
MS REBECCA HARTLEY

NOISE IMPACT ASSESSMENT

**LAND TO REAR OF 88 KNIGHTS WAY, EMMER GREEN,
READING RG4 8RH**

Client: Ms Rebecca Hartley

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MS REBECCA HARTLEY

**NOISE IMPACT ASSESSMENT AND MANAGEMENT
PLAN.**

**LAND TO REAR OF 88 KNIGHTS WAY, EMMER
GREEN, READING RG4 8RH**

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1 INTRODUCTION

- 1.1.1 By instruction from Ms Rebecca Hartley ('the client'), NoiseAir was commissioned to provide a noise impact assessment (NIA) in relation to a planning application for an extension to an existing childcare facility located at: Land to rear of 88 Knights Way, Emmer Green, Reading RG4 8RH, herein referred to as the 'development site'.
- 1.1.2 This noise report has been prepared to support a planning application and assesses the results of a noise survey carried out in accordance with current guidance and includes recommendations and mitigation as appropriate.
- 1.1.3 General limitations of this report are outlined in **Appendix A**.

1.2 Site Description

- 1.2.1 At the time of writing, the development site is a vacant plot of land located to the rear of 88 Knights Way, Emmer Green, Reading where an existing nursery premises exists (Emmer Green Kindergarten).
- 1.2.2 The Emmer Green Kindergarten is typically open from 08:00 hours to 18:00 hours Monday to Friday.
- 1.2.3 The development site is located in a primarily residential location where the established nursery also exists.
- 1.2.4 **Figure 1** shows a site location plan of the development site with respect to the local area and its context.



Figure 1: Site location plan.

1.3 Development Proposals

- 1.3.1 At the time of writing, it is understood that the application proposals outline the redevelopment of the development site to form a new nursery building as part of an extension to the nursery operations.
- 1.3.2 The proposal is to cater for up to 24 no. children aged 3-5 years.
- 1.3.3 The proposed outline layout plan is presented within **Figure 2**. A proposed detail view of the new building structure is shown in **Figure 3**.
- 1.3.4 Specific details for the construction properties of the proposed building are not available. The new building is to be manufactured and supplied by Portakabin who a well known modular building supplier. The drawing provided indicates that the external wall is to be a 124 mm double skin partition, no specific acoustic performance of this partition has been provided however typically a mid-specification insulated modular cabin is likely to achieve approximately R_w 30-40 dB. For this assessment we assume that the building structure will achieve not less than R_w 25 dB for the building envelope as a conservative estimate.

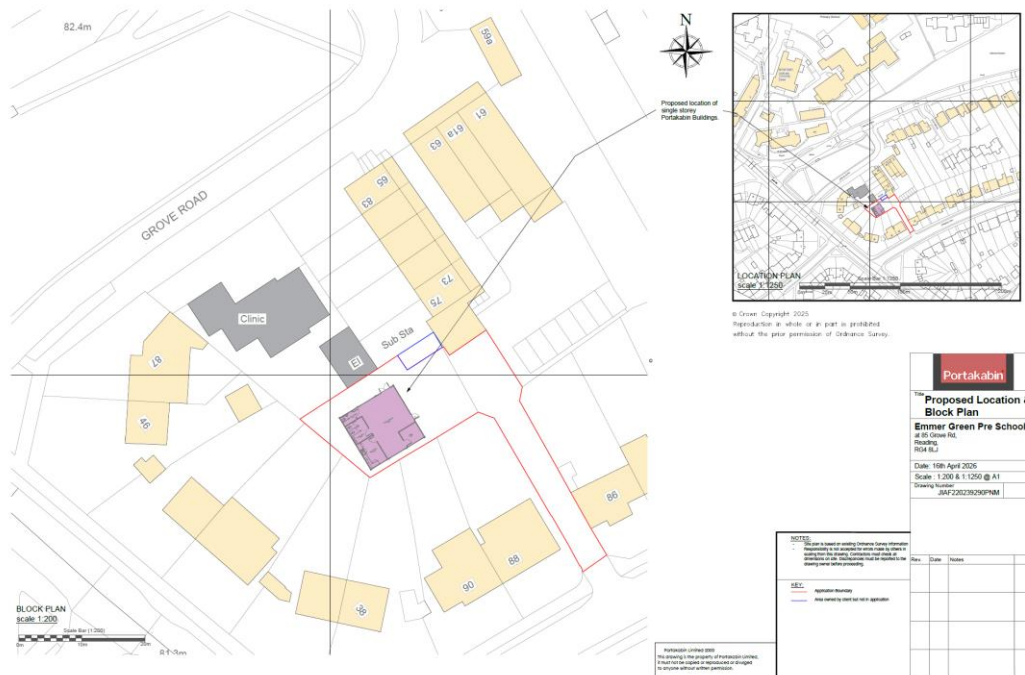


Figure 2: Proposed Floor Layout.

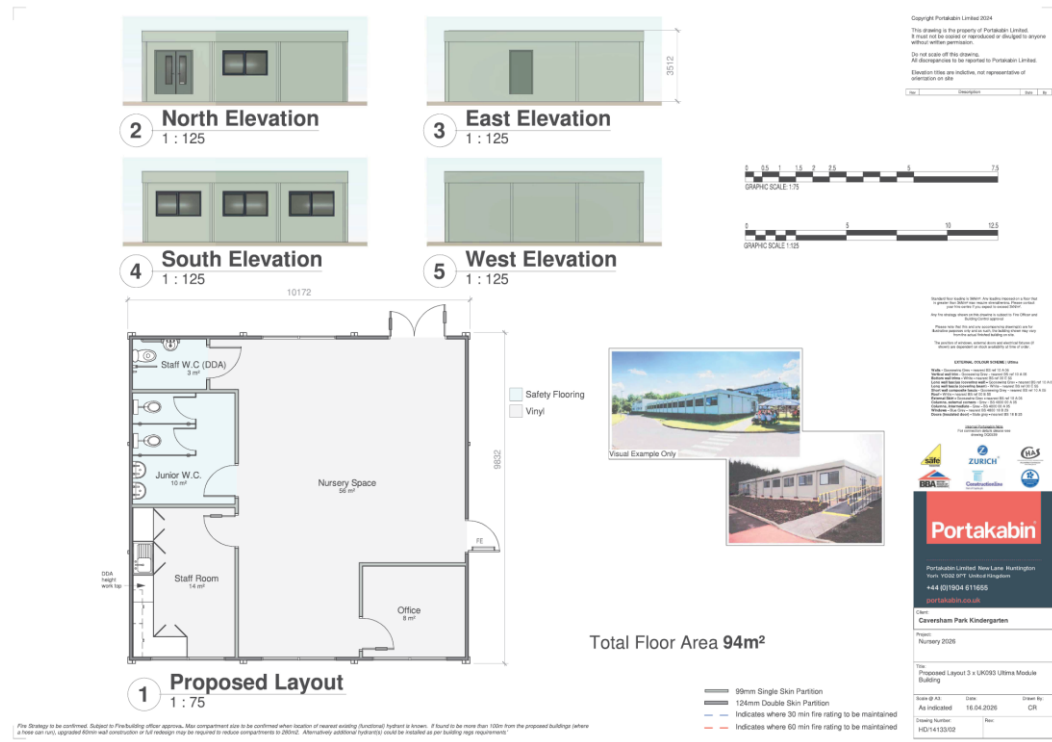


Figure 3: Proposed new nursery building details.

2 ASSESSMENT METHODOLOGY AND SCOPE OF WORKS

2.1 National Planning Policy Framework [NPPF 2024]

- 3 The NPPF sets out the government's planning policies for England and how they are expected to be applied. It aims to achieve sustainable development; stating that planning policies and decisions should prevent unacceptable levels of noise pollution from new and existing development while affirming that National Policy Statements form part of the national planning policy framework and should be considered in planning decisions.

3.1 Noise Policy Statement for England (NPSE)

- 4 The Noise Policy Statement for England (NPSE), published in March 2010, states the long-term vision of Government noise policy is 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".
- 5 The NPSE sets out the government's overall policy on noise within the context of sustainable development. It introduces three concepts for noise management: avoid significant adverse effects; mitigate and minimise adverse effects; and where possible, contribute to improvements in health and quality of life.
- 6 It also establishes a hierarchy of noise management actions: avoid; reduce; remedy; mitigate; compensate.
- 7 The NPSE also introduces the below categories with respect to 'adverse impacts'.

'NOEL – No Observed Effect Level

- This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

- This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

- This is the level above which significant adverse effects on health and quality of life occur.'

- 8 The NPSE states that significant adverse effects on health and quality of life should be avoided. Where the impact lies somewhere between LOAEL and SOAEL, it requires that all reasonable steps are taken to mitigate and minimise the adverse effects of noise. In this

regard, a certain degree of impact between LOAEL and SOAEL would be acceptable in terms of planning policy, provided that the impact has been mitigated and minimised by design.

8.1 Planning Practice Guidance - Noise [PPG 2019]

9 PPG 2019 provides guidance on how noise should be considered in planning decisions. It was published in 2014 and updated in 2019. The document advises on how to avoid, mitigate, or minimise adverse effects of noise through good acoustic design and appropriate conditions or obligations.

10 **Table 1** summarises the noise exposure hierarchy outlined within the PPG.

Table 1: National Planning Practice Guidance noise exposure hierarchy		
Perception	Increasing Effect Level	Action
Not noticeable	No Observed Effect	No specific measures required
Noticeable and not intrusive	No Observed Adverse Effect	No specific measures required
Lowest Observed Effect Level		
Noticeable and intrusive	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Effect Level		
Noticeable and disruptive	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Unacceptable Adverse Effect	Prevent

10.1 Scope of Works

10.1.1 The potential noise impact, along with general principles of assessment have been reviewed by NoiseAir.

10.1.2 It is regarded that this NIA considers the potential for increased noise disturbance, (specifically regarding neighbouring residential premises) from children in the external play areas at the development site.

10.2 Assessment Criteria

10.2.1 As there are currently no defined British Standards for the assessment of noise breakout from childcare facilities, NoiseAir consider that BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings* (BS 8233:2014), and WHO guidance could prove a useful

guide in reviewing noise levels. It is the view of NoiseAir that this guidance should not be used to employ any 'hard' limits, however, should be used to assist contextual review of the application against measured/calculated noise levels.

- 10.2.2 Assessment will also be provided in the context of the existent background sound levels through an on site background noise survey. Assessment of the background sound levels will be in general accordance with BS 4142:2014+A1:2019.

10.3 British Standard 8233:2014 (BS 8233:2014)

- 10.3.1 British Standard 8233:2014 – *Guidance on sound insulation and noise reduction for buildings* (BS 8233) provides guidance on internal ambient noise levels, resulting from break-in of external environmental noise that should not be exceeded in various locations within dwellings.

- 10.3.2 Guidelines for buildings in terms of internal noise level are reported in **Table 2**.

Table 2: Summary of internal noise guidelines.			
Activity	Location	0700 – 2300 hours	2300 – 0700 hours
Resting	Living Room	35 dB L _{Aeq,16hour}	-
Dining	Dining room / area	40 dB L _{Aeq,16hour}	-
Sleeping (daytime resting)	Bedroom	35 dB L _{Aeq,16hour}	30 dB L _{Aeq,8hour}

- 10.3.3 The standard clarifies that these values are based on the existing guidelines issued by the World Health Organisation (WHO). In addition, it states that the internal noise levels may be relaxed by up to 5 dB whilst maintaining a reasonable living condition. Conversely, in terms of internal maximum levels to be achieved during the night, the standard does not recommend any limits for individual noise events. However, a guideline value may be set in terms of SEL or L_{AFmax}, depending on the type and the number of events per night.

- 10.3.4 Furthermore, BS 8233:2014 provides guidance on desirable noise levels in areas that are intended to be used for external amenity space, such as gardens, balconies and roof gardens which are intended to be used for relaxation. For these spaces it is desirable that the external noise level does not exceed 50 dB L_{Aeq,T} up to a level of 55 dB L_{Aeq,T} for noisier environments.

11 ACOUSTIC SURVEY

11.1 Acoustic Survey Details

- 11.1.1 NoiseAir carried out fixed position noise monitoring between 15th July 2025 to 17th July 2025 at the development site.
- 11.1.2 Noise monitoring was undertaken at one monitoring location (ML1). The approximate monitoring location is shown in **Figure 4** and described in **Table 3** below.

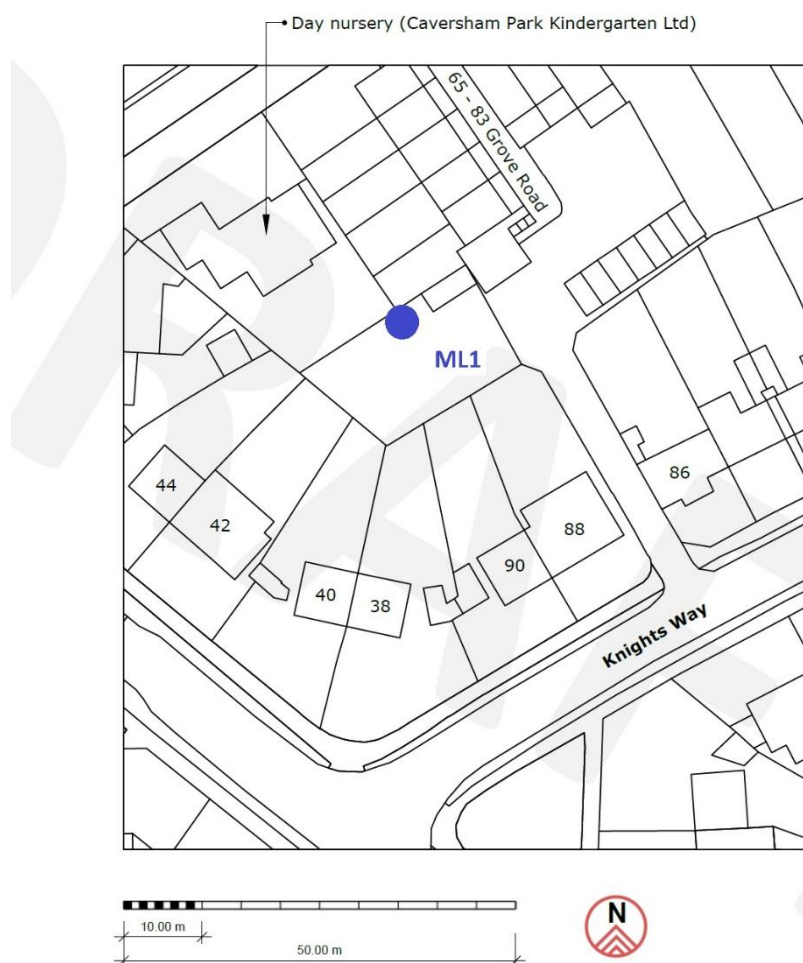


Figure 4: Noise monitoring locations.

Table 3: Summary of Noise Monitoring Locations				
Monitor Location Number	Location Description	Time Period Monitored		Attended or Unattended Monitoring
		Start	End/Duration	
ML1	Externally mounted upon the application sites northern boundary fence at 1.5 m above ground level in free field conditions.	18:30 15/07/25	15:45 17/07/25	Unattended

11.1.3 Monitoring location ML1 was positioned to be representative of the general background sound levels in the locality.

11.1.4 The noise measurements were made using one Class 1, integrating sound level meter (SLM).

11.1.5 The acoustic equipment was calibrated to comply with Section 4.2 of BS7445-1:2003¹ before and after the noise monitoring periods.

11.1.6 Details of the SLMs and associated field calibration can be found in **Table 4** below;

Table 4: Summary of SLM's used for survey and associated field calibration				
SLM (Serial Number)	Preamp (Serial Number)	Microphone (Serial Number)	Calibrator (Serial Number)	Drift dB
NOR140 (1402826)	NOR1209 (15455)	NOR1225 (168289)	B&K4231 (2699086)	<0.5

11.1.7 The weather conditions were noted to be as outlined in **Table 5** during the site visits at the start and end of the monitoring periods.

Table 5: Summary of weather conditions noted at the start and end of the monitoring duration.		
	15 th July 2025	17 th July 2025
Roads (Wet / Dry)	Dry	Dry
Temperature (°C)	20	25
Wind speed (ms ⁻¹)	< 0.5	< 0.5
Cloud Cover (Approx. %)	10	10
Humidity (%)	68	65

11.1.8 A-weighted² L_{eq}³ and L_{AMax}⁴ noise levels were measured to comply with the requirements of BS 8233:2014.

11.1.9 Attending the development site at the start and end of the survey monitoring period provided opportunity for observations and detailed notes to be made of the significant noise sources which contribute to each of the measured levels.

¹ BS7445-2003 "Description and measurement of environmental noise – Part 1: Guide to quantities and procedures.

² An electronic filter in a sound level meter which mimics the human ear's response to sounds at different frequencies under defined conditions.

³ Equivalent continuous noise level; the steady sound pressure which contains an equivalent quantity of sound energy as the time-varying sound pressure levels.

⁴ The instantaneous maximum noise level recorded for a measurement period.

ML1

During operational hours periods of higher noise can be identified in the dataset which indicates the presence of noise from the nursery children while at play. The survey installation and collection times were outside of the hours when children were at the nursery and the noise climate was considered to be of local non-descript low level traffic noise from the general locality.

11.2 Measured Sound Levels – Noise Monitoring (ML1)

- 11.2.1 Data is shown in **Figure 5** detailing a level vs. time graph of the recorded L_{Aeq} and L_{Amax} , sound levels across the survey period for ML1.

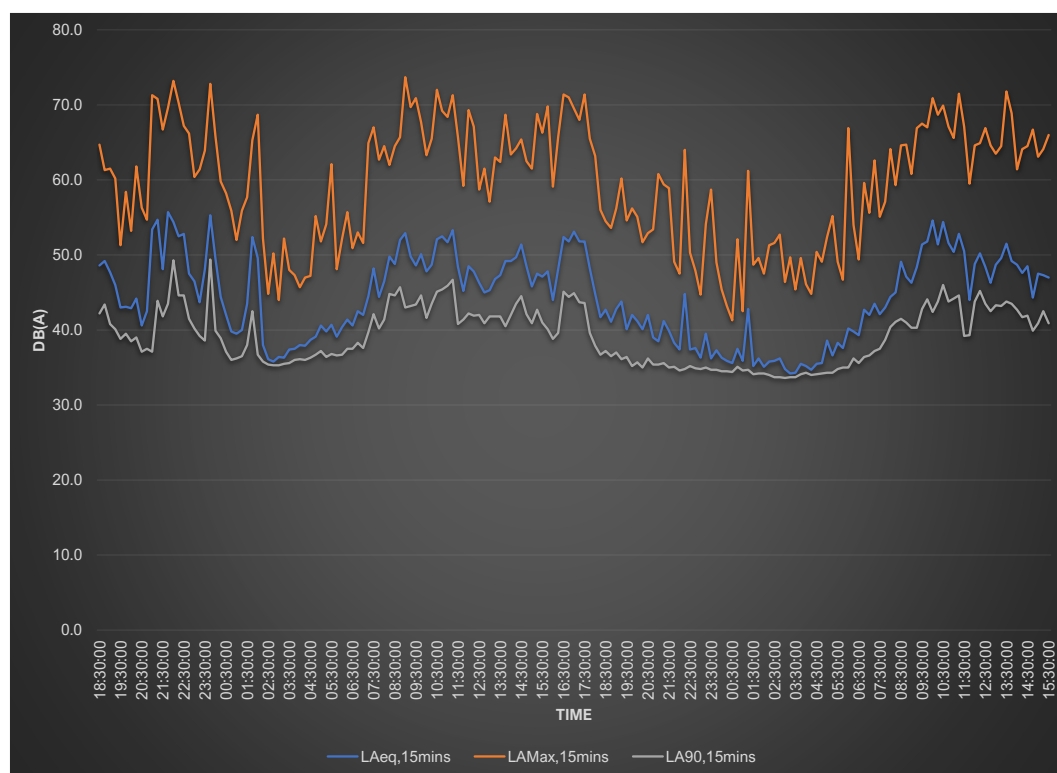


Figure 5: Level vs. time graph showing L_{Aeq} and L_{Amax} sound levels – ML1.

11.3 Background Sound Levels

- 11.3.1 Data analyses has been performed on the background sound levels in order to determine typical values for the locality. A histogram showing the distribution of existing $L_{A90,T}$ sound levels for the daytime are presented in **Figure 6**. The dataset has been restricted to 18:00 to 20:00 hours to ensure that the adopted background sound level does not have contributions from children at play at the nursery.

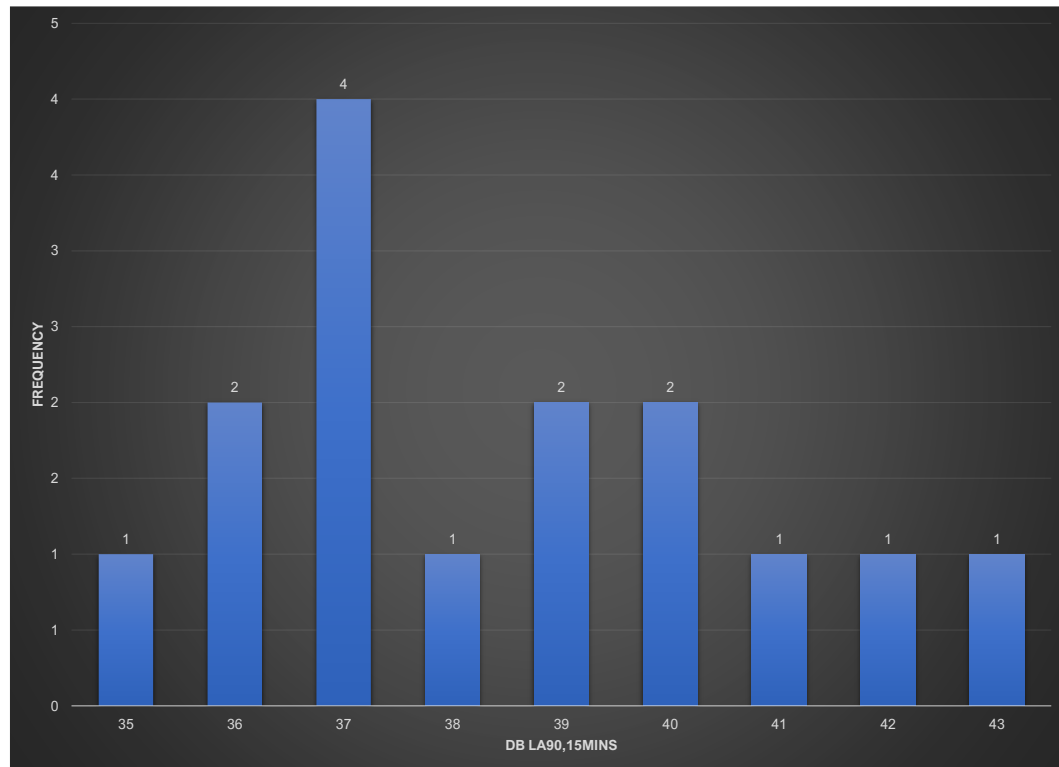


Figure 6: Histogram showing frequency distribution of $L_{A90,15mins}$ noise readings at ML1 – daytime.

- 11.3.2 It is considered that a daytime background sound level of 37 dB(A) is considered typical based on the data presented.

12 3D SOUND MODEL

12.1 Introduction

12.1.1 In order to assess the potential level of noise emissions from the application site in respect of local residential receptors, a 3D sound model has been constructed.

12.2 3D Sound Model

12.2.1 A 3D sound model has been constructed in SoundPlan™ to calculate the predicted sound pressure levels at various receptor locations in the vicinity of the application site. The model uses the calculation method from ISO 9613-2:1996 to account for the distance between the source and receiver and any screening or reflections provided by the surrounding buildings.

12.2.2 By default, the 3D sound model calculates the noise level that would be generated downwind from the source in question (wind direction within an angle of +/- 45 degrees of the direction connecting the source and receiver, with wind blowing from the source).

12.2.1 3D noise modelling specifically includes the following noise sources:

- **External Play** – Modelled as an area source, and assigned to the location of the existing external recreational space 1 m above ground level. The 3D sound model has been calibrated to a typical level for a nursery outdoor play area (64 dB(A) at 1 m from the area source).

12.2.2 Two scenarios have been presented as outlined below:

- **Scenario 1** – Noise emissions as existing; and,
- **Scenario 2** – Noise emissions as proposed.

12.3 Scenario 1 – Noise Emissions as Existing

12.3.1 A noise contour plot illustrating the calculated propagation of sound from source to receptor, is presented within **Figure 7**.

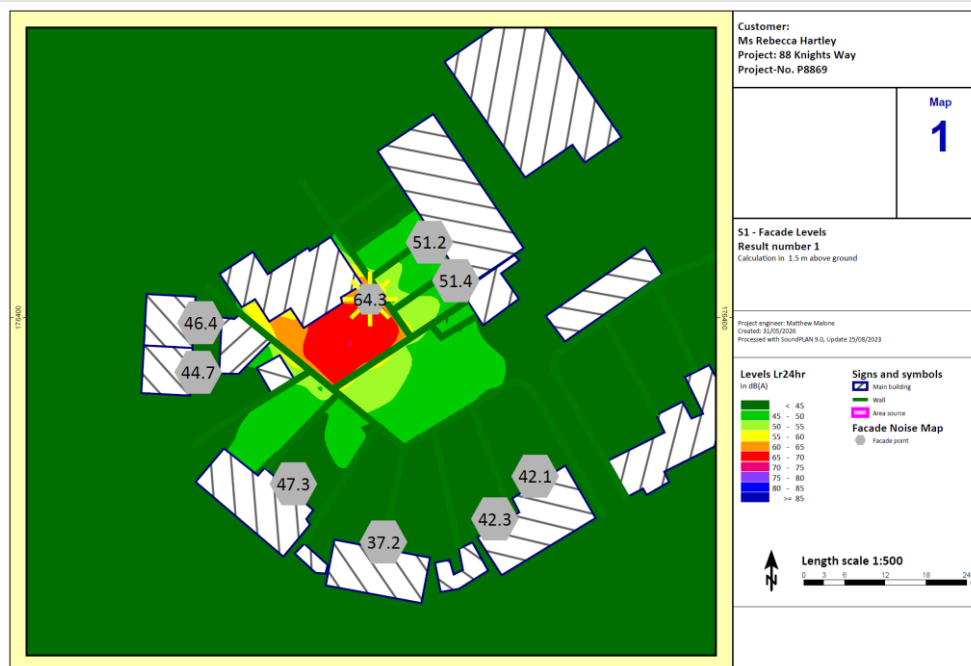


Figure 7: Noise contour plot illustration of the calculated propagation of sound – dB LAeq (external play area as existing).

12.4 Scenario 2 – Noise Emissions as Proposed

12.4.1 A noise contour plot illustrating the calculated propagation of sound from source to receptor, is presented within **Figure 8**.

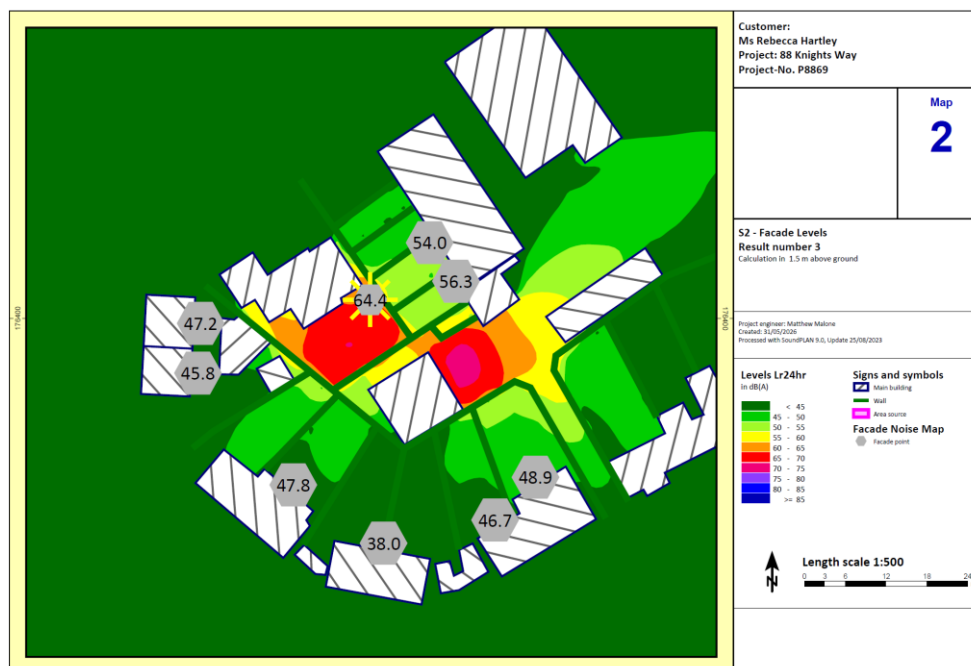


Figure 8: Noise contour plot illustration of the calculated propagation of sound – dB LAeq (external play area as proposed).

13 NOISE IMPACT ASSESSMENT

13.1 Assessment - External Play Areas

13.1.1 A 3D sound model has been constructed in order to review the current level of activity noise incident upon neighbouring residential receptors and compare this to the calculated future noise levels.

13.1.2 This assessment also makes reference to the measured background sound levels and compares the calculated sound levels to the recommended internal noise level criteria presented in BS 8233:2014.

13.1.3 **Table 6** below details the calculated noise levels at each façade receptor location and the calculated change in noise levels.

Table 6: Summary of predicted façade sound levels from 3D sound model				
Scenario	Calculated Noise Level (Figures in dB L _{Aeq,T})			
	NSR - NE	NSR - SE	NSR - SW	NSR - W
1	51.4	42.3	47.3	46.4
2	56.3	48.9	47.8	47.2
Level Increase	+4.9	+6.6	+0.5	+0.8

13.1.4 **Table 6** demonstrates that a marginal noise level increase is calculated at most NSR locations with the maximum increase in propagation to the southeast NSRs of up to 6.6 dB(A).

13.1.5 The increase in noise propagation to NSRs to the southwest and west is marginal and is likely to be imperceptible.

13.1.6 **Table 7** below presents the calculated noise levels at the facades of the existing properties and provides a comparison against the measured background sound levels.

Table 7: Summary of predicted façade sound levels from 3D sound model compared against measured background sound levels.				
	Calculated Noise Level (Figures in dB L _{Aeq,T})			
	NSR - NE	NSR - SE	NSR - SW	NSR - W
Proposed Scenario 2	56	49	48	47
Measured Background Sound Level	37	37	37	37
Excess of the Calculated level over the background sound level	+19	+12	+11	+10

- 13.1.7 The calculated sound levels exceed the measured background sound levels by up to +19 dB(A) to the NE. In the other NSR directions there is a lower excess of the calculated façade noise level over the background sound level of up to 12 dB(A).
- 13.1.8 In all circumstances it is considered that the noise levels incident at the existing residential receptors is likely to be audible and identifiable, and this is reflected in the calculated exceedances of the measured background sound level.
- 13.1.9 The noise emissions from the existing nursery however are an established part of the local noise climate when the nursery is operational and therefore any noise impact is likely to be reduced somewhat. As presented in **Table 6** the increase in noise levels is not likely to be excessive and in most cases any increase in noise levels is likely to be marginal, therefore any increase in noise impact is also likely to be marginal.
- 13.1.10 **Table 8** below presents the calculated façade noise levels and provides comparison against the recommended internal noise levels presented in BS 8233:2014. The façade noise levels have been attenuated by 15 dB(A) for a partially open window to calculate the likely internal noise levels.

Table 8: Summary of predicted façade sound levels from 3D sound model compared against recommended BS 8233:2014 sound levels.				
	Calculated Noise Level (Figures in dB L _{Aeq,T})			
	NSR - NE	NSR - SE	NSR - SW	NSR - W
Proposed Scenario 2	56	49	48	47
Internal Noise Level	41	34	33	32
BS 8233:2014 Recommended Internal Noise Level - Daytime	35	35	35	35
Excess of the Calculated level over the background sound level	+6	-1	-2	-3

13.1.11 **Table 8** indicates that the noise level emissions from the nursery play areas are unlikely to exceed the BS 8233:2014 internal noise levels at the NSRs to the southeast, southwest and west directions.

13.1.12 The NSR to the northeast indicates that the internal noise level will exceed the threshold by up to 6 dB(A). As already outlined the noise emissions from children at play is an already established noise source and therefore potential adverse impact are likely to be reduced as a result. The increase in noise emissions is calculated as up to 4.9 dB(A) in this direction and therefore in terms of relative change this would typically be categorised as a small change in receptor perceptibility.

14 RECOMMENDATIONS

14.1 Introduction

- 14.1.1 While the preceding section indicates a mostly marginal increase in noise levels at the existing NSRs and considers it unlikely, on balance, that an adverse impact is likely, we also recommend that a noise management plan is completed for the nursery to minimise and reduce noise levels in the longer term.

14.2 Noise management plan

- 14.2.1 The following section details mitigation measures, communication and complaint procedures which should be incorporated in a noise management plan (NMP).
- 14.2.2 The objective of the NMP is to provide a framework for site activity noise management in order to minimise the effect of potentially adverse noise levels at neighbouring residential premises.
- 14.2.3 The NMP should consider the following areas:
- **Responsible persons** – A designated site representative should be responsible for ensuring that the proposals presented within the NMP are appropriately implemented and maintained across the duration of which the business remains in practice at the aforementioned address;
 - **Hours of operation** – the NMP should set out the hours of operation of the business;
 - **Arrival and departure procedure** – The NMP should set out clear arrival and departure procedures for staff and parents visiting and leaving the site;
 - **Settling in procedures** – All age groups should be subject to a settling in session run and managed by experienced staff personnel. This will maintain a state of calm within the premises thus avoiding any increased potential for agitated infants (at times of increased sensitivity, such as being handed over by parents) spreading disorientation amongst others;
 - **On site calming space** – An onsite calming space will be established in order to isolate and settle distressed infants, should it be deemed necessary;
 - **Staff conduct** – Training should be provided to all new and existing staff personal about the importance of keeping noise emerging from the site to a minimum, and all site policies/procedures in which to do so;
 - **Noise complaints procedure** – A 24-hour complaints email address should be established, whereby residents can voice concerns if they should arise. Any complaints that arise from local residents alleging unacceptable noise from the site

will be recorded in a designated logbook and will be acted upon in a proactive positive manner. Documented records of any complaints, and actions taken will be maintained and made available to the LA upon request; and,

- Documentation – A noise complaint file should be established.

15 CONCLUSIONS

- 15.1.1 NoiseAir was commissioned to provide a noise impact assessment (NIA) in relation to a planning application for an extension to an existing childcare facility located at: Land to rear of 88 Knights Way, Emmer Green, Reading RG4 8RH.
- 15.1.2 It is understood that the application proposals the redevelopment of the development site to form a new nursery building as part of an extension to the nursery operations.
- 15.1.3 A background noise assessment has been conducted at the development site to establish the prevailing background noise levels in the locality.
- 15.1.4 A 3D sound model has been utilised to calculate the noise levels at the receptor location in close proximity to the development site when the new nursery building and play area are operational.
- 15.1.5 A marginal noise level increase is calculated at most NSR locations with the maximum increase in propagation to the southeast NSRs of up to 6.6 dB(A).
- 15.1.6 The calculated façade sound levels exceed the measured background sound levels by up to 19 dB(A) to the NE. In the other NSR directions there is a lower excess of the calculated façade noise level over the background sound level of up to 12 dB(A).
- 15.1.7 The noise emissions from the existing nursery however are an established part of the local noise climate when the nursery is operational and therefore any noise impact is likely to be reduced somewhat.
- 15.1.8 Noise level emissions from the nursery play areas are unlikely to exceed the BS 8233:2014 internal noise levels at the NSRs to the southeast, southwest and west directions.
- 15.1.9 The NSR to the northeast indicates that the internal noise level will exceed the threshold by up to 6 dB(A). The noise emissions from children at play is an already established noise source and therefore potential adverse impact are likely to be reduced as a result. The increase in noise emissions is calculated as up to 4.9 dB(A) and therefore in terms of relative change this would typically be categorised as a small change in receptor perceptibility.
- 15.1.10 We however recommend that the client produces a noise management plan in order to minimise noise emissions as much as reasonably practicable.

APPENDIX A - REPORT LIMITATIONS

This report is presented to Ms Rebecca Hartley and may not be used or relied on by any other person or by the client in relation to any other matters not covered specifically by the scope of this report.

Notwithstanding anything to the contrary contained in the report, NoiseAir Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by Ms Rebecca Hartley and NoiseAir shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

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Where assessments of works or costs identified in this report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

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APPENDIX B – GLOSSARY

A-weighted sound pressure, p_A	Value of overall sound pressure, measured in pascals (Pa), after the electrical signal derived from a microphone has been passed through an A-weighting network. <i>NOTE: The A-weighting network modifies the electrical response of a sound level meter with frequency in approximately the same way as the sensitivity of the human hearing system.</i>
A-weighted sound pressure level, L_{pA}	Quantity of A-weighted sound pressure in decibels (dBA).
Acoustic environment	Sound from all sound sources as modified by the environment [BS ISO 12913-1:2013].
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. <i>NOTE: The ambient sound comprises the residual sound and the specific sound when present.</i>
Ambient sound level, $L_a = L_{Aeq,T}$ (BS4142:2014)	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T <i>NOTE: The ambient sound level is a measure of the residual sound and the specific sound when present.</i>
Background sound	Underlying level of sound over a period, T, which might in part be an indication of relative quietness at a given location.
Background sound level, $L_{A90,T}$ (BS4142:2014)	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.
Break-in	Noise transmission into a structure from outside.
Break-out	Noise transmission from inside a structure to the outside.
Cross-talk	Noise transmission between one room and another room or space via a duct or other path.
C_{tr}	Correction term applied against the sound insulation single-number values (R_w , D_w , and $D_{nT,w}$) to provide a weighting against low frequency performance. <i>NOTE: The reference values used within the C_{tr} calculation are based on urban traffic noise.</i>
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that, within a specified time interval, T, has the same mean-squared sound pressure as the sound under consideration that varies with time.
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$ (BS4142:2014)	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time.
Equivalent sound absorption area of a room, A	Hypothetical area of a totally absorbing surface without diffraction effects, expressed in square metres (m ²), which, if it were the only absorbing element in the room, would give the same reverberation time as the room under consideration
Facade level	Sound pressure level 1 m in front of the façade. <i>NOTE: Facade level measurements of L_{pA} are typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the facade.</i>
Free-field level	Sound pressure level away from reflecting surfaces. <i>NOTE: Measurements made 1.2 m to 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as free-field. To minimize the effect of reflections the measuring position has to be at least 3.5 m to the side of the reflecting surface (i.e. not 3.5 m from the reflecting surface in the direction of the source). Estimates of noise from aircraft overhead usually include a correction of 2 dB to allow for reflections from the ground.</i>

Impact sound pressure level, L_i	Average sound pressure level in a specific frequency band in a room below a floor when it is excited by a standard tapping machine or equivalent.
Indoor ambient noise	Noise in a given situation at a given time, usually composed of noise from many sources, inside and outside the building, but excluding noise from activities of the occupants. <i>NOTE: The location(s) within the room at which the ambient indoor noise is to be measured or calculated ought to be considered.</i>
Measurement time interval, T_m (BS4142:2014)	Total time over which measurements are taken. <i>NOTE: This may consist of the sum of a number of non-contiguous, short-term measurement time intervals.</i>
Noise criteria	Numerical indices used to define design goals in a given space.
Noise rating, NR	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves.
Normalised impact sound pressure level, L_n	Impact sound pressure level normalized for a standard absorption area in the receiving room. <i>NOTE: Normalised impact sound pressure level is usually used to characterize the insulation of a floor in a laboratory against impact sound in a stated frequency band.</i>
Octave band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit.
Percentile level, $L_{AN,T}$	A-weighted sound pressure level obtained using time-weighting "F", which is exceeded for $N\%$ of a specified time interval.
Reference time interval, T_r (BS4142:2014)	Specified interval over which the specific sound level is determined. <i>NOTE: This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h.</i>
Residual sound (BS4142:2014)	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.
Residual sound level, $L_r = L_{Aeq,T}$ (BS4142:2014)	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T .
Rating level, L_{Ar,T_r}	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise. <i>NOTE: This is used in BS 7445 and BS 4142 for rating industrial noise, where the noise is the specific noise from the source under investigation.</i>
Reverberation time, T	Time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped.
Sound exposure level, L_{AE}	Level of a sound, of 1 s duration, that has the same sound energy as the actual noise event considered.
Sound level difference, D	Difference between the sound pressure level in the source room and the sound pressure level in the receiving room.
Sound pressure, p	Root-mean-square value of the variation in air pressure, measured in pascals (Pa) above and below atmospheric pressure, caused by the sound.
Sound pressure level, L_p	Quantity of sound pressure, in decibels (dB).
Sound reduction index, R	Laboratory measure of the sound insulating properties of a material or building element in a stated frequency band.

Specific sound level, $L_s = L_{Aeq,T_r}$ (BS4142:2014)	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r .
Specific sound source (BS4142:2014)	Sound source being assessed.
Standardised impact sound pressure level, L'_{nT}	Impact sound pressure level normalized to a reverberation time in the receiving room of 0.5 s.
Standardised level difference, D_{nT}	Difference in sound level between a pair of rooms, in a stated frequency band, normalized to a reference reverberation time of 0.5 s for dwellings.
Groundborne noise	Audible noise caused by the vibration of elements of a structure, for which the vibration propagation path from the source is partially or wholly through the ground. <i>NOTE Common sources of ground-borne noise include railways and heavy construction work on adjacent construction sites.</i>
Structure-borne noise	Audible noise caused by the vibration of elements of a structure, the source of which is within a building or structure with common elements. <i>NOTE Common sources of structure-borne noise include building services plant, manufacturing machinery and construction or demolition of the structure.</i>
Third octave band	Band of frequencies in which the upper limit of the band is 2% times the frequency of the lower limit.
Weighted level difference, D_w	Single-number quantity that characterizes airborne sound insulation between rooms, but which is not adjusted to reference conditions. <i>NOTE Weighted level difference is used to characterize the insulation between rooms in a building as they are. Values cannot normally be compared with measurements made under other conditions (see BS EN ISO 717-1).</i>
Weighted normalised impact sound pressure level, $L'_{n,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted sound reduction index, R_w	Single-number quantity which characterizes the airborne sound insulating properties of a material or
Weighted standardised impact sound pressure level $L_{nT,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted standardised level difference, $D_{nT,w}$	Single-number quantity that characterizes the airborne sound insulation between rooms.

Symbols

D_w	Weighted level difference (dB)
D_{nT}	Standardized level difference (dB)
$D_{nT,w}$	Weighted standardized level difference (dB)
L_{Amax}	Maximum noise level (dB)
$L_{Ar,Tr}$	Rating level (dB)
L_n	Normalised impact sound pressure level (dB)
L'_{nT}	Standardised impact sound pressure level (dB)
$L'_{nT,w}$	Weighted standardised impact sound pressure level (dB)
$L'_{n,w}$	Weighted normalised impact sound pressure level (dB)
L_p	Sound pressure level (dB)
L_{pA}	A-weighted sound pressure level (dB)
$L_{AN,T}$	Percentile level (dB)
L_{AE}	Sound exposure level (dB)
$L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level (dB)
p	Sound pressure (Pa)
p_A	A-weighted sound pressure (dB)
$p_{A(t)}$	Instantaneous A-weighted sound pressure (Pa)

R	Sound reduction index (dB)
R_w	Weighted sound reduction index (dB)
T	Time interval (also used for reverberation time) (s)
t_0	Reference time interval (s)

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