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EDWINA MOUNTBATTEN HOUSE
ROMSEY

NOISE ASSESSMENT

Technical Report: R10048-1 Rev 1

Date: 23rd May 2023

For: Planning issues
Churchill House
Parkside
Ringwood
Hampshire
BH24 3SG

24 Acoustics Document Control Sheet

Project Title: Edwina Mountbatten House, Romsey – Noise Assessment

Report Ref: R10048-1 Rev 1

Date: 23rd May 2023

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For and on behalf of 24 Acoustics Ltd				

Document Status and Approval Schedule

Revision	Description	Prepared By	Reviewed By	Approved By
0	Approved for issue	Kiel Edwards	Neil McLeod	Reuben Peckham

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1.0 INTRODUCTION

1.1 24 Acoustics Ltd has been appointed by Planning Issues to undertake a noise assessment for the proposed new build retirement living development at Edwina Mountbatten House, Romsey.

1.2 The site is located in a mixed use residential, office and retail area with surrounding road networks and a nearby car park. Accordingly, this assessment has included:

Environmental noise monitoring;
Consideration of noise arising from surrounding sources incident at the site;
Assessment of noise levels within the proposed dwellings;
Consideration of noise mitigation measures.

1.3 This report presents the results of the assessment, following environmental noise measurements undertaken between the 5th and 11th May 2023.

1.4 All sound pressure levels quoted in this report are in dB relative to 20 µPa. A glossary of the acoustic terminology used in this report is provided in Appendix A.

2.0 SITE DESCRIPTION

2.1 The site is located to the south of Romsey town centre and currently comprises the vacant building, Edwina Mountbatten House, previously used as supported living accommodation for the elderly.

2.2 The site is bounded by the local road network to the southern (Bypass Road), eastern (Palmerston Street) and northern (Broadwater Road) boundaries. A restaurant is located to the north, on the opposite side of the Palmerston Street carriageway. Crossfield Community Hall and a public car park is located to the west of the site, which is accessed via Broadwater Road.

2.3 It is proposed to demolish the existing building and construct a new three story retirement apartment block comprising 47 units with associated communal areas. An external amenity garden space will be located to the centre of the site with parking areas located to the west.

2.4 The site location is shown in Figure 1 with the proposed site layout shown in Figure 2.

3.0 STANDARDS AND GUIDANCE

Local Authority Guidance

3.1 24 Acoustics has been in contact with Test Valley Environmental Health Manager Mark Lee to discuss suitable criteria for the assessment of noise at the proposed site. Based on this discussion, the following criteria has been adopted.

NPPF/NPSE/PPG

3.2 The National Planning Policy Framework (NPPF) [Reference 1] states (paragraph 185) in relation to noise that planning policies and decisions should aim to:

> 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;
> Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason

3.3 The NPPF refers to the Noise Policy Statement for England (NPSE) [Reference 2] which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term vision to 'promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development' which is supported by the following aims:

> Avoid significant adverse impacts on health and quality of life;
> Mitigate and minimise adverse impacts on health and quality of life.

3.4 The NPSE defines the concept of a 'significant observed adverse effect level' (SOAEL) as 'the level above which significant adverse effects on health and quality of life occur'. The following guidance is provided within the NPSE:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

3.5 The Planning Practice Guidance (PPG) [Reference 3] is written to support the NPPF with more specific planning guidance. The PPG reflects the NPSE and states that noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. It also states that opportunities should be taken, where practicable, to achieve improvements to the acoustic environment. The PPG states that noise can over-ride other planning concerns but should not be considered in isolation from the other economic, social and environmental dimensions of the proposed development.

ProPG

3.6 The Professional Practice Guidance on Planning and Noise (ProPG) [Reference 4] was published jointly by the Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health in May 2017. The guidance relates to the consideration of existing sources of transportation noise upon proposed new residential development and strives to:

Advocate full consideration of the acoustic environment from the earliest possible stage of the development control process;

Encourage the process of good acoustic design in and around new residential developments;

Outline what should be taken into account in deciding planning applications for new noise-sensitive developments;

Improve understanding of how to determine the extent of potential noise impact and effect; and

Assist the delivery of sustainable development.

3.7 The guidance describes a recommended approach for new residential development, which includes four key elements of the assessment process, identified below:

(i) Good acoustic design process;
(ii) Internal noise level guidelines;
(iii) External amenity area noise assessment;
(iv) Assessment of other relevant issues.

3.8 It is important to note that the guidance in ProPG does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy.

BS 8233 and World Health Organisation

3.9 BS 8233:2014 [Reference 5] provides design guidance for dwelling houses, flats and rooms in residential use and recommends that internal noise levels in dwellings do not exceed 35 dB $L_{Aeq,16\ hour}$ in living rooms and bedrooms during the day, 40 dB $L_{Aeq,\ 16\ hour}$ in dining rooms during the day and 30 dB $L_{Aeq,\ 8\ hour}$ in bedrooms at night.

3.10 BS 8233 also notes that "Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night."

3.11 The World Health Organisation (WHO) [Reference 6] provides guidance on desirable internal noise levels to minimise the risk of sleep disturbance. The WHO 2000 guidelines suggest internal noise levels not exceeding 30 dB $L_{Aeq,\ 8\ hour}$ or regularly exceeding 45 dB $L_{Amax,f}$ for 'a good night's sleep'.

BS 4142: 2014+A1:2019 Methods for Rating Industrial and Commercial Sound

3.12 BS 4142:2014 [Reference 7] provides a method for rating the effects of industrial and commercial sound on residential areas. The standard advocates a comparison between the typical measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction of up to 15 dBA is applied.

3.13 The standard states that a difference between the rating level and the background level of around +10 dBA is an indication of a significant adverse impact, depending on the context and a difference of around +5 dBA is likely to be an indication of an adverse impact again depending on the context. Where the rating level does not exceed the background noise level, this is an indication of the specific sound source having a low impact (depending upon the context).

Summary of Criteria

3.14 In line with the above guidance, the impact of noise upon the site has been assessed using the following methodology:

BS 8233: 2014 and the WHO Guidelines for recommended internal noise levels, inside the properties, due to noise from road traffic. An upper internal daytime level of 35 dB $L_{Aeq,\ 16\ hour}$ for bedrooms and living rooms should apply; and a night-time level for bedrooms of 30 dB $L_{Aeq,\ 8\ hour}$ should apply. Similarly, a maximum night-time internal level of 45 dB $L_{Amax,f}$ should apply in bedrooms for regular events.

Assessment of noise levels from the neighbouring car park and commercial noise sources.

Assessment of noise levels in the external amenity garden area.

Assessment of background noise levels and outline plant noise limits to be achieved at the nearest existing residential properties.

4.0 ENVIRONMENTAL NOISE MEASUREMENTS

4.1 Environmental noise measurements were undertaken at the site between the 5th and 11th May 2023 to determine the prevailing noise levels in the area. Measurements were undertaken using the following equipment:

Four Nº Rion precision sound level meters	Type NL52;
Brüel & Kjær acoustic calibrator	Type 4231.

4.2 Equipment was located to the site boundaries as described below:

Measurement Location 1: Southern boundary of the site, overlooking The Bypass. Approximately 2m above local ground height in free field conditions;

Measurement Location 2: Eastern site boundary, overlooking Palmerston Street. Approximately 1.5m above local ground height in free field conditions.

Measurement Location 3: Northern boundary of the site, overlooking Broadwater Road. Approximately 2m above local ground height in free field conditions;

Measurement Location 4: Western site boundary, overlooking Crossfield Hall and the public car park. Approximately 4m above local ground height in free field conditions.

4.3 The measurement locations are shown in Figure 1.

4.4 Measurements were undertaken in samples of 1 minute in terms of the octave-band and free field A-weighted L_{eq}, L_{90} and $L_{max,\ f}$ parameters. Measurements were made in accordance with BS 7445:1991 "Description and measurement of environmental noise Part 2 – Acquisition of data pertinent to lane use" [Reference 8].

4.5 The instrumentation's calibration was verified before and after the measurements in accordance with the manufacturer's instructions and no significant drift in calibration was recorded. Calibration of 24 Acoustics' equipment is traceable to National Standards.

4.6 All instrumentation was fitted with environmental weather shields. Weather conditions during the measurements were variable with periods of rain and wind speeds exceeding 5 m/s. Measurements affected by meteorological conditions have been omitted from the design levels.

Noise Measurement Results

4.7 Measurement results are shown graphically in Appendix B and summarised in Tables 1, 2, 3 and 4.

4.8 Note, measurements undertaken on the bank holiday, Monday 8th May, were influenced by a-typical traffic movements and have been omitted from the design levels.

Measurement Location 1: Results Summary (south)			
Date (May 2023)	Daytime Level 07:00 to 23:00 hours	Night-Time Level 23:00 to 07:00 hours	
	dB $L_{Aeq, 16\ hour}$	dB $L_{Aeq, 8\ hour}$	Typical dB $L_{Amax, f}$
Friday 5th	65*	55	72
Saturday 6th	65**	55	72
Sunday 7th	64	54	72
Monday 8th	64**	57**	72
Tuesday 9th	65**	58**	73
Wednesday 10th	64	57	72
Thursday 11th	66*	-	-
Design Level	64	56	72

Table 1 - Measurement Location 1 – Results Summary *Partial Measurement Period **Periods of Rainfall Noted

Measurement Location 2: Results Summary (east)			
Date (May 2023)	Daytime Level 07:00 to 23:00 hours	Night-Time Level 23:00 to 07:00 hours	
	dB $L_{Aeq, 16\ hour}$	dB $L_{Aeq, 8\ hour}$	Typical dB $L_{Amax, f}$
Friday 5th	68*	58	78
Saturday 6th	68**	56	77
Sunday 7th	66	57	78
Monday 8th	67**	58**	77
Tuesday 9th	68**	59**	80
Wednesday 10th	70	58	80
Thursday 11th	74*	-	-
Design Level	69	58	79

Table 2 - Measurement Location 2 – Results Summary *Partial Measurement Period **Periods of Rainfall Noted

Measurement Location 3: Results Summary (north)			
Date (May 2023)	Daytime Level 07:00 to 23:00 hours	Night-Time Level 23:00 to 07:00 hours	
	dB $L_{Aeq, 16\ hour}$	dB $L_{Aeq, 8\ hour}$	Typical dB $L_{Amax, f}$
Friday 5th	66*	55	74
Saturday 6th	67**	53	72
Sunday 7th	64	57	72
Monday 8th	65**	55**	75
Tuesday 9th	67**	55**	75
Wednesday 10th	69	55	75
Thursday 11th	68*	-	-
Design Level	68	55	75

Table 3 - Measurement Location 3 – Results Summary *Partial Measurement Period **Periods of Rainfall Noted

Measurement Location 4: Results Summary (west)			
Date (May 2023)	Daytime Level 07:00 to 23:00 hours	Night-Time Level 23:00 to 07:00 hours	
	dB $L_{Aeq, 16\ hour}$	dB $L_{Aeq, 8\ hour}$	Typical dB $L_{Amax, f}$
Friday 5th	58*	49	64
Saturday 6th	58**	48	64
Sunday 7th	58	48	64
Monday 8th	57**	51**	64
Tuesday 9th	59**	51**	65
Wednesday 10th	61	50	64
Thursday 11th	58*	-	-
Design Level	60	49	64

Table 4 - Measurement Location 4 – Results Summary *Partial Measurement Period **Periods of Rainfall Noted

4.9 24 Acoustics determines the typical maximum noise event to be the tenth highest value during the measurement period.

4.10 A substation is located adjacent to Measurement Location 3. Via analysis of the long-term noise data, substation noise was not found to be significant or measurable against the prevailing ambient noise levels at this measurement location, which is representative of the closest proposed façade.

4.11 Attended measurements were undertaken during the afternoon of the 11th May 2023, to the community centre and car park's western boundary, to determine the contribution of neighbouring community centre and car park use at measurement location 4. Results of the attended measurements are shown in the following sections.

Community Centre – Attended Measurements

4.12 The community centre is used for events such as business meetings, receptions, craft fairs, quiz nights and parties. With reference to the hall's licencing conditions, use of the hall for hired events is restricted to no later than 00:00 hours and the hall is fitted with an active power restricting noise limiter to protect surrounding residential properties from noise break-out from the building.

4.13 During the attended measurements, a blood donation drive was in operation at the community centre. Doors to the community centre were open with donation vans to the outside of the main entrance. No noise breakout from the hall or noise from the donation vans were observed or measurable at Location 4. Noise from The Bypass was the primary source of noise at location 4 with contributions from occasional car park movements.

4.14 Based on the above, noise from community centre use is low and is not considered further.

Car Park - Attended Measurements

4.15 Attended measurement results demonstrate that noise from vehicle movements (i.e. parking manoeuvring, car door open/close, ingress/egress of car park) are in the order of 56 dB $L_{Aeq\ 1\ hour}$ with maximum noise levels of 62 to 67 dB $L_{Amax\ f}$ at measurement location 4 during daytime periods.

4.16 Via analysis of the long-term measurement results, no significant car park noise was evident during night-time hours (23:00 to 07:00).

4.17 Note, measurement location 4 is in closer proximity to the car park and community centre than the nearest proposed façade (approximately 6m further back from the car park boundary). Therefore, noise levels from car park use at the nearest proposed façades will be lower.

4.18 The above car park noise levels are low and would be subject to losses from distance, line of sight, and screening from the car park's boundary wall at the proposed building. Additionally, as car park use is not significant during night-time periods, noise from car park activities incident at the proposed development is acceptable.

Restaurant Activity

4.19 The neighbouring restaurant (Prezzo) to the north of the site comprises a listed building with external seating area and car park (20 to 30m from the nearest proposed façade), which are screened from the site by solid brick boundary walls. The restaurant's advertised opening hours are shown below:

Monday to Thursday	12:00 to 21:30 hours;
Friday and Saturday	11:30 to 22:30 hours;
Sunday	11:30 to 21:30 hours.

4.20 Daytime deliveries to the restaurant to the north of the site (Prezzo) were noted during the site investigations, although were not found to be significant against the prevailing ambient noise levels at the site. No night-time delivery movements were noted in the measurement results, which is in line with Prezzo's advertised opening hours.

4.21 No evidence of plant associated with the restaurant was evident in measurement results or during the site investigations. Additionally, no patron, music or entertainment noise was noted from the neighbouring restaurant (Prezzo) at the measurement locations. This is in line with the type of restaurant and a planning condition that restricts sound reproduction or amplification equipment leading to audible noise at the restaurant's boundary (planning reference: TVS.02063/4).

4.22 Based on the above, noise from the neighbouring restaurant is low and considered unlikely to cause unreasonable disturbance at the proposed development.

Background Noise Measurements

4.23 Typical measured background noise levels at Location 2, representative of the nearest existing residential properties on Palmerston Street, were 56 dB $L_{A90,\ 1\ hour}$ during daytime periods (07:00 to 19:00 hours), 46 dB $L_{A90,\ 1\ hour}$ during evening periods (19:00 to 23:00 hours) and 38 dB $L_{A90,\ 15\ min}$ during night-time periods (23:0 to 07:00 hours).

4.24 Note, 24 Acoustics determines the typical to be the average minus one standard deviation.

5.0 CALCULATIONS AND RECOMMENDATIONS

5.1 Calculations have been undertaken, based on the measured noise levels, to determine the window/glazing requirements for the habitable rooms, which will ensure that noise levels do not exceed 35 dB $L_{Aeq,\ 16\ hour}$ during the day and 30 dB $L_{Aeq,\ 8\ hour}$ at night (and also not regularly exceed 45 dB $L_{Amax\ f}$ at night) from road traffic noise sources.

5.2 The calculations are based on floor plans and elevations from Churchill Retirement Living issued in May 2023. If there are any future changes to the site layout, room layout, volumes or elevations, this assessment should be revised accordingly.

5.3 Corrections are applicable to the measurement results at Locations 2, 3 and 4 in order to account for the setback nature of the proposed façades from the road compared to the closer proximity measurement locations.

5.4 The analysis given below is based on 24 Acoustics' understanding of the envelope construction to be used for this scheme, based on a traditional cavity masonry construction, which would be expected to achieve a minimum sound insulation performance of 52 dB R_w.

Window/Glazing Sound Insulation Performance

5.5 The calculations demonstrate that standard window frames and thermal glazing would be acceptable to all habitable rooms screened from the surrounding road traffic noise sources (i.e. to the centre of the building). Acoustically rated glazing will be required to the northern, eastern and southern façades. The window types and minimum sound insulation performances are stated in Table 5 with recommended locations identified in Figure 2.

Window Type	Minimum SRI (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
A	27	26	29	39	45	44
B	24	22	29	40	44	44
C	24	20	25	35	38	35

Table 5 - Minimum Glazing Sound Insulation Performance

5.6 In making a comparison with the values in Table 5, it is important that the glazing figures used are the result of tests in accordance with ISO 10140, Part 2: 2010 and that the quoted minimum sound reduction specifications are met by the entire glazing system as a whole, including frames, seals, any insulated panels and not just the glass. The requirements also apply to any external glazed doors to habitable rooms.

5.7 In order to assist with the selection process, the following example window configurations, if installed correctly, would be capable of achieving the required sound reduction performance:

Window Type 1: 4mm glass; 12-16mm cavity; 8.4mm Stadip Silence (or similar) – Minimum 36 dB R_w;

Window Type 2: 4mm glass; 12-16mm cavity; 6.4mm Stadip Silence (or similar) – Minimum 34 dB R_w;

Window Type 3: 4mm glass; 12-16mm cavity; 4mm glass – Minimum 31 dB R_w.

Ventilation Sound Insulation Performance

5.8 In order to control internal noise levels to the northern and eastern façades of the building, it is recommended to install MVHR to habitable rooms in these areas. Trickle ventilators will be acceptable to other façades of the building. The acoustic performance criteria for background ventilators are shown in Table 6 and assume up to two trickle ventilators per habitable room. Ventilator type locations are identified in Figure 2.

Vent Type	Minimum Acoustic Performance Dn,e,w (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
1	MVHR – See 5.9					
2	43	43	38	38	40	48
3	23	26	29	30	33	33

Table 6: Ventilation Acoustic Performance * mechanical ventilation performance, see 5.8

5.9 Note, the Vent Type 1 recommendation (MVHR) can also be achieved via a through wall mechanical ventilation unit (e.g. Titon SonAir F+), achieving a minimum overall performance of 49 dB $D_{n,e,w}$.

5.10 The acoustic requirements for Vent Type 2 can typically be achieved by two trickle ventilators/through wall vents, each achieving a minimum sound reduction performance of 39 dB $D_{n,e,w}$. The acoustic requirements for Vent Type 3 can typically be achieved by two standard trickle ventilators, each achieving a minimum sound reduction performance of 31 dB $D_{n,e,w}$.

5.11 In making a comparison with the specifications in Table 6, it is important that the figures used are the result of laboratory tests with the vent in the open position. Note that the stated minimum performance values assume two ventilators per habitable room.

5.12 Where applicable, it is imperative that the calculations are revised once the minimum number of trickle vents are determined to achieve the background ventilation requirements of Approved Document F. Please issue details once available.

5.13 The above assessment demonstrates that the internal noise level criteria, as outlined in Section 3, will be readily achievable, subject to the appropriate specification and design of the external façade elements.

Noise Levels in External Amenity Garden Area

5.14 With reference to the long term and attended measurement results, and future screening provided by the proposed building, noise levels in the external amenity garden area to the centre of the proposed building (shown in Figure 2) will be at or below the BS8233 aspirational guideline value of 55 dB $L_{Aeq,\ 16\ hour}$, which is acceptable.

External Plant Noise Limits

5.15 With reference to the measured background noise levels, it is recommended that noise from any new external plant be designed to achieve the plant noise limits shown in Table 7 at the nearest existing residential properties.

Recommended Plant Noise Limits		
Daytime (07:00 to 19:00 hours) dB $L_{Aeq\ 1\ hour}$	Evening (19:00 to 23:00 hours) dB $L_{Aeq\ 1\ hour}$	Night-time (23:00 to 07:00 hours) dB $L_{Aeq\ 15\ min}$
51	41	33

Table 7: Recommended Plant Noise Limits

5.16 The above limits are based on new plant achieving a rating noise level of at least 5 dBA below the typical background noise level in the area.

5.17 Plant noise rating levels should be determined following the guidance of BS4142 and will need to take account of any tonal, impulsive or otherwise distinctive noise characteristics.

6.0 CONCLUSIONS

6.1 Planning Issues has appointed 24 Acoustics Ltd to undertake a noise assessment for a proposed retirement apartments development at Edwina Mountbatten House, Romsey.

6.2 Noise measurements have been carried out at the site to determine the prevailing noise levels from the local road network and surrounding sources during daytime and night-time periods.

6.3 Noise from neighbouring restaurant, community centre and car park activities was not found to be significant at the nearest proposed façades of the development.

6.4 Recommendations have been provided for the acoustic performance of windows and ventilation to habitable rooms. It is concluded that with the recommended measures given, noise within habitable rooms would comply with maximum internal levels of 35 dB $L_{Aeq\ 16\ hour}$ during daytime, 30 dB $L_{Aeq\ 8\ hour}$ at night and 45 dB $L_{Amax\ f}$ for regular events.

6.5 Noise levels within the external amenity garden area to the centre of the building will be at or below the BS8233 aspirational guideline value of 55 dB $L_{Aeq\ 16\ hour}$.

6.6 On the above basis, an appropriate acoustic environment will be provided to the proposed residential properties.

6.7 Maximum plant noise limits have been provided, based on the measured background noise levels, to be achieved by new external plant at the nearest existing residential properties.

REFERENCES

1. Department for Communities and Local Government. National Planning Policy Framework, July 2021.

2. DEFRA, Noise Policy Statement for England, March 2010.

3. Planning Practice Guidance, Department of Communities and Local Government (revised December 2014).

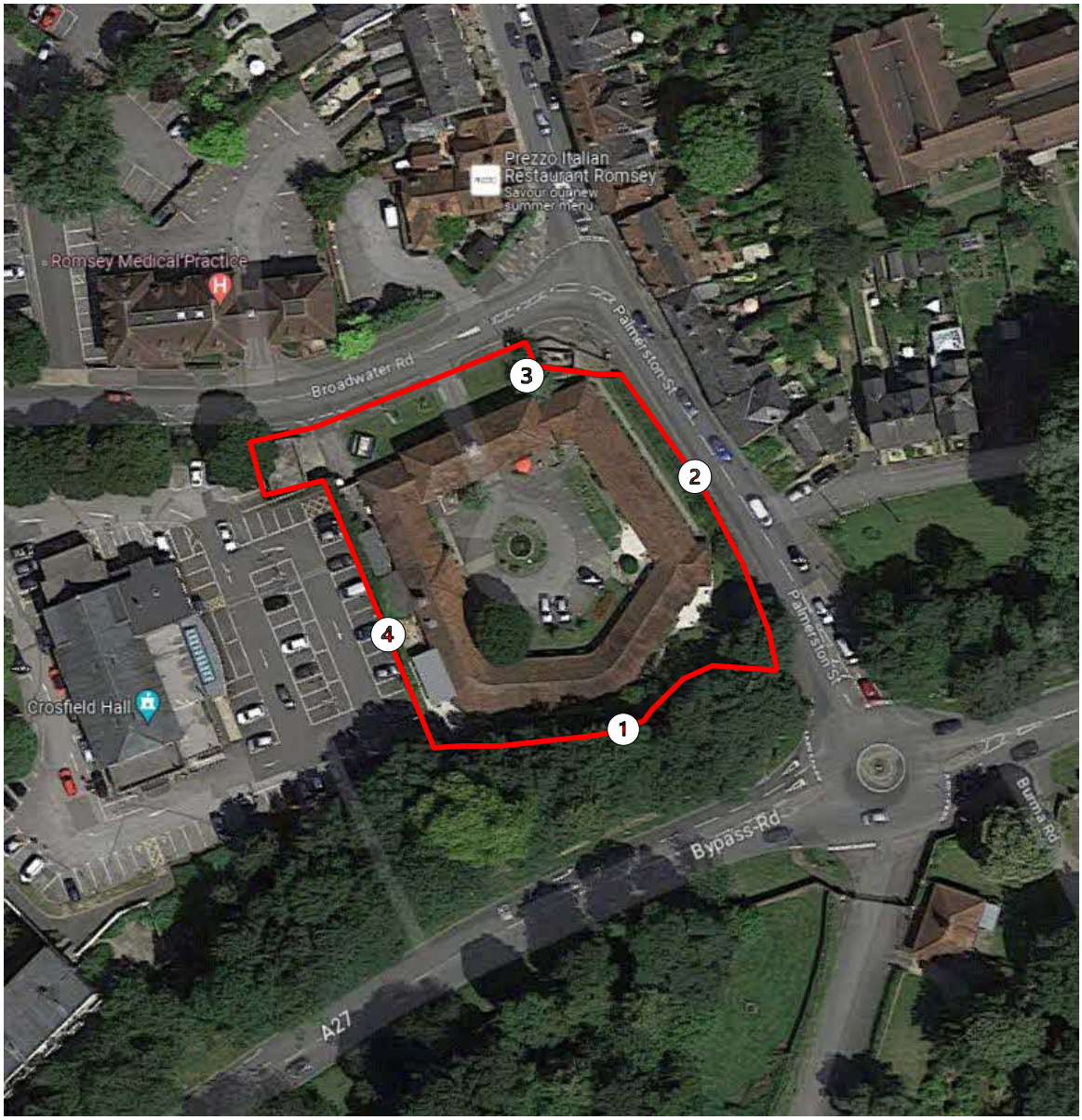
4. ProPG: Planning and Noise. Professional Practice Guidance on Planning & Noise, New Residential Development, May 2017. Association of Noise Consultants, Institute of Acoustics, Chartered Institute of Environmental Health.

5. British Standards Institution. British Standard 8233: Guidance on sound insulation and noise reduction for buildings, 2014.

6. World Health Organisation, Guidelines for Community Noise, 2000.

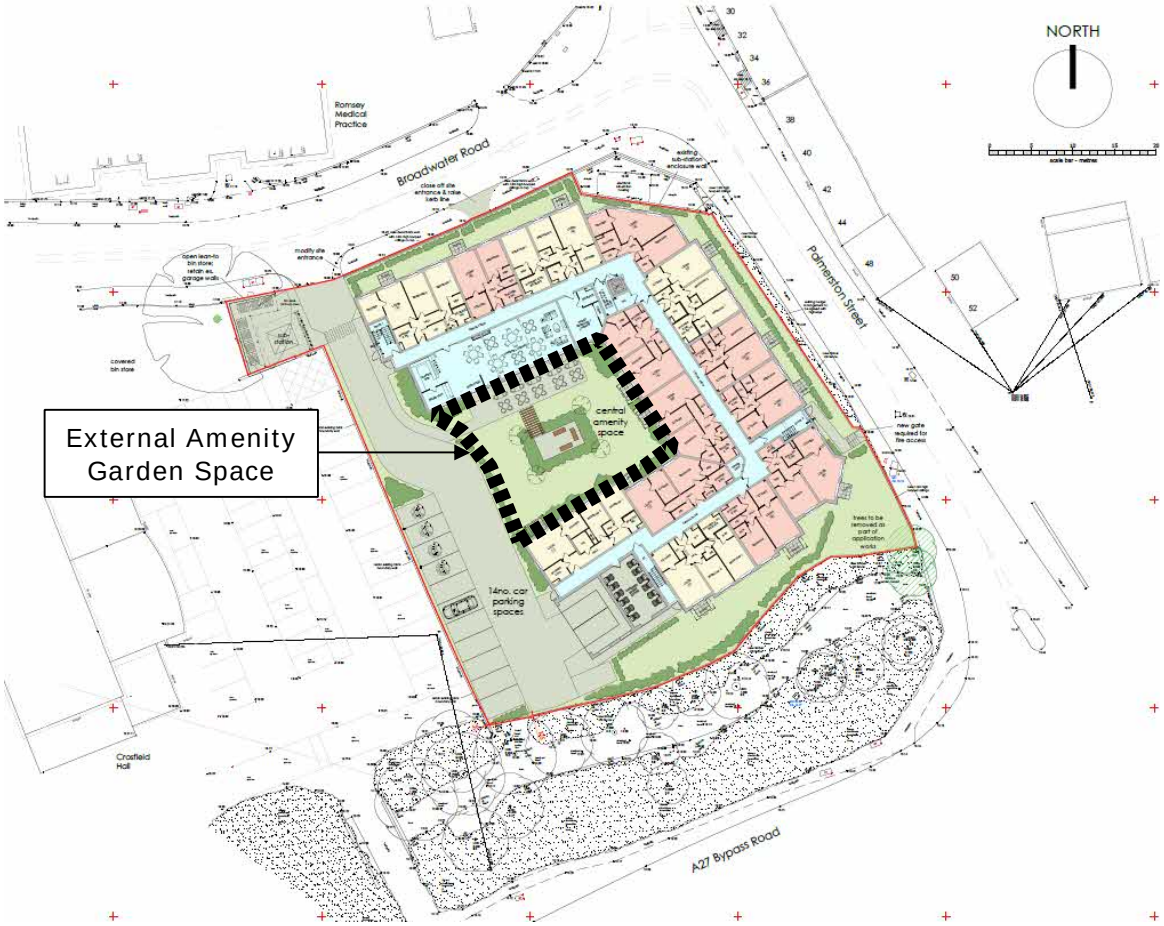
7. British Standards Institution. British Standard 4142: Methods for rating and assessing commercial and industrial sound, 2014. BS 4142:2014+A1:2019

8. British Standards Institution. British Standard 7445: 1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use.

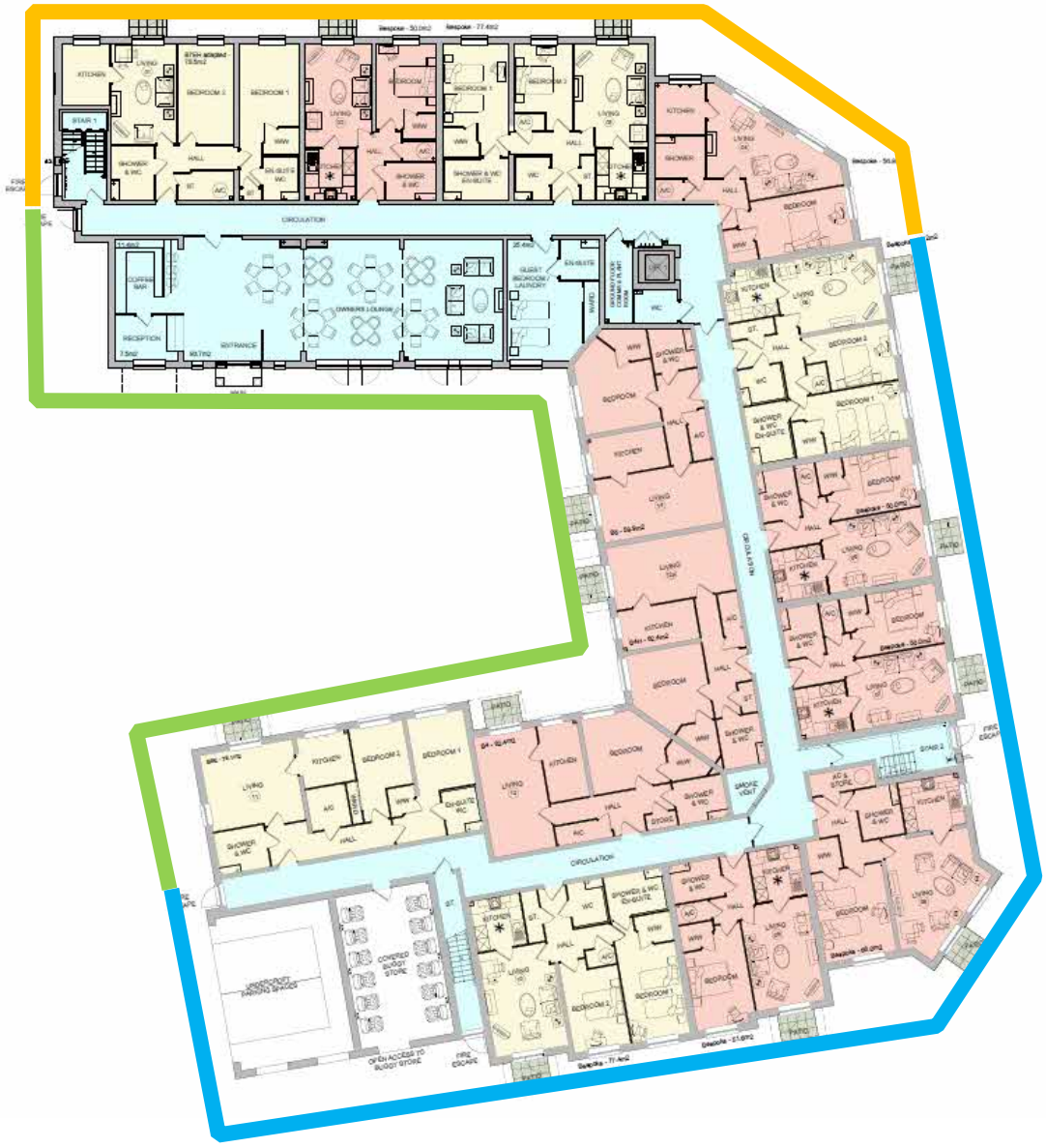


Nº Measurement Locations

Project: Edwina Mountbatten House, Romsey	Title: Site Location, Measurement Locations		24Acoustics
DWG No: Figure 1	Scale: N.T.S.	Rev: -	
Date: May 2023	Drawn By: KE	Job No: 10048	



Project: Edwina Mountbatten House, Romsey	Title: Proposed Site Layout	
DWG No: Figure 2	Scale: N.T.S.	Rev: -
Date: May 2023	Drawn By: KE	Job No: 10048



Glazing Type 1:
Glazing Type 2:
Glazing Type 3:

Project: Edwina Mountbatten House, Romsey	Title: Window Type Locations	
DWG No: Figure 3	Scale: N.T.S.	Rev: -
Date: May 2023	Drawn By: KE	Job No: 10048

Vent Type 1: (Mechanical Ventilation)
Vent Type 2:
Vent Type 3:

Project: Edwina Mountbatten House, Romsey	Title: Ventilation Type Locations		
DWG No: Figure 4	Scale: N.T.S.	Rev: -	
Date: May 2023	Drawn By: KE	Job No: 10048	

APPENDIX A - ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dBA corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time internal, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B - MEASUREMENT RESULTS