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COOP ACADEMY SMITHIES MOOR
NOISE ASSESSMENT

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COOP ACADEMY SMITHIES MOOR
NOISE ASSESSMENT

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CONTENTS

1. INTRODUCTION

This report provides an assessment of the noise impact from mechanical plant and external sports areas associated with the new COOP Academy Smithies Moor.

Details of the scheme are based on design information available at RIBA Stage 4. Some development of the scheme and plant selections may take place, but the noise criteria and impacts set out in this report will continue to be considered.

This report has been updated following the Consultation Responses for the planning application relating to noise (ref: WK202530135, dated 7 October 2025). These are summarised as:

- *A compliance condition is recommended to ensure noise levels do not exceed the measured background level.*

  The plant noise limits set in this report are in line with this proposed condition.

- *A condition is recommended for a further/addendum Noise Impact Assessment to be submitted with an emphasis on the use of the MUGA.*

  Further assessment of the MUGA has been presented in this report.

1.1 Assessment Criteria

Kirklees Council published guidance Noise Design Advice[1] gives advice on plant noise limits for new developments:

> *"Developers should carry out an assessment in accordance with BS4142 to determine the rating level of the new development. It is recommended that during normal daytime hours (0700 to 2300 hours), the BS4142 rating level, measured over 1 hour, should be 5dB below the background (L_{A90}). During the night-time period (2300 to 0700 hours), the BS4142 rating level, measured over 5 minutes should be 5dB below the background (L_{A90}). The assessment should be carried out at the site boundary or at the nearest noise sensitive premises, depending on the circumstances."*

This is consistent with planning conditions relating to plant noise for recent similar developments in the area.

In terms of noise impacts upon the development itself, the scheme has been designed to achieve the acoustic performance requirements in Building Bulletin 93 Acoustic design of schools: performance standards (BB93)[2], required under Part E of the Building Regulations[3].

[1] https://www.kirklees.gov.uk/beta/planning-applications/pdf/noise-design-advice.pdf, May 2007
[2] Building Bulletin 93, Acoustic design of schools: performance standards, February 2015

2. NOISE SURVEY

Noise levels were measured by Ramboll at the existing school site on 15th and 16th May 2025 at several positions, with a noise monitor running continuously between these dates at a position along the west boundary adjacent to Leeds Old Road and close to the nearest house to the site (173 Leeds Old Road). The results of this noise survey are summarised below, with the new site layout shown. Survey details are given in Appendix 1.

Figure 1 – Measured site noise levels from noise surveys, May 2025

2.1 Noise Map

A noise map has been created using CadnaA® modelling software, based on the levels measured by Ramboll in May 2025. The approximate noise levels at each façade of the new school building are shown in the figure below.

[3] Approved Document E – Resistance to the passage of sound. 2010 (2015 amendments). HM Government

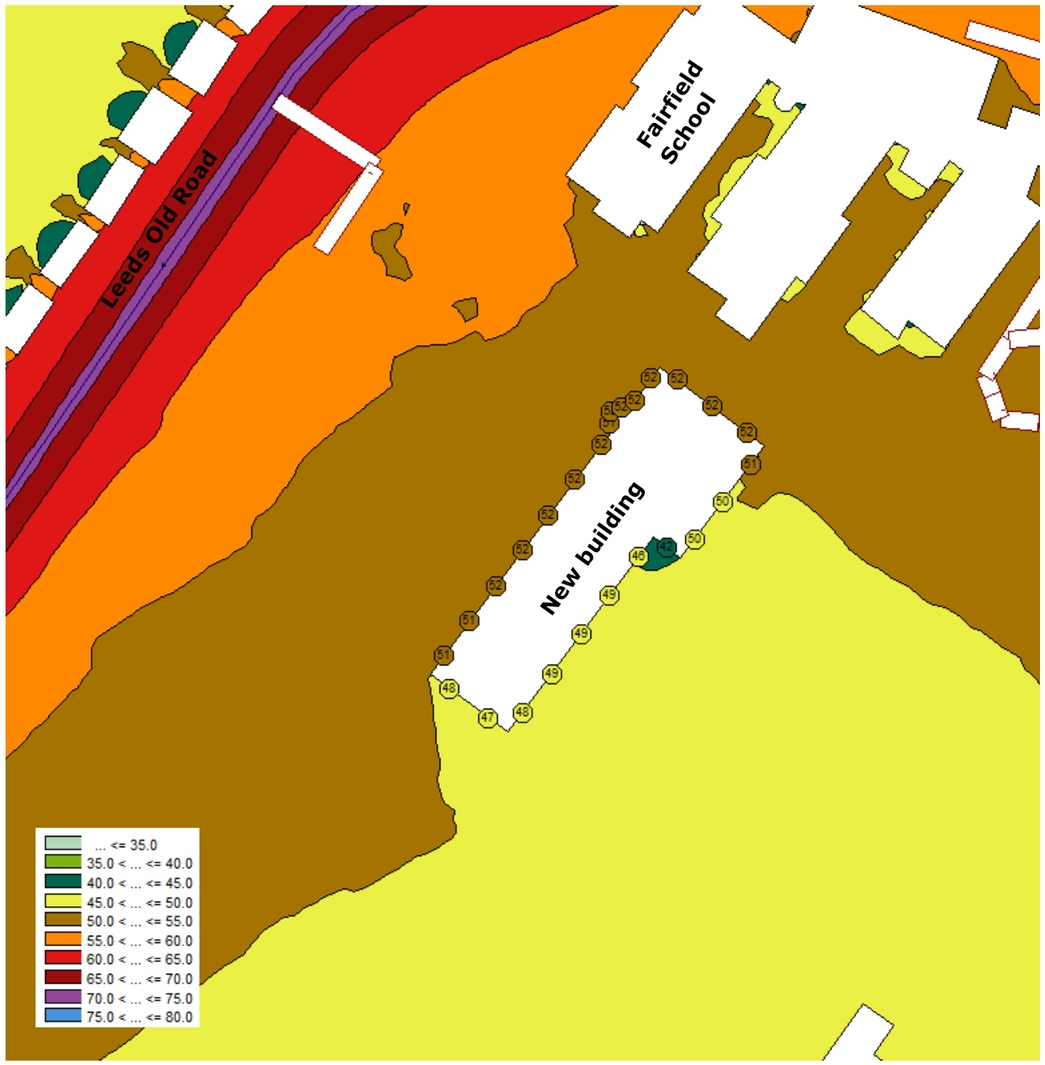

Figure 2 – Noise map based on levels from Ramboll noise survey, LAeq, 30min at 1.5m height.

Road traffic is the primary source of noise affecting the site with some noise from general activity around the site itself including noise from the adjacent high school. The model is based on noise primarily from Leeds Old Road with adjustments to account for other further away noise sources such as the A62 and M62.

3. NOISE IMPACT ON THE DEVELOPMENT

Noise levels at the facades of the proposed building are calculated to be up to 52dB $L_{Aeq,T}$ at the most exposed facades of the new school buildings, but generally lower than this.

The indoor ambient noise level targets for different rooms at COOP Academy are taken from BB93 and the scheme has been designed to achieve these based on the site noise levels measured. In typical teaching spaces a hybrid mechanical/natural ventilation strategy is proposed, with some rooms having more onerous internal noise requirements, such as SEN rooms, using a ventilation system that allows windows to remain closed.

Based on noise levels measured across the site during the school day, there are no onerous requirements for the sound insulation performance of the building envelope. Standard constructions and typical double-glazed windows will provide sufficient sound insulation. Cross vent and single sided natural ventilation solutions are possible to most spaces.

4. PLANT NOISE

4.1 BS4142: 2014

The basis of BS4142:2014 +A1:2019 (BS4142) is a comparison between the background noise level in the vicinity of residential receptors and the rating level of the noise source under consideration. The relevant parameters are as follows:

i. Background Level, $L_{A90,T}$: defined in the Standard as the 'A' weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, and quoted to the nearest whole number of decibels;
ii. Specific Level, $L_{Aeq,T}$: the equivalent continuous 'A' weighted sound pressure level at the assessment location, it is the specific sound source under consideration, over a given time interval, T; and
iii. Rating Level, $L_{Ar,T}$: the specific sound level plus any adjustment made for the characteristic features of the noise.

Potential impacts are predicted from the difference between the representative background level at a noise sensitive receptor and the rating level from the noise source considered.

i. Typically, the greater this difference, the greater the magnitude of the impact;
ii. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
iii. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
iv. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a **low impact**, depending on the context.

In determining the significance of the impact, BS4142 requires a consideration of the context of the assessment i.e. the nature of the existing acoustic environment and the new noise source, and the sensitivity of the affected receptors.

Noise Characteristics and Penalties
BS4142 applies different penalties for noise sources that have an acoustic feature. These penalties are applied to the plant noise level where such features increase attention to the noise, such as tonality and intermittent operation (kicking in and out). BS4142 gives a guide to the level of penalty that should be applied.

4.2 Noise Limits for External Plant

Background noise levels have been measured during the day and night at a position on the school site boundary near to the houses on Leeds Old Road (Figure 1), and sample measurements at the houses to the south east on Leefield Road. The measurement positions are considered representative of the nearest residential properties. The measured levels and corresponding plant noise limits are summarised below.

Location	Period	Measured background noise level (noise monitor)	Corresponding plant noise Rating Level limit
Nearest houses on Leeds Old Road	Day (07:00-19:00)	47dB LA90	42dB(A)
	Evening (19:00-23:00)	40dB LA90	35dB(A)
	Night (23:00-07:00)	37dB LA90	32dB(A)

Table 1 – Proposed plant noise limits

In addition, sample background noise measurements were taken near the houses on Leefield Road to the south-east of the site (see Fig. 1) at 06:15-06:50 to represent the last hours of the night when school heating plant may be in operation to bring the building up to temperature. Levels of around 50dB L_{A90} were recorded, which were the same at the logger position at that time (higher than daytime levels due to elevated traffic on the M62/A62). As such, any plant only operating in the early morning but not the quietest parts of the night, may not require as onerous mitigation as that operating through the night.

4.3 Outline Assessment of Plant Noise

At this stage plant selections have not been finalised, but an outline assessment of the noisiest plant items has been made based on example items of similar plant. These include:

- Air source heat pumps (ASHPs) providing heating to the school (74dB L_{wA} sound power level based on currently proposed selection)
- DHW heat pumps for the changing rooms (69dB L_{wA} sound power level based on currently proposed selection)
- Condensing units providing cooling for Server Room and Kitchen (69dB L_{wA} sound power level assumed based on typical selection)
- Air handling unit serving the Assembly Hall (72dB L_{wA} sound power level assumed based on currently proposed selection)
- Heat recovery unit serving the Kitchen (65dB L_{wA} sound power level assumed based on typical selection)

Noise from this plant has been calculated using proprietary modelling software (CadnaA®). The model includes the site topography and retained and future buildings. The plant items above are located on the roof of the new school building.

The figure below shows the approximate noise level across the site with this plant. It should be noted that this is based on all plant running at full duty, which is not likely to be the case in practice, particularly at night, and noise levels are expected to be lower than this.

Rating Level
Plant noise from the site is made up from a number of diverse plant sources and the cumulative noise is not expected to have any distinct tonality or intermittency. Noise levels calculated are very low and significantly lower than the typical ambient noise (L_{Aeq}), so any tonality or cycling of plant due to changes in demand are unlikely to be perceivable at the receptor locations under normal conditions. Therefore the Rating Level, $L_{Ar,T}$, is equal to the calculated specific noise level.

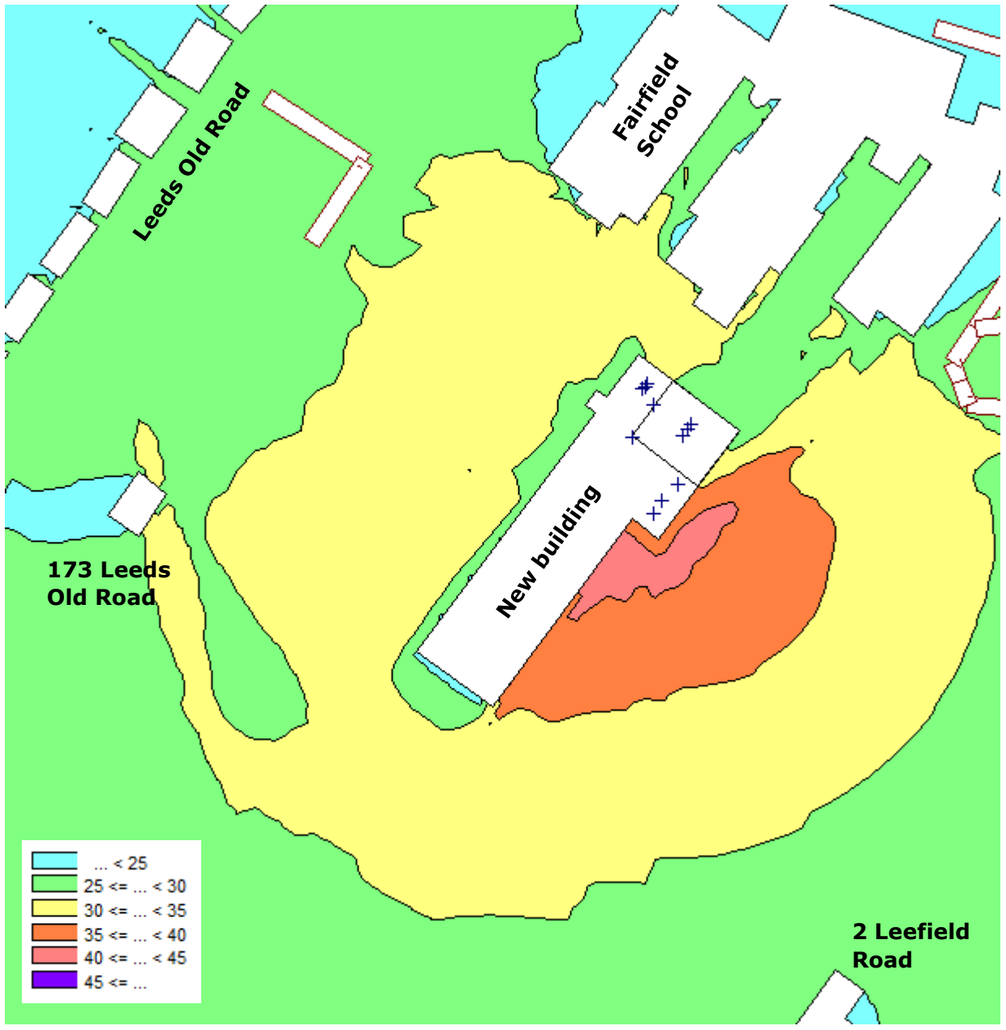

Figure 3 – Predicted plant noise based on outline plant selections, dB(A) at 4m height

The cumulative noise level at the nearest properties is around 30dB $L_{Ar,Tr}$ or lower. This is 5dB or more below the background noise level at these locations during the day or night. As such the impact on residents is expected to be negligible to low. Mitigation requirements will be reviewed following final plant selections.

5. PLAYGROUND AND MUGA NOISE

The MUGA included in the new school site layout is a similar offering to the current mesh fenced MUGA at the south-east of the site which will move further west, closer to the boundary with the rear of No. 173 Leeds Old Road.

Note that vehicle parking will be in similar areas to existing and no change in noise impact on surrounding residents is expected from this.

5.1 Consultation Response

The Consultation Response from Kirklees Council recommended that:

> *The report states the location of the proposed MUGA and the soft PE area will move slightly further west and therefore closer to the house at 173 Leeds Old Road but is not expected to have a significant impact upon the surrounding properties. We accept this is not a new school, merely replacing the existing, but do not accept the comment the noise impact during the school day is unlikely to be significantly affected without supporting evidence. We would expect an assessment to be conducted in line with the Sport England - Artificial Grass Pitch (AGP) Acoustics - Planning Implications Guidance document which offers advice on design and mitigation measures where necessary.*
>
> *A condition is recommended for a further/addendum Noise Impact Assessment to be submitted with an emphasis on the use of the MUGA.*

5.2 Sport England Guidance

The Sport England guidance publication "*Artificial Grass Pitch (AGP) Acoustics – Planning Implications*" (2015) provides guidance on assessment of noise from AGPs and presents 'typical' noise levels derived from several measurements of operational AGPs.

It should be noted that these measurements, that form the basis of a "*typical free-field noise level from an AGP (at 10 m from the sideline halfway marking) = 58 dB LAeq(1 hour)*", were:

> *"…measured during nine sports sessions on three separate AGPs. The sessions included football, hockey and rugby and participation by men, women and children. The purpose was to determine a 'typical' noise level generated from a 'typical' AGP sports session. Noise level measurements were taken at a distance of 10 metres behind the mid-way points along goal lines and sidelines. They were found to be highest behind the sideline halfway line. The most significant noise levels were found to be generally derived from the voices of players, with the exception of hockey where impact noises of balls hitting perimeter strike boards and goal back boards were more noticeable. Such impact noises can be mitigated by incorporating shock absorbing noise reduction measures. Assuming such mitigation measures, the most significant noise source from typical AGP sports sessions is therefore voice and as such, a typical noise level can be determined."*

The proposed primary school MUGA is not directly comparable to the large Artificial Grass Pitches (AGP) and MUGAs that are addressed in the Sport England guidance. Measurements included adult voices, rugby, hockey, adult football, etc, which are not relatable to the type of noise expected from a primary school MUGA, and the type of AGP that the guidance is commonly related to are very different to a small primary school MUGA. It is noted that the Sport England guidance notes that the most significant noise levels were from the "voices of players". For much of the time a school MUGA is a teacher led environment, and voices may therefore be more controlled.

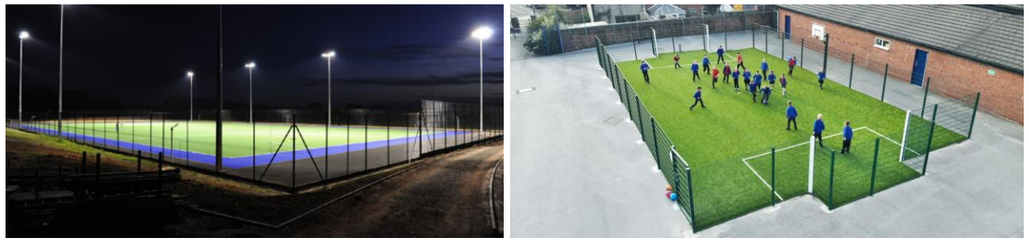

Figure 4 – Large AGP as per Sport England guidance vs typical primary school MUGA

It is reasonable to conclude that noise from a primary school MUGA is likely to be somewhat lower than that of a full size AGP used by adults. A conservative estimate of a 3dB reduction of the Sport England measured levels is therefore assumed for this assessment: i.e. a level of **55dB $L_{Aeq,1hour}$ at 10m** from the MUGA centre line has been adopted. Section 4.0 of the Sport England guidance acknowledges that:

"*…it is not possible to predict the noise emission of an AGP on a 'one case fits all' basis and it may be necessary to undertake a site specific assessment to determine the predicted noise levels at the nearby residential properties*."

As such, an adaptation of the Sport England noise data is considered appropriate to represent the type of facilities proposed here. This noise level has also been used for the Soft PE area at the front of the school, but it is arguable that noise from this area would be different to a MUGA and potentially further lower in level.

The Sport England guidance refers to World Health Organisation (WHO) 'Guidelines for Community Noise' published in 1999 which states that to avoid 'moderate annoyance' during the daytime and evening the noise level should not exceed 50 dB $L_{Aeq(T)}$. Average noise levels from the proposed MUGA have been assessed against this as well as comparing to the existing ambient noise levels in the area.

The proposed site layout is shown in Figure 4 below.

Figure 5 – Proposed layout of the school site

5.3 MUGA

The new MUGA will be used in the same way as the existing, being used for football, netball, basketball and net games. The MUGA is used primarily in the afternoons during the school day and during break and lunch times and will not be floodlit.

To minimise the impact of noise specific to the MUGA, mitigation measures have been incorporated into the design of the MUGA:

- Use of rebound mesh fencing – this will use resilient (EPDM) fixings between clamp bar and post for weldmesh fencing to reduce noise from rattles when struck by a ball.

- Rules and signage around shouting and behaviour.

If a community use agreement is required for the MUGA, then noise outside of school hours must also be considered. It is noted however that 173 Leeds Old Road (and the other properties in the area) is already adjacent to several community use rugby pitches (Birstall Victoria ARLFC) at the John Curwen Academy Playing Fields to the south and east, one of which is adjacent to the garden of the property. This is the current context of the area where there is already established noise from sports activities surrounding the school and nearby properties both during and outside of school hours.

5.3.1 Existing Playground

173 Leeds Old Road is also immediately adjacent to the existing hard and soft playground areas at the school and is already therefore subject to voices and shouting during breaktimes.

Ramboll has previously measured noise levels at other primary schools and recorded noise levels of around 65dB L_{Aeq} at 15m from the boundary of the playground. The activities observed were running, shouting, screaming, and general play, with around 60 children. Acknowledging that the layout of the current playground means that fewer than 60 children are likely to be using the part of the playground next to the house, by way of providing context to the assessment it is still likely that levels of up to 60dB L_{Aeq} or so are experienced in the garden during breaktimes with the current configuration.

5.4 MUGA Noise Assessment

To estimate the potential noise levels from the MUGA at the nearest residential properties a noise model has been created in CadnaA® modelling software based on an area source (as used in the Sport England guidance) set to a height of 1.5m. A voice frequency spectrum has been taken from measurements (by others[4]) and a child's "loud vocal effort" has been used to represent children using the MUGA. This has been adjusted to a free-field noise level of 55dB $L_{Aeq,1hour}$ at 10m from the MUGA centre line, as discussed above.

The calculated levels are shown in the noise map below, at a receiver height of 1.5m.

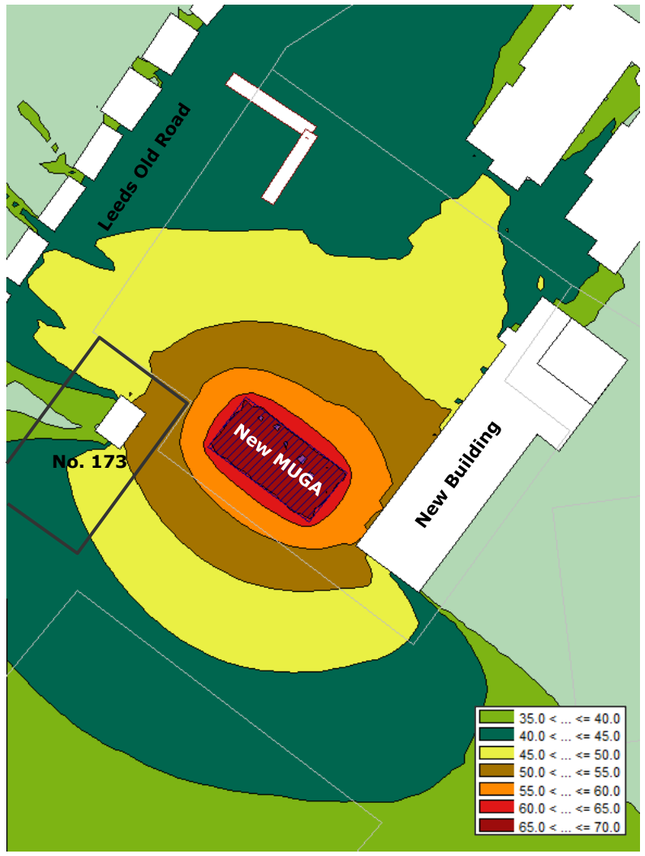

Figure 6 – Calculated MUGA noise levels, dB $L_{Aeq,1hour}$

MUGA noise levels in the garden of the nearest property, 173 Leeds Old Road, would be around 45-52dB L_{Aeq} for the short periods that the MUGA is in use. These levels are broadly in line with the WHO level of 50dB L_{Aeq} quoted in the Sport England guidance to avoid 'moderate annoyance' during the daytime and evening.

More significantly, comparing this to the general ambient noise levels measured adjacent to that garden of around 55-58dB L_{Aeq} during the day and around 53dB L_{Aeq} in the evening (around 17:00 – 21:00), MUGA noise would be lower than the general noise in the area from traffic and other sources. At other receptors the MUGA noise level is lower still.

[4] Average Speech Levels and Spectra in Various Speaking/Listening Conditions: A Summary of the Pearson, Bennett, & Fidell (1977) Report - Wayne O. Olsen

5.4.1 Existing Rugby Pitches

By way of comparison, the noise map below shows the levels at the same receptors with the same level of 55dB $L_{Aeq,1hour}$ at 10m applied to the nearest of the existing rugby pitches at the John Curwen Academy Playing Fields. Levels of around 47dB L_{Aeq} are experienced in the garden of 173 Leeds Old Road. This indicates that noise from sports (specifically voices) of a broadly similar level are already experienced at the properties surrounding the school and is the context into which the relocated MUGA is assessed.

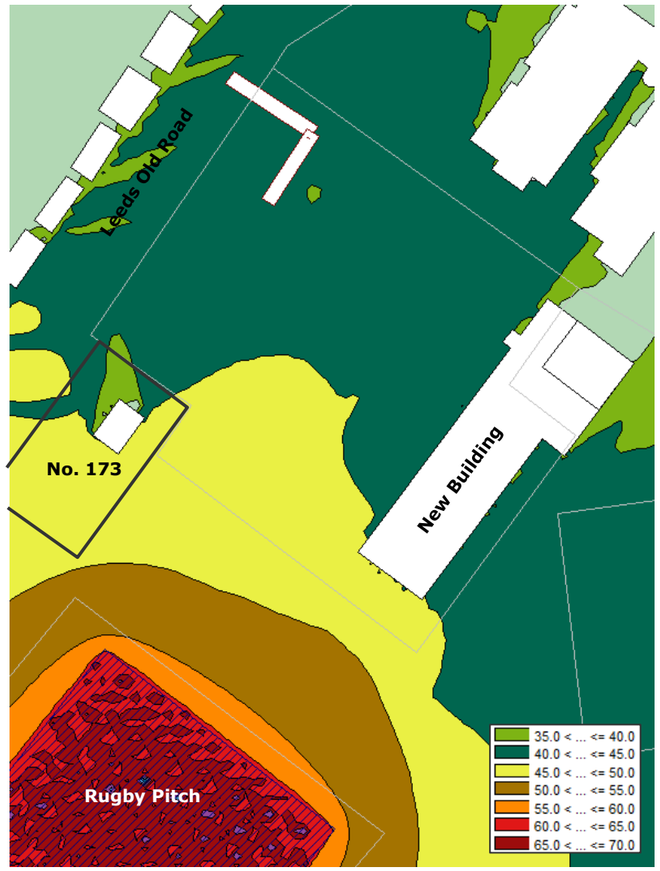

Figure 7 – Calculated rugby pitch noise levels, dB $L_{Aeq,1hour}$

5.5 Soft PE Area

A new Soft PE area will be located opposite the houses on Leeds Old Road and as such there will potentially be more noise from PE activities at those houses compared to existing, although some parts of the playground areas to the south of the existing school can be seen from the road currently.

The Soft PE area is likely to be used for PE lessons during the school day as well as possible break and lunchtime use. It may also be used for after school clubs such as football and rugby.

It is noted that ambient noise levels are high along Leeds Old Road due to passing traffic on Leeds Old Road and the A62 (around 58dB L_{Aeq}). Also, gardens of these properties are behind the houses themselves, so any noise from outdoor PE will be significantly screened by the intervening houses.

5.6 Soft PE Noise Assessment

The likely noise levels from the Soft PE area at the nearest residential properties has been calculated in the same way as the MUGA, with a free-field noise level of 55dB $L_{Aeq,1hour}$ at 10m from the centre line. The calculated levels are shown in the noise map below, at a height of 1.5m.

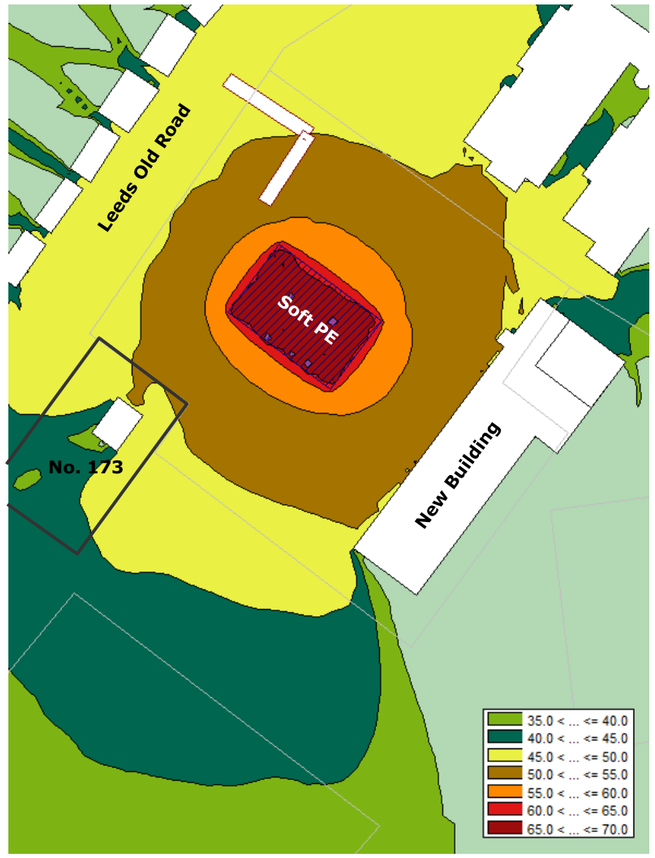

Figure 8 – Calculated Soft PE noise levels, dB $L_{Aeq,1hour}$

Noise levels from sports in the Soft PE area would be around 42-49dB L_{Aeq} in the garden of 173 Leeds Old Road and around 49dB L_{Aeq} outside the frontages of the houses opposite the school on Leeds Old Road. In practice it is the levels in the gardens of these properties that is more significant, and these would be around 30-33dB L_{Aeq}, due to the screening provided by the houses.
Again, this is significantly lower than the general ambient noise levels during the day and evening at these locations and lower than the WHO level that avoids 'moderate annoyance' during the daytime and evening.

5.7 General Conclusions

Based on the guidance and sample noise levels given in the Sport England guidance publication "*Artificial Grass Pitch (AGP) Acoustics – Planning Implications"*, adjusted for the scale and type of the facilities at Smithies Moor, noise levels from use of the new MUGA or Soft PE Area are expected to be broadly in line with the level of 50dB L_{Aeq} quoted in the Sport England guidance to avoid 'moderate annoyance' during the daytime and evening and significantly lower than the general ambient noise levels measured at the nearest noise sensitive properties.

Given the context of the area, being an existing school site with other larger sports facilities nearby, the limited use of the new facilities and the type of sports they are intended for, there is not expected to be a significant impact upon residents from the proposals.

APPENDIX 1 - RAMBOLL NOISE SURVEY

Date of survey: Manned measurements & noise logger: 15th & 16th May 2025.

Personnel: Matthew Bull (Ramboll)

Equipment: Manned measurements: (15th May) Sound level meter: Nor140 #1406951, Calibrator: Nor1251 #34964. (16th May) Sound level meter: B&K 2250 #3002075, Calibrator: B&K 4231 #2642788

Noise logger: Sound level meter: 01dB Fusion #14157, Calibrator: Cirrus CR:515 #95399

Weather conditions: 15 May – Dry, overcast, 100% cloud coverage, 13°C, 2m/s wind from NE
16 May – Dry, no clouds, sunny, 7-15°C, light wind <5m/s
No rain was recorded at the site overnight on online weather station resources.

Measurement Positions:

Measured Levels:

Position	Start Time	Duration	LAFmax	LAeq	LA90
Position 1	15/05/2025 10:22	00:30:00	59.9	46.9	44.5
	16/05/2025 09:43	00:20:45	79.6	47.1	41.1
	16/05/2025 12:06	00:14:08	59.9	46.4	43.6
Position 2	16/05/2025 09:00	00:30:00	73.0	48.6	43.2
	16/05/2025 11:39	00:24:20	71.2	48.5	43.7
Position 3	16/05/2025 06:15	00:15:00	58.7	51.5	50.2
	16/05/2025 06:35	00:15:00	60.2	52.2	51.4
	16/05/2025 09:37	00:05:00	52.4	44.9	42.8
	16/05/2025 11:23	00:05:00	51.4	45.8	44.0

Noise Logger: