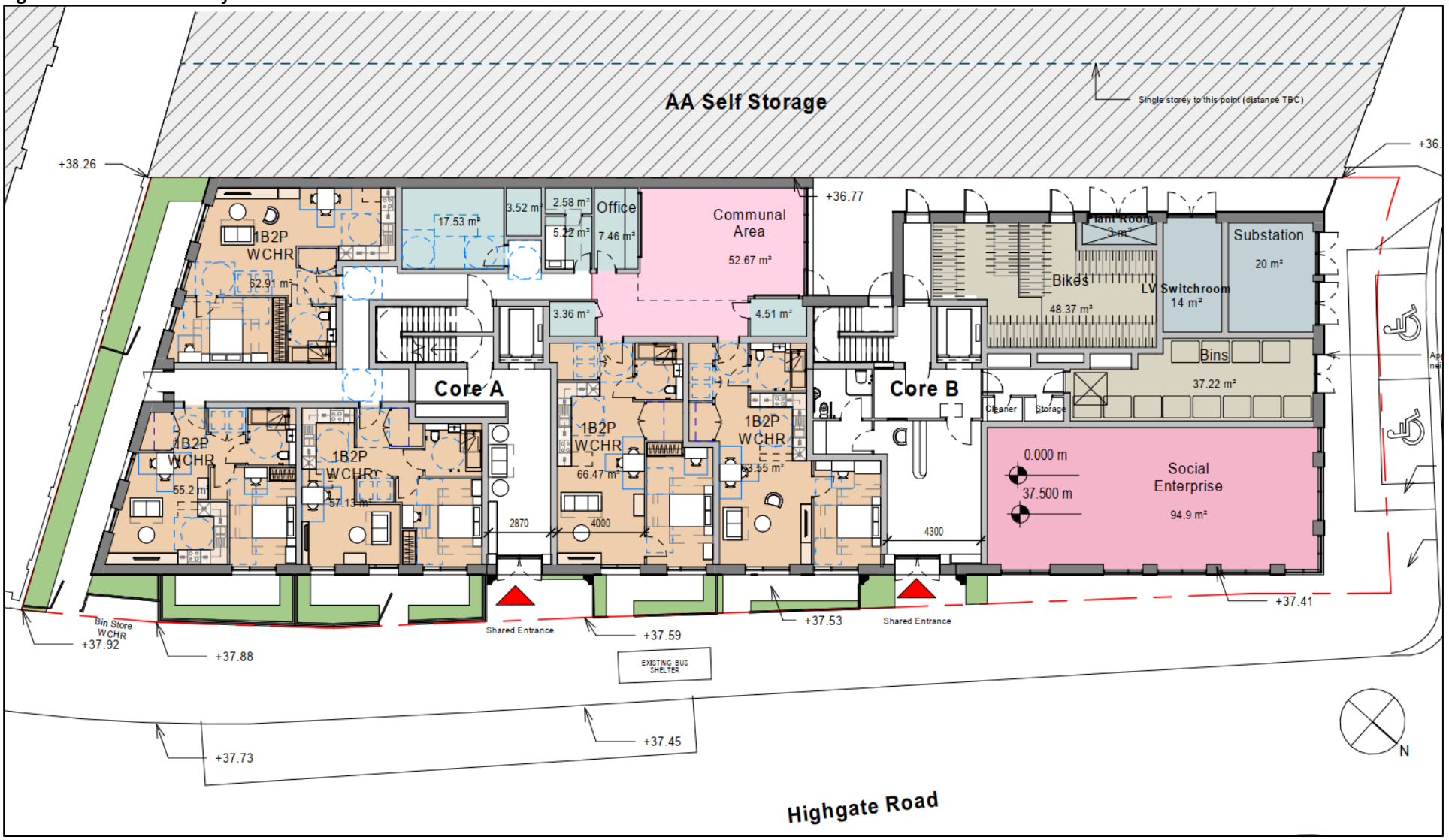


Figure C.2: 5th floor layout

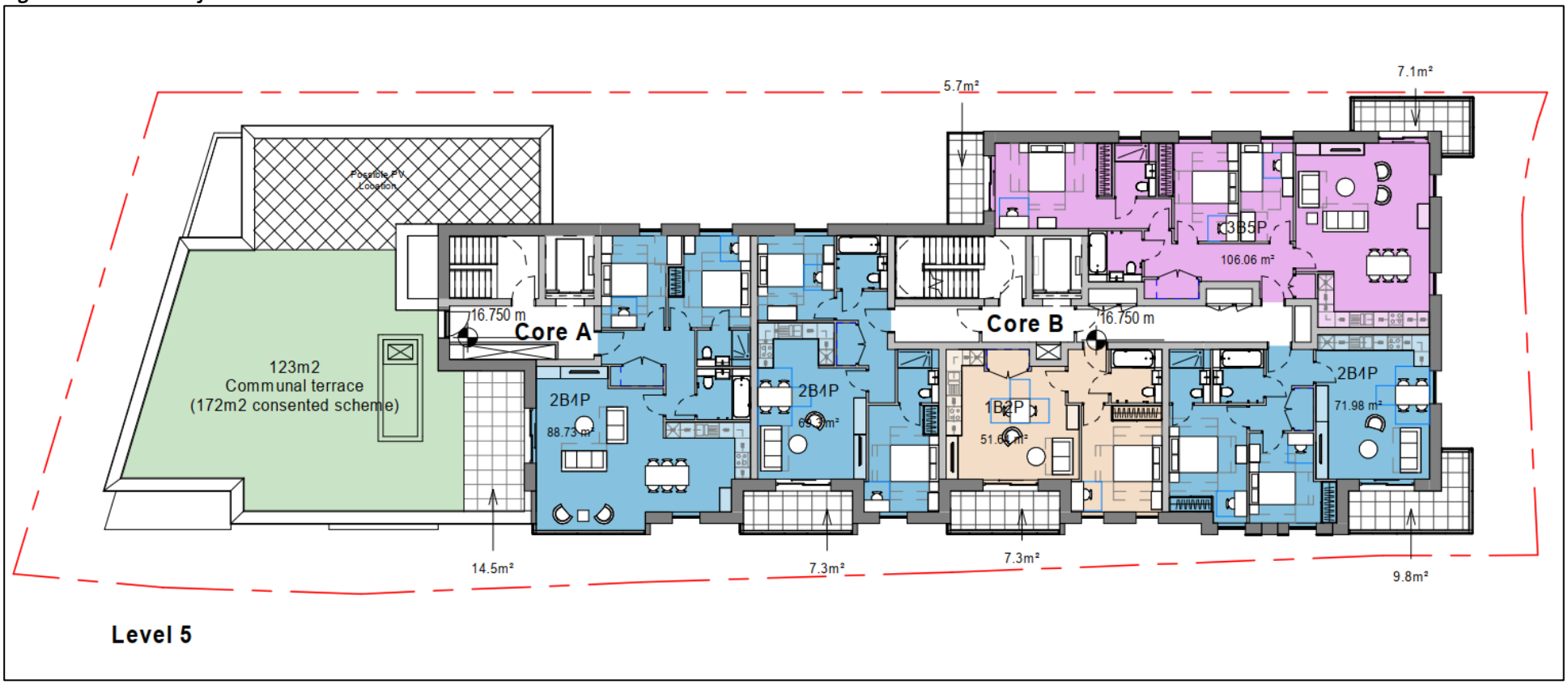


Figure C.3: 7th floor layout (rooftop)

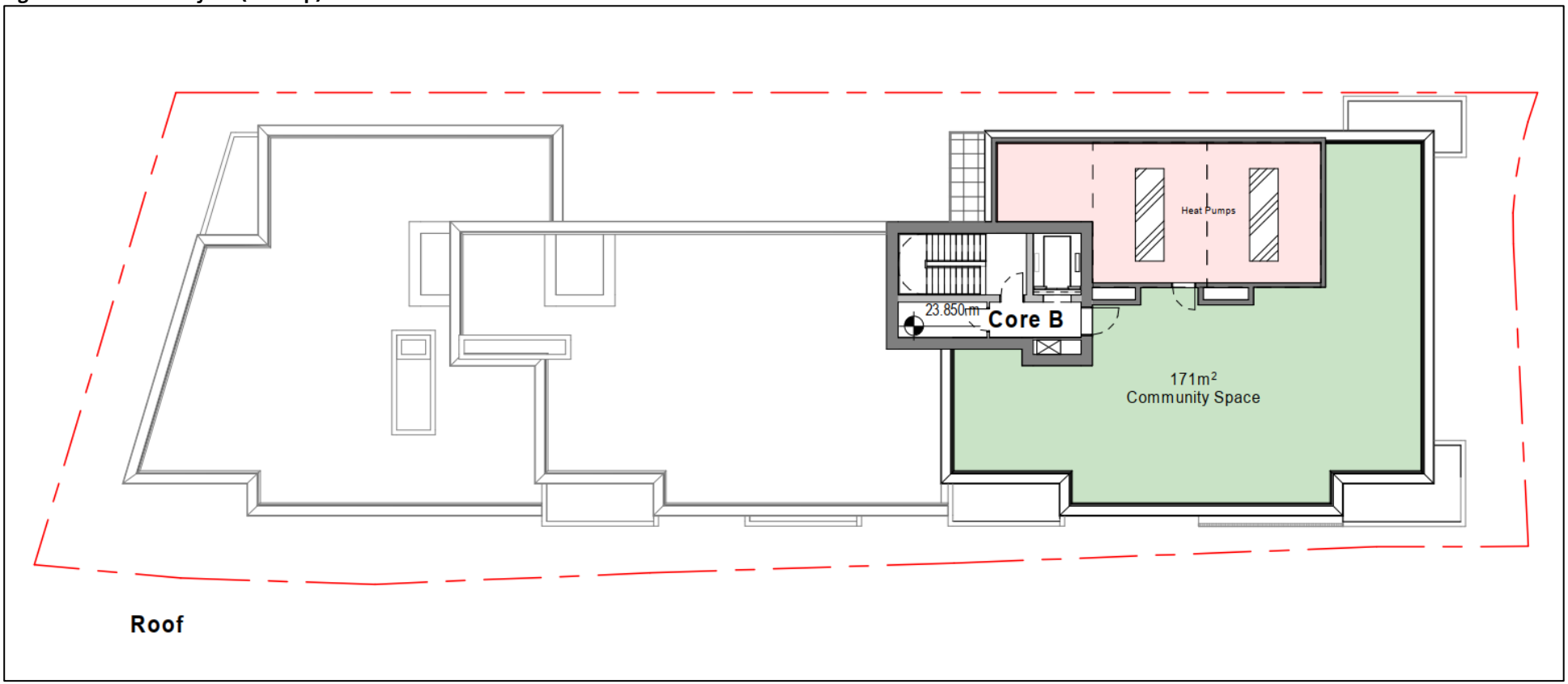


Figure C.4: Section A-A

APPENDIX D

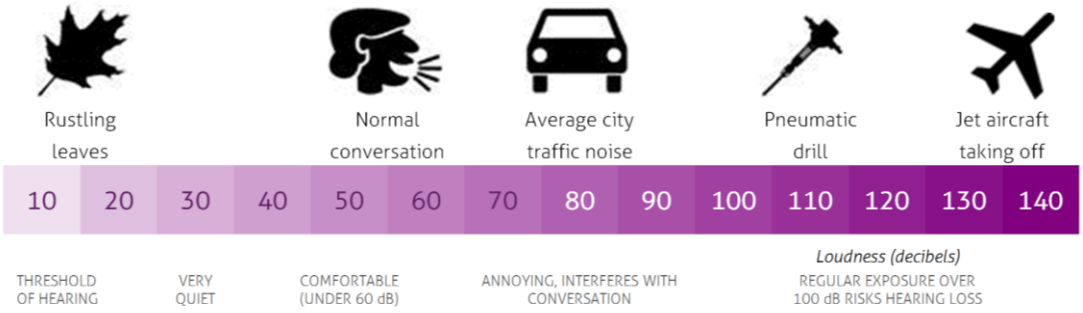
NOISE UNITS AND ACOUSTIC TERMINOLOGY

Noise is measured using a logarithmic scale, to account for a wide range, called the decibel (dB). Noise is defined as unwanted sound and the range of audible sound varies from around 0 dB to 140 dB.

The human ear is capable of detecting sound over a range of frequencies from around 20 Hz to 20 kHz, however its response varies depending on the frequency and is most sensitive to sounds in the mid frequency range of 1 kHz to 5 kHz. Instrumentation used to measure noise is therefore weighted across the frequency bands to represent the sensitivity of the ear. This is called 'A weighting' and is represented as dB(A).

It is generally accepted that under normal conditions humans are capable of detecting changes in steady noise levels of 3 dB, whilst a change of 10 dB is perceived as a doubling or halving of the noise level. An indication of the range of noise levels commonly found in the environment is given below.

Figure D.1: Typical noise levels



A number of different indices are used to describe the fluctuations in noise level over certain time periods. The main indices include:

$L_{Aeq,T}$ This is the "equivalent continuous A weighted sound pressure level" and is the level of a notional steady sound which has the same acoustic energy as the fluctuating sound over a specified time period. It is often used for measuring all sources of noise in the environment, which can be referred to as the ambient noise.

With regard to sound insulation metrics, the following metrics are relevant to this report:

R_w Weighted sound reduction index. This is a single-number quantity which characterises the laboratory airborne sound insulation performance of a separating building element (such as walls, floors, doors and windows) over a range of frequencies. There is no flanking (indirect) transmission loss, so only the element under test needs is considered.

C / C_{tr} A-weighted spectrum adaptation term, taking account of pink noise or road traffic, respectively. This is term is added to single-number ratings (i.e. R_w or $D_{nT,w}$) to take account of characteristics of a particular sound spectra (C for pink, C_{tr} for traffic noise).