

noise.co.uk Ltd

T+44(0)2476 545 397

F+44(0)2476 545 010

The Haybarn

Newnham Grounds

Kings Newnham Lane

Bretford

Warwickshire

CV23 0JU

Environmental Noise Survey

Prepared: 11th August 2026

Report No	21898K-1
Client	Crest Nicholson Operations Ltd
Site	District Centre Nursery and Pre-school, Arborfield Reading

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1. Executive Summary

1.1.1. An environmental noise assessment has been carried out to predict the noise impact from an existing multi-use games area (MUGA) at Bohunt School on a proposed residential development at District Centre Nursery and Pre-school, Arborfield, Reading (“Proposed Development”).

1.2. Measurement, assessment and evaluation

1.2.1. The survey was carried out to BS7445-1:2003¹ and BS7445-2:1991².

1.3. Scope

1.3.1. This report covers all aspects of the noise survey, including:

- the identification of acoustic design criteria;
- an objective sound pressure level survey of the existing site;
- 3D noise model & analysis of the data;
- the design of any mitigation to meet the required internal noise criteria

1.4. Results summary

1.4.1. Noise modelling has been used to assess how much of an impact the MUGA will generate against the existing noise climate and criteria set out in the WHO guidelines. Assessments have also been undertaken to the nearest noise-sensitive windows to ascertain internal noise levels from the MUGA activity.

1.4.2. The assessment indicates that the overall noise impact could have an adverse impact, whereby the impact has the *“Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.”* It should be noted that the MUGA is not expected to be in use during the night-time period (23:00-07:00) and so is not expected to cause sleep disturbance.

1.4.3. An open window is widely regarded to provide approximately 15dB reduction in noise levels³. Taking this reduction into account, the resulting internal noise levels are calculated to be 41.9dB $L_{Aeq,T}$. It should be noted that this only applies to the worst affected façade and that every other façade on the development are predicted to result in internal levels <40dB $L_{Aeq,T}$ on this basis which achieves reasonable internal noise conditions for daytime (0700-2300). It should also be noted that the sound pressure levels report are first floor levels and all ground floor sound pressure levels for equivalent facades are predicted to achieve <40dB $L_{Aeq,T}$.

1.4.4. It has been demonstrated that, with the addition of a 1.8m fence to garden areas, the guideline values from WHO/BS8233:2014 can be achieved with the MUGA in operation.

¹ BS7445-1:2003 “Description and measurement of environmental noise – Part 1: Description of quantities and procedures”

² BS7445-2:1991 “Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use”

³ ProPG: Planning and Noise – Professional Practice Guidance on Planning & Noise, pg 11

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4. Background

4.1. Noise Policy Statement for England

- 4.1.1. The Noise Policy Statement for England (NPSE), 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”*.
- 4.1.2. This long-term vision is supported by the following aims; through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:
- Avoid significant adverse impacts on health and quality of life;
 - Mitigate and minimise adverse impacts on health and quality of life;
 - Where possible, contribute to the improvement of health and quality of life.
- 4.1.3. The intention is that the NPSE should apply to all types of noise apart from noise in the workplace (occupational noise).

4.2. National Planning Policy Framework

- 4.2.1. The National Planning Policy Framework (NPPF) sets out the Government’s planning policies for England and how these are expected to be applied. The framework states that the planning system should contribute to and enhance the natural and local environment by:
- “preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability”*.
- 4.2.2. The express inclusion of noise in the NPPF means that it is a material planning consideration for local planning decisions. It replaces the now revoked Planning Policy Guidance (PPG) Note 24. Paragraph 194 of the NPPF document states that planning policies and decisions should apply the following principles:
- a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
 - b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
 - c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons⁷⁰ and a suitable compensation strategy exists; and
 - d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

4.3. National Planning Practice Guidance

- 4.3.1. The National Planning Practice Guidance (PPG) is a web-based resource, launched by the Department for Communities and Local Government (DCLG) to support the NPPF and make it more accessible.⁴
- 4.3.2. It advises on how planning can manage potential noise impacts in new development. The guidance is regularly reviewed and updated and noise is listed as a specific category.
- 4.3.3. A summary of the effects of noise exposure (in terms of health and quality of life) associated with both noise generating developments and noise sensitive developments is presented within the PPG and reproduced in Table 1.

Perception	Examples of outcomes	Effect level	Action
Not noticeable	No effect	No observed effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect (NOAEL)	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very intrusive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

Table 1 – Noise exposure hierarchy

⁴ <http://planningguidance.communities.gov.uk/>

5. Introduction

- 5.1.1. An environmental noise assessment has been carried out to predict the noise impact from an existing multi-use games area (MUGA) at Bohunt School on a proposed development of six houses, a nursery and pre-school at District Centre Nursery and Pre-school, Arborfield, Reading ("Proposed Development").
- 5.1.2. The MUGA hours of use are between the hours of 1700 and 2130 on Mondays to Fridays and between 0900 and 1630 hours on Saturdays and Sundays.
- 5.1.3. An image showing the location of the MUGA and an indicative layout of the Proposed Development is given in Figure 1.

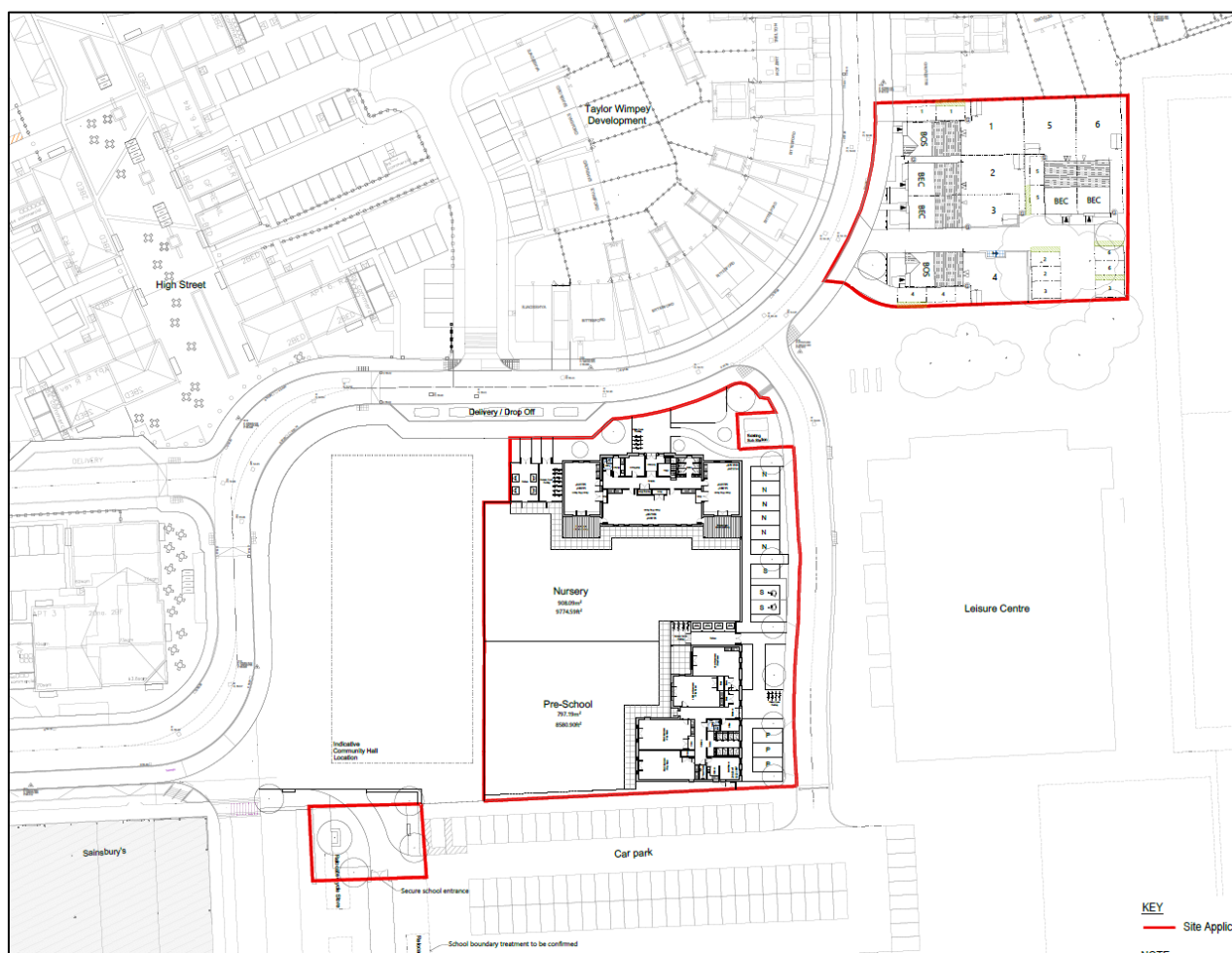


Figure 1 - Plan showing the location and layout of the Proposed Development

6. Assessment criteria

6.1. Sports England: Design Guidance Note

- 6.1.1. The Sports England guidance⁵ outlines the importance of providing good facilities to develop sporting opportunities by adopting good design and recognising the issues associated with sport facilities. The Sports England guidance aims to:
- Increase awareness of good design in sports facilities
 - Help key building professions, clients, user representatives and other stakeholders to follow best practice
 - Encourage well designed sports facilities that meet the needs of sports and are a pleasure to use
- 6.1.2. The guidance note specifically addresses the planning implications relating to artificial grass pitch (AGP) acoustics. The guidance note sets out the planning context in terms of the NPPF and identifies the WHO guidelines for community noise disturbance and BS8233:2014 as key assessment parameters for external and internal noise levels respectively.
- 6.1.3. The guidance then goes on to provide a description of a typical AGP noise source and identifies the key element of the noise source being human voice. It then goes on to provide a typical free-field noise level from an AGP as set out below:

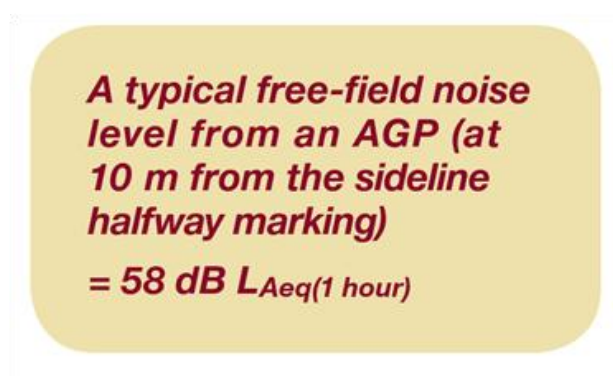


Figure 2 – Extract from Sports England Guidance setting out source noise levels for AGPs

- 6.1.4. The Sports England: Design guidance Note also recognises the ‘*significance of change in noise level*’ from the IOA/IEMA Working party Consultation Draft 2002⁶.
- 6.1.5. Where noise from the new source does not exceed the existing noise climate, the resulting increase in overall sound levels will be no more than 3dB. A difference of 3dB is generally accepted to be the minimum level difference that can normally be perceived.
- 6.1.6. This difference of up to 3dB increase is defined to be a ‘*slight*’ impact as per the above guidance. A difference of 3 to 5dB is considered a ‘*moderate*’ impact whereby the difference is noticeable but not intrusive.

⁵ Sport England Design Guidance note 2015: Artificial Grass Pitch (AGP) Acoustics - planning Implications

⁶ Institute of Acoustics (IOA) / Institute of Environmental Management & Assessment (IEMA)

- 6.1.7. Referring back to Table 1, both the above impacts would fall under the NOEL criteria wherein although noise is noticeable, no change is likely in either behavior or quality of life. Given this, no additional mitigation is considered necessary.

6.2. Garden Criteria – WHO/BS8233:2014

- 6.2.1. As per guidance in WHO⁷, BS8233:2014, provide the following criteria for traditional external areas that are used for amenity space, such as gardens and patios. It is desirable that the external noise level does not exceed 50dB $L_{Aeq,T}$ with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments.
- 6.2.2. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In such cases, the lowest practicable levels should be achieved in external amenity areas but the development should not be prohibited.

6.3. BS8233:2014 Internal Ambient Noise Criteria

- 6.3.1. BS8233:2014 draws on the results of research and experience to provide information on the design of buildings that have internal acoustic environments appropriate to their function. The standard provides guideline internal values for dwellings for steady external noise sources. These have been summarised in Table 2.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Room	35dB $L_{Aeq,16hour}$	-
Dining	Dining Room	40dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hour}$	30dB $L_{Aeq,8hour}$

Table 2 – BS8233:2014 guideline values for internal ambient noise levels from steady external noise sources

- 6.3.2. BS8233:2014 Note 7 states that “Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.”

⁷ Guidelines for Community Noise – Berglund et al – WHO: 1999

7. Noise Survey

7.1. Measurement locations

- 7.1.1. Fixed position monitoring took place to establish the existing noise climate. The monitoring equipment was located 1.8m from the ground and at least 3m from the next nearest reflecting surface. The monitoring position is shown in Figure 3.



Figure 3 - Noise monitoring location on site

- 7.1.2. The measurement instrumentation used during the survey is detailed in the appendix. The acoustic equipment was calibrated to comply with Section 4.2 of BS7445-1:2003⁸ before and after the surveys. The calibration details are also detailed in the appendix.

7.2. Meteorology

- 7.2.1. During the survey, the weather information was noted. This is summarised in Table 3.

	21 st February 2023	23 rd February 2023
Roads(Wet/Dry)	Dry	Wet
Wind Speed (ms ⁻¹)/Direction	3/S	5/N

Table 3 - Meteorological data noted during the survey

7.3. Measurement and timescale

- 7.3.1. Unattended noise monitoring was carried out between 21st February 2023 and 23rd February 2023. The measurements that have been made are summarised in Table 4

Monitoring position	Date	Type	Quantity
1	21 st February 2023– 23 rd February 2023	Fixed/unattended	dB LAeq,15-min

Table 4 – Measurements made at the site of the Proposed Development

⁸ BS7445-1:2003 “Description and measurement of environmental noise – Part 1: Guide to quantities and procedures”

7.3.2. Sound pressure measurements were subsequently averaged into hourly periods. The acoustic measurements and their interpretation have been in accordance with BS 7445: Parts 1, and 2⁹. All sound pressure levels are in dB (re 20μPa).

7.4. Results summary

7.4.1. The fixed position external measurement results are summarised in Table 5. Sound pressure measurements were subsequently averaged into hourly periods to determine the ambient noise levels.

Date	Time	dB L _{Aeq,1-hour}
2023-02-21	14:00	41.0
2023-02-21	15:00	42.1
2023-02-21	16:00	44.2
2023-02-21	17:00	38.9
2023-02-21	18:00	40.7
2023-02-21	19:00	42.3
2023-02-21	20:00	37.2
2023-02-21	21:00	42.9
2023-02-22	09:00	46.6
2023-02-22	10:00	42.8
2023-02-22	11:00	45.2
2023-02-22	12:00	42.2
2023-02-22	13:00	42.9
2023-02-22	14:00	42.4
2023-02-22	15:00	42.3
2023-02-22	16:00	41.5
2023-02-22	17:00	43.4
2023-02-22	18:00	40.7
2023-02-22	19:00	41.0
2023-02-22	20:00	39.4
2023-02-22	21:00	45.1
2023-02-23	09:00	48.3
2023-02-23	10:00	49.3
2023-02-23	11:00	49.7
2023-02-23	12:00	49.2

Table 5 – Hourly summary of the external sound pressure levels measured

⁹ BS7445-2:1991 “Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use”

8. Noise model

- 8.1.1. A 3D noise model has been created using SoundPLAN™ to determine the noise impact and aid the specification of mitigation.
- 8.1.2. The MUGA has been set so that it measures 58dB $L_{Aeq, T}$ free-field noise level at 10m from the sideline halfway line. This has been based on research provided in the Sports England guidance.
- 8.1.3. The noise source i.e. the MUGA has been defined as an area source and set to a height of 1.5m from the ground. This implies that the total area of the MUGA is generating noise simultaneously. This is not realistic however, it does provide a relatively worst-case definition of the source levels.
- 8.1.4. The barrier object has been used to model the garden fences. It has been assumed that a 1.8m garden fence will be installed.
- 8.1.5. The model has been calculated using the calculation procedure from ISO9613-2¹⁰. A noise contour map illustrating the propagation of the MUGA noise across the site can be found below in Figure 5.



Figure 4 – Noise contour plot illustrating the propagation of sound from source to receiver with a 1.8m garden fence

Figure 5 – Noise contour map illustrating dispersion of noise from MUGA

- 8.1.6. Figure 5 shows a worst-case incident level of 56.9 dB $L_{Aeq, T}$. It should be noted that the levels listed are the first-floor levels, which do not benefit from any screening.

¹⁰ ISO 9613-2:1996 "Acoustics -- Attenuation of sound during propagation outdoors -- Part 2: General method of calculation"

9. Noise Assessment

9.1.1. The assessment is split into three elements. The first is a noise impact based on existing noise levels, the second is absolute noise levels in gardens and the third is absolute noise levels internally. Each of the three assessments is then compared with the assessment criteria set out in section 6.

9.2. Noise Impact Assessment

9.2.1. As noted previously, an increase of no more than 3dB in overall sound levels is considered the minimum level difference that is normally perceptible.

9.2.2. On this basis, any overall increases that are 3dB or below can be deemed ‘*slight*’ as per previously discussed guidance. The following table compares the measured sound pressure levels at the proposed residential receptors with the calculated free field noise levels from the operation of the MUGA.

9.2.3. The hourly $L_{Aeq,T}$ calculated by the model during the operation of the MUGA at the worst affected façade containing habitable rooms is 56.9 dBA. The following table sets out the measured hourly levels (representative of existing sound levels at the residences) and compares them with the calculated MUGA level. The resulting increase in noise level is then quantified.

Date	Time	$L_{Aeq,1-hour}$ (dB)			
		Measured Levels	MUGA Level	New Levels (Existing + MUGA)	Relative increase
2023-02-21	14:00	41.0	56.9	57.0	16.0
2023-02-21	15:00	42.1	56.9	57.0	14.9
2023-02-21	16:00	44.2	56.9	57.1	12.9
2023-02-21	17:00	38.9	56.9	57.0	18.1
2023-02-21	18:00	40.7	56.9	57.0	16.3
2023-02-21	19:00	42.3	56.9	57.0	14.7
2023-02-21	20:00	37.2	56.9	56.9	19.7
2023-02-21	21:00	42.9	56.9	57.1	14.2
2023-02-22	09:00	46.6	56.9	57.3	10.7
2023-02-22	10:00	42.8	56.9	57.1	14.3
2023-02-22	11:00	45.2	56.9	57.2	12.0
2023-02-22	12:00	42.2	56.9	57.0	14.8
2023-02-22	13:00	42.9	56.9	57.1	14.2
2023-02-22	14:00	42.4	56.9	57.1	14.7
2023-02-22	15:00	42.3	56.9	57.0	14.7
2023-02-22	16:00	41.5	56.9	57.0	15.5
2023-02-22	17:00	43.4	56.9	57.1	13.7
2023-02-22	18:00	40.7	56.9	57.0	16.3
2023-02-22	19:00	41.0	56.9	57.0	16.0
2023-02-22	20:00	39.4	56.9	57.0	17.6
2023-02-22	21:00	45.1	56.9	57.2	12.1

Date	Time	L _{Aeq,1-hour} (dB)			
		Measured Levels	MUGA Level	New Levels (Existing + MUGA)	Relative increase
2023-02-23	09:00	48.3	56.9	57.5	9.2
2023-02-23	10:00	49.3	56.9	57.6	8.3
2023-02-23	11:00	49.7	56.9	57.7	8.0
2023-02-23	12:00	49.2	56.9	57.6	8.4

Table 6 – Hourly L_{Aeq,1h} noise impact assessment results

9.2.4. As indicated in the table above, the relative increase in noise levels varies across the day. During the hours of operation, an increase greater than 3dB is noted. The overall noise impact could have an adverse impact, whereby the impact has the *“Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.”* It should be noted that the MUGA is not expected to be in use during the night-time period (23:00-07:00) and so is not expected to cause sleep disturbance.

9.2.5. This relates to a LOEL (as described in Section 4) rating and therefore requires further investigation.

9.3. Garden Noise levels

9.3.1. As per guidance in WHO¹¹, BS8233:2014, provide the following criteria for traditional external areas that are used for amenity space, such as gardens and patios. It is desirable that the external noise level does not exceed 50dB L_{Aeq,T} with an upper guideline value of 55dB L_{Aeq,T} which would be acceptable in noisier environments.

9.3.2. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In such cases, the lowest practicable levels should be achieved in external amenity areas but the development should not be prohibited.

9.3.3. It has been demonstrated that, with the addition of a 1.8m fence to garden areas, the guideline values from WHO/BS8233:2014 can be achieved with the MUGA in operation.

9.4. Internal Noise Levels

9.4.1. Although the hours of operation of the MUGA are during the daytime (07h00 – 22h00), calculations are carried out on the first floor and recommendations for daytime internal noise levels are applied.

9.4.2. The worst-case incident noise level at the first-floor window has been calculated to be 56.9dB L_{Aeq,1h}.

9.4.3. An open window is widely regarded to provide approximately 15dB reduction in noise levels¹². Taking this reduction into account, the resulting internal noise levels are calculated to be 41.9dB L_{Aeq,T}. It should be noted that this only applies to the worst affected façade and that every other façade on the development are predicted to result in internal levels <40dB L_{Aeq,T} on this basis which achieves reasonable internal noise conditions for daytime (0700-2300). It should also be noted that the sound pressure levels report are first floor levels and all ground floor sound pressure levels for equivalent facades are predicted to achieve <40dB L_{Aeq,T}.

¹¹ Guidelines for Community Noise – Berglund et al – WHO: 1999

¹² ProPG: Planning and Noise – Professional Practice Guidance on Planning & Noise, pg 11

10. Conclusions

- 10.1.1. An environmental noise survey has been carried out at District Centre Nursery and Pre-school, Arborfield, Reading, to determine the noise impact on a proposed development of six houses, a nursery and pre-school from a MUGA at Bohunt School.
- 10.1.2. Noise modelling has been used to assess how much of an impact the MUGA will generate against the existing noise climate and criteria set out in the WHO guidelines. Assessments have also been undertaken to the nearest noise-sensitive windows to ascertain internal noise levels from the MUGA activity.
- 10.1.3. The assessment indicates that the overall noise impact could have an adverse impact, whereby the impact has the *“Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.”* It should be noted that the MUGA is not expected to be in use during the night-time period (23:00-07:00) and so is not expected to cause sleep disturbance.
- 10.1.4. An open window is widely regarded to provide approximately 15dB reduction in noise levels¹³. Taking this reduction into account, the resulting internal noise levels are calculated to be 41.9dB $L_{Aeq,T}$. It should be noted that this only applies to the worst affected façade and that every other façade on the development are predicted to result in internal levels <40dB $L_{Aeq,T}$ on this basis which achieves reasonable internal noise conditions for daytime (0700-2300). It should also be noted that the sound pressure levels report are first floor levels and all ground floor sound pressure levels for equivalent facades are predicted to achieve <40dB $L_{Aeq,T}$.
- 10.1.5. It has been demonstrated that, with the addition of a 1.8m fence to garden areas, the guideline values from WHO/BS8233:2014 can be achieved with the MUGA in operation.
- 10.1.6. We strongly recommend that this report be passed to the local planning authority for approval prior to any works being carried out.

Jonathan Seiffert BSc, MIOA
Acoustic Consultant

¹³ ProPG: Planning and Noise – Professional Practice Guidance on Planning & Noise, pg 11

11. Appendix

APPENDIX A: Summary information

Required ISO Test Report Information (cross-referenced where required)			
		Measurements carried out to:	Analysed to:
A	Standards	BS 7445-1: 2003 BS 7445-2: 1991	BS 8233:2014; ISO 9613-1:1996
B	Organisation performed the measurements	noise.co.uk Ltd, The Haybarn, Newnham Grounds, Kings Newnham Lane, Bretford, Coventry, CV23 0JU.	
C	Name of Client	Crest Nicholson Operations Ltd	
D	Full site address	District Centre Nursery and Pre-school, Arborfield Reading	
E	Date of surveys	Survey Date: 21 st February 2023 - 23 rd February 2023	
F	Description & identification of Proposed Development	It is proposed to develop the existing playing fields into a MUGA for school and community use.	
G	Brief Description of details of Procedure & equipment	See Section 7 of this report.	

APPENDIX B: Technical appendix

11.1.1. Measurements were made using the following equipment:

Monitoring Position	Sound Level Meter (Serial Number)	Calibrator (Serial Number)
1	Norsonic 140 (1405560)	Norsonic 1251 (33824)

11.1.2. The equipment has traceable calibration. The sound level meter was calibrated immediately prior to and immediately after the measurements were carried out.

Sound Level Meter	Before	After
Norsonic 140 (1405560)	114.0 dB	114.0 dB

11.1.3. There was no adverse deviation.

APPENDIX D: Raw Data

Start Date	Start Time	End Time	L _{Aeq,15-min}
2023-02-21	14:00	14:15	40.0
2023-02-21	14:15	14:30	40.0
2023-02-21	14:30	14:45	43.0
2023-02-21	14:45	15:00	40.4
2023-02-21	15:00	15:15	41.4
2023-02-21	15:15	15:30	41.6
2023-02-21	15:30	15:45	42.2
2023-02-21	15:45	16:00	43.1
2023-02-21	16:00	16:15	43.3
2023-02-21	16:15	16:30	47.3
2023-02-21	16:30	16:45	42.5
2023-02-21	16:45	17:00	40.6
2023-02-21	17:00	17:15	39.5
2023-02-21	17:15	17:30	36.3
2023-02-21	17:30	17:45	40.8
2023-02-21	17:45	18:00	37.8
2023-02-21	18:00	18:15	41.2
2023-02-21	18:15	18:30	39.2
2023-02-21	18:30	18:45	37.0
2023-02-21	18:45	19:00	43.2
2023-02-21	19:00	19:15	42.0
2023-02-21	19:15	19:30	37.7
2023-02-21	19:30	19:45	45.4
2023-02-21	19:45	20:00	40.5
2023-02-21	20:00	20:15	38.4
2023-02-21	20:15	20:30	38.8
2023-02-21	20:30	20:45	35.3
2023-02-21	20:45	21:00	34.9
2023-02-21	21:00	21:15	35.0
2023-02-21	21:15	21:30	46.4
2023-02-21	21:30	21:45	42.2
2023-02-21	21:45	22:00	41.4
2023-02-21	22:00	22:15	44.0
2023-02-21	22:15	22:30	32.6

Start Date	Start Time	End Time	L _{Aeq,15-min}
2023-02-21	22:30	22:45	32.0
2023-02-21	22:45	23:00	42.9
2023-02-21	23:00	23:15	32.6
2023-02-21	23:15	23:30	49.9
2023-02-21	23:30	23:45	49.6
2023-02-21	23:45	00:00	32.9
2023-02-22	00:00	00:15	49.8
2023-02-22	00:15	00:30	38.2
2023-02-22	00:30	00:45	30.0
2023-02-22	00:45	01:00	33.1
2023-02-22	01:00	01:15	30.4
2023-02-22	01:15	01:30	30.6
2023-02-22	01:30	01:45	30.3
2023-02-22	01:45	02:00	33.8
2023-02-22	02:00	02:15	32.7
2023-02-22	02:15	02:30	29.9
2023-02-22	02:30	02:45	30.0
2023-02-22	02:45	03:00	30.5
2023-02-22	03:00	03:15	32.2
2023-02-22	03:15	03:30	30.8
2023-02-22	03:30	03:45	35.1
2023-02-22	03:45	04:00	32.6
2023-02-22	04:00	04:15	31.4
2023-02-22	04:15	04:30	33.2
2023-02-22	04:30	04:45	31.7
2023-02-22	04:45	05:00	33.8
2023-02-22	05:00	05:15	44.2
2023-02-22	05:15	05:30	54.7
2023-02-22	05:30	05:45	58.9
2023-02-22	05:45	06:00	48.2
2023-02-22	06:00	06:15	54.9
2023-02-22	06:15	06:30	55.9
2023-02-22	06:30	06:45	50.6
2023-02-22	06:45	07:00	46.9
2023-02-22	07:00	07:15	47.6
2023-02-22	07:15	07:30	51.0

Start Date	Start Time	End Time	L _{Aeq,15-min}
2023-02-22	07:30	07:45	45.4
2023-02-22	07:45	08:00	46.5
2023-02-22	08:00	08:15	43.5
2023-02-22	08:15	08:30	51.9
2023-02-22	08:30	08:45	49.1
2023-02-22	08:45	09:00	43.0
2023-02-22	09:00	09:15	45.4
2023-02-22	09:15	09:30	44.0
2023-02-22	09:30	09:45	49.4
2023-02-22	09:45	10:00	45.5
2023-02-22	10:00	10:15	44.2
2023-02-22	10:15	10:30	41.9
2023-02-22	10:30	10:45	42.6
2023-02-22	10:45	11:00	42.1
2023-02-22	11:00	11:15	45.7
2023-02-22	11:15	11:30	45.6
2023-02-22	11:30	11:45	46.7
2023-02-22	11:45	12:00	41.0
2023-02-22	12:00	12:15	43.0
2023-02-22	12:15	12:30	40.3
2023-02-22	12:30	12:45	43.5
2023-02-22	12:45	13:00	41.0
2023-02-22	13:00	13:15	43.9
2023-02-22	13:15	13:30	43.3
2023-02-22	13:30	13:45	43.5
2023-02-22	13:45	14:00	40.0
2023-02-22	14:00	14:15	43.5
2023-02-22	14:15	14:30	42.1
2023-02-22	14:30	14:45	41.9
2023-02-22	14:45	15:00	41.8
2023-02-22	15:00	15:15	40.7
2023-02-22	15:15	15:30	44.6
2023-02-22	15:30	15:45	41.6
2023-02-22	15:45	16:00	41.3
2023-02-22	16:00	16:15	40.9
2023-02-22	16:15	16:30	42.8

Start Date	Start Time	End Time	L _{Aeq,15-min}
2023-02-22	16:30	16:45	40.5
2023-02-22	16:45	17:00	41.3
2023-02-22	17:00	17:15	41.1
2023-02-22	17:15	17:30	44.4
2023-02-22	17:30	17:45	42.8
2023-02-22	17:45	18:00	44.5
2023-02-22	18:00	18:15	40.4
2023-02-22	18:15	18:30	41.7
2023-02-22	18:30	18:45	40.7
2023-02-22	18:45	19:00	39.7
2023-02-22	19:00	19:15	43.4
2023-02-22	19:15	19:30	40.0
2023-02-22	19:30	19:45	40.6
2023-02-22	19:45	20:00	38.6
2023-02-22	20:00	20:15	41.4
2023-02-22	20:15	20:30	37.8
2023-02-22	20:30	20:45	40.1
2023-02-22	20:45	21:00	36.8
2023-02-22	21:00	21:15	36.3
2023-02-22	21:15	21:30	37.8
2023-02-22	21:30	21:45	45.0
2023-02-22	21:45	22:00	49.4
2023-02-22	22:00	22:15	35.8
2023-02-22	22:15	22:30	38.4
2023-02-22	22:30	22:45	35.6
2023-02-22	22:45	23:00	35.5
2023-02-22	23:00	23:15	34.5
2023-02-22	23:15	23:30	33.5
2023-02-22	23:30	23:45	34.4
2023-02-22	23:45	00:00	35.6
2023-02-23	00:00	00:15	33.2
2023-02-23	00:15	00:30	32.2
2023-02-23	00:30	00:45	32.1
2023-02-23	00:45	01:00	32.5
2023-02-23	01:00	01:15	31.9
2023-02-23	01:15	01:30	32.5

Start Date	Start Time	End Time	L _{Aeq,15-min}
2023-02-23	01:30	01:45	31.5
2023-02-23	01:45	02:00	31.7
2023-02-23	02:00	02:15	35.5
2023-02-23	02:15	02:30	31.8
2023-02-23	02:30	02:45	32.6
2023-02-23	02:45	03:00	33.7
2023-02-23	03:00	03:15	32.5
2023-02-23	03:15	03:30	31.4
2023-02-23	03:30	03:45	33.5
2023-02-23	03:45	04:00	33.6
2023-02-23	04:00	04:15	33.0
2023-02-23	04:15	04:30	41.2
2023-02-23	04:30	04:45	35.1
2023-02-23	04:45	05:00	42.6
2023-02-23	05:00	05:15	50.3
2023-02-23	05:15	05:30	34.3
2023-02-23	05:30	05:45	40.8
2023-02-23	05:45	06:00	45.0
2023-02-23	06:00	06:15	45.2
2023-02-23	06:15	06:30	40.9
2023-02-23	06:30	06:45	48.8
2023-02-23	06:45	07:00	51.7
2023-02-23	07:00	07:15	49.4
2023-02-23	07:15	07:30	52.1
2023-02-23	07:30	07:45	48.7
2023-02-23	07:45	08:00	49.7
2023-02-23	08:00	08:15	46.8
2023-02-23	08:15	08:30	46.8
2023-02-23	08:30	08:45	49.9
2023-02-23	08:45	09:00	49.2
2023-02-23	09:00	09:15	46.4
2023-02-23	09:15	09:30	48.7
2023-02-23	09:30	09:45	49.4
2023-02-23	09:45	10:00	48.1
2023-02-23	10:00	10:15	48.4
2023-02-23	10:15	10:30	47.8

Start Date	Start Time	End Time	L _{Aeq,15-min}
2023-02-23	10:30	10:45	49.4
2023-02-23	10:45	11:00	50.9
2023-02-23	11:00	11:15	50.5
2023-02-23	11:15	11:30	49.9
2023-02-23	11:30	11:45	48.8
2023-02-23	11:45	12:00	49.4
2023-02-23	12:00	12:15	47.8
2023-02-23	12:15	12:30	47.3
2023-02-23	12:30	12:45	52.1
2023-02-23	12:45	13:00	47.3