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MANOR FARM, BEDHAMPTON- PHASE 2

ACOUSTIC DESIGN STATEMENT /
DISCHARGE OF PLANNING CONDITION 2

Technical Report: R11014-1 Rev 1

Date: 13th June 2025

For: Bargate Homes Ltd
The New Barn,
Vicarage Farm Business Park
Winchester Road,
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SO50 7HD

24 Acoustics Document Control Sheet

Project Title: Manor Farm, Bedhampton- Phase 2
Acoustic Design Statement/ Discharge of Planning Condition 2

Report Ref: R11014-1 Rev 1

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1.0 INTRODUCTION

1.0 24 Acoustics Ltd has been retained by Bargate Homes Ltd to provide the necessary technical work in order to discharge planning condition 2 at their Bedhampton (Phase 2) development scheme.

1.1 This acoustic design statement presents the results of the assessment. All noise levels are presented in dB relative to 20 μ Pa. A glossary of the acoustic terminology used in this report is provided in Appendix A.

2.0 PROPOSED DEVELOPMENT AND PLANNING CONDITIONS

2.1 The site is located to the south of Bedhampton with vehicular access via Lower Road to the north.

2.2 The A27 junction with Bedhampton Roundabout follows the site's western boundary. The A3(M) junction with the A27 lies further west and a train line follows the site's southern boundary. The main carriageway of the A27 lies further south at a distance of approximately 200 m. The Bargate Homes Bedhampton Phase 1 development lies to the east, comprising of residential properties.

2.3 An aerial image showing the location of the site is shown in Figure 1. The site masterplan is shown in Figure 2.

2.4 Reserved matters planning consent for 43 homes was granted at the site by Havant Borough Council in February 2025 (Reference APP/24/00612).

2.5 The consent is subject to conditions and Conditions 2-4 relate to noise. Condition 3 relates to consideration of overheating and Condition 4 requires post-completion/ pre-occupation noise compliance noise surveys to be undertaken. These will be provided in due course.

2.6 Condition 2 is a (semi) pre-commencement condition and is reproduced below:

2. No development above slab level shall take place until an Acoustic Design Statement setting out the acoustic mitigation measures to be employed with regard to the building envelope, including fenestration and ventilation, for all residential units, shall be submitted to and approved in writing by the Local Planning Authority. The report shall set out how the mitigation measures shall meet BS8223:2014 standards as recommended for indoor ambient noise levels for dwellings, especially in relation to living rooms and bedrooms i.e during the day (07:00 to 23:00) 35 dB L Aeq,16 hour and at night (23:00 to 07:00) 30 dB L Aeq,8 hour for bedrooms. The acoustic mitigation report shall also stipulate which units will use passive ventilation and which will use mechanical ventilation. The development shall be carried out in accordance with the approved details.

3.0 APPROACH TO ASSESSMENT

3.1 This acoustic design statement has been prepared according to the following methodology:

The data from ambient noise surveys (undertaken on the site previously) has been used to populate an acoustic model of the proposed development;

The acoustic model has estimated likely day-time and night-time noise levels at the new building facades;

Calculations have been undertaken to determine internal noise levels based upon the sound insulation properties of the building façade, glazing and ventilation systems. Where necessary the same have been upgraded in order to ensure compliance with the target noise levels set out in BS 8233:2014 as stipulated in Condition 2 of the planning consent.

4.0 SITE NOISE LEVELS

Environmental Noise Surveys

- 4.1 Environmental noise measurements have been previously undertaken at the undeveloped site in order to establish existing ambient noise levels across the site. Noise measurements were undertaken between 3rd and 10th April 2024. The measurement locations are shown in Figure 1 and described below:

Location 1: Northern boundary with housing off Lower Common Road;
Location 2: Western boundary;
Location 3: Southern boundary with railway.

- 4.2 Measurements were undertaken using the following equipment:

3 N° Rion class 1 sound level meter	Type NL52;
Brüel and Kjær acoustic calibrator	Type 4231.

- 4.3 All noise measurements were undertaken at approximately 2 m above local grade level in free field conditions and with direct line of sight to the railway. Environmental windshields were fitted to the microphones and the instrumentation was configured to measure and store overall A-weighted statistical parameters such as L_{Aeq} , L_{Amax} and L_{A90} (all measured on fast response) in 5 minute intervals. 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 3].
- 4.4 Weather conditions during the survey period were variable, with periods of rain and wind speeds exceeding 5 m/s. Measurements affected by meteorological conditions have been removed from the design levels.
- 4.5 Noise sources in the area include road traffic from the A3(M) and A27 slip road to the west as well as the A27 to the south of the site. Maximum noise levels were predominantly controlled by road traffic and, to a lesser extent, train movements to the south of the site.
- 4.6 The noise survey results are shown graphically in Appendix B and summarised in Tables 2 to 4.

Date (April 2024)	Time Period and Noise Level dB	
	Day 07:00 - 23:00 hours LAeq, 16 hr Average	Night 23:00 - 07:00 hours LAeq, 8hr Average
Wednesday 3rd	63	57
Thursday 4th	63	58
Friday 5th	63	54
Saturday 6th	61	55
Sunday 7th	61	54
Monday 8th	59	59
Tuesday 9th	62	55
Wednesday 10th	59	-
Representative	61	56

Table 1: Summary of Noise Survey Results at Location 1 (Northern Boundary)

Date (April 2024)	Time Period and Noise Level dB	
	Day 07:00 - 23:00 hours LAeq, 16 hr Average	Night 23:00 - 07:00 hours LAeq, 8hr Average
Wednesday 3rd	63	60
Thursday 4th	63	61
Friday 5th	64	57
Saturday 6th	62	56
Sunday 7th	62	58
Monday 8th	62	61
Tuesday 9th	62	59
Wednesday 10th	62	-
Representative	63	59

Table 2: Summary of Noise Survey Results at Location 2 (Western Boundary)

Date (April 2024)	Time Period and Noise Level dB	
	Day 07:00 - 23:00 hours L _{Aeq, 16 hr} Average	Night 23:00 - 07:00 hours L _{Aeq, 8hr} Average
Wednesday 3rd	64	59
Thursday 4th	64	59
Friday 5th	64	56
Saturday 6th	63	56
Sunday 7th	62	55
Monday 8th	62	60
Tuesday 9th	64	57
Wednesday 10th	61	-
Representative	63	58

Table 3: Summary of Noise Survey Results at Location 3 (Southern Boundary)

Noise Propagation Model

4.7 The noise survey data described above has been used to populate an acoustic model of the site. IMMI 2024 noise-mapping software was used and this has determined the noise levels across the site from the road and railway. This has used the propagation methodology of CRTN [Reference 4] taking into account the effects of geometric divergence, atmospheric and ground absorption and acoustic screening. The following parameters were used in the model:

- Ambient temperature: 10 degrees centigrade;
- Relative humidity: 70%;
- Ground effects: G=0 ('hard' ground);
- Light downwind propagation conditions.

4.8 The acoustic model has considered the proposed site layout including topography of the site for receptor heights at both ground floor and first floor level (1.5 m and 4 m receptor heights). The model results are shown in the form of noise contours in Figures 3 and 4.

5.0 FENESTRATION DESIGN AND SPECIFICATION

- 5.1 The output of the acoustic model has been used to calculate likely internal noise levels in habitable rooms in each proposed dwelling in order to achieve the acoustic design criteria set out in Condition 2 of the planning consent.
- 5.2 Consideration was initially given to determination of compliance with the target internal noise levels with windows open (for the provision of natural ventilation). However, the noise environment across the entire site is such that this will not be possible and the target noise levels may only be achieved when windows are closed. Windows will be openable with residents having the choice to occupy with windows open or closed, however, in order to allow them to occupy with windows closed alternative means of background ventilation will be necessary. Consideration to overheating will also need to be given and this is addressed in a separate technical report (in accordance with the requirements of Condition 3 of the Planning Consent and Approved Document O of the Building Regulations).
- 5.3 Calculations have been undertaken to determine the acoustic performance of glazing and ventilation systems in order to ensure compliance with the requirements of Condition 2. It is assumed that all buildings will be constructed from a traditional cavity masonry construction, which would be expected to achieve a minimum sound insulation performance of 52 dB R_w .
- 5.4 Table 4 below provides a minimum acoustic specification for glazing systems within the site.

Glazing Type	Minimum SRI (dB) per Octave Band Centre Frequency (Hz)						Overall R_w (dB)
	125	250	500	1k	2k	4k	
G1	24	20	25	35	38	35	31
G2	24	25	31	42	44	49	37

Table 4: Glazing Acoustic Specifications

- 5.5 Figure 5 shows the locations and facades where each glazing system is required. A corresponding schedule is provided in Appendix B.
- 5.6 The following glazing configurations are examples that should comply with each specification:

- o G1: 4 mm glass, 16 mm airgap, 4 mm glass;
- o G2: 6 mm glass, 16 mm airgap, 6.4 acoustic laminate (eg Stadip Silence).

5.7 Ventilation throughout the site will be provided via trickle vents (with a minimum weighted elemental level difference of 33 dB $D_{n,e,w}$) with decentralised and centralised mechanical ventilation systems (DMEV and MEV)

6.0 CONCLUSIONS

6.1 24 Acoustics Ltd has been retained by Bargate Homes Ltd to provide the necessary technical work in order to discharge planning condition 2 at their Bedhampton (Phase 2) development scheme. The condition requires a noise management plan to ensure that internal noise levels in the new development are compliant with the requirements of BS 8233:2014.

6.2 This noise management plan has been drafted based upon measurements of the prevailing noise environment on the site and acoustic modelling to determine the noise level at the façade of each proposed new dwelling. Calculations have then been undertaken and a specification for acoustically rated glazing and background ventilation provided accordingly.

REFERENCES

1. British Standards Institution. British Standard 8233: Guidance on sound insulation and noise reduction for buildings, 2014.
2. World Health Organisation. Guidelines for Community Noise, 1999.
3. British Standards Institution. British Standard 7445: 1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use.
4. Department of Transport, Calculation of Road Traffic Noise, 1988.

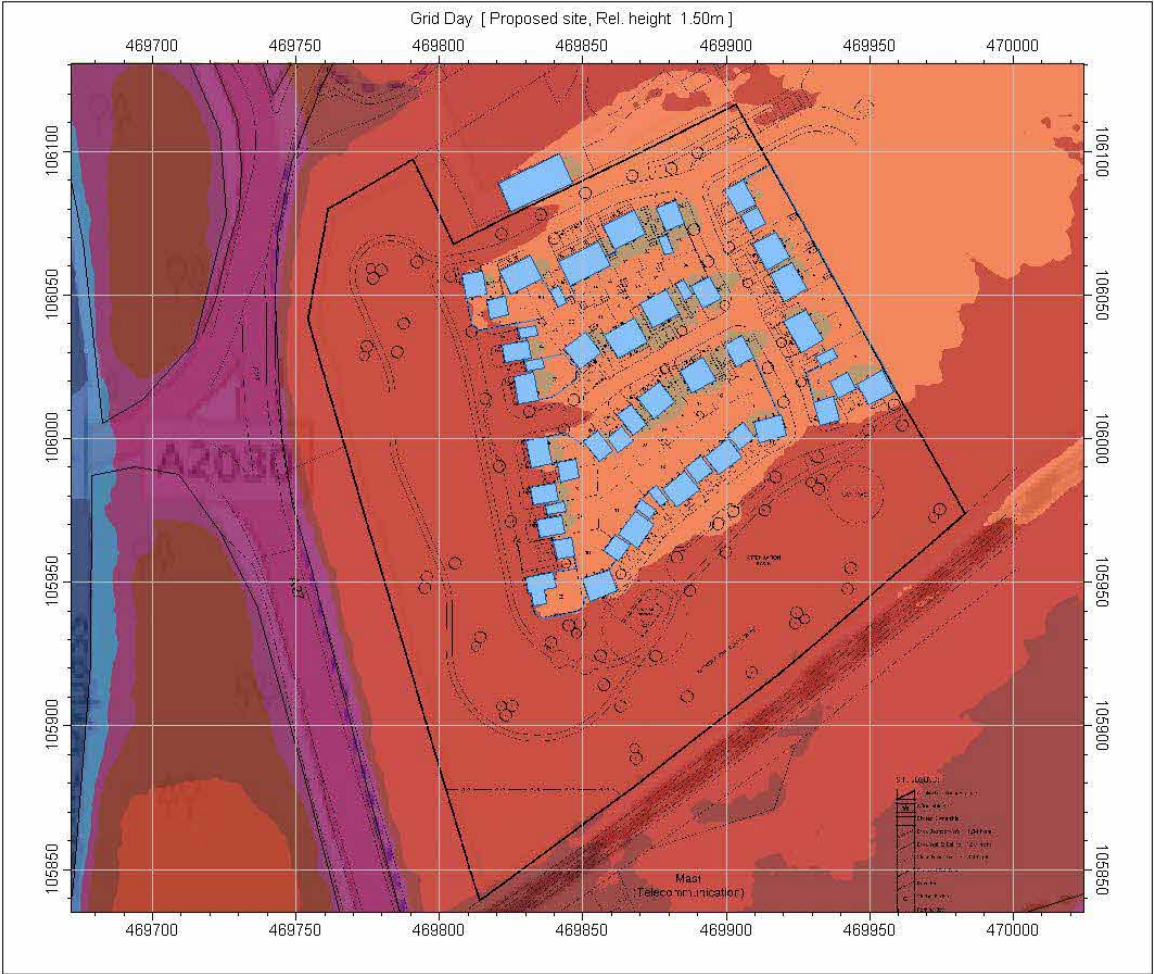


-  Measurement Location 1
-  Measurement Location 2
-  Measurement Location 3

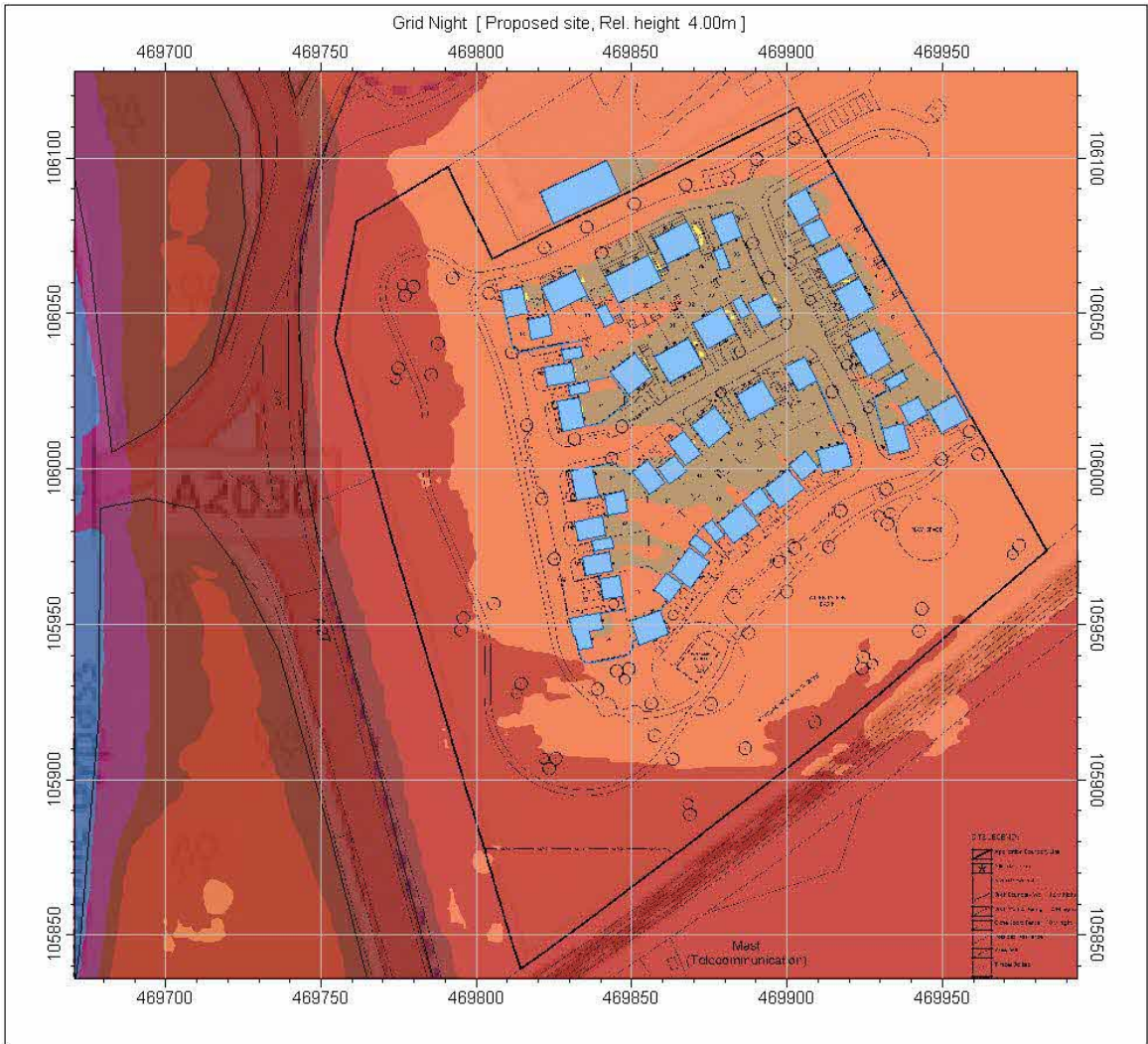
Project: Land off Lower Road, Bedhampton	Title: Site Location Plan/ Noise Survey Locations		 24Acoustics
DWG No: Figure 1	Scale: N.T.S.	Rev: -	
Date: March 2025	Drawn By: RP	Job No: 11014-1	



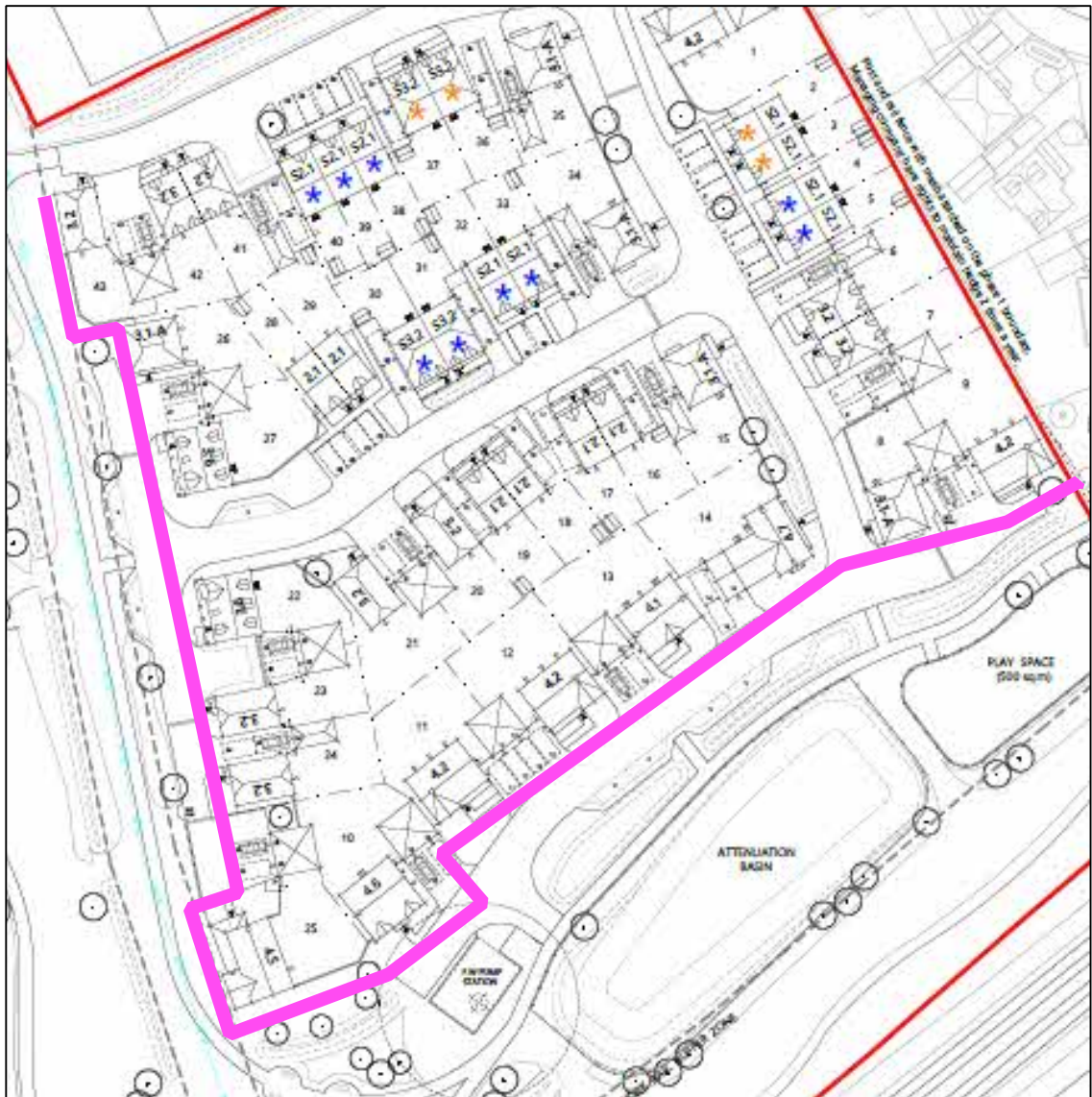
Project: Land off Lower Road, Bedhampton	Title: Consented Development Scheme		
DWG No: Figure 2	Scale: N.T.S.	Rev: -	
Date: March 2025	Drawn By: RP	Job No: 11014-1	



Project: Land off Lower Road, Bedhampton	Title: Daytime Noise Contours, dB LAeq, 16 hour		
DWG No: Figure 3	Scale: N.T.S.	Rev: -	
Date: March 2025	Drawn By: RP	Job No: 11014-1	



Project: Land off Lower Road, Bedhampton	Title: Night time noise contours, dB L _{Aeq} , 8 hour		
DWG No: Figure 4	Scale: N.T.S.	Rev: -	
Date: March 2025	Drawn By: RP	Job No: 11014-1	



Highlighted area showing building facades requiring G2 glazing (as specified in Table 4)

All other facades should be fitted with G1 glazing.

Project: Land off Lower Road, Bedhampton	Title: Glazing Specification		
DWG No: Figure 5	Scale: N.T.S.	Rev: -	
Date: March 2025	Drawn By: RP	Job No: 11014-1	

APPENDIX A: NOISE UNITS

Noise

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 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 interval, 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: AMBIENT NOISE MEASUREMENT RESULTS

APPENDIX C: GLAZING SCHEDULE

Plot	Elevation 1	Elevation 2	Elevation 3
8	East	South	
9	East	South	
10	West	South	
11	South		
12	South		
13	South		
14	South	east	
22	West	South	North
23	West	North	
24	West	South	
25	West	South	North
26	West	South	
27	West	South	
43	West	South	

Table C1: Summary of All Plots/ Facades Requiring G2 Glazing (as specified in Table 4).

All other plots/ elevations may be fitted with G1 Glazing