



REPORT

FAÇADE NOISE EXPOSURE ASSESSMENT
TO SUPPORT OUTLINE PLANNING APPLICATION

SITE ADDRESS

10 WOODLANDS ROAD, WICKFORD, ESSEX SS12 0AL



REFERENCE

HA/AF613/V1

HEALTHY ABODE ACOUSTICS
BUILDING ACOUSTICIANS & ENVIRONMENTAL NOISE CONSULTANTS

Our Ref HA/AF613/V1
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For Ricky Coleby
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SUMMARY

- Healthy Abode Ltd t/a as HA Acoustics was instructed to undertake a noise façade assessment for proposed residential premises to be located at 10 Woodlands Road, Wickford, Essex SS12 0AL.
- HA Acoustics has undertaken an environmental noise survey and assessment at the site in line with the guidance contained in British Standard (BS) 8233:2014. The environmental noise survey was undertaken in order to determine prevailing ambient, background and maximum noise levels that are representative of the residential premises, measurements being taken over continuous 5-minute periods.
- An unattended survey was conducted between Wednesday 27th September 2023 and Friday 29th September 2023 at two fixed secure monitoring positions deemed representative of the worst affected façades of the proposed site.
- The results of the noise survey are considered reasonable given the location of the measurement position and the existing noise sources in the local vicinity. The representative time-averaged ambient and night-time maximum noise levels have been calculated at:
 - Position 1: 52 dB L_{Aeq} daytime, 42 dB L_{Aeq} night time, and 59 dB $L_{Amax,F,NNE}$,
 - Position 2: 52 dB L_{Aeq} daytime, 45 dB L_{Aeq} night time, and 62 dB $L_{Amax,F,NNE}$
- The assessment has indicated that internal noise levels within the proposed development are predicted to meet the guideline noise criteria contained in BS 8233:2014 provided the identified appropriate minimum specified glazing, ventilation and façade materials are installed to a good manner of workmanship.
- At the time of composing the report the exact specifications of the construction/build of the proposal have not been finalised. Recommendations provided in respect to sound insulation of the building have been proposed based on achieving the desired internal noise levels in BS 8233:2014.

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1. INTRODUCTION

- 1.1. It is proposed to introduce new residential premises, comprising of two flats at 10 Woodlands Road, Wickford, Essex SS12 0AL. The existing ambient noise climate could have the potential to affect the premises. An environmental noise survey had been undertaken to determine the sites noise climate levels.

- 1.2. The proposed site lies within the jurisdiction of the Local Authority, Basildon Borough Council. This assessment is sought to support the planning application

- 1.3. The purposes of this report are:
 - 1.3.1. To determine and assess prevailing ambient, background and maximum noise levels affecting the proposal due to nearby noise sources (e.g. air and road traffic);

 - 1.3.2. To present desired internal noise levels to be achieved within the residential premises in accordance with BS 8233:2014, and

 - 1.3.3. To detail appropriate sound insulation requirements for the purposes of mitigating noise caused by prevailing and potential noise sources such that internal noise levels are achieved.

2. SITE DESCRIPTION AND OBSERVATIONS

- 2.1. 10 Woodlands Road, Wickford, Essex SS12 0AL is hereafter referred to as 'the site'. The proposal is to demolish the existing office construction and construct residential premises comprising of two flats spread over two storeys.
- 2.2. The site is located within an urban area, comprising a mixture of commercial and residential premises. The site fronts onto Woodlands Road which runs to the west of the site. Located opposite off Woodlands Road, is a block of purpose built residential flats. Commercial premises, with residential to the first floor, is noted adjacent to the east of the site, which fronts onto the High Street. These commercial premises were noted to be vacant at time of assessment. Located directly to the north and south are more commercial premises to the ground floor with residential above. Britannia Fish and Chips was noted to the south of the site, approximately 10m away. A kitchen extraction duct was noted to the side of Britannia Fish and Chip shop. Located to the North is Natwest bank and Co-operative Funeral Directors.
- 2.3. See appendix A for the site plans.
- 2.4. The noise survey was mainly unmanned; therefore, a subjective assessment of background and ambient noise sources could not be undertaken for the whole monitoring duration. However, during installation and collection of the monitoring equipment, the dominant noise source emanated from road traffic and pedestrians. These noise sources are considered normal to the site location. No significant abnormal noise source(s) were identifiable.

3. NOISE GUIDANCE AND CRITERIA

3.1. The proposed site lies within the jurisdiction of the Local Authority, Basildon Borough Council. An acoustic report is required to support a planning application.

3.2. National Planning Policy Framework (2021)

3.3. In March 2012, the National Planning Policy Framework (NPPF) came into force and was revised in 2019 and 2021. This document replaces a great many planning guidance documents, which previously informed the planning system in England.

3.4. The NPPF (2021) sets out the Government's economic, environmental and social planning policies for England and these policies articulate the Government's vision of sustainable development.

3.5. The Noise Policy Statement for England (NPSE) published 2010 applies to *'all forms of noise, including environmental noise, neighbour noise and neighbourhood noise'*.

3.6. Paragraph 185 of the NPPF (2021) considers noise, stating:

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

- *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- *c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."*

3.7. National Planning Policy is guided by the NPPF. With regard to noise, the terms 'significant adverse impact' and 'other adverse impacts' are defined in the explanatory notes of the 'Noise Policy Statement for England' (NPSE). These state that there are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

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

3.8. Extending these concepts for the purpose of this NPSE leads to the concept of SOAEL - significant observed adverse effect level. This is the level above which significant adverse effects on health and quality of life occur’. However, no specific noise limits for LOAEL and SOAEL have been defined. Therefore, guidance from other acoustic standards must be employed to determine suitable levels within the overall principal of the National Planning Policy Framework; such as BS 8233:2014.

3.9. BS8233: 2014

3.10. Local Authorities usually stipulate internal noise criteria for new build residential uses based on British Standard 8233:2014 ‘Guidance on Sound Insulation and Noise Reduction for Buildings’.

3.11. BS 8233:2014 provides references and guideline values for desirable indoor ambient noise levels for dwellings as shown in Table 3.1 below.

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 $L_{Aeq,8hour}$

Table 3.1 BS 8233:2014 Desirable Internal Ambient Noise Levels for Dwellings

3.12. The table is noted to apply to external noise as it affects the internal acoustic environment from sources without a specific character. The above internal ambient noise levels are therefore considered appropriate within this assessment.

3.13. BS 8233:2014 states that ‘for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed an upper guideline value of 55dB L_{Aeq} , which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances...in higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated

noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited’.

3.14. BS4142: 2014 +A1: 2019

3.15. BS 4142: 2014 +A1: 2019 “*Methods for Rating and Assessing Industrial and Commercial Sound*” presents a method for assessing the significance and possible adverse impact due to an industrial or commercial noise source, based on a comparison of the source noise levels and the background noise levels, both of which are measured or predicted at a noise sensitive receiver e.g. a residential property.

3.16. The specific noise level due to the source is determined, with a series of corrections for tonality, impulsivity, intermittency, or any other unusual characteristic. This can result in a maximum total correction of +21dB being added if the new noise source demonstrates all the above characteristics. The background noise level is then subtracted from the rating level and a comparison made.

3.17. The significance of the new noise source and the likelihood of any adverse impact is determined in accordance with the following advice:

“The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs.

- *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
- *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.”*

4. ENVIRONMENTAL NOISE SURVEY METHODOLOGY

- 4.1. An unmanned environmental noise survey was undertaken at two secure single measurement locations (see appendix A). The surveys were undertaken between 13:40 hours on Wednesday 27th September 2023 and 11:00 on Friday 29th September 2023.
- 4.2. Ambient, background and maximum sound pressure level measurements (L_{Aeq} , L_{A90} and $L_{Amax,F}$ respectively) were measured throughout the noise survey with continuous recorded 5 minute periods. The measurement position is indicated in orange in Appendix A.
- 4.3. The sound level meter's (SLM) were mounted approximately 2 metres above ground level and positioned to the north and south facade. The position is considered not to be in 'free-field' conditions so a façade correction has been applied to the data. The positions were chosen to gain representative noise levels from any noise sources as well as for monitoring equipment security reasons.
- 4.4. The equipment used for the noise survey is summarised in Table 3.1.

Equipment	Description	Quantity	Serial Number
Svantek 977	Class 1 automated logging sound level meter	1	34192
ACO Pacific 7052E	Class 1 ½" microphone	1	32452
Svantek 977	Class 1 automated logging sound level meter	1	46457
ACO Pacific 7052E	Class 1 ½" microphone	1	64237
Larson Davis CAL200	Class 1 Calibrator	1	14432

Table 3.1 Description of Equipment used for Noise Survey

- 4.5. The noise survey and measurements were conducted, in accordance with BS7445-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'. Measurements were made generally in accordance with ISO 1996-2:2017 '*Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels*'.
- 4.6. The noise monitoring equipment used was calibrated before and after the noise survey period. No significant drift was recorded. Equipment calibration certificates can be provided upon request.

4.7. **Weather Conditions**

4.8. Weather conditions were noted to be:

4.8.1. during installation - warm (approx. 21° Celsius), dry, with cloudy skies (100% cloud cover) and a light wind (<5m/s).

4.8.2. during collection - warm (approx. 17° Celsius), dry, with clear to cloudy skies (20-50% cloud cover) and a light wind (<5m/s).

4.8.3. throughout the entire noise survey period -predominantly warm (approx. 12° to 22° Celsius), generally dry, with clear to cloudy skies (0-100% cloud cover) and a light wind (<5m/s).

4.9. These weather conditions were checked against and confirmed by the use of the Met Office. These conditions were generally maintained throughout the whole survey period and are considered reasonable for undertaking environmental noise measurements.

5. NOISE SURVEY RESULTS

5.1. The average-ambient and maximum noise levels at the measurement position during the survey have been based on an analysis of the monitoring data and are summarised in Table 5.1. A time history of the noise monitoring data is provided in Appendix B.

Monitoring Position	Period	Measured External Sound Pressure Level, dB
Position 1 ⁺ (Front Façade)	Daytime (07:00 - 23:00)	52 L _{Aeq,T}
	Night-time (23:00 - 07:00)	42 L _{Aeq,T}
	Night-time (23:00 - 07:00)	*59 L _{Amax,F,NNE}
Position 2 ⁺ (Rear Façade)	Daytime (07:00 - 23:00)	52 L _{Aeq,T}
	Night-time (23:00 - 07:00)	45 L _{Aeq,T}
	Night-time (23:00 - 07:00)	**62 L _{Amax,F,NNE}

⁺includes -3dB façade correction *11th highest measured noise level **13th highest measured noise level

Table 5.1 Noise Survey Results

5.2. BS 8233:2014 does not provide specific guidance on night time L_{Amax,F} criteria therefore maximum levels are based on World Health Organisation (WHO) 'Guideline for Community Noise' (2009) and WHO 'Environmental Noise Guidelines for the European Region' (2018) guidance and ProPG: 2017 guidance.

5.3. It is stated that for suitable sleeping conditions, 45dB L_{Amax,F} should not be exceeded by more than 10-15 times a night within a bedroom. For robustness, the L_{Amax,F,NNE} noise levels presented above is the not normally exceeded (NNE) 11th and 13th highest measured between 23:00 and 07:00 hours. This L_{Amax,F,NNE} noise level then needs to be reduced to 45dB internally to comply with the night time internal noise level.

6. NOISE IMPACT SUITABILITY

6.1. Mechanical Plant

6.2. Due to the close proximity of commercial premises, there is a potential for noise arising from plant to impact at the proposed residential premises, in particular the ducted kitchen extract fan from Britania Fish and Chip Shop on the High Street.

6.3. The extraction fan is noted to be ducted to the rear of Britania Fish and Chip Shop above second floor height, at approximately 6m from the nearest proposed façade. As seen from appendix A the ducting terminates above the proposed roof line. The proposed residential premises have been designed where possible to minimise habitable space on the façade closest to the plant.

6.4. Due to the height of the extract terminus, it was not possible to get noise data onsite at source; therefore a subjective assessment was undertaken.

6.5. At time of installation the kitchen extract fan was just audible in lulls of road traffic. It was not audible at time of collection. The mechanical plant was not audible in the existing premises with the windows open or closed.

6.6. There is no evidence of the plant operating at night in the survey data, nor is the plant operable dominant in the time histories. Due to the nature of the plant it is likely that it is only operable when cooking is occurring. It is understood that the site is operable as requires 11:30 – 21:00 Monday-Thursday and Saturdays, 11:30-21:30 on Fridays and 12:00-20:30 on Sundays.

6.7. The subjective method of allocating corrections to the sound source levels has been used following the methodology provided in BS4142: 2014 +A1: 2019. As a measurement at source could not be taken a specific noise level of the plant or rating level can be determined. Penalty corrections can still be considered, at time of survey no tonal or impulsive characteristics were identified. It is likely that the plant will be utilised intermittently during the operational hours.

6.8. Context

6.9. The site is located in an urban area just behind the High Street with a mixture of commercial and residential premises surrounding.

- 6.10. Noise from the mechanical plant was only just audible at time of installation during quieter periods in the background. It is understood that operation of the mechanical plant only occurs during the daytime. BS2833 allows a loss of 10-15dB through a partially open window, and noise from the extract fan was not audible inside the existing premises with windows open.
- 6.11. From the subjective of existing mechanical plant during installation of equipment, the nature of the area, and analysis of the unattended data, it is considered that the impact from the mechanical plant would be considered low.
- 6.12. It is noted that there are residential units closer to the Fish and Chip shop than the proposed site. Recommendations have been given within the acoustic report; for acoustic screening, building materials and glazing in relation to the measurement and site to ensure a good quality of acoustic design is included throughout.
- 6.13. The monitoring data shows that with a good standard acoustic design, as recommended herein, the internal levels as required by WHO:2017 and BS8233: 214 are capable of being met.
- 6.14. Following a good design, the proposed premises can be constructed so as to ensure no adverse impact arises from the nearby commercial activities.

8. BUILDING FACADES SUITABILITY

8.1. Sound reduction performance calculations have been undertaken to determine the internal noise levels and performance of the glazed and non-glazed elements. The specification has been adopted to achieve the night-time level (23:00 – 07:00 hours) for bedrooms, 30dB $L_{Aeq, 8hour}$ and for the daytime (07:00 – 23:00) for living rooms, 35dB $L_{Aeq, 16hour}$. The spectrum of the $L_{Amax, NNE}$ during the night-time period have also been applied to the calculations to confirm the limit of 45 $L_{Amax, F}$, is not regularly exceeded for single events during the night.

8.2. Suggested window units and building element specifications other than those provided may be suitable but should be reviewed before purchase or installation. The analysis is provided to demonstrate that a design solution is feasible at the site for the purposes of meeting the requirements of the Local Authority.

8.3. Non-Glazed Elements

8.4. It is understood that the non-glazed elements of the building will be constructed from brick and block work and internally drylined. This construction would be anticipated to provide a sound reduction performance of at least the figures shown in Table 6.1 when tested in accordance with BS EN ISO, 140-3:1995.

Element	Octave band centre frequency SRI, dB					
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
Non-glazed element brick/block cavity wall SRI	41	43	48	50	55	55

Table 6.1 Non-glazed elements assumed sound reduction performance

8.5. The below example of construction provides guidance to a typical wall build which should attenuate external noise such that the internal noise levels are achieved.

- BS 8233 Table E.1A (50-54dB R_w sound insulation) (d) details construction of “Brick laid frogs up, wall nominal 200 mm thickness, weight (including plaster) not less than 380 kg/m². Plaster or dry-lined finish both sides. Brickwork joints well filled”.

8.6. Given the typical extensive build and construction of external walls in accordance with the Building Regulations it is predicted that this element would provide significant attenuation to achieve the internal noise levels.

8.7. Roofs

8.8. Roofs generally have a lower SRI than masonry façade walls but they are required to reduce noise from external sources. Typical construction and sound insulation values of roofs can be gained from BS 8233:2014, for example a traditional pitched roof with tiles on felt with 100mm mineral wool on plasterboard ceiling has an SRI of approximately 43dB R_w .

8.9. Given the typical extensive build and construction of roofs it is predicted that these elements would provide sufficient attenuation to achieve the internal noise levels.

8.10. Where habitable space is being built into the roof and/or Velux or dormers are constructed as part of the design, then it is likely that the roof performance will need to be enhanced. Acoustic calculations should be re-run at detailed design stage to ensure the internal noise levels are met.

8.11. Window Elements

8.12. Calculations (Appendix C) show that based on the noise monitoring data obtained, façade materials, room sizes and volumes, a minimum of 31dB R_w noise reduction is required for all glazed elements to be installed.

8.12.1. The performance is specified for the whole window unit, including the frame and other design features such as the inclusion of trickle vents. Sole glass performance data would not demonstrate compliance with this specification. Window performance calculations have been based on the measured L_{Aeq} and $L_{Amax,NNE}$ noise levels as recommended by BS 8233: 2014.

8.13. The reference reverberation time of 0.5 second is utilised, as stated in BS8233: 2014 and assumes that the dwelling shall have carpeted, fully furnished, occupied bedroom(s) and living spaces.

8.14. The glazing window requirements are listed below in table 6.2. These specifications and their acoustic data on octave band frequencies are provided in Appendix C.

	Glazing and Ventilation Type – Indicative Only
All Facades*	R _w 31 dB Double Glazing System (4mm Glass – 12mm air gap – 4mm Glass)
	Standard Trickle Ventilator (27 D _{n,e,w})

*based on approximate room sizes

Table 6.2 Required window specifications.

8.15. Ventilation

8.16. In addition to the glazing requirements, internal noise levels should be considered in the context of room ventilation requirements. At the time of writing, full details regarding a ventilation strategy are not available. Table 7.2 above details a suitable standard trickle ventilator, which provides a sound insulation performance of 27dB D_{n,e,w}, which would work in combination with the specified window spectral.

8.17. Detailed Design Stage Notes:

8.18. The analysis is provided to demonstrate that a design solution is feasible at the site for the purposes of meeting the requirements of the Local Authority local policy and British Standard internal design criteria and therefore to produce a noise impact assessment to be supplied in support of the planning application.

8.19. Following planning consent, then it is usual that the architect will produce full building regulation drawings. At which time, structural chartered engineers, thermal engineers, M+E and acoustic engineers will be engaged to input on the detailed design. As part of this detailed design stage, it is strongly recommended that further acoustic analysis of the individual specified components and if necessary further recommendations, specifications be undertaken.

8.20. Acoustic calculations to determine the glazing and ventilation strategy should also be re-run should the room sizes and percentage of glazing differ from that assumed above.

9. UNCERTAINTY

- 9.1. The levels of uncertainty in the data and calculations are considered to be low given the robust exercise undertaken in noise monitoring and the confidence in the statistical analysis.
- 9.2. All measurements taken on-site by instrumentation are subject to a margin of uncertainty. This is relatively small, with a sound level meter manufacturer's margin of uncertainty at +/-1.1dB. It is due to the tolerances associated with the Class 1 sound level meter and calibrator equipment used to measure background.
- 9.3. The meter and calibrator used have a traceable laboratory calibration and were field calibrated before and after the measurements.
- 9.4. Manufacturers' data for the plant is likely to be robust. Detailed calculations and resultant noise levels at the residential location are considered to be confidently predicted.
- 9.5. Uncertainty in the calculated impact has been reduced by the use of a well-established calculation method.

10. CONCLUSION

- 10.1. A new residential development is proposed at 10 Woodlands Road, Wickford, Essex SS12 0AL.
- 10.2. A noise survey and assessment has been undertaken for the proposed development. Existing noise levels at the site have been measured and compared to relevant standards and guidance.
- 10.3. A minimum of 31dB R_w noise reduction is required for all glazed elements to be installed into the proposed building. Window calculations have been carried out and the requirements identified. Passive vents to provide ventilation are available that meet or exceed the sound reduction required by the window elements and can be constructed into the proposal accordingly.
- 10.4. With appropriate sound insulation window measures and building construction as exemplified within this report the proposed residential premises is more than capable of achieving the guideline internal noise criteria contained in BS 8233:2014.

Appendix A – Site Plan (SP1)

Source: Google Earth



Key

Noise Monitoring Position ●

Site Boundary [---]

1985

Imagery Date: 6/15/2022 31 U 328284.23 m E 572

Appendix A – Site Plan (SP2)

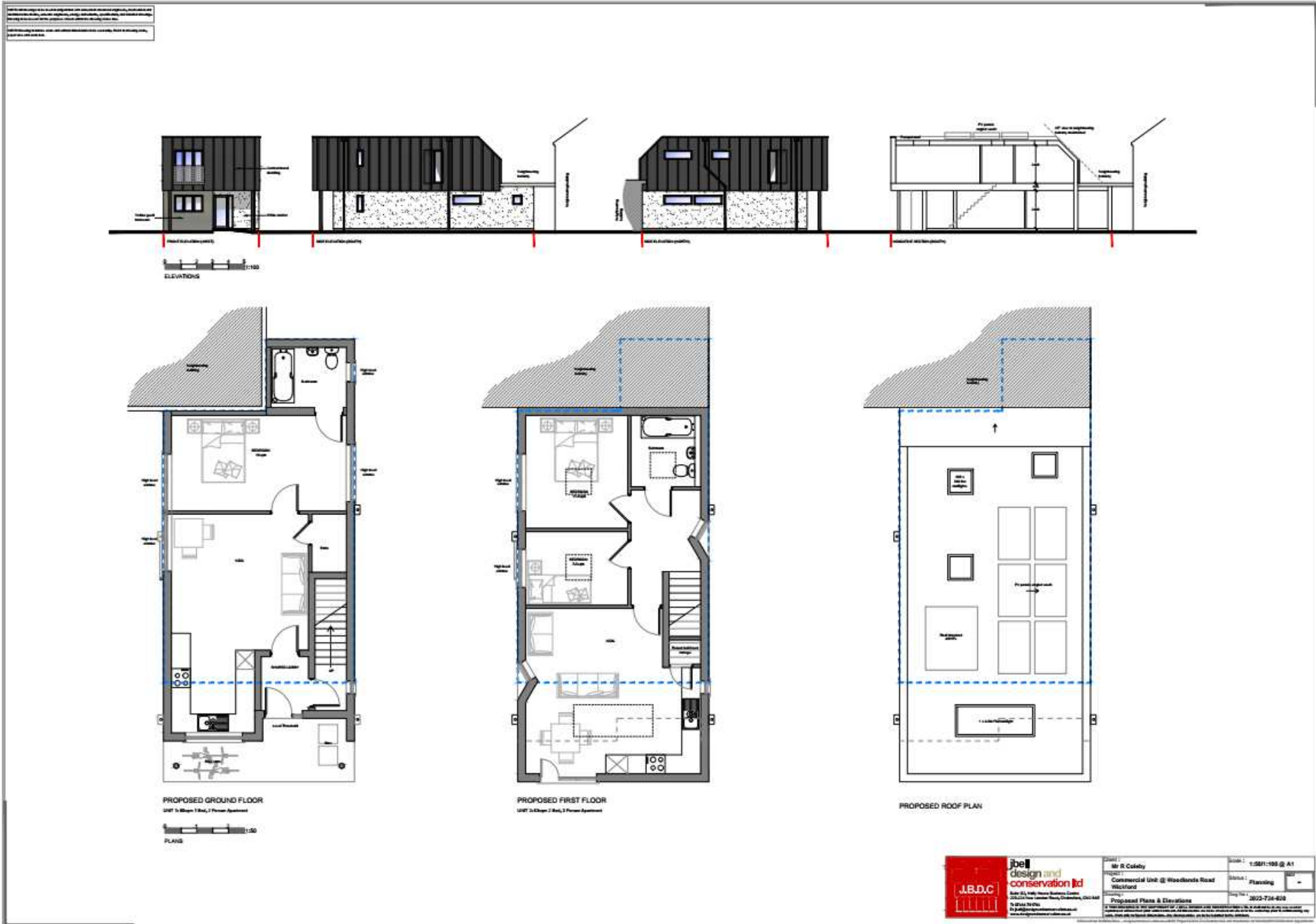
Source: Received from Client



	ibel design and conservation ltd <small>ibc 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000</small>	Mr R Coleby Commercial Unit @ Woodlands Road Woodford	1:2881:1050 @ A1 Planning
		Proposed Site & Location Plan <small>© 2013 J.B.D.C. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage or retrieval system, without the prior written permission of J.B.D.C.</small>	2013-7-24-892

Appendix A – Site Plan (SP3)

Source: Received from Client



	design and conservation ltd Suite 5/1, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000	DRAWN: Mr R Coleby PROJECT: Commercial Unit @ Woodlands Road Woodford SHEET: Planning DATE: 2023-7-26-2024	SCALE: 1:500 (Elevations) 1:50 (Plans)
	Proposed Plans & Elevations	2023-7-26-2024	1:500 (Elevations) 1:50 (Plans)
	J.B.D.C. Ltd 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000	2023-7-26-2024	1:500 (Elevations) 1:50 (Plans)

Appendix A – Site Plan (SP4)

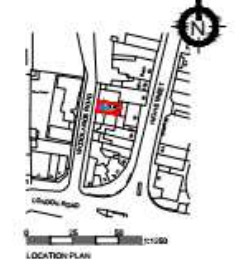
Source: Received from Client



1. This drawing is to be read in conjunction with the project brief and the project description. It is not to be used for any other purpose without the written consent of the architect.

2. The architect is not responsible for the accuracy of the information provided by the client or for the accuracy of the information provided by any other source.

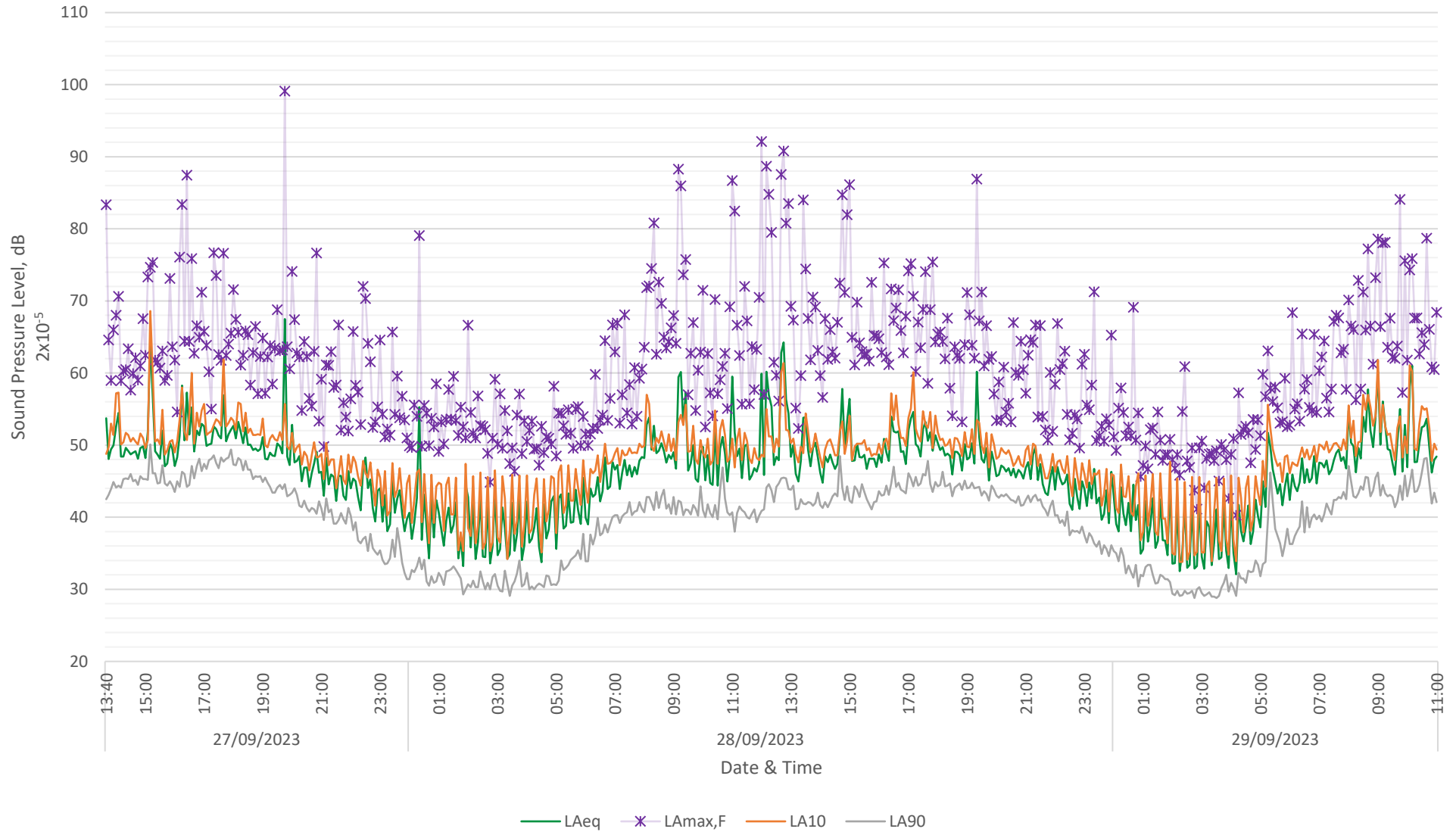
3. The architect is not responsible for the accuracy of the information provided by any other source.



	jbel design and conservation ltd Suite 201, Holly House Business Centre, 215-217 West London Road, Chislehurst, Kent DA7 1JG Tel: 0181 734 4633 www.jbel.co.uk	Client:	Mr R Coleby	Scale:	1:180/1:125 @ A1
		Project:	Commercial Unit @ Woodlands Road, Woodford	Status:	Planning
		Existing & Proposed Circulation:	See separate drawings		

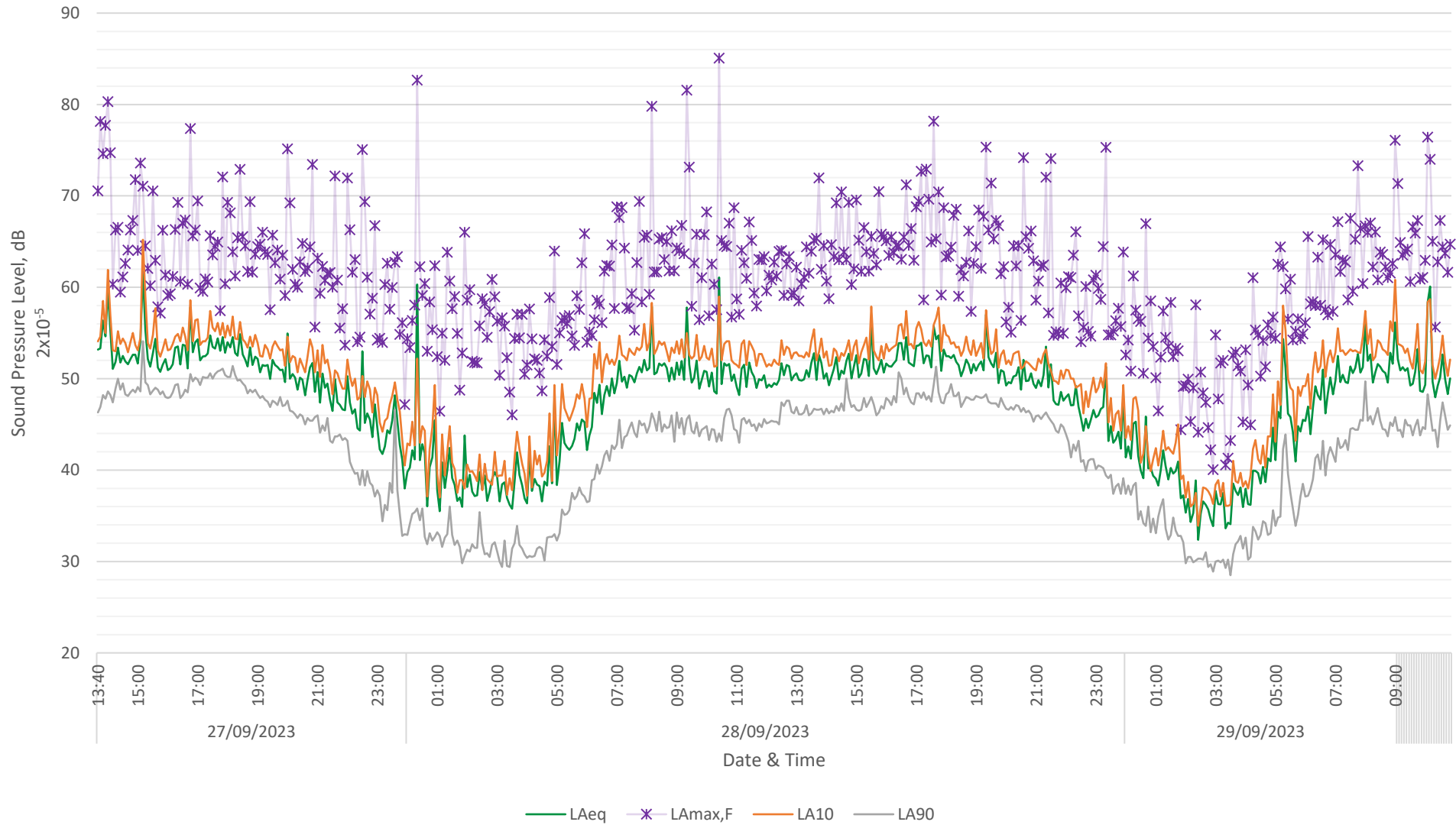
Appendix B - Time History 1 (TH1)

10 Woodlands Road, Wickford, Essex
Wednesday 27 September 2023 - Friday 29 September 2023
Position 1



Appendix B - Time History 2 (TH2)

10 Woodlands Road, Wickford, Essex
Wednesday 27 September 2023 - Friday 29 September 2023
Position 2



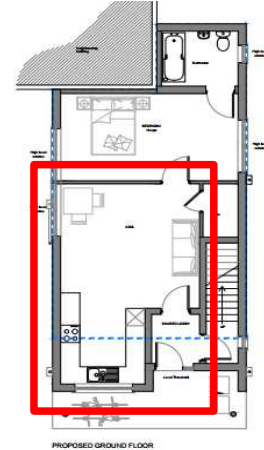
10 Woodlands Road, Wickford Ground Floor - Living Room

BS EN 12354-3 Calculation to determine glazing specification

**Based on approximate measured room sizes*

Habitable room data variables

Type of habitable room	Bedroom
Volume	69 cubic metres
Total area - external façade(s)	25 square metres
Total area - window(s)	2.5 square metres
L(k)	3
Lmax (K)	3
Trickle Ventilator(s)	5
Solid Façade (exc. windows)	22.5 square metres
Reverberation Time	0.5 seconds



External noise level

	1:1 Octave Bands Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Logged Log average daytime Leq	62	55	52	49	48	43	33	52
Logged Log average night-time Leq	56	48	44	42	41	35	27	45
Logged Lmax for duration of survey	75	67	62	60	57	53	44	62

Sound reduction of building fabric

	1:1 Octave Band Centre Frequency (Hz)							Rw / Dn,e,W
	63	125	250	500	1000	2000	4000	
31 Rw - Pilk 4/12/4mm	22	24	20	25	35	38	35	31
**Standard Masonry from Template Re	39	41	43	48	50	55	55	
27 Dn,e,w - Titon Patio Vent - Standard trickle	31	33	27	27	28	26	27	27

	1:1 Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Reduction from façade	-27.0	-29.0	-24.8	-27.9	-31.3	-28.8	-30.1
Addition for Ctr	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Resultant internal noise level

	1:1 Octave Band Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Daytime internal Leq	40	31	32	26	22	19	8	29
Night-time internal Leq	34	24	24	19	14	12	1	21
Night-time internal Lmax	48	38	37	32	26	24	13	34

Based on BS8233:2014 - Design Criterion: LAeq 30
Based on BS8233: 1999 Lmax levels LAmax 45

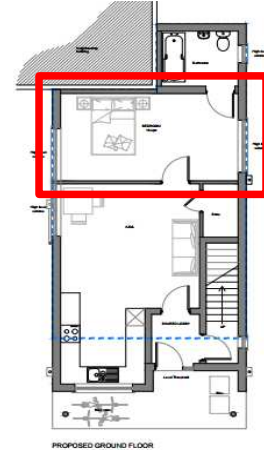
10 Woodlands Road, Wickford Ground Floor - Bedroom 1

BS EN 12354-3 Calculation to determine glazing specification

*Based on approximate measured room sizes

Habitable room data variables

Type of habitable room	Bedroom
Volume	38 cubic metres
Total area - external façade(s)	13 square metres
Total area - window(s)	2 square metres
L(k)	3
Lmax (K)	3
Trickle Ventilator(s)	5
Solid Façade (exc. windows)	11 square metres
Reverberation Time	0.5 seconds



External noise level

	1:1 Octave Bands Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Logged Log average daytime Leq	62	55	52	49	48	43	33	52
Logged Log average night-time Leq	56	48	44	42	41	35	27	45
Logged Lmax for duration of survey	75	67	62	60	57	53	44	62

Sound reduction of building fabric

	1:1 Octave Band Centre Frequency (Hz)							Rw / Dn,e,W
	63	125	250	500	1000	2000	4000	
31 Rw - Pilk 4/12/4mm	22	24	20	25	35	38	35	31
**Standard Masonry from Template Ref	39	41	43	48	50	55	55	
27 Dn,e,w - Titon Patio Vent - Standard trickle	31	33	27	27	28	26	27	27

	1:1 Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Reduction from façade	-25.4	-27.4	-22.9	-25.8	-28.9	-26.3	-27.6
Addition for Ctr	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Resultant internal noise level

	1:1 Octave Band Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Daytime internal Leq	41	32	34	29	24	22	10	31
Night-time internal Leq	36	25	26	21	17	14	4	23
Night-time internal Lmax	49	39	39	34	28	27	16	36

Based on BS8233:2014 - Design Criterion: LAeq 30
Based on BS8233: 1999 Lmax levels LAmax 45

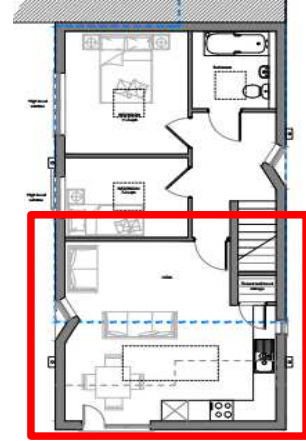
10 Woodlands Road, Wickford First Floor - Living Room

BS EN 12354-3 Calculation to determine glazing specification

**Based on approximate measured room sizes*

Habitable room data variables

Type of habitable room	Living Room
Volume	66 cubic metres
Total area - external façade(s)	35 square metres
Total area - window(s)	5 square metres
L(k)	3
Lmax (K)	3
Trickle Ventilator(s)	10
Solid Façade (exc. windows)	30 square metres
Reverberation Time	0.5 seconds



External noise level

	1:1 Octave Bands Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Logged Log average daytime Leq	62	55	52	49	48	43	33	52
Logged Log average night-time Leq	56	48	44	42	41	35	27	45
Logged Lmax for duration of survey	75	67	62	60	57	53	44	62

Sound reduction of building fabric

	1:1 Octave Band Centre Frequency (Hz)							Rw / Dn,e,W
	63	125	250	500	1000	2000	4000	
31 Rw - Pilk 4/12/4mm	22	24	20	25	35	38	35	31
**Standard Masonry from Template Ref	39	41	43	48	50	55	55	
27 Dn,e,w - Titon Patio Vent - Standard trickle	31	33	27	27	28	26	27	27

	1:1 Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Reduction from façade	-24.0	-26.0	-21.6	-24.7	-28.1	-25.6	-26.9
Addition for Ctr	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Resultant internal noise level

	1:1 Octave Band Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Daytime internal Leq	43	34	35	30	25	22	11	32
Night-time internal Leq	37	27	27	22	18	15	5	24
Night-time internal Lmax	51	41	40	35	29	27	17	37

Based on BS8233:2014 - Design Criterion: LAeq 35
Based on BS8233: 1999 Lmax levels LAmax n/a

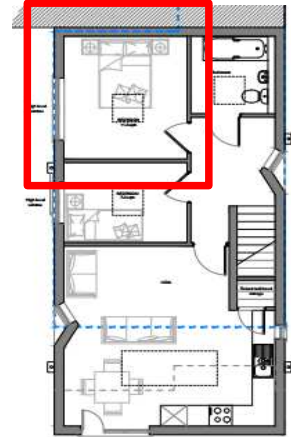
10 Woodlands Road, Wickford First Floor - Bedroom 1

BS EN 12354-3 Calculation to determine glazing specification

**Based on approximate measured room sizes*

Habitable room data variables

Type of habitable room	Bedroom
Volume	28 cubic metres
Total area - external façade(s)	14 square metres
Total area - window(s)	1 square metres
L(k)	3
Lmax (K)	3
Trickle Ventilator(s)	5
Solid Façade (exc. windows)	13 square metres
Reverberation Time	0.5 seconds



External noise level

	1:1 Octave Bands Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Logged Log average daytime Leq	62	55	52	49	48	43	33	52
Logged Log average night-time Leq	56	48	44	42	41	35	27	45
Logged Lmax for duration of survey	75	67	62	60	57	53	44	62

Sound reduction of building fabric

	1:1 Octave Band Centre Frequency (Hz)							Rw / Dn,e,W
	63	125	250	500	1000	2000	4000	
31 Rw - Pilk 4/12/4mm	22	24	20	25	35	38	35	31
**Standard Masonry from Template Ref	39	41	43	48	50	55	55	
27 Dn,e,w - Titon Patio Vent - Standard trickle	31	33	27	27	28	26	27	27

	1:1 Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Reduction from façade	-25.9	-27.9	-23.2	-25.4	-27.7	-25.0	-26.4
Addition for Ctr	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Resultant internal noise level

	1:1 Octave Band Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Daytime internal Leq	41	32	33	29	25	23	12	31
Night-time internal Leq	35	25	26	22	18	15	5	24
Night-time internal Lmax	49	39	39	35	29	28	17	37

Based on BS8233:2014 - Design Criterion: LAeq 30
Based on BS8233: 1999 Lmax levels LAmax 45



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