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# Noise Assessment

## Downlands Farm, Uckfield

**Cass Allen**
01234 834 862
www.cassallen.co.uk

# Noise Assessment

**Project:** DOWNLANDS FARM, UCKFIELD

**Report reference:** RP01-23101-R1

**Client:**
GLEESON LAND LTD
SENTINEL HOUSE
HARVEST CRESCENT
ANCELLS BUSINESS PARK
FLEET
GU51 2UZ

**Our details:**
CASS ALLEN ASSOCIATES LTD
BEDFORD I-LAB
BEDFORD
MK44 3RZ

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**Cass Allen**
01234 834 862
www.cassallen.co.uk

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# 1. EXECUTIVE SUMMARY

1.1 Cass Allen has been instructed by Gleeson Land Ltd to assess noise affecting a proposed new residential development at Downlands Farm, Uckfield.

1.2 The assessment has been carried out in accordance with relevant local and national planning guidance.

1.3 A noise survey was carried out at the site. Noise levels across the are generally dictated by road traffic noise emissions from the A22.

1.4 The site is 'Low risk' in relation to noise levels, assessed in accordance with ProPG: '*Planning and Noise for New Residential Development*', May 2017.

1.5 BS8233 recommended internal noise levels are predicted to be achieved in all habitable rooms (bedroom, living rooms, etc) across the development with no specific acoustic upgrades to the glazing and trickle ventilators.

1.6 Bedrooms closest to the A22 will only be able to rely on partially open windows for the control of overheating during the night-time. This will need to be considered at the detailed design stage as part of a detailed overheating assessment, as required by Building Regulations Part O.

1.7 BS8233 recommended external noise levels are predicted to be achieved in all external amenity areas, including communal amenity areas and the woodland park, provided that gardens within around 170m of the A22 are acoustically screened from the road by positioning them either fully or partially behind the dwellings and through the specification of min. 1.8m perimeter close-boarded timber fencing as currently proposed.

1.8 Noise from individual domestic Air Source Heat Pumps (ASHPs), if required for energy and sustainability purposes, can be addressed at the detailed design stage. We recommend that ASHPs are selected and positioned to comply with the acoustic criteria as set out in the MCS 020 guidelines as a minimum.

1.9 It is our view therefore that the site is suitable for the development in terms of noise levels and that planning permission may be granted subject to the imposition of suitable planning conditions.

## 2. INTRODUCTION

2.1 The assessment has been carried out in accordance with relevant local and national planning guidance.

2.2 The aim of the assessment was to establish the suitability of existing noise levels at the site for the proposed development, and where required, identify appropriate measures to optimise the acoustic design of the development and achieve acceptable noise levels in habitable areas.

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

## 3. PROJECT DESCRIPTION

3.1 The site is located to the north west of Uckfield, between the A22 to the west and a residential area to the east. The site location is shown on the current illustrative masterplan in Figure 1 below.

**Figure 1 Illustrative Masterplan**




3.2 As shown in Figure 1, the proposal is to develop the site into residential properties with associated amenity areas and a large woodland park in the north eastern area of the site.

# 4. PLANNING POLICY

**National Policy**

4.1 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**

4.2 Wealden District Council's District Core Strategy Local Plan (February 2013) and saved policies from the Adopted Wealden Local Plan (1998) also apply to the proposed development. We have reviewed these and the noise-related requirements are consistent with the requirements of the NPPF as set out above.

4.3 No significant noise would be expected to be generated by the development itself, other than possibly some low level noise from Air Source Heat Pumps (ASHPs, discussed later in this report), and therefore the key acoustic matter to be assessed to address the requirements of the relevant policies is noise from existing sources affecting the sensitive areas of the development. This includes the new dwellings, the new communal amenity areas and the new woodland park.

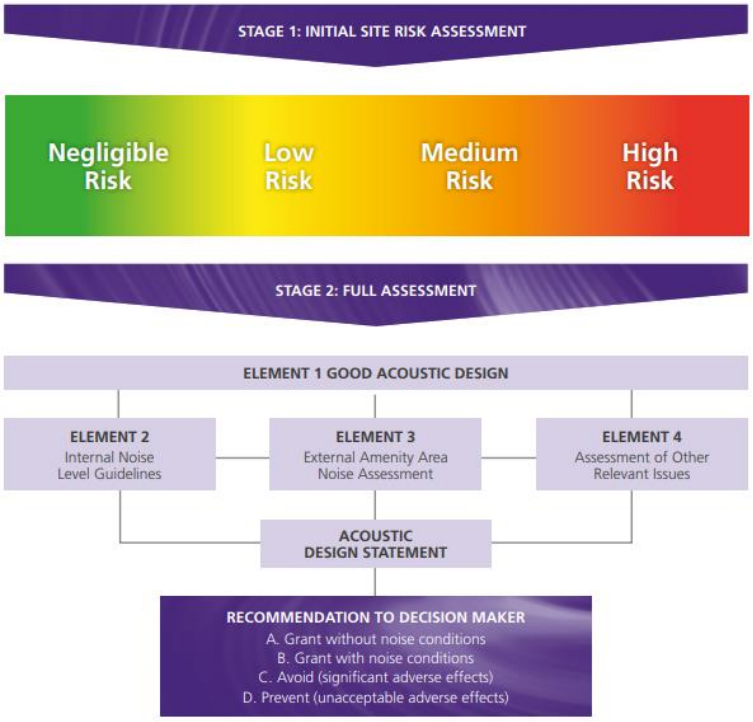
## 5. NOISE AFFECTING THE DEVELOPMENT

5.1 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 process within the ProPG guidance for the appraisal of noise levels affecting new residential development is considered to be current 'best practice' and has, therefore, been followed for the assessment. The assessment process can be summarised as follows:

- Stage 1 – measure noise levels at the site and carry out an initial noise risk assessment of the proposed development site based on the measured levels.
- Stage 2 – where a higher noise risk is identified, carry out a detailed assessment including the following four considerations:
    - Element 1 – the overall acoustic design and layout of the site
    - Element 2 – internal noise levels in habitable areas
    - Element 3 – noise levels in external amenity areas
    - Element 4 – consideration of other relevant issues
- Based on the results of the Stage 2 assessment, provide a recommendation to the decision maker on whether planning permission can and should be granted.

5.2 The process is shown visually in Figure 2 below

**Figure 2 ProPG Assessment Process**



**Stage 1 – Noise survey and initial assessment**

5.3 A noise survey was carried out at the site between the 1st and 6th February 2023 to investigate the existing noise environment in the area. The full methodology and results of the noise survey are provided in Appendix 1.

5.4 Noise levels across the site were generally dictated by road traffic on the A22, which is the dominant noise source in the area. At the eastern edges of the site, which are further from the A22, noise from natural sources (e.g. birdsong, wind in trees, etc) also contributed to the measured levels. Noise levels at the southern edge of the site were also affected by some low level noise from road traffic on Rock Road.

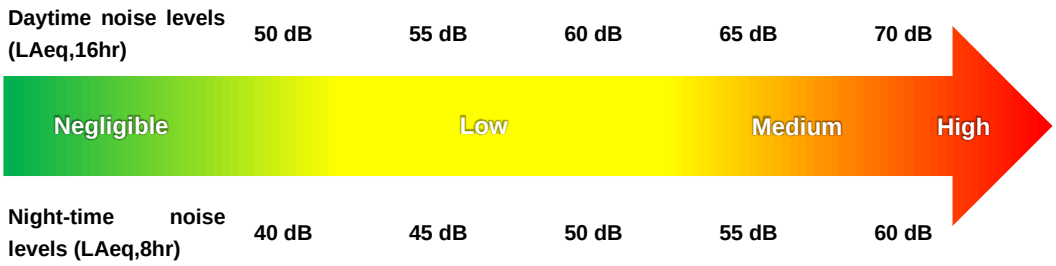
5.5 Longer-term noise monitoring positions (L1 & L2) were chosen to represent the locations of proposed dwellings in the illustrative masterplan that will be closest to the A22 and therefore subject to the highest noise levels. The survey results show that noise levels at these positions were as follows:

- Average noise levels during the daytime – 57-59 dB LAeq,0700-2300hrs;
- Average noise levels during the night-time – 50-52 dB LAeq,2300-0700hrs;
- Typical maximum noise levels during the night-time – 63-65 dB LAmax.

5.6 Nosie levels at the eastern edge of the site were significantly lower. The attended measurement results showed that the noise levels were around 10-15 dB lower than those at the western edge of the site due to the increased distance from the A22.

5.7 The measured noise levels can be compared with Figure 3 below to assess the 'noise risk' of the site in accordance with ProPG. Where the noise risk is high, significant acoustic design measures may be required to achieve acceptable noise levels in the development. Where the noise risk is low, acceptable noise levels are normally achievable with no specific acoustic design measures.

**Figure 3 Noise Risk Assessment (Adaption of Figure 1 from ProPG)**




5.8 It can be seen from a comparison of the measured noise levels in Paragraph 5.5 above with Figure 3 that the western edge of the site near the A22 is 'Low' risk in relation to daytime and night-time noise levels. The eastern edge of the site, where the noise levels are around 10-15 dB lower, would be 'Negligible' risk for the day and night-time periods.

5.9 It will therefore be straight forward to achieve acceptable noise levels in the proposed new residential properties. This is assessed further below via a more detailed ProPG 'Stage 2' assessment.

**Stage 2 – Element 1 – Overall acoustic design of the site**

5.10 The overall design of the layout of the site as shown in the illustrative masterplan in Figure 1 is good from an acoustics perspective. The retained existing woodland to the western edge of the site adjacent to the A22 is ~85m wide and provides an effective buffer and partial acoustic screen to reduce noise from the A22 at the closest proposed residential properties. The gardens to the new residential properties closest to the A22 are also located behind the dwellings and therefore will be further acoustically screened from the A22. This is important and is discussed further below in relation to noise affecting external amenity areas.

5.11 The Woodland park and other communal amenity areas are also set back further into the site away from the A22 where noise levels will be lower (also discussed further below).

**Stage 2 – Element 2 - Internal noise levels**

5.12 ProPG draws and expands on criteria for acceptable noise levels in acoustically sensitive areas of new developments from BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*'.

5.13 Relevant BS8233 design criteria for average noise levels are summarised in Table 1 below.

**Table 1 BS8233:2014 Internal Noise Criteria**

| Activity | Location | 07:00 to 23:00 | 23:00 to 07:00 |
|---|---|---|---|
| Resting | Living room | 35 dB LAeq,16hour | - |
| Dining | Dining room/area | 40 dB LAeq,16hour | - |
| Sleeping (daytime resting) | Bedroom | 35 dB LAeq,16hour | 30 dB LAeq,8hour |

5.14 It is also appropriate to assess the potential impact of maximum noise levels from individual noise events on bedrooms during the night-time. This is in line with guidance given in BS8233:2014 and ProPG, which both point out that regular individual noise events during the night have the potential to cause sleep disturbance.

5.15 Appropriate design criteria for acceptable maximum noise levels in habitable rooms of new residential developments are given in the ProPG guidance, which states that "*In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB LAmax,F more than 10 times a night.*"

5.16 Therefore, the following acoustic design criteria would be appropriate for the development in our view:

- Average noise levels in living rooms and dining rooms during the day should not exceed 35 dB LAeq,0700-2300hrs and 40 dB LAeq,0700-2300hrs respectively;
- Average noise levels in bedrooms should not exceed 35 dB LAeq,0700-2300hrs during the day and 30 dB LAeq,2300-0700hrs during the night;
- Maximum noise levels should not regularly exceed 45 dB LAmax in bedrooms during the night.

5.17 The project is at an early design stage however we understand that the dwellings will be built with standard masonry facades, thermal double glazed windows and trickle ventilators for the provision of background ventilation. The outside to inside road traffic noise reduction of these standard facade elements will be approximately 25-30 dB when the windows are closed.

5.18 The noise levels in the habitable rooms closest to the A22, which will be subject to the highest levels, are therefore be predicted to be as shown in Table 2 below.

**Table 2 Anticipated Internal Noise Levels in 'Worst case' Habitable rooms with Standard Facade Elements**

| Room | Criteria (upper limit) | Anticipated Level | Compliance |
|---|---|---|---|
| Living rooms & Dining room/areas | 35-40 dB LAeq,16hour | <34 dB LAeq,16hour | Yes |
| Bedrooms | 35 dB LAeq,16hour | <34 dB LAeq,16hour | Yes |
| | 30 dB LAeq,8hour | <27 dB LAeq,8hour | Yes |
| | 45 dB LAmax | <40 dB LAmax | Yes |

5.19 It can be seen from Table 2 above that compliant internal noise levels are predicted to be achieved in the 'worst case' rooms closest to the A22 with standard facade elements. It follows therefore that compliant internal noise levels would be achieved in all dwellings in the development with standard facade elements. This is common for sites rated as 'Low risk' by a ProPG assessment.

5.20 The above ProPG assessment is based on internal noise levels with windows closed (assumed to be "normal" circumstances). However, it is anticipated that residents will want to open their windows at times for thermal comfort (e.g. to prevent overheating in warmer months). Noise levels in the rooms will increase under these circumstances.

5.21 Part O of the Building Regulations sets out specific requirements for noise levels in bedrooms at night that must be achievable with sufficient provision for the control of overheating in warmer months (e.g. open windows). Approved Document O states:

> *In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).*

*Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.*

*a. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).*

*b. 55dB LAFmax, more than 10 times a night (between 11pm and 7am).*

5.22 The outside to inside noise reduction provided by a facade with an open window ranges from around 4 dB for a fully open window to 13 dB for a partially open window. This would result in the following internal noise levels in 'worst case' bedrooms of the development closest to the A22:

- Average noise levels; 39 to 48 dB LAeq,8hour (partially open to fully open)
- Maximum noise levels; 52 to 61dB LAmax (partially open to fully open)

5.23 It can be seen from the above that the Part O criteria will be exceeded in bedrooms when the windows are fully open but that they will comply when partially open. This means that any bedrooms close to and directly facing the A22 will need to be designed so that the windows do not need to be more than partially open to prevent overheating in warmer months. This is common and can be assessed further as part of a detailed overheating assessment during the detailed design stage, as required by Part O.

5.24 The proposed development is therefore considered to be acceptable based on the noise levels that will exist in dwellings subject to a detailed overheating assessment at the detailed design stage, as required by Building Regulations Part O.

**Stage 2 – Element 3 – Noise levels in external amenity areas**

5.25 BS8233 states that it is desirable that noise levels in external amenity areas of residential developments do not exceed 50 dB LAeq,T and that 55 dB LAeq,T should be regarded as an upper guideline value. However, BS8233 recognises that these guideline values will not always be achievable in areas adjoining main roads. In these cases, BS8233 states that the development should be designed to achieve the lowest practicable noise levels in the amenity spaces.

5.26 The BS8233 recommended levels specifically apply to private gardens and external amenity areas however can also be used to assess the quality of the proposed woodland park.

5.27 The noise survey results show that noise levels at the positions of the closest dwellings to the A22 are 57-59 dB LAeq,16hours and therefore would exceed the BS8233 recommended upper level by 2-4 dB. However, the illustrative masterplan shows that the gardens to these properties will be located behind the dwellings and therefore partially screened from noise from the A22. The gardens will also have min. 1.8m perimeter close-boarded timber fencing that will provide a degree of screening. This represents good acoustic deign in our view and is expected to result in areas in each garden where the BS8233 recommended noise levels are achieved.

5.28 Gardens further from the A22 will be subject to lower noise levels and therefore will comply with the BS8233 recommended levels without any specific screening. We expect that no specific screening will be provided to any gardens or external amenity areas beyond around 170m from the

A22. This includes all of the formal community amenity areas and the Woodland park shown on the illustrative masterplan. We would expect that noise levels will actually be significantly lower than the BS8233 recommended levels in these areas given that they will be located behind other dwellings and/or areas of woodland that will provide a degree of additional screening.

5.29 In summary of the above, noise levels in external amenity areas are predicted to achieve BS8233 recommended levels in all external amenity areas provided that gardens within around 170m of the A22 are acoustically screened from the road by positioning them partially behind dwellings and through the specification of min. 1.8m perimeter close-boarded timber fencing around the gardens as currently proposed.

5.30 The proposed development is therefore also considered to be acceptable based on noise levels in external amenity areas including private gardens, the communal amenity areas and the woodland park.

**Stage 2 – Element 4 – Other relevant issues**

5.31 In our view the design and acoustic approach outlined above is in line with both local and national noise policy. It is common for residential properties to be situated near to main roads and this is an acceptable scenario provided that good acoustic design principles are adopted to protect future residents, as they have been in this case.

**Recommendation to decision maker**

5.32 It is our view that planning permission should be granted in relation to noise affecting habitable areas of the development subject to the imposition of suitable planning conditions to ensure that acceptable noise levels are achieved in the finished development.

## 6. NOISE FROM ASHPS

6.1 We understand that the energy and sustainability strategy for the project is likely to result in individual domestic external Air Source Heat Pumps (ASHPs) being used to heat the future dwellings. ASHPs can provide high efficiency heating and therefore help reduce energy consumption.

6.2 Domestic ASHP systems typically comprise an external condenser unit that extracts heat from the outside air. The condensers generate some noise, similar to a small air conditioning unit.

6.3 It is generally straight forward to design and select ASHP systems to achieve acceptable noise levels at nearby properties by locating them in gardens at sensible positions away from sensitive habitable rooms in neighbouring properties and by choosing high quality inherently quiet units with no significant acoustic characteristics (e.g. tones, impulsivity, etc). ASHPs can also be acoustically screened or enclosed where necessary, although this is rarely required provided that appropriately quiet units are specified.

6.4 In our view any noise from the ASHPs can be addressed at the detailed design stage and this could be secured by the imposition of a suitable planning condition. We generally recommend that domestic ASHPs are specified and positioned, as a minimum, to comply with the acoustic criteria as set out in MCS 020 – *MCS Planning Standards for Permitted Development Installations of Wind Turbines and Air Source Heat Pumps on Domestic Premises,* 2019.

## 7. CONCLUSIONS

7.1 Noise levels across the site are generally dictated by road traffic noise emissions from the A22.

7.2 The site is 'Low risk' in relation to noise levels, assessed in accordance with ProPG, '*Planning and Noise for New Residential Development*', May 2017.

7.3 BS8233 recommended internal noise levels are predicted to be achieved in all habitable rooms (bedroom, living rooms, etc) across the development with standard glazing and trickle ventilators.

7.4 Bedrooms closest to the A22 will only be able to rely on partially open windows for the control of overheating during the night-time. This will need to be considered at the detailed design stage as part of a detailed overheating assessment, as required by Building Regulations Part O.

7.5 BS8233 recommended external noise levels are predicted to be achieved in all external amenity areas, including communal amenity areas and the woodland park, provided that gardens within around 170m of the A22 are acoustically screened from the road by positioning them either fully or partially behind the dwellings and through the specification of min. 1.8m perimeter close-boarded timber fencing as currently proposed.

7.6 Noise from domestic ASHPs, if required for energy and sustainability purposes, can be addressed at the detailed design stage. We recommend that ASHPs are selected and positioned to comply with the acoustic criteria as set out in the MCS 020 guidelines as a minimum.

7.7 It is our view therefore that the site is suitable for the development in terms of noise levels and that planning permission may be granted subject to the imposition of suitable planning conditions.

# Appendix 1 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.

**Survey Period:**

01/02/2023 to 06/02/2023

**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-15506-E0 |
| 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 | 00530374 |
| Sound level meter[1] (noise logger) | Rion | NL-32 | 00623765 |
| 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.

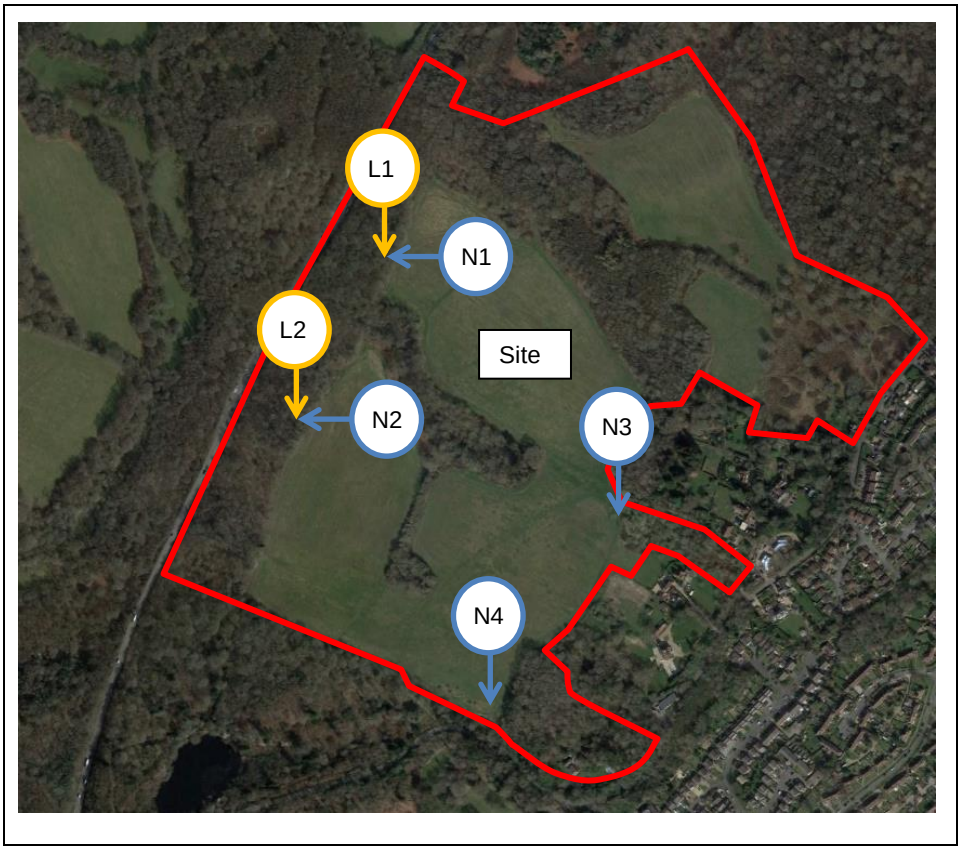
**Weather Conditions:**

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.

**Measurement Positions:**

| Position (refer plan below) | Description |
|---|---|
| N1 | Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to A22 (75m). |
| N2 | Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to A22 (65m). |
| N3 | Attended noise monitoring position. 1.5m above ground. Free-field. |
| N4 | Attended noise monitoring position. 1.5m above ground. Free-field. |
| L1 | Unattended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to A22 (75m). |
| L2 | Unattended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to A22 (65m). |

**Site Plan showing Measurement Positions:**




**Attended Noise Monitoring Results:**

| Date | Position | Time | Meas. Length | LAeq, dB | LAmax, dB | LA90, dB | Observations |
|---|---|---|---|---|---|---|---|
| 01/02/2023 | N1 | 14:28 | 5 mins | 57 | 63 | 53 | Noise levels dictated by road traffic noise from A22. |
| | | 14:33 | | 57 | 61 | 54 | |
| | N2 | 15:03 | 5 mins | 59 | 65 | 54 | |
| | | 15:08 | | 59 | 66 | 56 | |
| 15/01/2014 | N3 | 13:13 | 5 mins | 41 | 50 | 38 | Noise dictated by distant road traffic and natural sources, e.g. birdsong, etc. |
| | | 13:18 | | 41 | 52 | 38 | |
| | N4 | 13:27 | 5 mins | 46 | 54 | 37 | Road traffic noise from Rocks Road. Distant road traffic noise from the A22 audible. |
| | | 13:33 | | 44 | 50 | 38 | |

**Unattended Noise Monitoring Results:**

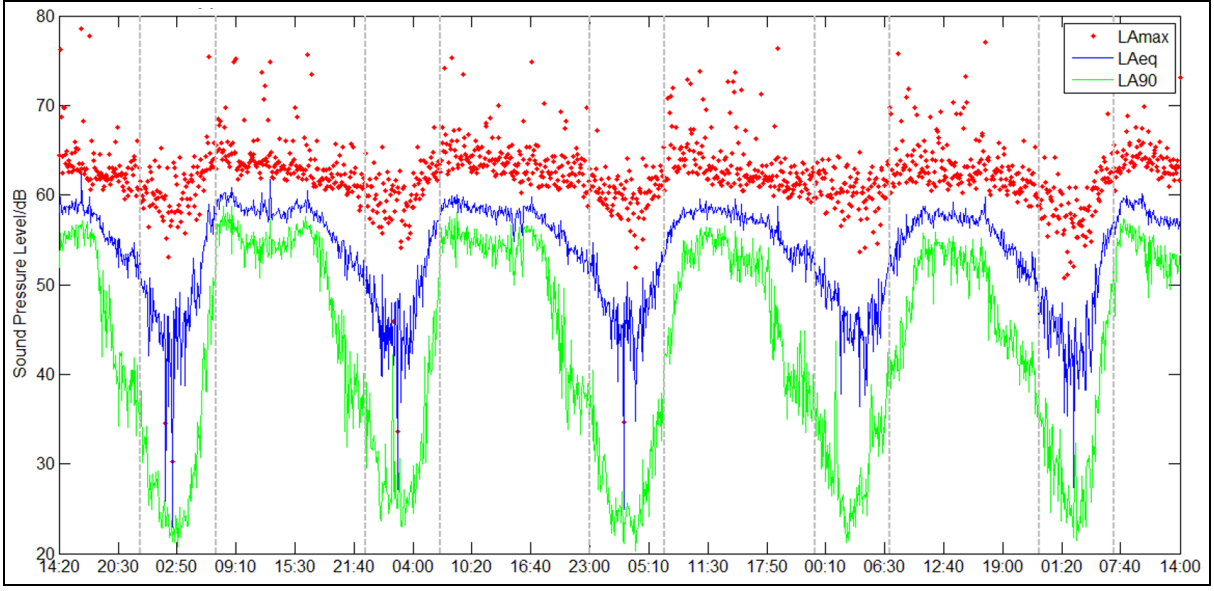
| Meas. Period | Position | Daytime (0700-2300hrs) | | Night-time (2300-0700hrs) | | |
|---|---|---|---|---|---|---|
| | | LAeq,16hr, dB | LA90,1hr dB[1] | LAeq,8hr, dB | LA90,5mins, dB[1] | LAmax, dB[2] |
| 01/02/2023 to 06/02/2023 | L1 | 57 | 54 | 50 | 23 | 63 |
| | L2 | 59 | 57 | 52 | 29 | 65 |

**Note 1:** Typical lowest measured during the period shown.

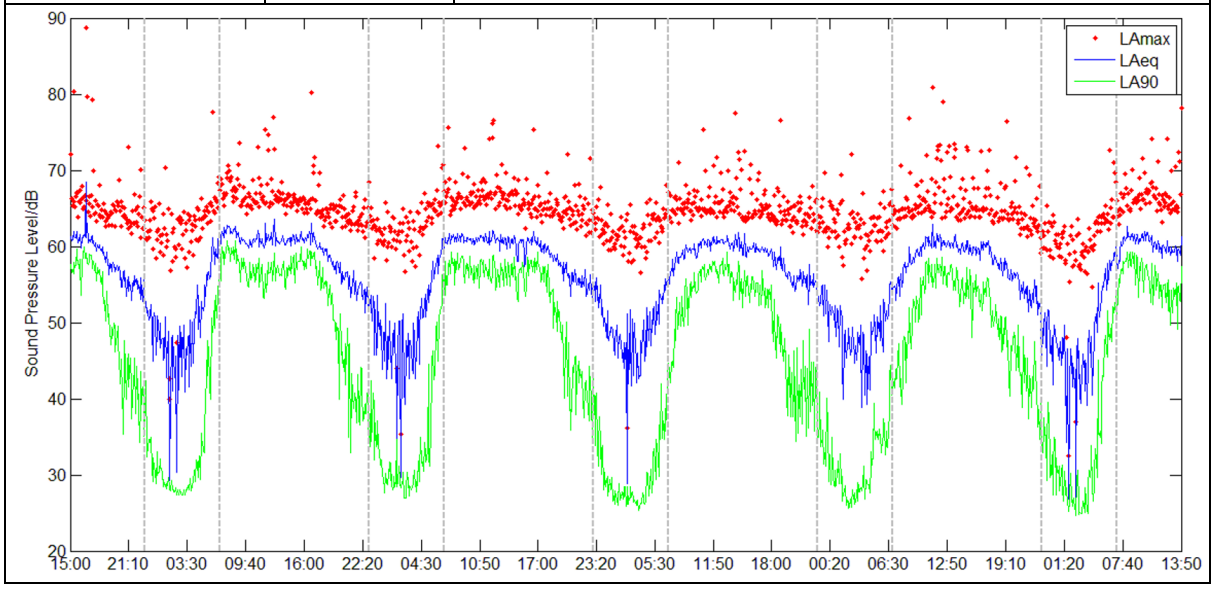
**Note 2:** Highest typical maximum noise level during the night-time (not exceeded more than 10-15 times per night).

**Unattended Noise Monitoring Results:**

| Meas. Period | Position |
|---|---|
| 01/02/2023 to 06/02/2023 | L1 |




| Meas. Period | Position |
|---|---|
| 01/02/2023 to 06/02/2023 | L2 |



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**Cass Allen**
01234 834 862
www.cassallen.co.uk