PP 18

Planning Conditions: Discharge submission

Planning Permission: 14387/APP2020/4128
& Associated
Listed Building Consent: 14387/APP2020/4126

For Barn type extension at:

The Six Bells
Duck Hill Road
Ruislip
HA4 7TP

Condition 28: Noise Transmission

2nd February 2022

VERNONSMITH & associates

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1.0 PRECEPT

1.1 Background

Summary

1.1.1 This report is submitted in support of an application to discharge condition 18 of the Planning Permission 14387/APP2020/4128 namely Noise transmission. The work ahs been carried out by Peak Acoustics on behalf of the applicant the report is appended to this document

2.0 Noise Transmission

2.1 Specification

2.1.1 The report in appendix One deals with the following issues:

1. Introduction
2. Planning Policy, Guidance & Conditions
3. Assessment Criteria
4. Site Location
5. Background Noise Survey
6. Background Sound Levels
7. Internal Noise Levels
8. Noise Breakout
9. Internal Sound Transmission
10. Conclusion

APPENDIX A – Measurement Details
APPENDIX B - Equipment Details.
APPENDIX C - Meteorology Details
APPENDIX D - Calibration Details
APPEND E Noise Survey Time History
APPENDIX Calculations
APPENDIX G – Sound Insulation Models
APPENDIX H – Plans & Constructions Details
APPENDIX I – Acoustic Terminology

APPEDIX A

PEAK acoustics

Noise Assessment Report

Client:	Arens Bar & Grill
Site:	Arens Bar & Grill at The Six Bells, Ducks Hill Rd, Ruislip HA4 7TS
Reference No.	KD1811211NR
Revision:	0.0
Date of Issue:	31/01/2022

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Executive Summary

A noise assessment has been undertaken in relation to a proposed barn extension to provide an extended dining area at ground floor and 8 no. guest rooms at first floor at Arens Bar & Grill at The Six Bells, Ducks Hill Rd, Ruislip HA4 7TS.

Hillingdon Council issued planning conditions related to the control of noise breakout to the external environment and internal noise transfer to the proposed first floor guest rooms directly above.

Measurements of the background noise climate were undertaken from Wednesday 12th to Thursday 13th January 2022. A representative background sound level of 39 dB L_{A90} was derived from data during the most sensitive time period.

Details of the external wall build-up and separating floor were provided and modelled in sound insulation modelling software, *Insul (Marshall Day Acoustics).*

Noise breakout via the building envelope was calculated considering the proposed external wall build-up and minimum standard double glazing. Noise levels directly outside the proposed dining area were predicted to be below the representative background sound level. A worst-case internal noise limit of 80 dBA has been given for any amplified music system to ensure noise breakout is controlled.

Internal sound transmission from the ground floor dining area to the first-floor habitable rooms indicated levels to be within the limits of Noise Rating Curve NR15 for each individual octave band. No enhancement or alterations to the proposed separating floor construction are deemed necessary.

Contents

Executive Summary 2
1. Introduction 4
2. Planning Policy, Guidance & Conditions 4
3. Assessment Criteria 5
4. Site Location 6
5. Background Noise Survey 7
6. Background Sound Levels 7
7. Internal Noise Levels 8
8. Noise Breakout 8
9. Internal Sound Transmission 10
10. Conclusion 11
APPENDIX A – Measurement Details 12
APPENDIX B - Equipment Details 12
APPENDIX C - Meteorology Details 12
APPENDIX D - Calibration Details 12
APPENDIX E – Noise Survey Time History 13
APPENDIX F – Calculations 14
APPENDIX G – Sound Insulation Models 15
APPENDIX H – Plans & Constructions Details 17
APPENDIX I – Acoustic Terminology 21

1. Introduction

1.1 A noise assessment has been undertaken at Arens Bar & Grill at The Six Bells, Ducks Hill Rd, Ruislip HA4 7TS in relation to a proposed barn extension to provide an extended dining area at ground floor and 8 no. guest rooms at first floor.

1.2 The extended dining area is to accommodate approximately 150 diners in an open plan space. Plans for the extension are given in **Appendix H.**

1.3 The use hours of the dining area will be as follows:

- *Monday & Tuesday: Closed*
- *Wednesday to Saturday: 12:00 – 00:00*
- *Sunday: 12:00 – 22:00*

1.4 A noise assessment is to be undertaken to ensure the proposal will not cause detriment to the amenity of future and existing residents.

2. Planning Policy, Guidance & Conditions

2.1 The National Planning Policy Framework (NPPF) sets out the following aims in relation to the assessment of noise impact in the interest of sustainable development.

- *"avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of a new development;*
- *mitigate and reduce to a minimum other adverse impact on health and quality of life arising from noise from new development, including through the use of conditions;*
- *recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and*
- *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."*

2.2 To avoid and mitigate adverse noise effects on health arising from and impacting on new development, the NPPF makes reference to NPSE. The Noise Policy Statement for England (NPSE) was published in March 2010 and covers all forms of noise other than occupational noise. For the purposes of this report, "Neighbourhood Noise" is most relevant as NPSE defined at paragraph 2.5.

> *"neighbourhood noise which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street."*

2.3 The Noise Policy Statement for England (NPSE) states the following aims in paragraph 2.2.

NOEL – No Observed Effect Level.
This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level.
This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level.
This is the level above which significant adverse effects on health and quality of life occur.

2.4 Hillingdon Council issued the following noise control related planning conditions for the application.

1) *"Prior to the commencement of the superstructure (excluding demolition and site clearance), a scheme for the control of noise transmission to the adjoining dwellings shall be submitted to and approved in writing by the Local Planning Authority. The scheme shall be fully implemented before the development is occupied/use commences and thereafter shall be retained and maintained in good working order for so long as the building remains in use."*

2) *"The use of the building hereby approved shall not commence until a scheme for the control of amplified music emanating from the building has been submitted to and approved in writing by the Local Planning Authority. The scheme shall include such combination of physical works, administrative procedures, noise limits and other measures as may be approved by the Local Planning Authority. The scheme shall be fully implemented before the use commences and thereafter shall be retained and maintained in good working order for so long as the building remains in use."*

3. Assessment Criteria

3.1 There is no formal standard or assessment criteria for internal noise transmission or noise breakout. Bespoke criteria have therefore been adopted from common practices and guidance such as *'BS8233:2014 - Guidance on sound insulation and noise reduction for buildings'* and *'Noise from Pubs and Clubs (Phase II) Final Report - May 2006'* commissioned by DEFRA. The derived bespoke criteria are outlined below.

3.2 **Internal Noise Transfer:**

Internal sound transmission from the ground floor dining area to first floor habitable rooms directly above shall be below Noise Rating Curve NR15 in each individual octave band.

3.3 **Amplified Music Breakout:**

Noise breakout via the building envelope (dB L_{Aeq}) shall not exceed the existing background sound level (dB L_{A90}).

4. Site Location

4.1 The site is located toward the north side of Ruislip in northwest London on Ducks Hill Road (A4180). Areas to the south are predominantly residential with the closest being directly south of the site on a private road. Areas to the north and west are woodland and grassed areas.

4.2 The site and noise monitoring location are shown in Figure 1 below:

Figure 1: Site & Monitoring Locations - earth.google.com

Site Boundary *(Approx.)*

Footprint of Proposed Extension *(Approx.)*

Background Monitoring Location M1 *(Approx.)*

5. Background Noise Survey

5.1 An unattended background noise survey was conducted at position M1 over an approximate 24hr period from Wednesday 12th to Thursday 13th January 2021. This period was selected to measure typical background sound levels during the most sensitive time periods in which the dining area will be in use.

5.2 Measurements of $L_{Aeq,T}$ and $L_{A90,T}$ were logged in 5-minute intervals in accordance with BS7445 - *'Description and Measurement of Environmental Noise'*.

5.3 At position M1 (See Figure 1 on Page 6), the microphone was positioned on the western boundary of the site, close to the nearest dwellings to the south. The microphone was positioned approximately 1.6m from local ground level and away from nearby reflective surfaces.

5.4 The noise climate at the site location is dominated by passing road traffic on Ducks Hill Road. Birdsong from the surrounding woodland was also noted.

5.5 Measurements were obtained using Class 1 instrumentation. Full equipment details are given in **Appendix B**.

5.6 Equipment was calibrated before and after use and no significant drift occurred during measurements. Up to date calibration certification can be provided upon request. Full calibration details are provided in **Appendix D**.

5.7 Daytime temperatures during the survey were noted as around 7-8°C with wind speeds between 2 – 3 m/s; deemed suitable for conducting environmental noise monitoring. Detailed meteorological information can be found in **Appendix C**.

6. Background Sound Levels

6.1 The proposed dining area is to be used up until 00:00, deemed the most sensitive time period. The business was operational during the survey. To negate its influence on the noise climate, background sound level data from the 15-minute period immediately after closing (00:00 – 00:15) is to be considered. These levels are summarised below.

Date(s)	Period	$L_{Aeq,15min}$	$L_{A90,15min}$
Thurs 13th Jan 2022	Night-time (00:00 – 00:15)	47	**39**

Table 1: Background Noise Survey Results

6.2 **39 dB L_{A90}** has been selected as the representative background sound level for the noise breakout assessment in reference to planning condition 2.

6.3 The full time history of the monitoring data is given in **Appendix E.**

7. Internal Noise Levels

7.1 It is understood that amplified music within the dining area will be low background music. In addition to music, the internal noise climate within the proposed dining area is likely to be dominated by spoken voice from diners. Representative internal noise levels have been derived for the dining area using Peak Acoustics library data for music and raised spoken voice data from *'ANSI 3.5-1997' - American National Standard – Methods for Calculation of the Speech Intelligibility Index (1997)*'. These spectra have been summed and normalised to a typical representative internal noise level for the dining area and are tabulated below.

Unit	Para.	Octave Centre Frequency Band (Hz) – Z weighted								dBA
		63	125	250	500	1k	2k	4k	8k	
Dining Area (Speech & Music)	L_p	62	66	70	73	70	66	61	56	75

Table 2: Dining Area Noise Levels

8. Noise Breakout

8.1 The relevant planning condition reads as follows

> *"The use of the building hereby approved shall not commence until a scheme for the control of amplified music emanating from the building has been submitted to and approved in writing by the Local Planning Authority. The scheme shall include such combination of physical works, administrative procedures, noise limits and other measures as may be approved by the Local Planning Authority. The scheme shall be fully implemented before the use commences and thereafter shall be retained and maintained in good working order for so long as the building remains in use."*

8.2 The selected assessment criteria for noise breakout are described in section 3.

8.3 To calculate noise breakout via the building envelope to the external environment, details of the proposed external wall build-up were provided by the applicant. These construction details were used to predict the sound insulation performance in software, *Insul (Marshall Day Acoustics).* For glazed areas, a worst-case assumption has been made for a minimum glazing configuration of '4 / 12-16 / 4mm' standard double glazing. The sound insulation performance of these elements is given below.

Element	Sound Reduction Index (Hz)							dB R_w
	63	125	250	500	1k	2k	4k	
External Wall	20	36	44	51	54	54	66	53
Glazing ('4 / 12-16 / 4mm')	22	24	18	26	40	45	39	30

Table 3: Façade Elements Sound Insulation Performance

8.4 A detailed sound insulation model for the external wall is given in **Appendix G.** Details of the external wall construction are given in **Appendix H.**

8.5 To calculate noise breakout emanating from the dining room structure, the internal noise levels given in Table 2 and sound insulation performance given in Table 3 have been utilised. Room dimensions and surface areas have been measured from current proposals supplied by the applicant. The calculated noise breakout immediately outside the dining area is given below.

Internal Noise Level, dB L_{Aeq}	Calculated External Noise Level, dB L_{Aeq} *(3m from the façade)*
75	38

Table 4: Noise Breakout

8.6 Noise breakout immediately outside the dining area is calculated to be 38 dB $L_{Aeq,}$ 1 dB below the background sound level of 39 dB $L_{A90,}$ measured during the most sensitive time period. It is likely that the dining area will not be near full capacity during the late evening and therefore internal noise levels during this time would be lower than considered in this assessment. In turn, background sound levels are higher when the dining area will likely be at maximum occupancy. The assessment above therefore serves to demonstrate that noise breakout via the building envelope is unlikely to cause detriment to the amenity of nearby, existing, or future residential occupiers.

8.7 To ensure this outcome is maintained, it is advised that an internal noise limit of 80 dBA be imposed for any amplified music system. Bass or subwoofer levels from the system should be kept low at all times. This noise limit should not be exceeded for a duration of more than 15-minutes before action is taken to reduce noise levels. Any noise limiting device should be controlled by permitted staff only, to avoid tampering.

8.8 Details provided by the applicant inform that the proposed dining area extension is to be serviced by a mechanical ventilation system. This system should negate the need for open windows or doors for the purposes of ventilative cooling during the warmer summer months, and thus contain noise levels within the building. In the event that windows or doors should have to be opened, the duration should be kept to a minimum and, if possible, doors and windows only on the north facing elevation should be opened as these face directly away from the nearest receptors.

8.9 Details of the calculation are given in **Appendix F.**

9. Internal Sound Transmission

9.1 The relevant planning condition reads as follows:

> *"Prior to the commencement of the superstructure (excluding demolition and site clearance), a scheme for the control of noise transmission to the adjoining dwellings shall be submitted to and approved in writing by the Local Planning Authority. The scheme shall be fully implemented before the development is occupied/use commences and thereafter shall be retained and maintained in good working order for so long as the building remains in use."*

9.2 The selected assessment criteria for internal sound transmission are described in section 3.

9.3 To calculate internal sound transmission from the ground floor dining area to the first-floor habitable rooms, details of the proposed separating floor construction have been provided by the applicant and modelled in sound insulation modelling software, *Insul (Marshall Day Acoustics).* The modelled sound insulation performance of the proposed floor system is given below.

Element	Sound Reduction Index (Hz)							dB R_w
	63	125	250	500	1k	2k	4k	
Proposed Separating Floor	32	40	55	66	73	80	80	**65**

Table 5: Floor/Ceiling Sound Insulation

9.4 A detailed sound insulation model for the separating floor is given in **Appendix G.** Details of the proposed build up are given in **Appendix H.**

9.5 To calculate internal sound transmission from the dining area to first floor habitable rooms, the internal noise levels given in Table 2 and sound insulation performance given in Table 5 have been utilised. Room dimensions and surface areas have been measured from current proposals supplied by the applicant. The calculated noise transmission has been compared to Noise Rating Curve NR15 below.

Internal Space/Criteria	Centre Octave Frequency Band (Hz)							dBA
	63	125	250	500	1k	2k	4k	
Dining Area (Source)	62	66	70	73	70	66	61	**75**
First floor room (Receiver)	31	27	16	8	0	0	0	**14**
NR15	*47*	*35*	*26*	*19*	*15*	*12*	*9*	-
Difference, dB	-16	-8	-10	-12	-15	-12	-9	-

Table 6: Internal Sound Transmission

9.6 The comparison made above in Table 6 demonstrates that internal sound transmission from the dining area to first floor habitable rooms will be within the limits of NR15 for each individual octave band. No enhancements to the proposed floor/ceiling construction are deemed necessary.

9.7 Details of the calculation are given in **Appendix F.**

10. Conclusion

10.1 A noise assessment has been undertaken at Arens Bar & Grill at The Six Bells, Ducks Hill Rd, Ruislip HA4 7TS in relation to a proposed barn extension to provide an extended dining area at ground floor and 8 no. guest rooms at first floor.

10.2 Hillingdon Council issued planning conditions related to control of noise breakout to the external environment and internal transfer to the proposed first floor guest rooms.

10.3 Measurements of the prevailing background noise climate were undertaken from Wednesday 12th to Thursday 13th January 2022.

10.4 Noise breakout via the building envelope was calculated and predicted to be below the lowest background sound levels during the most sensitive time period. A worst-case internal noise limit has been given to ensure noise breakout is controlled.

10.5 Internal sound transmission from the ground floor dining area to the first-floor habitable rooms indicated levels to be within the limits of NR15 for each octave band. No enhancement to the proposed separating floor construction is deemed necessary.

APPENDIX A – Measurement Details

Measurement	Kit	Start Date	Start Time	End Date	End Time
M1	A5	12/01/2022	12:50	13/01/2022	12:00

APPENDIX B - Equipment Details

Kit	Equipment	Make	Model	Class	Serial Number
A5	Sound Meter	RION	NL-52	1	00219828
A5	Pre-Amp	RION	NH-25	1	00344
A5	Microphone	RION	UC-59	1	18806
A5	Calibrator	RION	NL-75	1	34212936

APPENDIX C - Meteorology Details

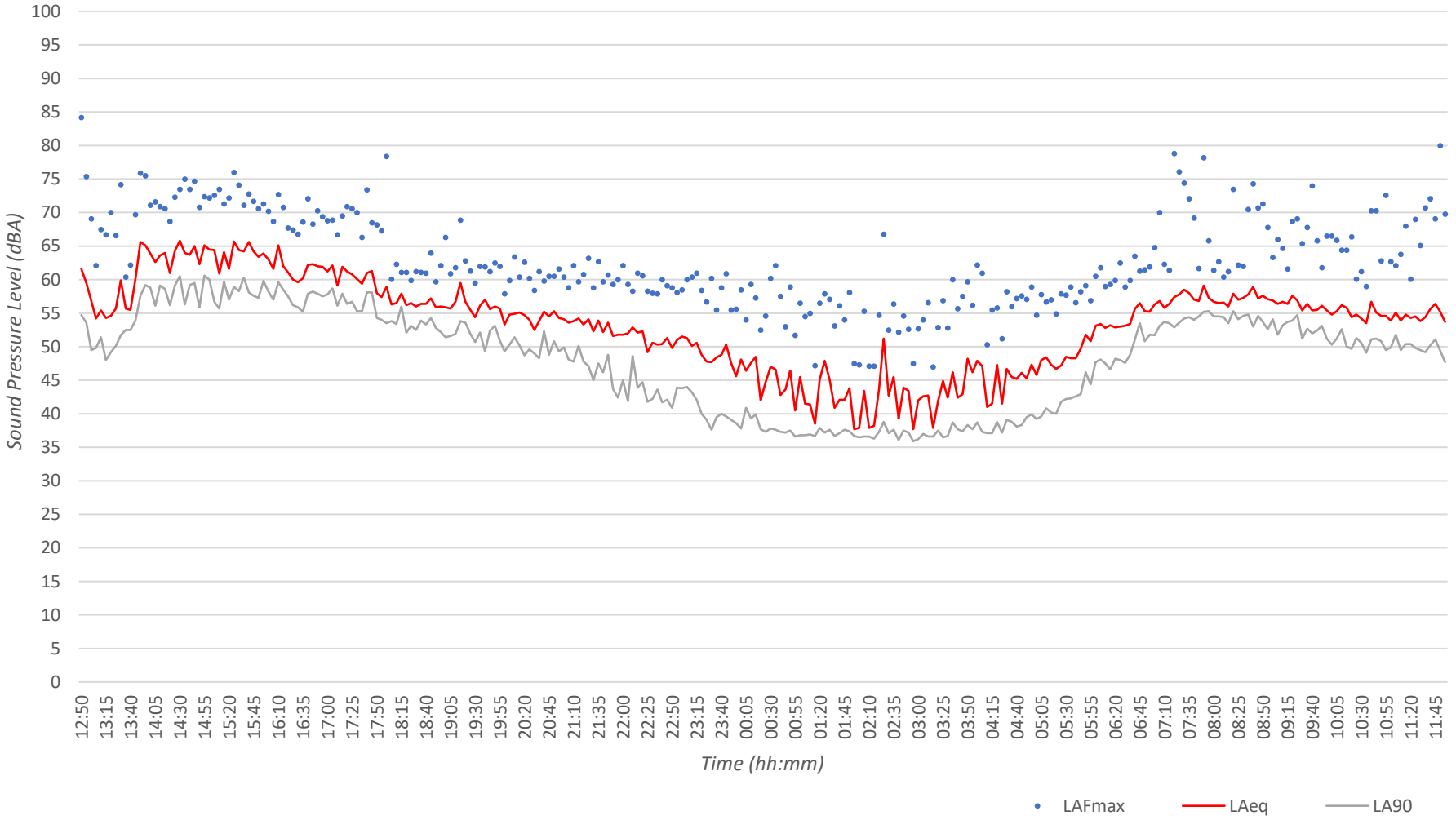
Date	Temp C°	Wind Speed m/s	Wind Direction	Humidity %	Precipitation mm	Cloud Cover (Oktas)
12/01/2022	7	2 - 3	SW	81	0.0	2/8
13/01/2022	8	2 - 3	SSW	76	0.0	3/8

APPENDIX D - Calibration Details

Measurement	Calibrator Ref Level (dB)	Deviation Before (dB)	Deviation After (dB)
M1	94.0	0.0	0.0

APPENDIX E – Noise Survey Time History

Measured Background Sound Levels Time History (M1): Wednesday 12th to Thursday 13th January 2022



APPENDIX F – Calculations

Noise Breakout

Noise Breakout Calculation

Calculation of noise breakout from ground floor restaurant area to external environment

1/1 Octave Centre-Freq. Band	Hz	63	125	250	500	1k	2k	4k	dBA
Source Noise Level, dB	dB	62	66	70	73	70	66	61	**75**
External wall	R, dB	20	36	44	51	54	54	66	
Glazing (30 dB Rw)	R, dB	22	24	18	26	40	45	39	
R3	R, dB	0	0	0	0	0	0	0	
Comp R	Rcomp, dB	-20	-30	-25	-33	-46	-50	-46	
Distance Correction	dB	-10	-10	-10	-10	-10	-10	-10	
Receiver Level *(Unweighted)*	dBZ	40	34	43	38	22	14	13	
A-Weighting	*dB*	*-26*	*-16*	*-9*	*-3*	*0*	*1*	*1*	
Receiver Level	**dBA**	**13**	**18**	**34**	**35**	**22**	**15**	**14**	**38**

Areas & Distances		
External wall	m2	110.0
Glazing (30 dB Rw)	m2	28.0
R3	m2	0.0
S Total	m2	138.0
S Facing Receiver	m2	138.0
Source > Receiver Distance	m	3.0
Lw Ground Atten. Factor	dB	-14.0

Internal Sound Transmission

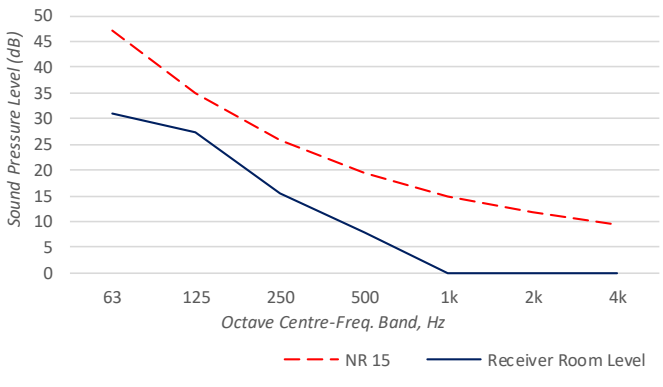
Room to Room Sound Transmission Calculation

Description:

Calculation of internal sound transmission from ground floor restaurant area to first floor habitable rooms

1/1 Octave Centre-Freq. Band	*Hz*	*63*	*125*	*250*	*500*	*1k*	*2k*	*4k*	*dBA*
Source Noise Level, dB	*dB*	*62*	*66*	*70*	*73*	*70*	*66*	*61*	***75***
Proposed Floor	*R, dB*	*32*	*40*	*55*	*66*	*73*	*80*	*80*	
R2	*R, dB*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
R3	*R, dB*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Comp R	*Rcomp, dB*	*-32*	*-40*	*-55*	*-66*	*-73*	*-80*	*-80*	
Receiver Room Level	**dB**	**31**	**27**	**16**	**8**	**-2**	**-13**	**-18**	**14**

Partition & Receiver Room Details		
Proposed Floor	*m2*	*20.0*
R2	*m2*	*0.0*
R3	*m2*	*0.0*
S Total	*m2*	*20.0*
S Shared Area	*m2*	*20.0*
Receiver Room Volume	*m3*	*50.0*
RT60	*s*	*0.5*
Absorptive Area	*A, m2*	*16.1*
Source Room Level	*dBA*	*75*
Receiver Room Level	*dBA*	***14***



APPENDIX G – Sound Insulation Models

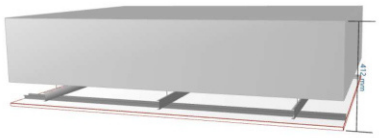
Separating Floor Model

Sound Insulation Prediction (v9.0.22)

INSUL

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
Peak Acoustics - Key No. 5547
Job Name:
Job No.: Initials:kyle
Date:25/01/2022
File Name:Proposed Floor.ixl

Notes:



Rw 65 dB
C -3 dB
Ctr -10 dB

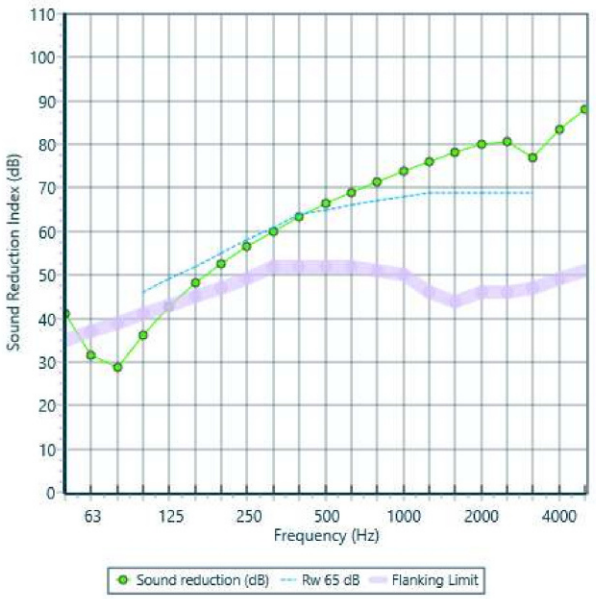
Mass-air-mass resonant frequency = =66 Hz
Panel Size = 2.7 m x 4.0 m
Partition surface mass = 549 kg/m²

System description

Panel 1 : 1 x 300 mm Concrete

Frame: Suspended Light Steel Grid (1E2 mm x 45 mm), Stud spacing 600 mm ; Cavity Width 100 mm
Panel 2 : 1 x 12.5 mm Gyproc Wallboard 12.5mm

freq.(Hz)	R(dB)	R(dB)
50	41	
63	32	32
80	29	
100	36	
125	43	40
160	48	
200	53	
250	57	55
315	60	
400	63	
500	66	66
630	69	
800	71	
1000	74	73
1250	76	
1600	78	
2000	80	80
2500	81	
3150	77	
4000	83	80
5000	88	



External Wall Model

Sound Insulation Prediction (v9.0.22)

INSUL

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
Peak Acoustics - Key No. 5547
Job Name:
Job No.: Initials:kyle
Date:25/01/2022
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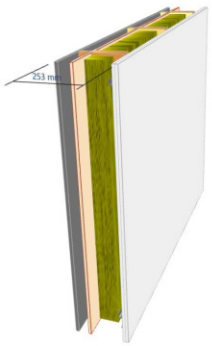


Rw 53 dB
C -1 dB
Ctr -5 dB

Mass-air-mass resonant frequency = =44 Hz , 155 Hz

Panel Size = 2.7 m x 4.0 m

Partition surface mass = 45.8 kg/m²

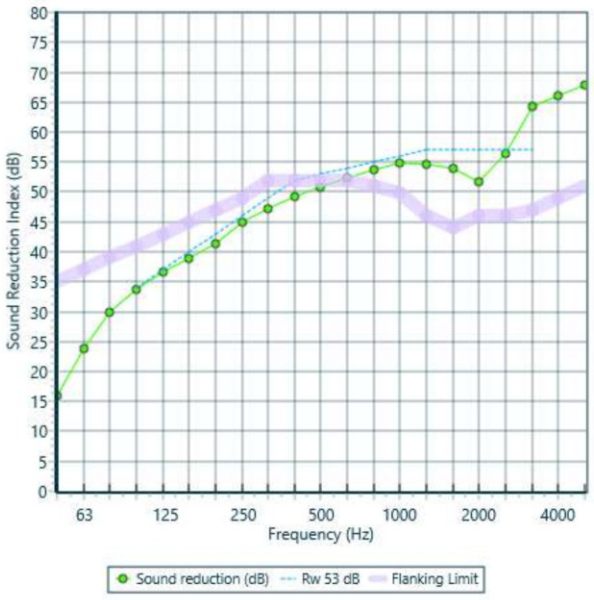
System description

Panel 1 : 1 x 14 mm Stria Cladding

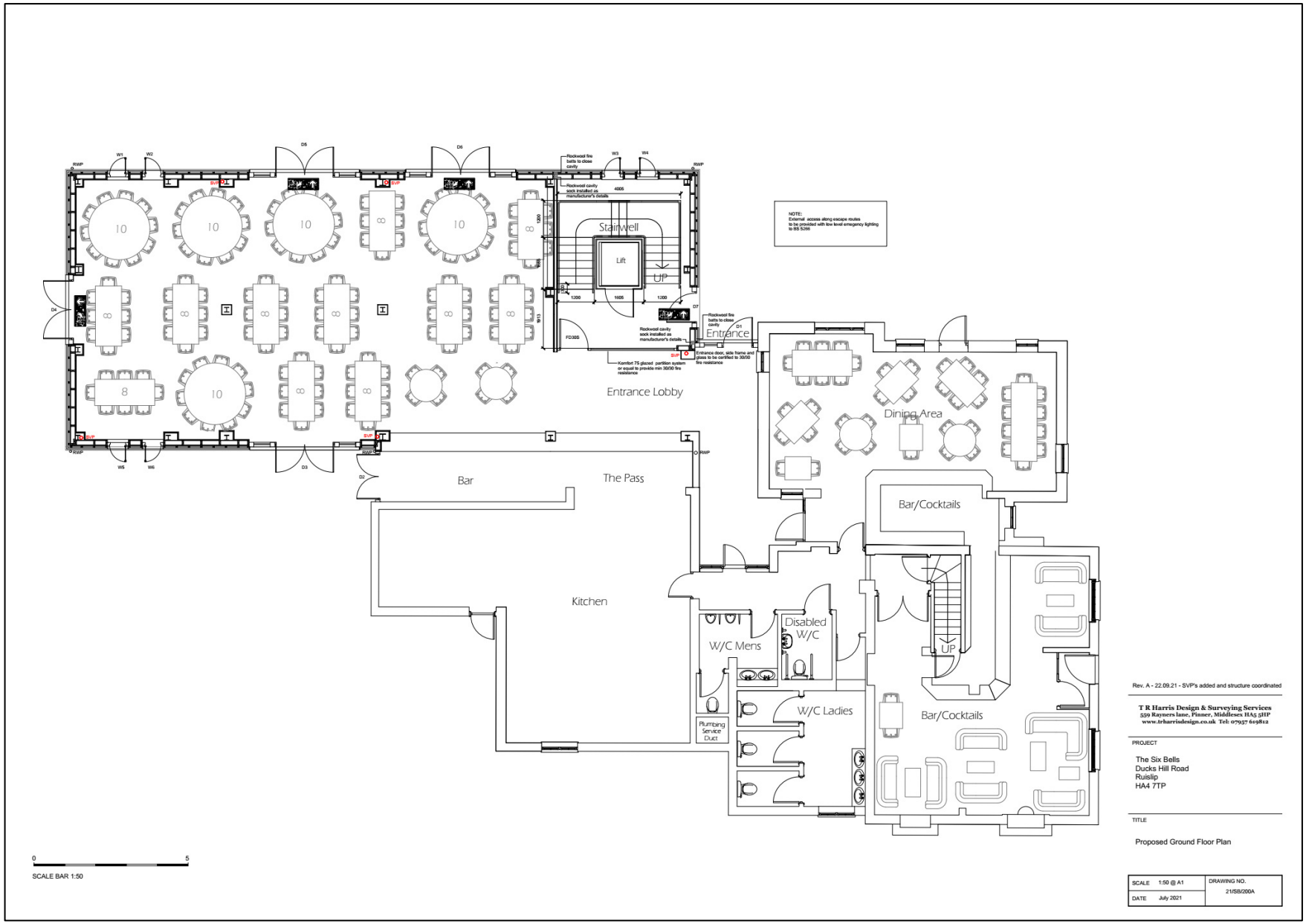
Frame: Timber stud (50 mm x 25 mm), Stud spacing 600 mm ; Cavity Width 50 mm
Panel 2 : 1 x 12 mm OSB (Oriented Strand Board)

Frame: Timber stud + Resilient rail/bar (1.4E2 mm x 50 mm), Stud spacing 600 mm ; Cavity Width 152 mm , 1 x Fibreglass (10kg/m3) Thickness 100 mm ...
Panel 3 : 2 x 12.5 mm Gyproc SoundBloc 12.5mm

freq.(Hz)	R(dB)	R(dB)
50	16	
63	24	20
80	30	
100	34	
125	37	36
160	39	
200	41	
250	45	44
315	47	
400	49	
500	51	51
630	52	
800	54	
1000	55	54
1250	55	
1600	54	
2000	52	54
2500	56	
3150	64	
4000	66	66
5000	68	

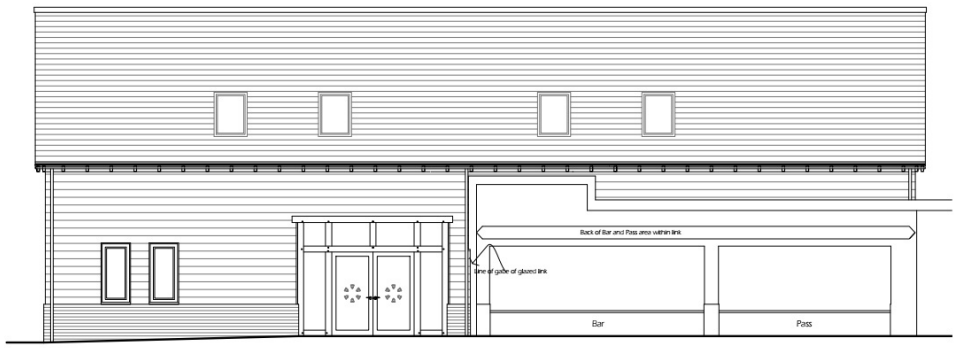


APPENDIX H – Plans & Constructions Details



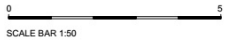
North West Elevation: Proposed

North East Elevation: Proposed



North West Elevation: Proposed

South West Elevation: Proposed



T R Harris Design & Surveying Services
339 Rayners lane, Pinner, Middlesex HA5 5HP
www.trharrisdesign.co.uk Tel: 07937 619812

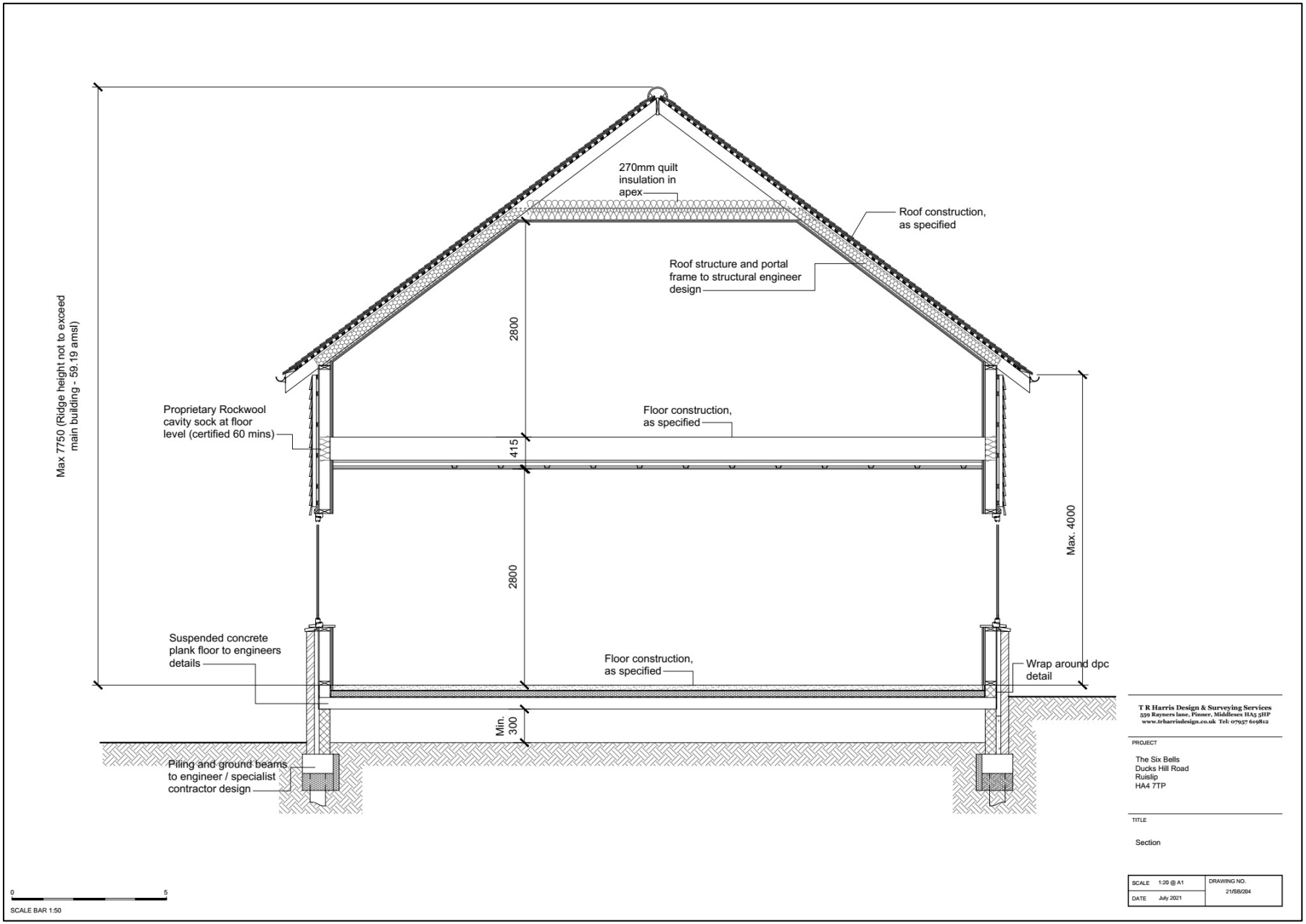
PROJECT

The Six Bells
Ducks Hill Road
Ruislip
HA4 7TP

TITLE

Proposed Elevations

SCALE	1:50 @ A1	DRAWING NO.	21/SB/203
DATE	July 2021		


Max 7750 (Ridge height not to exceed main building - 59.19 amsl)
270mm quilt insulation in apex
Roof construction, as specified
Roof structure and portal frame to structural engineer design
2800
Proprietary Rockwool cavity sock at floor level (certified 60 mins)
Floor construction, as specified
415
2800
Max. 4000
Suspended concrete plank floor to engineers details
Floor construction, as specified
Wrap around dpc detail
Min. 300
Piling and ground beams to engineer / specialist contractor design
0
5
SCALE BAR 1:50
T R Harris Design & Surveying Services
539 Rayners lane, Pinner, Middlesex HA5 5HP
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PROJECT
The Six Bells
Ducks Hill Road
Ruislip
HA4 7TP
TITLE
Section
SCALE 1:20 @ A1
DRAWING NO. 21/SB/204
DATE July 2021

GENERALLY

1. All dimensions are to be checked on site. Any discrepancies should be clarified through the architect.
2. Specification notes to be read in conjunction with the drawings
3. Main Contractor to assume riole of Principal Contractor and comply fully with CDM Regulations 2015 and prepare all necessary risk assessments in accordance with HSE guidelines. Principal Designer to be confiirmed.

FOUNDATIONS

4. Piled foundations with ground beams to engineer / specialist contractor design and generally in accordance with NHBC guildelines, depths determined by trees in close proximity.

GROUND FLOOR CONSTRUCTION

5. Precast suspended concrete floors as indicated to engineer / manufacturer design, all laid in strict accordance with the manufacturer's guidelines. Oversite to be stripped to reduced levels to ensure minimum floor voids, as shown with ground treated in accordance with the manufacturer's details. Floors to be laid on a dry-laid dpc, to link with suitable wrap around dpc as indicated, all fully taped and jointed in accordance with the dpc manufacturer's details. Ensure dpc's lap with existing at abutments with existing structures
6. Floor build up over suspended concrete floors to comprise 1200 gauge polythene dpm, all fully lapped and taped to dpc, followed by 75mm Quin Therm QF insulation or equal with 25mm perimeter upstand followed by 500 gauge polythene separating layer under 75mm proprietary quick drying sand cement screed. Underfloor heating installed as manufacturer's details, if provided. Incorporate movement joints in screed as recommended by manufacturer.

FIRST FLOOR CONSTRUCTION

7. Reinforced concrete Comflor composite deck to structural engineer design with level trowelled finish ready tro recvieve floor finishes direct. Floor supported on steel frame to structural engineer design.
8. Underside of floor to be finished with MF suspended ceiling system installed to manufacturer's details with 12.5mm tapered edge board, scrimmed, jointed and painted.

EXTERNAL WALLS

9. Timber framed construction generally designed and installed to manufacturer's design and detail. Timber frame to comprise 50x140 studs, header plates and sole plates with sole plates laid on dpc minimum 150mm above finished ground level. Outside face to be sheathed with 12mm OSB with breather membrane over to manufacturer's details. 100mm PUR insulation (Quinn Therm or equal) to be placed between studs. Tyvek Airguard Smart vapour check or equal to be provided to inside face to be finished with a 15mm resilient bar followed by two layers 12.5mm tapered edge Soundbloc plasterboard or equal (taped, jointed and painted).

EXTERNALL WALLS CONT'D

10. Timber cladding to outside face to comprise 25x50 treated sw battens to make up levels as required, followed by Tyvek Supro or equal, 50x50 vertical battens and horizontal feather edged timber cladding system, painted black.
11. Low level brick plinth detail to be formed with Hyload dpc or equal 150mm above external finished ground level. Outer leaf brickwork below dpc level to be either Class B engineering brick or designated F2/S2 facing brick (water absorption maximum 10%) to BS EN 771-1. Inner leaf to be either 140mm Thermalite Aircrete High-Strength 7 ot 7N Fibolite Plasmor blocks. Include for lead flashing detail dressed behind cladding and over projecting plinth.
12. All brickwork and blockwork built using a Class 6 mortar (1:4½) to BS EN 998-2 below dpc level using SRPC and 1:1:6 gauged mortar above dpc level.
13. Incorporate nominal 65x215 terracotta airbricks or equal to ventilate the sub-floor at nominal 900mm centres at ground level to achieve a minimum equivalent ventilation of 1500mm² per metre run of wall, to be provided on all opposing walls. Include telescopic vents as required and tray damp proof course over where vents penetrate through the cavity wall.

MAIN PITCHED ROOFS / PORTAL FRAME

14. Steel portal frame and roof structure generally to structural engineer's design. Main slopes to comprise Sahatas plain clay tiles on 25x38 treated sw battens on Tyvek Supro breathable felt, all fixed in accordance with the roof tile manufacturer's details. Provide 125mm Quin Therm QW or equal between 150mm deep rafters, followed by 25mm to the underside with two layers 12.5mm tapered edge Fireline plasterboard under (taped, jointed and decorated) for minimum 30 minutes fire resistance protecting ceiling void / cavity above)

LOW LEVEL ROOFS
OVER LINKS

15. Pitched roofs to comprise Sahatas plain clay tiles on 25x38 treated sw battens on Tyvek Supro breathable felt, all fixed in accordance with the roof tile manufacturer's details. Provide 270mm quilt insulation between ceiling joists in void.
16. Warm deck flat roof to comprise joists to structural engineer's details with firings over to achieve a minimum 1:40 fall, followed by 18mm OSB board, Icopal SA Primer and Torch Safe TA VCL vapour barrier, 120mm Quinn Therm QRFR insulation or equal,18mm OSB board and finished with Topseal fibreglass flat roofing system or equal uinstalled as manufacturer's guidelines. Include for kerb detail at abutments and for all upstands and lead cover flashings, and for dressing system up behind tiled roof finishes to achieve a minimum vertical updatnd of 150mm.

PARTITION AROUND STAIR ENCLOSURE

17. Partition around stair enclosure to comprise proprietary 70mm studs as manufacture'rs guidelines finished both sides with two layers 12.5mm British Gypsum Soundbloc or or equal with a 15mm resilient bar to one side.
18. Glazed screen to stair enclosure to be minimum 30/30 fire resisting (Komfort 75 or equal) with FD30S fire door (all installed as manufacturer's certified details). Glazed screen and door also to comply with BS6206 Class B for safe breakage.

STAIRCASE

19. Staircase, balustrade, handrails and guarding to engineer's / manufacturer design to with closed treads and risers and distinguishable nosings (55x55mm). Anticipated risers of 169mm and goings of 260mm (maximum 170 and minimum 250mm respectively). Handrails set at 900 above pitchline increasing to 1000mm at landings and 1100mm on quarter landings where there is a risk of fall. Laminated glass balustrades as manufacturer design. Design to ensure no gaps between strings and guarding gretaer than 100mm.
20. Guarding as above, set 1100mm above fibnished floor level.

DOORS & WINDOWS

21. All new external doors and windows to main barn area be traditional timber construction, double glazed with low E glass and/or argon filled to achieve a U-value of not more than 1.6W/m²K (actual specification to manufacturer's design).
22. Main entrance door and glazed screen to be certied minimum 30/30 fire resistant .Main entrance doors to require a maximum force of 30N to open the door on the leading edge when in the closed position, and not more than 22.5N bertween 30 to 60 degrees on the opening cycle. Where this cannot be achieved, a Part M compliant certified powered entry door system is to be provided with suitable push button controls, which can be overidden by manual use.
23. External doors generally are to be provided with a level access threshold as detailed and are to achieve a minimum clear opening of 800mm with one door leaf in the open position (1600mm when both are open).
24. Safety glass to BS 6206 Class B to be provided within new doors and side panes within 300mm of doors up to a height of 1500mm above FFL and to BS 6206. Class C to any other low level glazing less than 800mm above FFL.
25. Internal doors to be certified FD30S fire doors where indicated. All internal doors to achieve a minimum clear opening of 800mm.
26. All doors providing disabled access to provide a zone of visibility between 500 and 1500mm (minimum requirement) above finished floor level.
27. Door levers generally, where provided to have 'D' handle lever furniture for ease of use.
28. Means of escape doors within restaurant area to be provided with panic push pad release mechanisms. Elsewhere, doors should be cabable of being opened using a one handed single action.

SURFACE WATER DRAINAGE

29. Marley Deepflo gutters and downpipes fixed as manufacturer's details. Below ground drainage to SUDS design by others.

SPACE HEATING & VENTILATION

30. Space heating and mechanical ventilation systems to building services engineer design, to comply with the Non Domestic Building Services Compliance Guide

DISABLED REFUGE

31. Disabled refuge as indicated with clear signage , to be be provided with an emergency voice communication (EVC) system complying with BS 5839-9. It should consist of Type B outstations communicating with a master station located next to the fire detection and alarm panel and also connected using wireless technology to enable remote communication to a designated control centre, to be part of the buildings management strategy.

FIRE ALARM & EMERGENCY LIGHTING
INSTALLATIONS AND EXIT SIGNAGE

32. New fire alarm system to building services engineer design to be extended into new areas in accordance with BS 5839, grade L1 and certified on completion.
33. Emergency lighting to BS 5266 to be provided to all areas throughout (including external escape routes) and certified on completion.
34. Exit signage in accordance with 5499 to be provided at all designated final exits on escape routes

PART L - THERMAL PERFORMANCE

35. SBEM Calculations and Energy Performance Certficate to be provided on completion.

PART M - DISABLED ACCESS

36. External access paths to be designed to a maximum 1:20 fall. Doors as specified under doors and windows.
37. Ambulant disabled staircase to be provided, as detailed.
38. Part M compliant Commercial Platform Lift installation as supplied by Invalift limited.
39. Existing disabled WC facilities to be used to serve new extension.

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PROJECT

The Six Bells
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HA4 7TP

TITLE

OUTLINE SPECIFICATION NOTES FOR BUILDING REGULATIONS COMPLIANCE

SCALE	DRAWING NO.
DATE July 2021	21/SB/SPEC.01

APPENDIX I – Acoustic Terminology

To aid the understanding of acoustic terminology and the relative difference between noise levels the following background information is provided.

We perceive sound when the ear detects fluctuations in air pressure (sound waves), which are then processed by the brain and perceived as sound. Humans can hear an incredibly wide range of sound intensities ranging from jet engines to fingertips lightly brushing against each other. This range is quantified using a logarithmic scale called the decibel scale (dB). The comfortable range of the decibel scale typically ranges from 0dB (the threshold of hearing) to around 140dB. Here are some examples common environments and their typical noise levels.

Noise Level	Environment
0 dB(A)	Threshold of hearing
20 to 30 dB(A)	Quiet bedroom at night
30 to 40 dB(A)	Living room during the day
40 to 50 dB(A)	Typical office
50 to 60 dB(A)	Inside a moving car
60 to 70 dB(A)	Typical high street
100 to 110 dB(A)	Fire alarm at 1 metre away
140 dB(A)	Threshold of pain

Terminology

dB (decibel) – A unit used to quantify the pressure level of sound. Defined as 20 times the logarithm of the ratio between the root-mean-square pressure of a given sound field and a reference pressure level ($2x10^{-5}$ Pa – threshold of hearing).

$L_{Aeq,\,T}$ – The equivalent continuous sound pressure level over a stated period. It quantifies a fluctuating sound level over a given period as the equivalent continuous sound level in which the same amount of acoustic energy is contained over. This is A-weighted in order to assess human perception.

L_{A90} – The sound level exceeded 90% of the time. Typically used to describe background noise the L_{90} is regarded as the 'average minimum level' and quantifies the common sound level of a fluctuation sound field i.e. the sound level that occurs 90% of the time. Alternatively, L_{10} describes the sound level exceeded 10% of the time and therefore quantifies the 'average maximum level' of sound which is often used during the calculation of road traffic noise.

A-Weighting – A standard weighting of the audible frequencies designed to reflect the response of the human ear to noise.

R_w – The Weighted Sound Reduction Index (R_w) is a number used to rate the effectiveness of a soundproofing system or material.

PEAK acoustics

Let us introduce ourselves

Peak Acoustics formed in 2011, we are a fully accredited specialist consultancy and testing organisation.

We are a diverse team of Acoustic Consultants, Specialist Engineers and Building Compliance Technicians, with a network spanning the UK. We are proud to offer our services nationally, with no job too big or small.

We provide Acoustic Consultancy, Building Compliance Testing and Energy Services.

Additional Services

We offer an extensive range of services in the sectors of Acoustic Consultancy, Building Compliance & Energy Efficiency. We are able to put together custom packages combining multiple services which saves both time and money for you.

Building Compliance

- **Sound Insulation Testing**
- **Air Tightness Testing**
- **Ventilation Testing**
- **Water Efficiency Calculations**
- **Sound Insulation Specification**

Energy Efficiency

- **SAP Calculations**
- **EPC's**
- **SBEM Calculations**
- **Energy Statements**
- **Sustainability Statements**
- **MEES Regulations**
- **Commercial EPC's**

Acoustic Consultancy

- **Noise Assessment for planning conditions**
- **Construction site noise monitoring**
- **Noise at work assessments**
- **Noise & Vibration Impact Assessments**

Peace of mind

We are accredited and registered by all the relevant major UK authorities to provide the services we offer. Peak Acoustics is UKAS accredited for sound insulation testing, ATTMA registered for Air Leakage Testing. and our Energy team are all Domestic On-Completion Energy Assessors.

Our Added Value

We combine our detailed knowledge of building regulations with our technical understanding of building physics, acoustics and environmental sciences to maximise development quality. Our work ensures appropriate strategies and studies are prepared to demonstrate to local authorities how proposed developments will be of high quality and generate acceptable impact on the surrounding environment.

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