

MUGA Noise Impact Assessment

**Polegate Primary School
Oakleaf Drive
Polegate, East Sussex
BN26 6PT**

**Noise Impact Assessment
4927/NIA1_Rev3**

12th September 2018

For: **Wernick Buildings Ltd**

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Contents

1.0	Introduction	3
2.0	Planning Guidance	3
3.0	Noise Sensitive Premises	4
4.0	Noise Surveys	5
5.0	Impact Assessment	6
6.0	Conclusions	9
 Appendix A - Acoustic Terminology		 10

1.0 Introduction

As part of the new Polegate Primary School development, an additional MUGA has been built. The existing timber fence from the existing MUGA is to be moved to the edge of the new MUGA to provide protection to adjacent residents.

We understand the proposed hours of use are in line with school hours (i.e. no out of hours use).

A planning condition has been included relating to the noise barrier at the new MUGA.

This report has therefore been commissioned to assess existing ambient and background noise climate (using data in report 2151W-SEC-00002-01 dated Sep 2017 prepared by Southdowns Environmental Consultants) and to carry out a noise impact assessment of the proposed MUGA.

Appendix B explains acoustic terminology used in this report.

2.0 Planning Guidance

The following condition has been included on the planning consent;

“8. Before first use of the new MUGA, details of the noise barrier including its expected effectiveness shall be submitted to and approved in writing by the director of Communities, Economy and Transport.”

In addition to the above, further clarification was sought by ECE Architecture in emails to the planners in August 2018. The Local Authority's Noise Adviser provided the additional comments;

“I recommend a condition of +5dB above the existing background (ok to use the background levels in the acoustic report submitted with the application). The developer will have to model what height and spec of acoustic fencing will meet this and submit this for prior approval.”

3.0 Noise Sensitive Premises

The location of critical noise sensitive premises (NSPs) are shown highlighted in yellow on site plan 4927/SP1 below.

4927/SP1 - Site Plan showing Proposed MUGA Location and NSPs



The nearest NSPs to the proposed MUGA are dwellings on Greenleaf Gardens and Oakleaf Drive which have closest gardens approximately 7m from the pitch with rear dwelling facades at approximately 16m away.

4.0 Noise Surveys

An environmental noise survey was carried out by Southdowns Environmental Consultants, as detailed in their report 2151W-SEC-00002-01 dated September 2017.

The report states that measurements were undertaken on Tuesday 18th July 2017 and on Tuesday 15th August 2017.

Results of the unattended monitoring undertaken by Southdowns Environmental Consultants are as follows;

- A background sound level of 39dB $L_{A90,1hr}$ was determined for the school operating hours (0900-1800hrs Mon-Fri).
- Daytime ambient periods ranged between 44 and 51dB $L_{Aeq,16hr}$, with an overall mean of 47dB $L_{Aeq,16hr}$ obtained over the 23 day monitoring period.

Sample measurements were also undertaken of noise from the existing MUGA along with attenuation provided by the existing noise barrier;

6.2.2 A summary of the noise levels measured during use of the MUGA are presented below in Table 6.1.

Noise Source	Location	Distance (m)	Line of Sight/ Behind Barrier	Measured Noise Levels, dB re. 2 x 10 ⁻⁵ Pa	
				$L_{Amax,F}$	$L_{Aeq,T}^{[1]}$
P.E Lesson at Polegate Primary School	North Side ^[2]	1	Behind Barrier	72.7	58.0
		2		68.3	54.8
		5		67.7	54.7
		10		72.8	55.3
		20		69.8	55.0
	South Side	1	Line of Sight	79.7	65.4
		2		76.4	63.5
		5		76.6	59.0
		10		73.8	58.7
		20		72.5	55.9
	West Side ^[2]	1	Behind Barrier	64.4	47.8
		2		62.4	50.9
		5		71.1	55.4
		10		78.2	57.6

TABLE 6.1: REFERENCE SPORTS ACTIVITY NOISE LEVELS

Note:

[1] $L_{Aeq,T}$ noise levels corrected for the influence of the underlying residual ambient noise environment.

[2]: Noise measurements influenced by 1.8 m high close-boarded fencing on the MUGA's north and west perimeter.

6.2.3 The above sample noise levels have been assumed to be representative of the mean ambient $L_{Aeq,T}$ noise levels of a c. 1 hour P.E lesson held inside the MUGA at Polegate Primary School.

5.0 Impact Assessment

Sample noise data referred to in Section 4.0 above has been used in our assessment. To summarise;

- 55dB(A) at 5m, screened by barrier
- 59dB(A) at 5m, line of sight
- 55dB(A) at 20m, screened by barrier
- 56dB(A) at 20m, line of sight

The environmental health officer's (EHO) comments asked for *"+5dB above the existing background. The developer will have to model what height and spec of acoustic fencing will meet this and submit this for prior approval."*

With a background sound level of 39dB $L_{A90,1hr}$ determined during the daytime (in the school summer holidays – measured August 2017), a level of 44dB L_{Aeq} is indicated to be the EHO's design aim.

With gardens located around 7m away from the MUGA and existing screened MUGA levels measured at 55dB L_{Aeq} 5-10m away, it can be seen that even with a barrier in place to remove line of sight to the MUGA, a level of 44dB L_{Aeq} is unlikely to be achievable.

It should also be noted that first floor bedroom windows are unlikely to be screened to the MUGA.

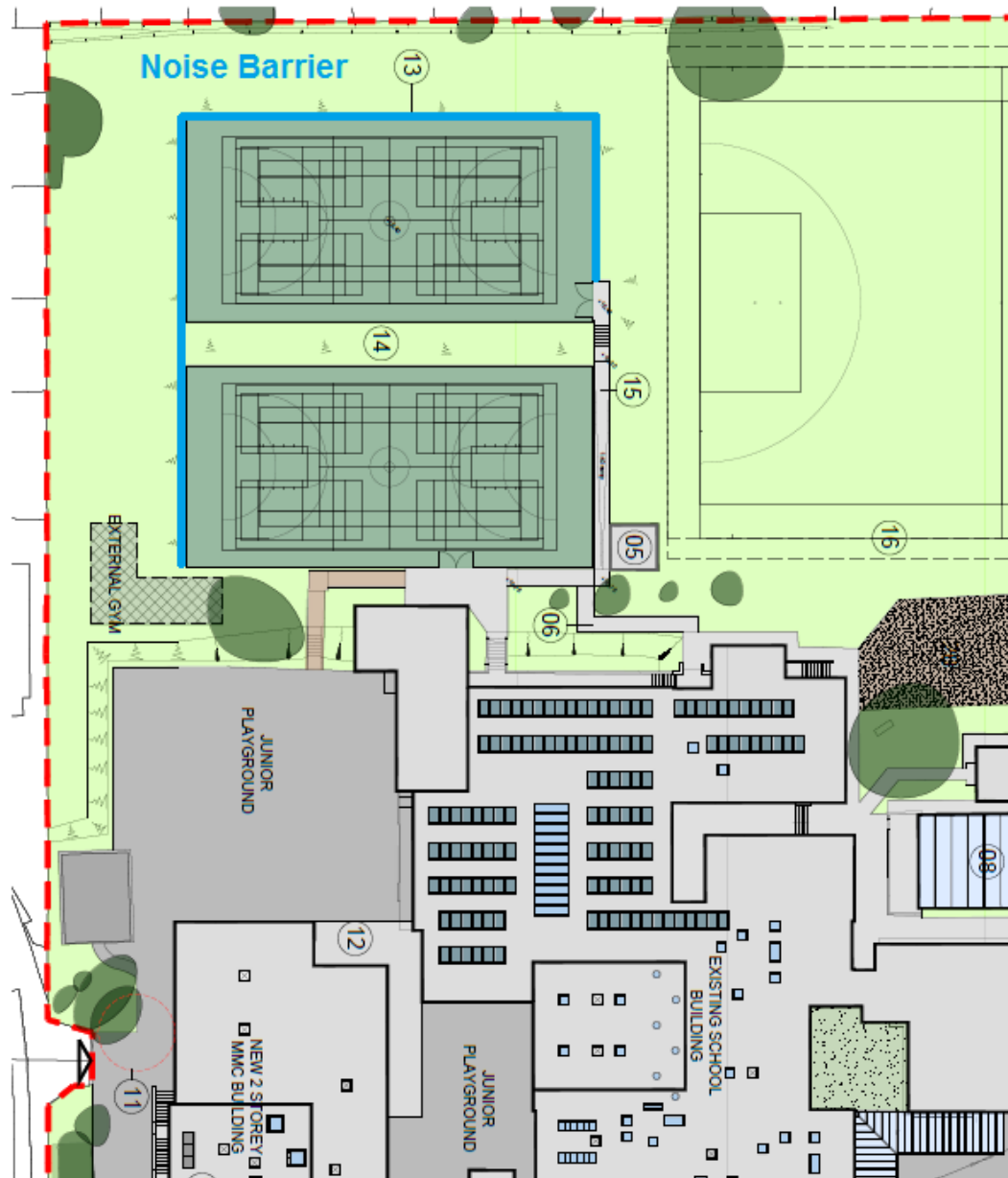
Typically, a solid imperforate barrier of minimum mass per unit area 10kg/m^2 high enough to completely remove line of sight results in a maximum reduction of 10dB in level.

We would therefore recommend including a noise barrier as close as practical to the MUGA of sufficient height to remove line of sight to 1.4m above the MUGA level from ground floor windows/gardens of nearest dwellings. We understand a 1.8m high barrier is sufficient to achieve this.

The barrier should be imperforate with a minimum mass per unit area of 10kg/m^2 .

The proposed barrier is currently indicated along the northern and western MUGA boundaries, however we would advise this should return down the eastern boundary of the new MUGA also, as shown below;

4927/D1 – Extent of MUGA Noise Barrier



We understand the use of the MUGA is to be limited to within school hours (0830-1800hrs Mon-Fri only).

Open metal fencing surrounding the MUGA should have sound reduction measures including rubber mountings on posts and gates to limit impact noise.

We understand the existing timber barrier on site is to be taken down and relocated/extended in the new location.

Photo 4927/P1 below shows the construction consisting of 150mm wide boards at 20mm thickness, with 40mm x 20mm timber battens used to cover the joints between boards, forming an imperforate construction;

4927/P1 – Existing Timber Barrier on Site



This construction is indicated sufficient to achieve the specification quoted above.

6.0 Conclusions

An assessment of the proposed noise barrier around the new MUGA at Polegate Primary School in Oakleaf Drive, Polegate, East Sussex, BN26 6PT has been undertaken in order assist in discharging condition 8 of the planning consent.

It has been shown that the EHO's request for background +5dB (which equates to 44dB L_{Aeq}) from MUGA noise at the nearest residential dwellings is unlikely to be feasible given the proximity of the MUGA and practical limitations of screening from any barrier (maximum reduction likely to be 10dB).

We would therefore recommend including a noise barrier as close as practical to the MUGA of sufficient height to remove line of sight to 1.4m above the MUGA level from ground floor windows/gardens of nearest dwellings.

We understand a 1.8m high barrier is sufficient to achieve this.

The barrier should be imperforate with a minimum mass per unit area of 10kg/m².


We understand the use of the MUGA is to be limited to within school hours (0830-1800hrs Mon-Fri only).

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Appendix A - Acoustic Terminology

Human response to noise depends on a number of factors including; Loudness, Frequency content, and variations in level with time. Various frequency weightings and statistical indices have been developed in order to objectively quantify 'annoyance'. The following units have been used in this report:

dB(A): The sound pressure level weighted to correspond with the frequency response of the human ear, and therefore a persons subjective response to frequency content.

L_{eq}: The equivalent continuous sound level is a notional steady state level which over a quoted time period would have the same acoustic energy content as the actual fluctuating noise measured over that period.

L_{max}: The maximum level measured during the measurement period.

L₉₀: The sound level which is exceeded for 90% of the measurement period. i.e. The level exceeded for 54 minutes of a 1-hour measurement. It is often used to define the background noise level.

L_{Ar,Tr}: The 'rating' level, as described in BS 4142:1997 – the specific noise + 'acoustic correction figure' (+5dB for tonality)

NSPs: Noise-sensitive premises