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PROPOSED RESIDENTIAL DEVELOPMENT
LAND AT SOUTHLEIGH PARK, HAVANT

RESERVED MATTERS
NOISE IMPACT ASSESSMENT

Technical Report: R9060-1 Rev 3

Date: 15th September 2023

For:

Bargate Homes Ltd
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Winchester Rd,
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24 Acoustics Document Control Sheet

Project Title: Proposed Residential Development, Land at Southleigh Park, Havant
Reserved Matters Noise Impact Assessment

Report Ref: R9060-1 Rev 3

Date: 15 September 2023

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Document Status and Approval Schedule

Revision	Description	Prepared By	Approved By
0	Approved for Issue	Reuben Peckham	Steve Gosling
1	Approved for Issue	Reuben Peckham	Steve Gosling
2	Approved for Issue	Reuben Peckham	Steve Gosling
3	Approved for Issue	Reuben Peckham	Steve Gosling

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1.0 INTRODUCTION

1.1 Bargate Homes Ltd has retained 24 Acoustics Ltd to undertake an assessment of the noise impact upon the proposed residential development of land at Southleigh Park in Havant.

1.2 This report presents the results of the assessment following noise surveys undertaken on the site in May 2021 and acoustic modelling showing the propagation of noise across the site to reflect the proposed reserved matters housing scheme.

1.3 An explanation of acoustical terms used in this report is provided in Appendix A. All sound pressure levels in this report are given in dB re: 20 μPa.

2.0 SITE DESCRIPTION

2.1 The site is located to the north-east of Havant and bounds Bartons Road to the north, Eastleigh Road to the West and Horndean Road to the East. Road traffic is the dominant source of ambient noise on the site.

2.2 Figure 1 shows an aerial image of the site and surroundings.

2.3 Outline planning consent for up to 70 residential units with associated landscaping, parking and infrastructure was granted by Havant Borough Council in January 2019 (Reference APP/17/00893).

2.4 Bargate Homes are now seeking reserved matters planning consent for 41 residential units. The proposed development scheme is shown in Figure 2.

3.0 NOISE IMPACT ASSESSMENT CRITERIA

National Planning Policy Framework and Noise Policy Statement for England

3.1 The National Planning Policy Framework (NPPF) [Reference 1] planning policies and decisions should contribute to and enhance the natural and local environment by preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.

3.2 The Framework also states that 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 life60;

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

3.3 The NPPF also 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 NPPG 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.

3.6 The PPG expands upon the concept of SOAEL (together with Lowest Observable Adverse Effect Level, LOAEL and No Observed Effect Level, NOEL) as introduced in the NPSE and provides a table of noise exposure hierarchy for use in noise impact assessments in the planning system.

3.7 The NPPF, NPSE and PPG documents do not refer to specific noise criteria, therefore the specific criteria to be used will depend on the nature of the assessment being undertaken.

<u>Professional Practice Guidance on Planning & Noise (ProPG)</u>

3.7 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.

3.8 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.

3.9 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. It is provided for guidance only and has no formal place within planning legislation.

British Standard 8233: 2014 and WHO Guidelines

3.10 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 (07:00 – 23:00 hours) and 30 dB $L_{Aeq,\ 8\ hour}$ in bedrooms at night (23:00 to 07:00 hours).

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

3.12 The WHO describe a noise level of 55 dB $L_{Aeq,\ 16\ hr}$ in external amenity spaces during the day as the onset of significant community annoyance. BS 8233 suggests upper design limits in gardens of between 50 and 55 dB $L_{Aeq,T}$ but states that these are 'guideline values' which are not achievable in all circumstances.

4.0 SITE NOISE LEVELS

Site Noise Surveys

4.1 Ambient noise measurements have been undertaken to measure existing noise levels across the site. Ambient noise levels were measured using the following equipment.

2 * Rion precision sound level meters	Type NL52;
Bruel and Kjaer acoustic calibrator	Type 4231.

4.2 Two long-term noise monitors were left unattended on the site between 12 and 21st May 2021 to log ambient noise levels at the following locations:

- 1: Site boundary with Horndean Road;
- 2: Site boundary with Bartons Road.

4.3 All survey locations are shown in Figure 1.

4.4 The monitors were installed on tripods at a height of 1.5 m above local grade level. Environmental windshields were fitted. All data was recorded in terms of the overall A-weighted and linear octave band L_{eq} and $L_{max,f}$ sound pressure levels in samples of 5 minutes.

4.5 Measurements were made in accordance with BS 7445: 1991 "Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use [Reference 7]. The calibration of all instrumentation was checked before and after the survey and no signal variation occurred. Calibration of 24 Acoustics' equipment is traceable to National Standards. The weather at the start and end of the survey period was dry, with wind speeds less than 5 m/s. There were some periods of precipitation during the survey period which have been excluded from the analysis.

4.6 The noise measurement results are shown graphically and in tabular format in Appendix B. In addition, Table 1 below summarises the results of the long term noise surveys.

	Period and Noise Level		
	Daytime	**Night time**	
	dB $L_{Aeq, 16 hr}$	**dB $L_{Aeq, 8 hr}$**	**dB $L_{Amax,f}$**
1- Site Boundary with Horndean Road	74	65	88
2- Site Boundary with Bartons Road	59	51	67

Table 1: Ambient Noise Levels – daytime and evening periods

Noise Propagation Model

4.7 The noise survey data has been used to populate an acoustic model of the site. This has predicted the daytime and night-time noise levels across the site in the form of acoustic contours. Immi v2017 noise modelling software has been used. The model has used the propagation methodology of the Department of Transport Publication 'Calculation of Road Traffic Noise' [Reference 8] and has been found to correlate well with the noise survey data recorded throughout the site.

4.8 The calculations assume some areas of enhanced boundary fencing or brick walls to act as acoustic barriers. These will comprise solid impervious structures with a minimum surface density of 12 kg/ m2 and are identified in Figure 3.

4.9 Figures 4 and 5 show the results of the model in terms of noise contours across the site for the daytime and night time periods respectively.

5.0 NOISE IMPACT ASSESSMENT

Noise Levels in External Amenity Areas

5.1 Figure 4 shows the daytime noise level at ground floor level (1.5 m above local grade). This indicates that the noise levels in all the vast majority of private gardens will be below the (aspirational) noise level of 55 dB $L_{Aeq,16\ hr}$. A small number of gardens will also be subject to noise levels of up to 57 dB $L_{Aeq,\ 16\ hr}$ in some areas of their gardens (with each garden except Plot 6 still having space with levels below 55 dB $L_{Aeq,\ 16\ hour}$).

5.2 As stressed above the guideline daytime noise levels in external amenity areas are aspirational and, specifically Paragraph 7.7.3.2 of British Standard 8233 states:

> *However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. 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.*

5.3 On the above basis it is therefore considered that the noise impact within private amenity areas will be entirely acceptable.

Internal Noise Levels

5.4 Consideration has been given to noise levels in internal spaces to ensure that they are compliant with the guidance of BS 8233:2014 (a noise level of 30 dB $L_{Aeq,8\ hr}$ in bedrooms at night and 35 dB $L_{Aeq,16hr}$ in all habitable rooms during the day). It will be necessary for some windows to be kept closed in order to achieve these targets (with some needing acoustically rated glazing). Residents will need the option to live normally in the dwellings when windows are closed and therefore will need alternative means of ventilation and measures to prevent excess heat build up inside the properties.

5.5 The affected properties are shown in Figure 6. Full acoustic specifications for the glazing and ventilation systems should be provided on a plot by plot basis as a detailed design matter (these are contingent on the volume of each space and the area of each window).

6.0 CONCLUSIONS

6.1 Bargate Homes Ltd has retained 24 Acoustics Ltd to undertake an assessment of the noise impact upon the proposed residential development of land at Southleigh Park in Havant.

6.2 The assessment has been performed following noise surveys undertaken on site and the development of an acoustic model which has determined the likely propagation of noise across the proposed development site.

6.3 Some mitigation of noise is recommended in the form of an acoustic barrier fences and acoustically rated glazing/ alternative means of ventilation to some properties (to enable residents to occupy them with windows closed).

6.4 On this basis the site is considered well designed to mitigate noise (in the spirit of the requirements of the ProPG and the NPPF) to ensure that noise levels are as low as practicable and compliant with national guidelines. It is therefore considered that there are no reasons, on noise grounds, why planning consent for the development should not be granted.

REFERENCES

1. Department for Communities and Local Government. National Planning Policy Framework, July 2018.

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

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

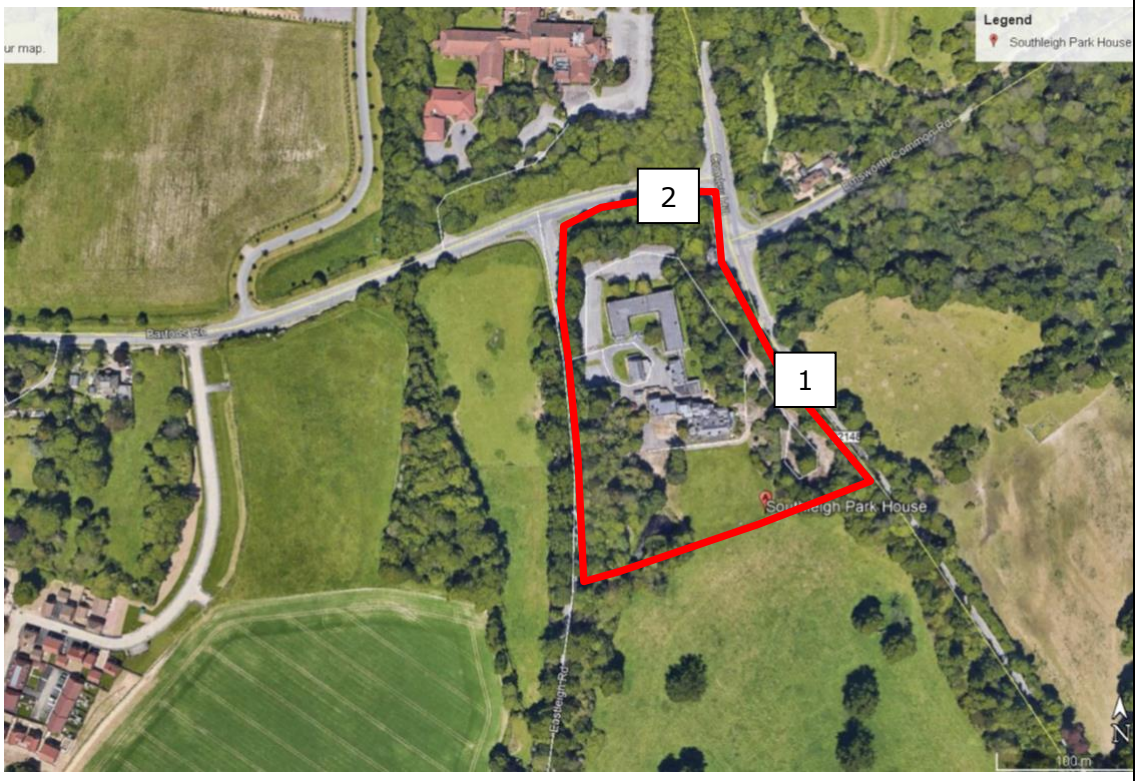
4. ANC, IOA CIEH. Professional Practice Guidance on Planning and Noise, 2017.

5. British Standards Institution. British Standard 8233: Sound Insulation and Noise Reduction for Buildings, 2014.

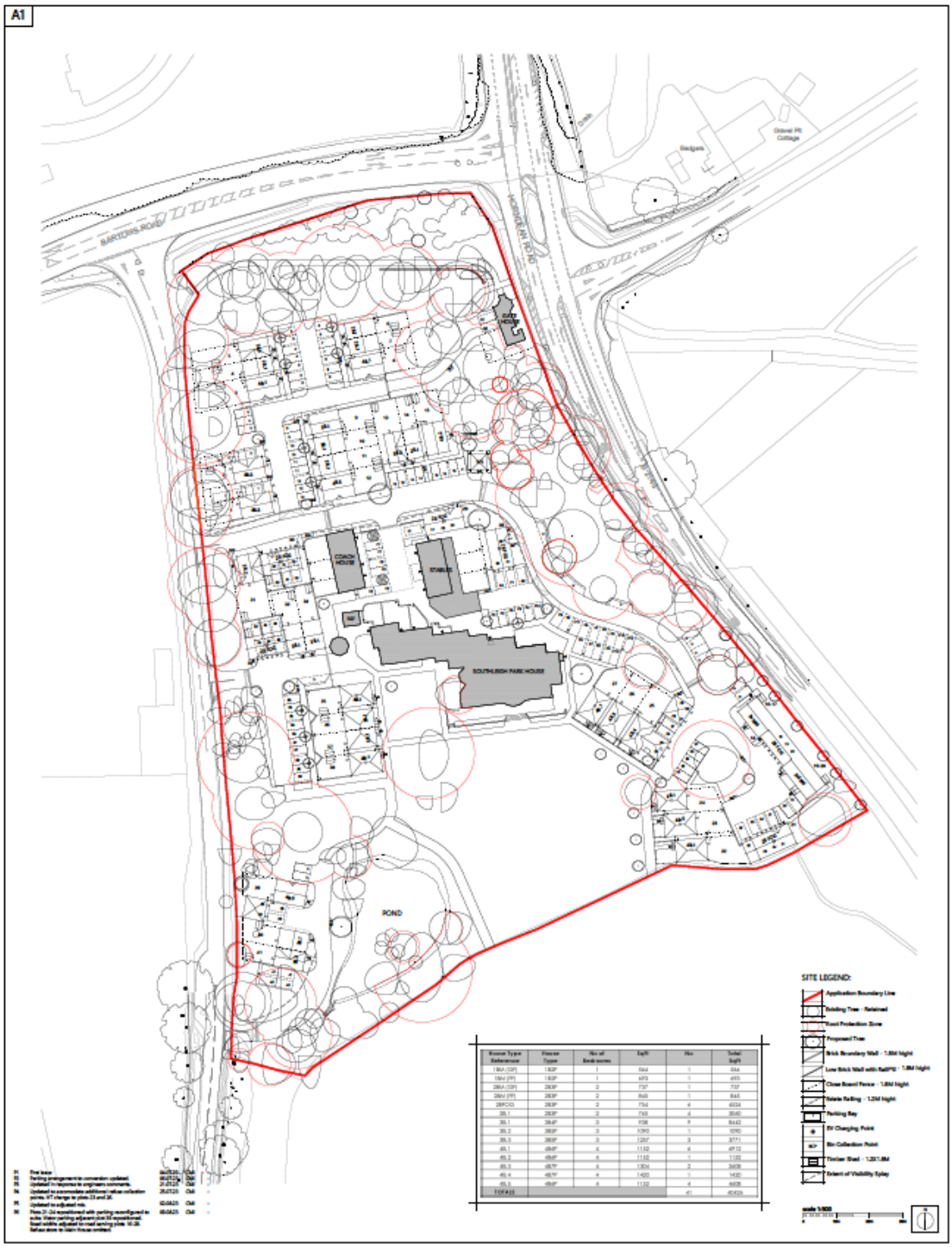
6. World Health Organisation. Guidelines for Community Noise, 2000.

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

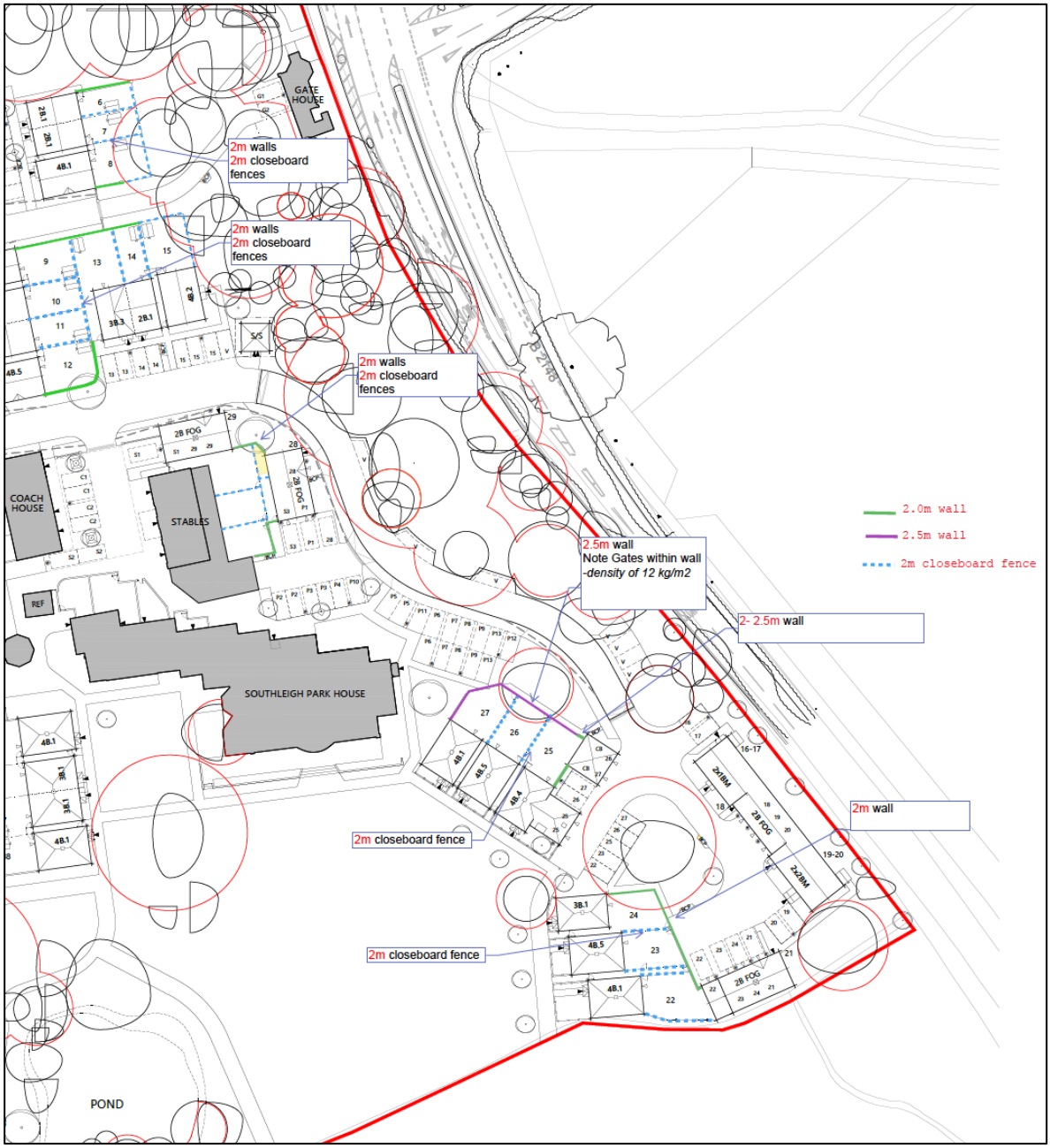
8. Department of Transport. Calculation of Road Traffic Noise, 1988.



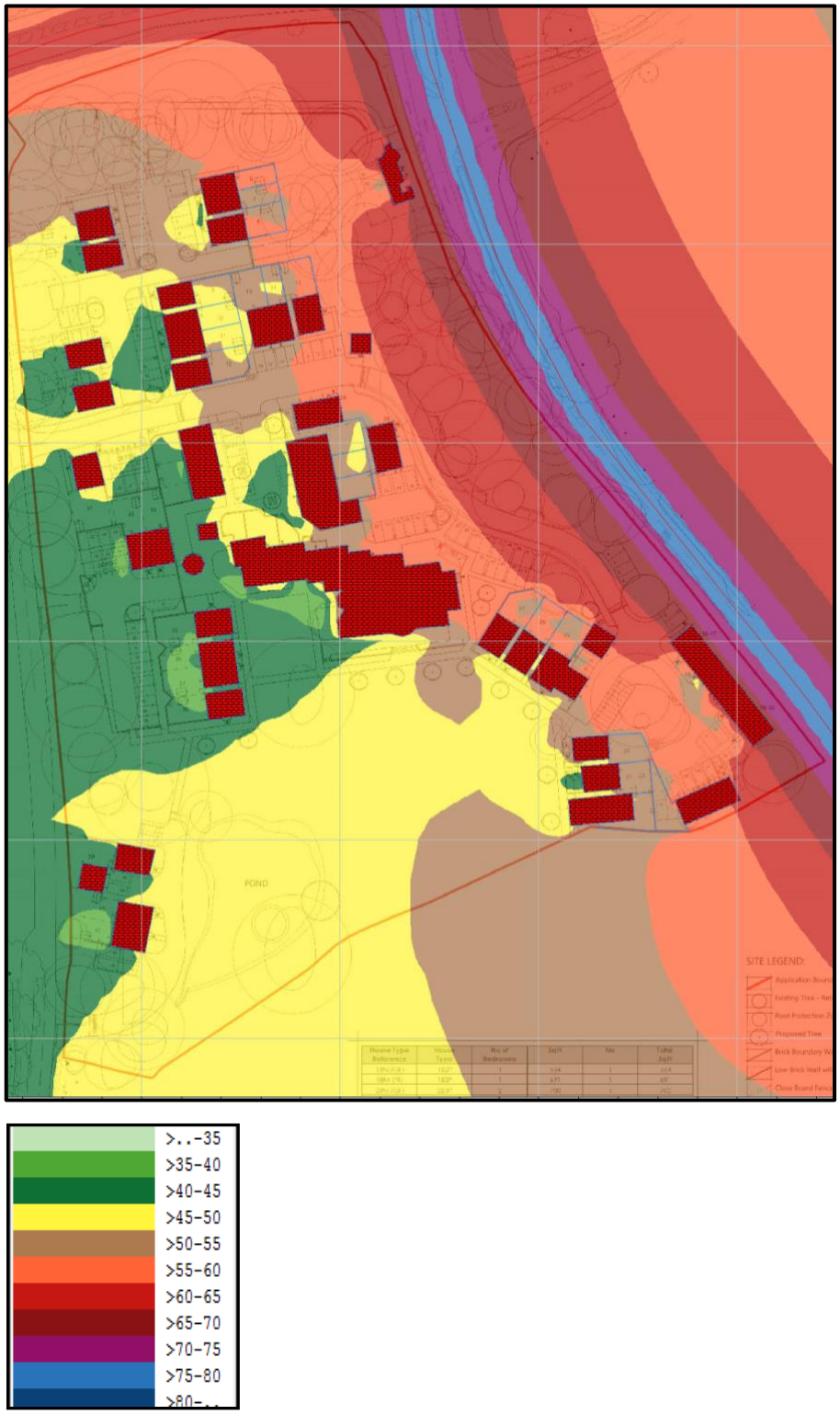
Project: Southleigh Park House, Havant	**Title:** Site Location and Noise Survey Locations	
DWG No: Figure 1	**Scale:** N.T.S.	**Rev:** -
Date: Sept 2023	**Drawn By:** RP	**Job No:** 9060



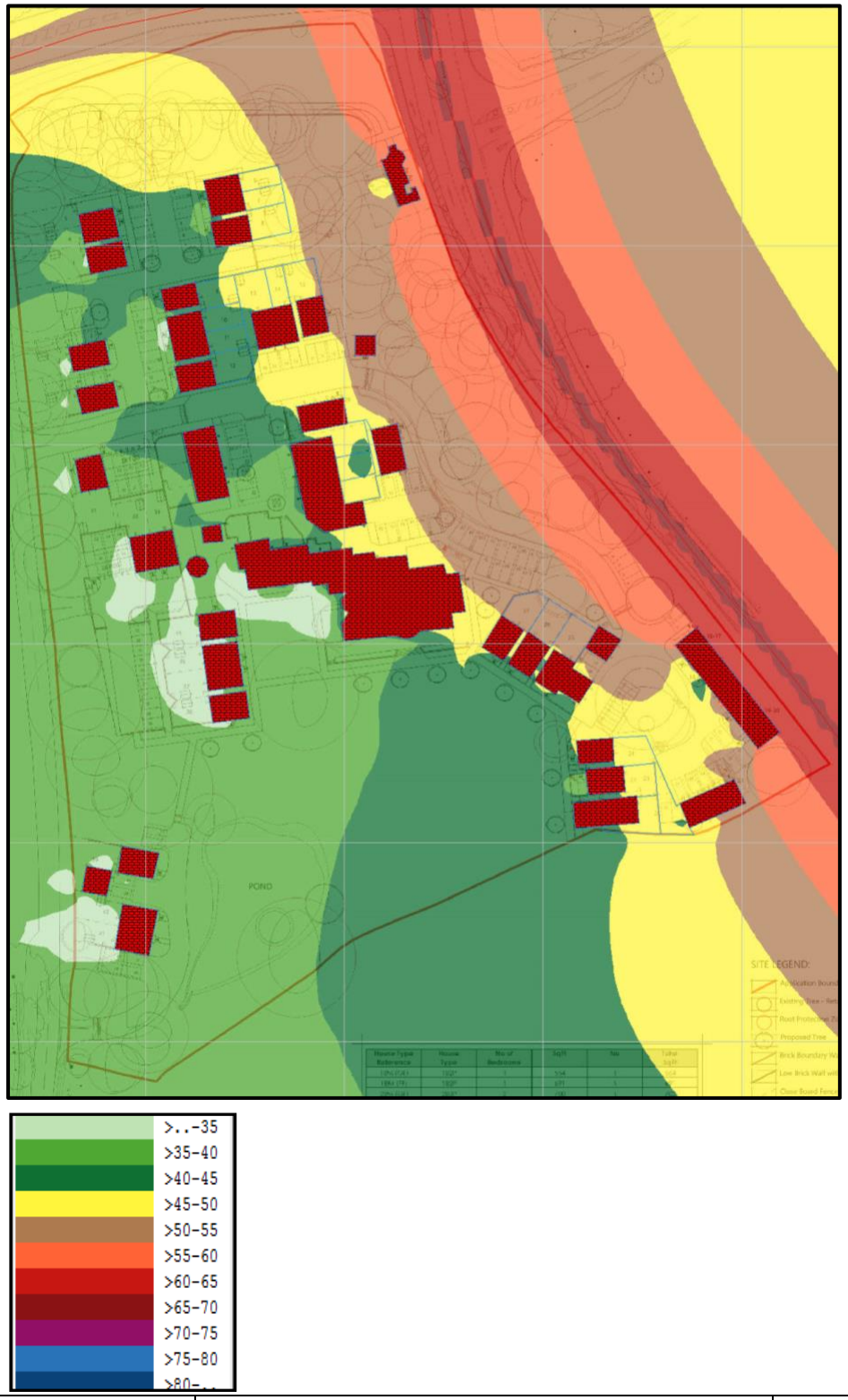
Project: Southleigh Park Havant	**Title:** Proposed Site Masterplan	
DWG No: Figure 2	**Scale:** N.T.S.	**Rev:** -
Date: Sept 2023	**Drawn By:** RP	**Job No:** 9060



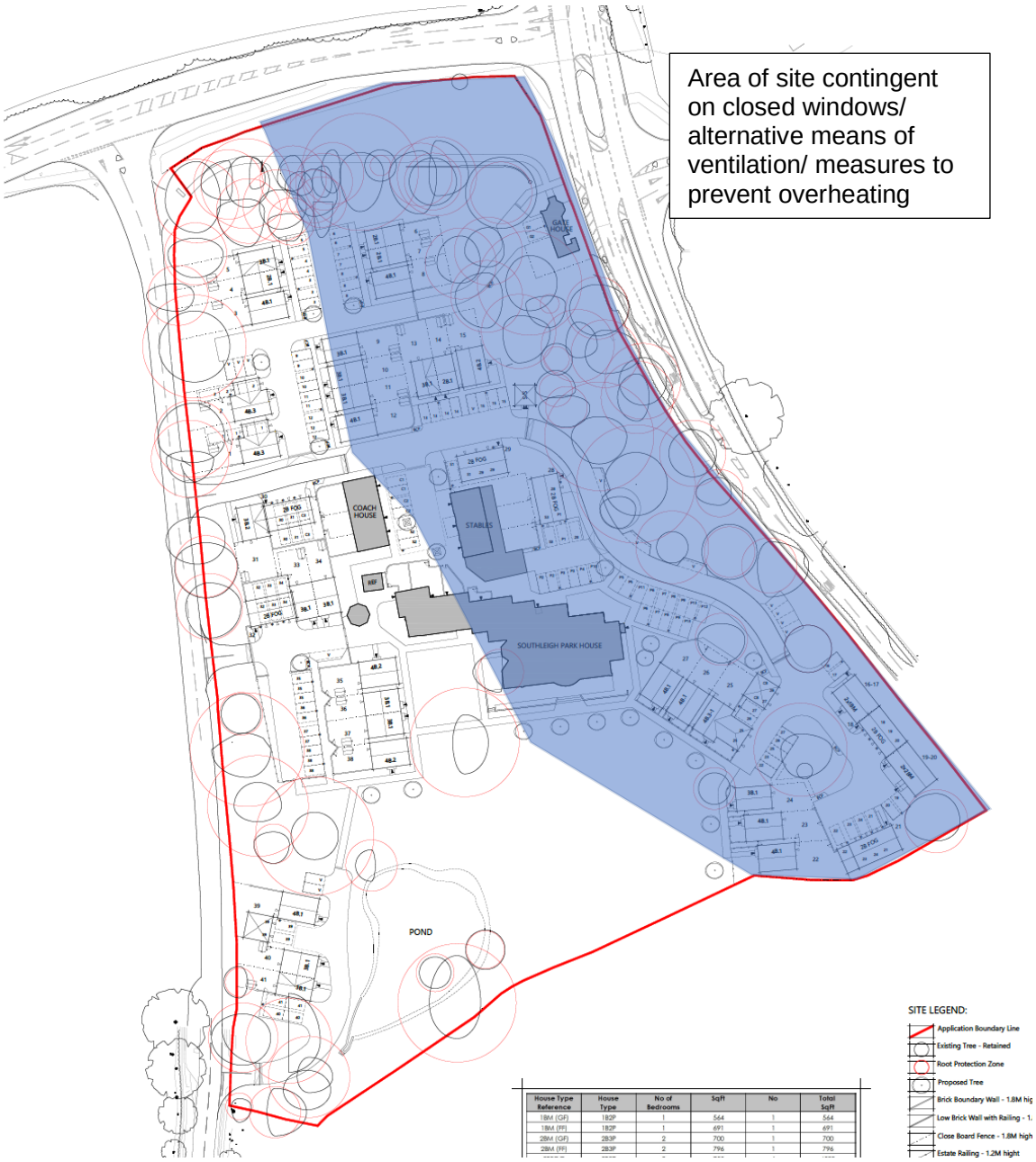
Project: Southleigh Park	**Title:** Proposed Acoustic Barriers	
DWG No: Figure 3	**Scale:** N.T.S.	**Rev:** -
Date: Sept 2023	**Drawn By:** RP	**Job No:** 9060



Project: Leigh Road, Wimborne	**Title:** Daytime Noise Contours, dB $L_{Aeq,\ 16hr}$	
DWG No: Figure 4	**Scale:** N.T.S.	**Rev:** -
Date: Sept 2023	**Drawn By:** RP	**Job No:** 9060



Project: Leigh Road, Wimborne	**Title:** Night Time Noise Contours, dB $L_{Aeq, 8\ hour}$	
DWG No: Figure 5	**Scale:** N.T.S.	**Rev:** -
Date: Sept 2023	**Drawn By:** RP	**Job No:** 9051



House Type Reference	House Type	No of Bedrooms	Sqft	No	Total SqFt
1BM (GF)	1B2P	1	564	1	564
1BM (FF)	1B2P	1	691	1	691
2BM (GF)	2B3P	2	700	1	700
2BM (FF)	2B3P	2	796	1	796

Project: Southleigh Park Havant	**Title:** Mitigation Recommendations	
DWG No: Figure 6	**Scale:** N.T.S.	**Rev:** -
Date: Sept2023	**Drawn By:** RP	**Job No:** 9060

APPENDIX A: NOISE UNITS

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 important 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 dB(A) weighting. This is an internationally accepted standard for noise measurements.

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

APPENDIX B: NOISE MEASUREMENT RESULTS

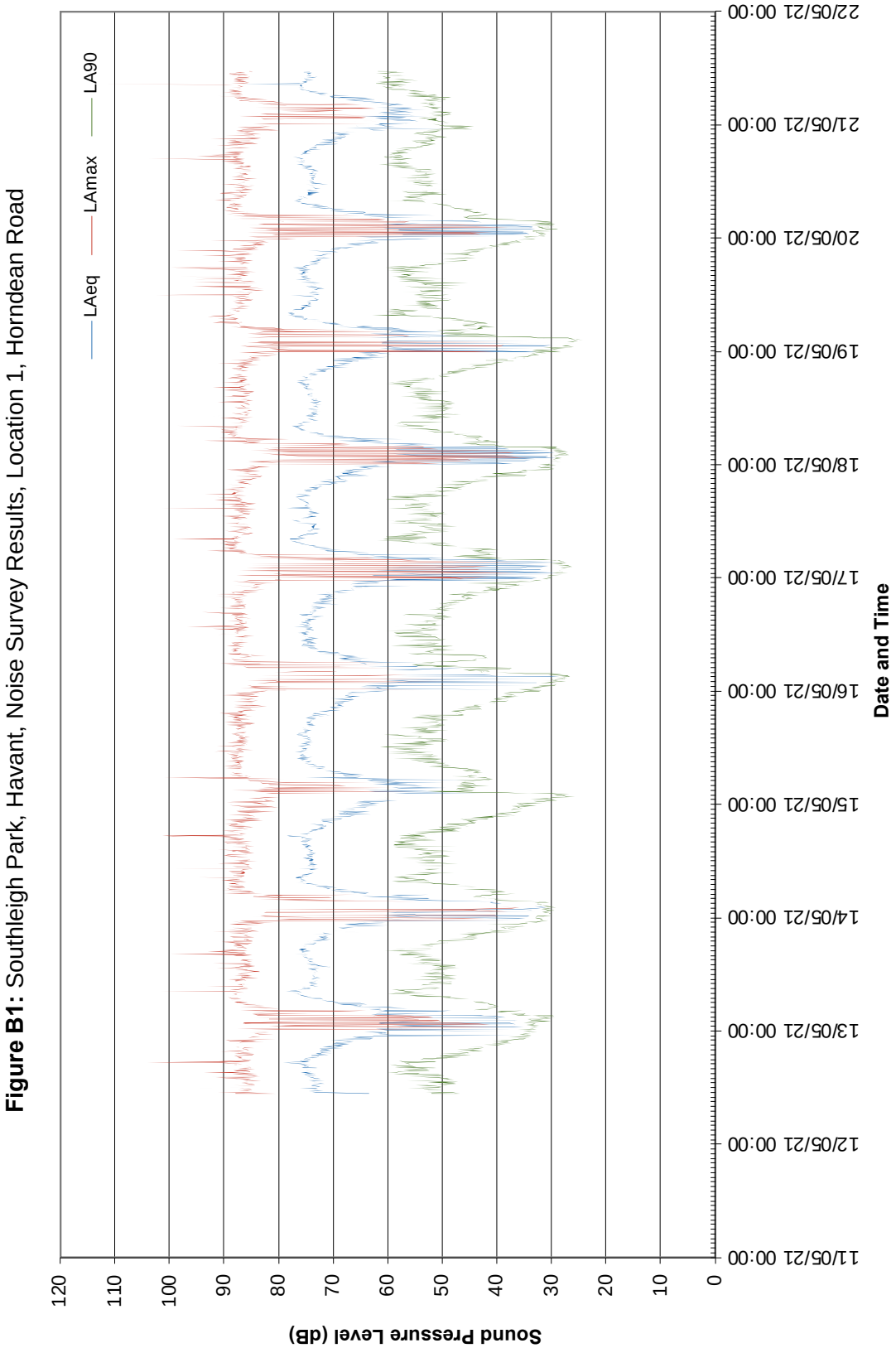


Figure B1: Southleigh Park, Havant, Noise Survey Results, Location 1, Horndean Road

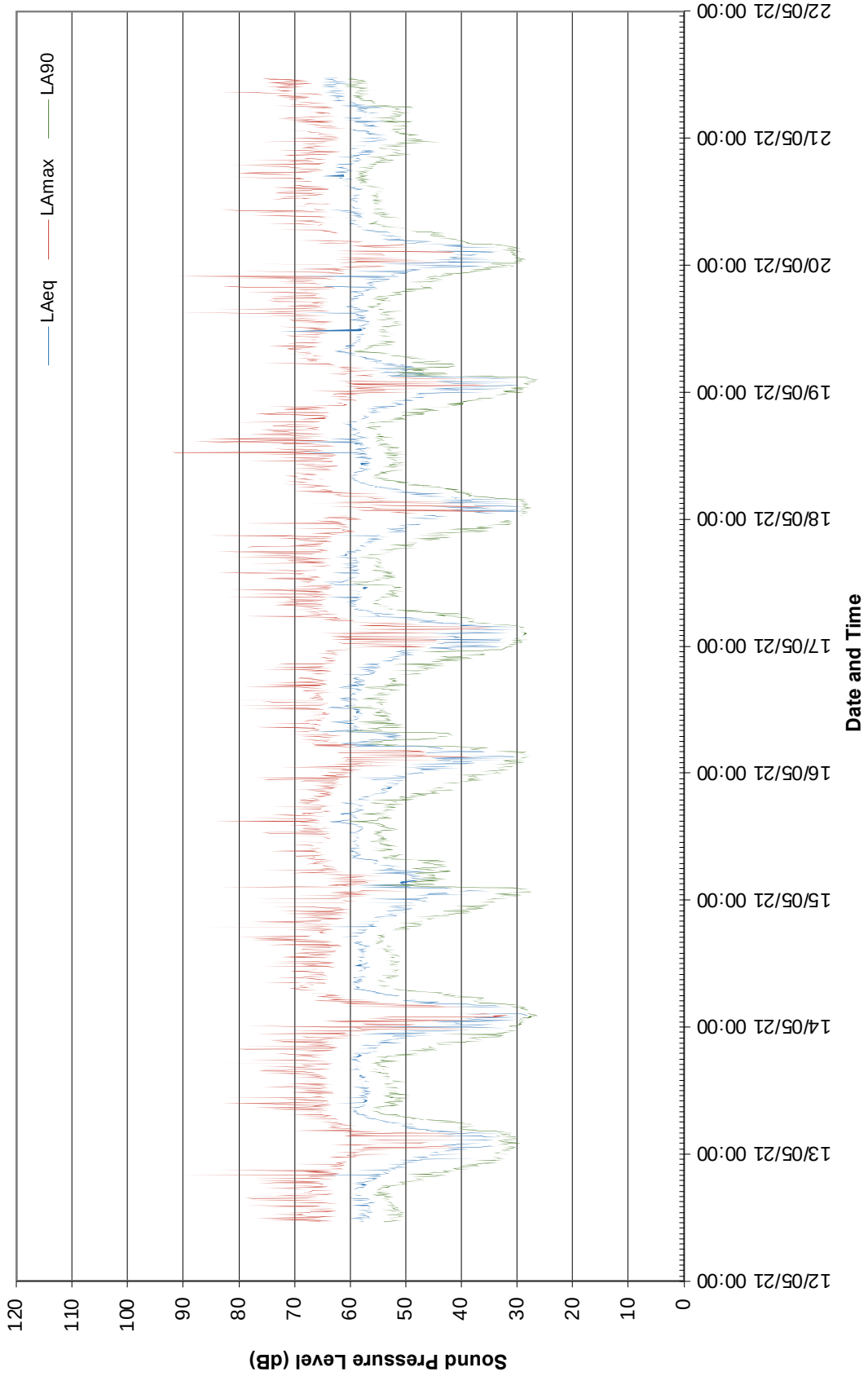



Figure B2: Southleigh Park, Havant Noise Survey Results, Location 2, Bartons Road