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Architectural & Environmental Acousticians

Noise & Vibration Engineers

Noise Assessment

Highfield Road, Minster-on-Sea

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Noise Assessment

Project: HIGHFIELD ROAD, MINSTER-ON-SEA

Report reference: RP01-21530-R0

Client:
SW ATTWOOD AND PARTNERS
NEW HOOK FARM
LOWER ROAD
EASTCHURCH
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0	11 November 2021	Alex Clark, BEng MIOA, Acoustics Engineer	Neil Morgan, BSc MIOA, Associate	Initial issue

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1. INTRODUCTION

1.1 Cass Allen has been instructed by SW Attwood and Partners to assess the noise environment for a proposed new development at Highfield Road, Minster-on-Sea in Sheerness, Kent.

1.2 The assessment has been carried out in accordance with relevant local and national planning guidance as well as comments made by the Environmental Health Officer at Swale Borough Council.

1.3 The aims of the assessment were:

- To establish the suitability of existing noise levels at the site for the proposed development;
- Where required, identify appropriate measures to optimise the acoustic design of the development and achieve appropriate noise levels in habitable areas.

1.4 This report contains technical terminology; a glossary of terms can be found at www.cassallen.co.uk/glossary.

2. PROJECT DESCRIPTION

2.1 The site is situated off Highfield Road, in a predominantly residential area, with a school to the east and fields to the south and west. A phone mast and associated generator are situated to the west of the site.

2.2 The site location is shown in Figure 1 below.

Figure 1 Site Location and Surrounding Area

2.3 The proposal is to develop the site into residential properties with an area to the west allocated as a community orchard and an area to the south as a public open space. A current drawing of the proposed development layout is shown in Appendix 1.

3. PLANNING POLICY

National Policy

3.1 Outline guidance for the assessment of noise affecting new developments is given in the National Planning Policy Framework (NPPF). Relevant sections in this case are highlighted below:

> *174. 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 …noise pollution.*
>
> *185. 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.*

Local Policy

3.2 Swale Borough Council's Local Plan - *Bearing Fruits 2031* (July 2017) provides outline guidance on the assessment of noise affecting new development in the borough, as shown below.

> *Noise and vibration*
>
> *7.7.4 Assessing developments for noise and vibration – both from noise generated from new developments affecting existing development and new development close to existing noise sources – can be complex. The relevant British Standards and guidance, including BS4142, BS8233 and BS7445 need to be considered.*

Environmental Health Officer Notes

3.3 The potential noise impact on the proposed development from Oasis Academy was raised in an internal memorandum from Swale Borough Council's Environmental Protection Team to their Planning Department, stating:

> *Adjacent to the development site is the Oasis Academy which should be considered as part of the application. Noise from the school grounds and if there are any outdoor mechanical ventilation systems on the buildings has the potential to be a nuisance for the new residents. I would recommend that a noise assessment is completed to ensure noise from this site on closest dwellings is adequate as set out in the Noise standards (Noise*

Guidance BS 8233 section 7.7.2) for both internal for noise (bedrooms and living /dining rooms) and within external amenity areas (i.e., below 55dB).

3.4 The methodology of our noise assessment was subsequently discussed and agreed with an Environmental Health Officer at Swale Borough Council, notably:

- One or two noise loggers would be deployed on site for two to four days;
- The measuring period would not include weekends or school holidays;
- The location of one noise logger would be close to the boundary with the school;
- The measured noise levels would be assessed against BS8233/WHO criteria.

3.5 To address the requirements of the national and local policies as well as the Environmental Health Officer's comments, the noise affecting the habitable areas of the proposed development has been assessed in the following sections of this report.

4. NOISE AFFECTING THE DEVELOPMENT

4.1 The noise levels that will exist within the habitable areas of the finished development have been predicted based on the existing noise environment at the site and outline details for the design of the development. The predicted noise levels have then been compared with agreed design criteria. Where the criteria have been predicted to be exceeded, suitable mitigation measures have been identified.

Existing Site Noise Levels

4.2 A noise survey was carried out at the site between 2nd and 5th November 2021 to assess existing noise levels in the area. The full methodology and results of the noise survey are provided in Appendix 2.

4.3 Average (LAeq), maximum (LAFmax) and background (LA90) noise levels across the site were generally low, dictated by noise from birds on site, occasional aircraft, occasional noise from the adjacent school, occasional road traffic on Highfield Road and occasional noise from farming activities in the distance. In addition, the average (LAeq) and background (LA90) noise levels were also influenced in some locations by noise from the generator associated with the phone mast to the west of the site.

4.4 Noise from the adjacent school, Oasis Academy, was typically most audible during lunch break and when the playing field was being used for sports. Therefore, the typical noise sources included pupils talking and shouting, footballs hitting goal posts, school announcements etc. and was most prominent between 1200 to 1400 hrs.

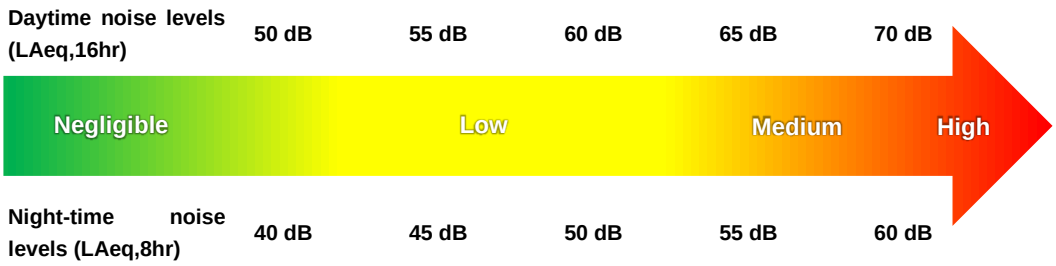
4.5 Areas of the development at the eastern edge of the site will be subject to the highest noise levels. The noise survey results show that noise levels at these positions are as follows:

- Eastern edge of the site facing school:
    - Average noise levels during the daytime - 47 dB LAeq,0700-2300hrs;
    - Average noise levels during the night-time - 41 dB LAeq,2300-0700hrs;
    - Typical maximum noise levels during the night-time - 58 dB LAmax.

ProPG – Initial Noise Risk Assessment

4.6 Specific guidance on the assessment of noise affecting new residential development is given in ProPG: Planning and Noise for New Residential Development, May 2017 (ProPG). The measured noise levels above can be compared with Figure 2 below to assess the 'noise risk' of the site.

Figure 2 Noise Risk Assessment (Adaption of Figure 1 from ProPG)



4.7 It can be seen from a comparison of the measured noise levels in Paragraph 4.5 above with Figure 2 that the site is a 'Negligible' risk in relation to both daytime and night-time noise levels. Typically, this would mean that further assessment of noise levels at the site is not necessary and the site is acceptable for residential development.

4.8 However, the guidance in ProPG relates primarily to noise from transportation sources, e.g. road traffic. Any significant noise from other sources (e.g. the adjacent school) is outside the scope of the ProPG guidance and is therefore assessed further below.

Design Criteria – Internal Noise Levels

4.9 Appropriate design criteria for acceptable noise levels in acoustically sensitive areas of new developments are given in BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*' and World Health Organisation (WHO) document 'Guidelines for community noise' (1999). This is confirmed in a memorandum from the Environmental Protection Team to the Planning Department and was subsequently also confirmed via email with Cass Allen and has therefore been adopted for this assessment.

4.10 Relevant design criteria are summarised in Table 1 below.

Table 1 BS8233/WHO Noise Criteria

Location	07:00 to 23:00	23:00 to 07:00
Living room	35 dB LAeq,16hour	-
Dining room/area	40 dB LAeq,16hour	-
Bedroom	35 dB LAeq,16hour	30 dB LAeq,8hour 45 dB LAFmax[1]
Gardens	55 dB LAeq,16hour	-

Note 1: Maximum noise levels should not regularly exceed approximately 45 dB LAFmax more than 10-15 times a night

Internal Noise Levels in Noise-sensitive Rooms

4.11 Calculations were carried out to predict internal noise levels in the 'worst-case' habitable rooms of the development (i.e. the habitable rooms that will be subject to the highest external noise levels).

4.12 The calculations indicate that internal noise levels would be compliant with the criteria in Table 1 above even with open windows, (assuming a 15 dB reduction from an open window as per BS8233:2014).

4.13 On this basis, no specific "acoustic upgrades" are necessary to comply with the adopted internal noise criteria.

4.14 Note that with standard thermal glazing and ventilator systems (i.e. no acoustic upgrades, achieving a typical reduction of 27 dB Rw+Ctr for glazing and 31 Dne,w+Ctr for vents), the internal noise levels are calculated to be significantly below the nominated project criteria (i.e. more than 10dB lower than the criteria in Table 1 above).

4.15 On this basis, even when considering noise during the school's two hour lunch time period in isolation (i.e. the period with the highest noise levels observed at the site), the internal noise levels in habitable rooms are still calculated to be compliant with the relevant criteria by a significant margin with no acoustic upgrades.

4.16 It is our view therefore that the proposed development is, in principle, acceptable with regards to the noise levels that will exist within the habitable rooms.

Noise Levels in External Amenity Areas

4.17 The layout of the development has also been reviewed in relation to the BS8233 recommendation that noise levels in external amenity areas should ideally not exceed 50 – 55 dB LAeq,T.

4.18 The noise survey results indicate that noise levels in gardens and the public open space will comply with the relevant criteria in Table 1. Furthermore, the majority of the community orchard is also calculated to meet the relevant criteria with only a small area closest to the phone mast generator being slightly above thee criteria.

4.19 The proposed development is therefore also considered to be acceptable based on noise levels in external amenity areas.

5. CONCLUSIONS

5.1 Cass Allen was instructed by SW Attwood and Partners to assess the suitability of the site for the proposed development with regards to noise.

5.2 The assessment was carried out in accordance with relevant local and national planning guidance.

5.3 A noise survey was carried out at the site. Noise levels at the site are generally low, dictated by noise from birds on site, occasional aircraft overflights, occasional noise from the adjacent school, occasional road traffic on Highfield Road, occasional noise from farming activities in the distance. In some areas, noise from the generator associated with the nearby phone mast also affected the average and background noise levels.

5.4 In accordance with discussions with the Local Planning Authority, the measured noise levels were assessed against BS8233 and WHO criteria. The calculations indicate that noise levels within habitable rooms of the proposed development, including noise emanating from the school grounds, will be compliant with the nominated criteria even with open windows. As a result, compliant noise levels will be achieved with no specific acoustic upgrades on the development (i.e. standard thermal double glazing and 'hit-and-miss' type trickle vents). It is our view therefore that the proposed development is, in principle, acceptable with regards to the noise levels that will exist within the habitable rooms.

5.5 The noise survey results indicate that noise levels in external amenity areas will comply with the BS8233 recommended levels. The proposed development is therefore also considered to be acceptable based on noise levels in external amenity areas.

5.6 In summary of the above it is our view that the site is suitable for the development in terms of noise levels and that planning permission should be granted.

Appendix 1 Site Layout

Appendix 2 Survey Results

Survey Summary:

The survey comprised short-term operator attended noise measurements and longer-term unattended noise monitoring at the site. Noise levels at the site were generally dictated by road traffic on surrounding roads and noise from train passes on the adjacent railway Vibration levels at the site were very low.

Survey Period:

02/11/2021 to 05/11/2021

Survey Objectives:

- To identify noise sources that contribute to ambient noise levels at the site;
- To measure noise levels around the site over a typical day and night-time period.

Equipment Used:

Type	Manufacturer	Model	Serial Number
Sound level meter[1]	NTi Audio	XL2	A2A-17487-E0
Calibrator	NTi Audio	600 000 388	15011
Sound level meter[1] (noise logger)	Rion	NL-32	01213688
Calibrator	Rion	NC-74	34551703

Note 1: All sound level meters were calibrated before and after measurement periods and no significant drift in calibration was found to have occurred. The results of the measurements are therefore considered to be representative.

Weather Conditions:

The observed weather conditions were acceptable for acoustic measurement throughout the attended survey periods (low-medium wind speeds and no rain). Weather records for the area confirmed that weather conditions were also generally acceptable for acoustic measurement during the unattended monitoring. Any periods of unattended monitoring that may have been adversely affected by weather conditions have been excluded from the data analysis, however the total remaining survey duration is still above 48hrs (i.e. within the agreed survey length).

Measurement Positions:

Position (refer plan below)	Description
N1	Attended noise monitoring position. 1m from edge of road. 1.5m above ground. Free-field. Direct line of sight to Highfield Road
N2	Attended noise monitoring position. 1.5m above ground. Free-field
N3	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to school field
N4	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to school field
N5	Attended noise monitoring position. 1.5m above ground. Free-field
N6	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to phone mast generator
N7	Attended noise monitoring position. 1.5m above ground. Free-field
L1	Unattended noise logging position. 3.5m above ground level. Free-field. Direct line of sight to school field

Site Plan showing Measurement Positions:

Attended Noise Monitoring Results:

Date	Position	Time	Meas. Length	LAeq, dB	LAmax, dB	LA90, dB	Observations
02/11/2021	N1	12:25	5 mins	55	80	35	Noise dictated by occasional road traffic on Highfield Road, birds, generator noise and nearby residents using their land (e.g. moving bins)
02/11/2021	N2	12:32	5 mins	50	65	37	Noise dictated by children playing on school field, birds, helicopter, and generator noise
02/11/2021	N2	12:39	5 mins	39	55	35	Noise dictated by children playing on school field, and generator noise
02/11/2021	N3	12:47	5 mins	54	78	42	Noise dictated by school pupils shouting and kicking football on school field
02/11/2021	N3	12:52	5 mins	50	67	42	
02/11/2021	N4	13:00	5 mins	43	58	37	Noise dictated by school pupils shouting and kicking football on school field
02/11/2021	N5	13:10	5 mins	41	50	40	Noise dictated by birds, and generator noise
02/11/2021	N6	13:16	5 mins	59	62	59	Noise dictated by generator
02/11/2021	N7	13:26	5 mins	38	50	37	Noise dictated by distant sounds including generator
02/11/2021	N3	13:38	5 mins	51	66	45	Noise dictated by helicopter and school pupils talking, shouting and kicking football on school field
02/11/2021	N3	13:45	5 mins	55	71	49	Noise dictated by school announcement and school pupils talking, shouting and kicking football on school field
02/11/2021	N3	13:55	5 mins	49	63	39	Noise dictated by school pupils talking and shouting
02/11/2021	N1	14:03	5 mins	51	73	35	Noise dictated by occasional road traffic on Highfield Road, birds, and residents using their land (e.g. opening/ closing door to dwelling or talking to neighbours etc.)
02/11/2021	N1	14:10	5 mins	42	59	35	
02/11/2021	N1	14:21	5 mins	44	56	35	
02/11/2021	N1	14:25	5 mins	55	72	39	
02/11/2021	N1	14:30	5 mins	51	71	35	

Unattended Noise Monitoring Results:

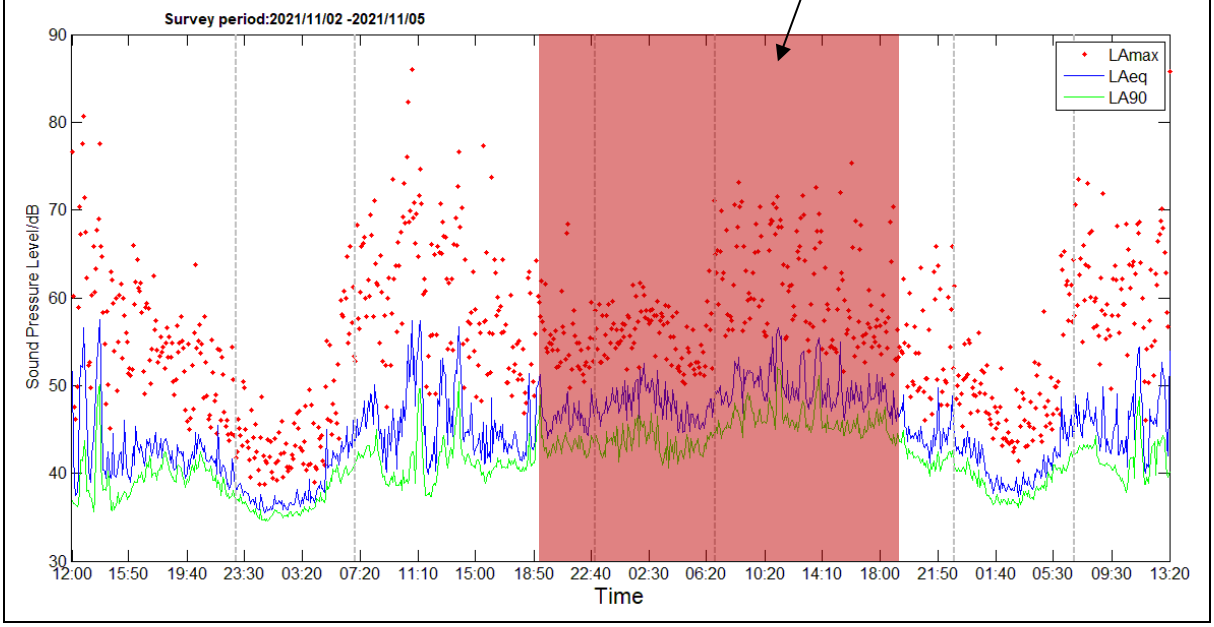
Meas. Period	Position	Daytime (0700-2300hrs)		Night-time (2300-0700hrs)		
		LAeq,16hr, dB	LA90,1hr dB[1]	LAeq,8hr, dB	LA90,5mins, dB[1]	LAmax, dB[2]
02/11/2021 to 05/11/2021	L1	47	39	41	37	58

Note 1: Typical lowest measured during the period shown.

Note 2: Highest typical maximum noise level during the night-time (not exceeded more than 10-15 times per night).

Unattended Noise Monitoring Results:

Meas. Period	Position	Excluded from analysis due to high wind speeds
02/11/2021 to 05/11/2021	L1	



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