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NOISE IMPACT ASSESSMENT REPORT – 3G PITCH

WELFARE PARK, JOHN STREET, RESOLVEN SA11 4LD

FOR

**MR P HINDER
C/O NEATH PORT TALBOT COUNTY BOROUGH COUNCIL**



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1. EXECUTIVE SUMMARY

The client is seeking planning approval for the construction one (1 No.) half-size 3G pitch at Welfare Park, John Street, Resolven SA11 4LD. A noise impact assessment has been requested to assess the proposed noise impact on the nearest residential receptors.

A robust, worst-case assessment of the noise levels associated with the proposed sporting uses has been undertaken.

An assessment based on IEMA guidance, BS8233:2014, WHO Guidelines for Community Noise external & internal noise guidelines, National Planning Policy and Sport England Artificial Grass Pitch (AGP) Acoustics – Planning Implications 2015 guidance has been undertaken.

The predicted noise level at 1m from the façade of the nearest sensitive receptor is below the suggested criteria (50dB) within the Artificial Grass Pitch (AGP) Acoustics – Planning Implications (Sport England 2015).

The resultant ambient noise levels from the proposed additional recreational activities will result in a negligible change to the existing noise levels at the nearest sensitive receptors in accordance with IEMA guidance.

The proposed recreational activities would result in a noise level of 53dB $L_{Aeq,T}$ within the external amenity areas of the nearest sensitive properties which is below the upper guideline level of 55dB $L_{Aeq,T}$ within BS8233:2014 and WHO community noise guidelines for desirable external ambient noise levels.

The ambient noise levels from the additional recreational activities, in accordance with NPSE/PPG, will have no observed effect level (NOEL) on the residents at the nearest noise sensitive properties.

2. INTRODUCTION

The client is proposing to construct a new half-size 3G pitch at Welfare Park, John Street, Resolven SA11 4LD the noise from the operation of which could have the potential to affect existing noise sensitive properties nearby.

The purposes of this report are:

- To determine prevailing environmental noise levels affecting surrounding properties due to nearby noise sources (e.g. road traffic, commercial noise, aircraft etc);
- To predict the proposed operational noise from sporting activities at the nearest noise sensitive receptors.
- To demonstrate that the resultant ambient noise levels from the proposed recreational activities will result in a negligible change to the existing noise levels in accordance with IEMA and National Planning Policy
- To demonstrate that the predicted noise levels achieve BS8233:2014/WHO external & internal and the Sport England AGP 2015 guideline values.

3. SITE DESCRIPTION

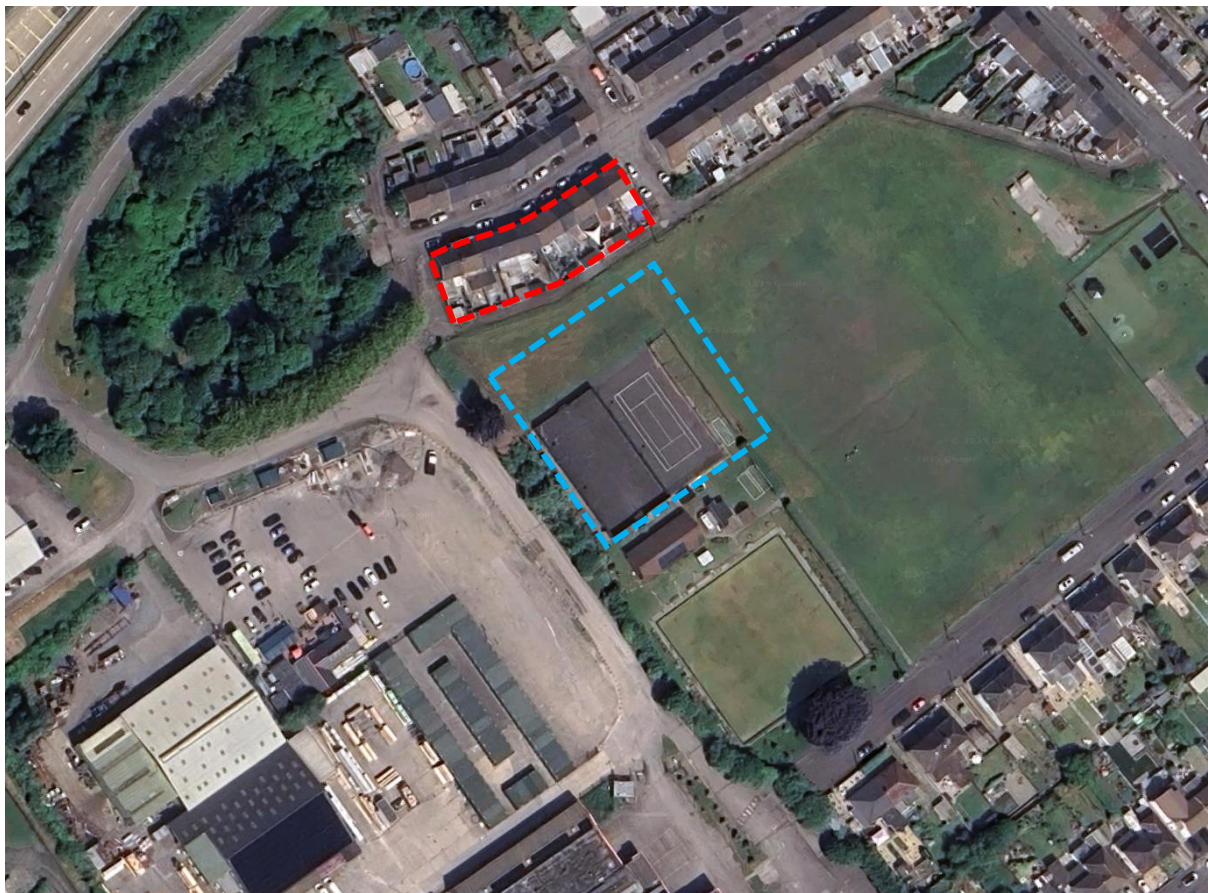
The client is seeking planning permission for the construction of a new half-size 3G pitch at Welfare Park, John Street, Resolven SA11 4LD (hereafter referred to as 'the site'). The site is currently operated as hard courts for tennis and other sports. It is located in a predominantly residential area with an industrial area to the west of the site.

The nearest sensitive residential receptors were noted to be the ground-floor windows located on the rear façades of 85-103 John Street at approximately 17m from the proposed 3G pitch boundary and the rear gardens at approximately 10m.

The nearest sensitive receptors are identified in figure 3.1. If the noise impact assessment details that there is an indication of the specific sound source having a low impact at these premises then it can be safely assumed it will be met at other properties of equal distance and/or those further away.

Figure 3.1 shows the site highlighted in **blue** with the nearest noise sensitive premises highlighted in **red**.

Figure 3.1 Site Location and Surrounding Land Use



Source: Google Maps

4. NOISE ASSESSMENT CRITERIA

4.1 Local Authority Requirements

The site lies within the jurisdiction of Neath Port Talbot County Council. Predicted noise levels have been compared to noise guidelines within Sport England Artificial Grass Pitch (AGP) Acoustics – Planning Implications 2015, IEMA Guidelines for Environmental Noise Impact, BS8233:2014 and WHO Guidelines for Community Noise.

Sport England

The Artificial Grass Pitch (AGP) Acoustics – Planning Implications – [Sport England 2015] document brings together relevant noise guidelines and UK planning policies for the assessment of noise from Artificial Grass Pitches. It identifies the noise implications of the associated sound sources and recommends mitigation measures to limit adverse impacts upon noise sensitive receptors.

The AGP guidance states that a typical free-field noise level from an AGP (at 10 m from the side-line halfway marking) = 58 dB $L_{Aeq,1hour}$.

The following suggested criteria are summarised from the document:

- The noise level outside a residential property during the daytime at about 1 metre from facades of living spaces should not exceed 50 dB $L_{Aeq,T}$.

The Institute of Environmental Management & Assessment (IEMA) Guidelines for Environmental Noise Impact

The IEMA Guidelines for Environmental Noise Impact provide general methods of assessing potential noise impacts and can be applied where there are no specifically designed standards or guidance. The IEMA guidance provides reference levels to assess the increase in noise level as shown in Table 4.1.1 below.

Table 4.1.1 IEMA Sensitivity of Receptor to Noise Level Exposure

	Large	Medium	Small	Negligible
Relative change	Greater than 10 dB(A) change in sound level	5 to 9.9 dB(A) change in sound level	3 to 4.9 dB(A) change in sound level	2.9 dB(A) or less change in sound level

The ambient ($L_{Aeq,16hour}$) road noise levels at the site have been used to determine the impact of the proposed 3G pitch in accordance with the IEMA guidance.

BS 8233:2014

Local Authorities usually stipulate external noise criteria for residential uses based on British Standard 8233:2014 'Guidance on Sound Insulation and noise reduction for buildings'.

BS 8233:2014 states that '*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 a lower guideline value of 50dB L_{Aeq}* '. The BS 8233:2014 standards are considered to be consistent with the principle aims of the National Planning Policy Framework.

The above external ambient noise levels are considered appropriate for this assessment.

BS 4142:2014+A1:2019

Section 1.3 of BS4142 states that the standard is not intended to be applied to the rating and assessment of sound from recreational activities and is considered inappropriate for this assessment. Therefore, alternative guidance has been utilised for the assessment of the proposed 3G pitch noise.

Who Guidelines for Community Noise

The guidance in this document details suitable noise levels within residential and commercial settings from various sources.

For outdoor living areas, it is stated that:

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55dB L_{Aeq} on balconies, terraces and in outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50dB L_{Aeq} . Where it is practical and feasible, the lower outdoor sound level should be considered the maximum desirable sound level for new development.

4.2 National Planning Policy

Noise Policy Statement for England (NPSE)

The Noise Policy Statement for England (NPSE) was published on 15th March 2010. It sets out the long-term vision for government noise policy. The Noise Policy aims, as presented in this document, are: “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; and
- where possible, contribute to the improvement of health and quality of life.’

It highlights the underlying principles on noise management already found in existing legislation and guidance. The NPSE should apply to all forms of noise including environmental noise.

The NPSE makes reference to the concepts of NOEL (No Observed Effect Level) and LOAEL (Lowest Observed Adverse Effect Level) as used in toxicology but applied to noise impacts. It also introduces the concept of SOAEL (Significant Observed Adverse Effect Level) which is described as the level above which significant adverse effects on health and quality of life occur.

The first aim of the NPSE is to avoid significant adverse effects. The second aim seeks to provide guidance on potential noise impacts that falls between the LOAEL and the SOAEL, in which case:

“...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development.”

Importantly, the NPSE goes on to state that:

‘It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.’

Planning Practice Guidance (PPG)

In July 2019, the Department for Communities and Local Government (DCLG) launched a national planning practice guidance (PPG). The guidance advises that when plan-making and decision-taking, the Local Planning Authority should consider the acoustic environment in relation to:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

The section on noise includes a table that summarises 'the noise exposure hierarchy, based on the likely average response' which offers 'examples of outcomes' relevant to the NOEL, LOAEL and SOAEL effect levels described in the NPSE (see above). These outcomes are in descriptive form and the guidance offers no numerical definition of the NOEL, LOAEL and SOAEL, or any further detailed advice regarding methodologies for their determination.

5. SITE USAGE AND ASSOCIATED NOISE LEVELS

5.1 Existing Use

The site and surrounding area is currently used for tennis, cricket, football, other sports and general walking. There is an existing multi-use games area at the site.

Proposed Uses

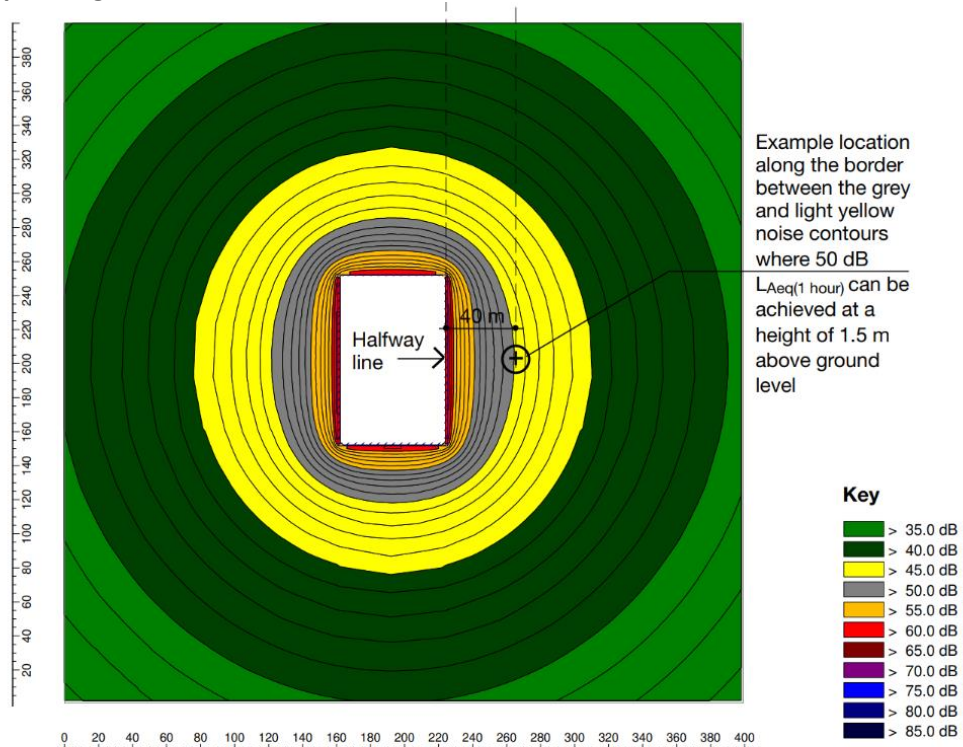
In addition to the existing uses adjacent to the site, it is proposed to replace the existing MUGA with a new half-size 3G pitch.

5.2 3G Pitch Noise Levels

There is little data available on noise levels associated with the proposed 3G pitch usage. Sports England have produced guidance “Artificial Grass Pitches Acoustics Planning Implications Guide” which states that a typical free-field noise level from an AGP (at 10 m from the side-line halfway marking) = 58 dB $L_{Aeq,1hour}$.

A plan of typical noise contours for an AGP in an open area measured at a height of 1.5m above ground level is shown below in figure 5.2:

Figure 5.2 Sport England AGP Noise Contours



Plan of typical noise contours for an AGP in an open area measured at a height of 1.5 m above ground level

5.3 Existing Site Noise Levels - Road Noise Levels

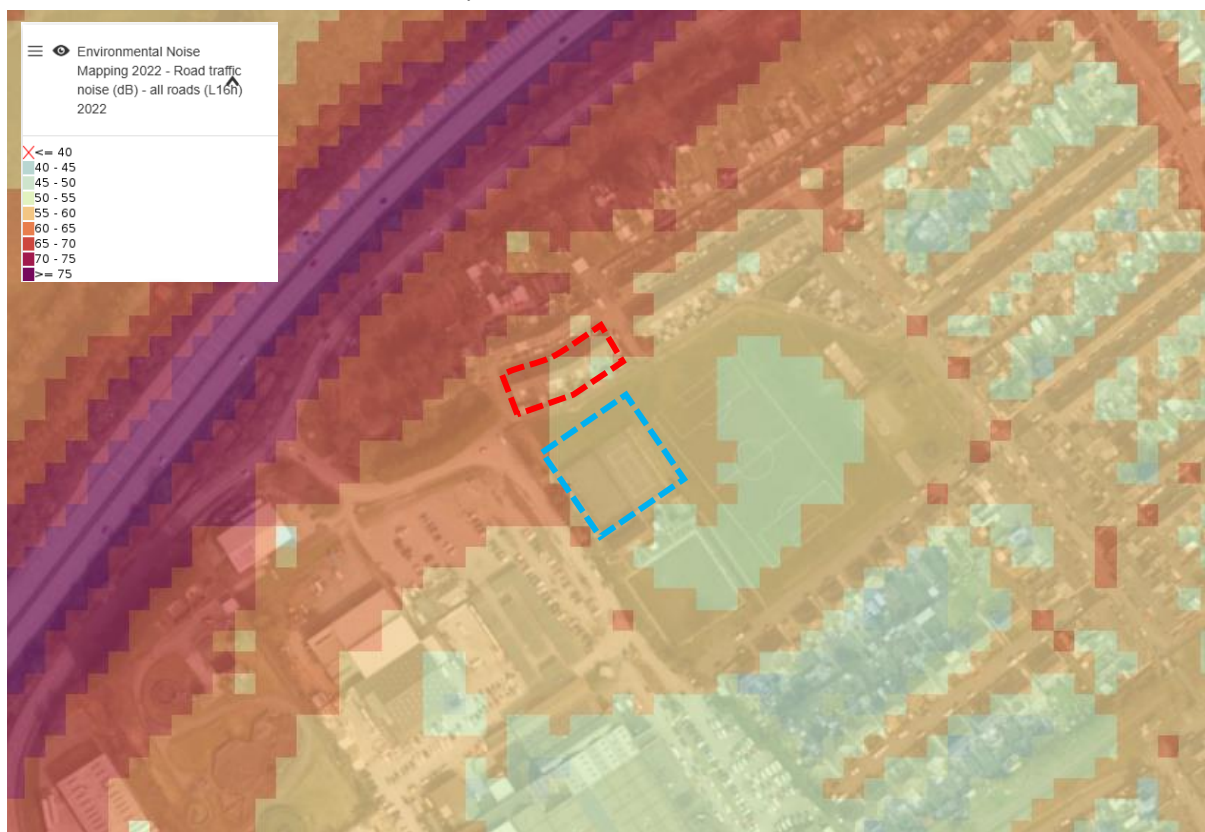
The Welsh Government commissioned noise maps of major road networks in 2022. The noise maps are produced using detailed 3-dimensional geographic models of Wales. The 3-dimensional data is overlaid with transport models of relevant parts of the road which details vehicle types, speed, etc. This data is loaded into sophisticated calculation software which implements a calculation algorithm to calculate the levels of noise generated at and propagated from the transport network. The road traffic noise maps are based on the Calculation of Road Traffic Noise (CRTN) methodology and noise levels were modelled on a 10m grid at a receptor height of 4 m above ground.

As the 3G pitch will only be accessible between the hours of 09:00 – 21:00 hours, the daytime road noise data has been used, defined as:

- $L_{Aeq,16h}$ - the annual average noise level (in dB) for the 16-hour period between 0700-2300.

The ambient daytime road noise data set is the $L_{Aeq,16h}$. The noise maps for these indicators are shown in Figures 5.3 below. The approximate site highlighted in **blue** with the nearest noise sensitive premises highlighted in **red**.

Figure 5.3 Road Traffic Noise $L_{Aeq,16hour}$



Ambient sound pressure level at 1m from the façade of the nearest sensitive receptor = **55-60dB**

$L_{Aeq,16hour}$

6. NOISE IMPACT ASSESSMENT

This section presents calculations to predict the noise impact of the proposed recreational activities, located at the site, at the nearest noise sensitive properties.

6.1 Proposed Operational Hours

The proposed recreational activities will take place during the hours of 09:00 to 21:00 hours, 7 days a week.

6.2 Nearest Noise Sensitive Properties

The nearest sensitive residential receptors were noted to be the ground-floor windows located on the rear façades of 85-103 John Street at approximately 17m from the proposed 3G pitch boundary and the rear gardens at approximately 10m.

There will be partial building screening from fencing and outbuildings in the rear gardens that would provide a minimum attenuation of 5dB to the nearest sensitive ground-floor receptors and the external amenity areas of the properties.

6.3 Description of Calculation Process

Calculations have been undertaken to predict noise levels in which the additional recreational activities could take place at their typical level. Given the distances between the noise sources and the noise sensitive receptors, point source calculations have been used.

6.4 Noise Level Predictions

IEMA

The ambient noise level from the proposed 3G pitch and the existing ambient road noise level at the site have been used to assess the noise impact of the proposed recreational activities in accordance with IEMA guidance. The assessment results are shown in Table 6.4.1 below. Full calculations are provided in Appendix D.

Table 6.4.1 IEMA Sensitivity of Receptor to Ambient Noise Level Exposure Determination

Receptor	AGP Noise Level @ 10m from Pitch, dB	Ambient Sound Pressure Level of 3G Pitch @ 1m from Sensitive Façade, dB	Existing Ambient Noise Level, dB	IEMA Sensitivity of Receptor to Noise Level Exposure
85-103 John Street	58	49	55-60	Negligible (-6dB)

In accordance with IEMA guidance, the proposed additional recreational activities would result in less than a 2.9dB(A) change to the ambient noise level which would be considered to be negligible.

Sport England

The predicted noise level at 1m from the façade of the nearest sensitive receptor of 49dB $L_{Aeq,T}$ which is below the suggested criteria (50dB) within the Artificial Grass Pitch (AGP) Acoustics – Planning Implications (Sport England 2015).

BS8233:2014 and WHO

The resultant noise level within the external amenity areas of the nearest sensitive properties would be 53dB $L_{Aeq,T}$ which is below the upper guideline value of 55dB $L_{Aeq,16hour}$ (07:00 – 23:00 hours) of BS 8233:2014 desirable external noise levels. The predicted external noise level would also meet the guideline level of 55dB $L_{Aeq,T}$ at which the WHO states that the onset of serious annoyance from external noise begins.

National Planning Policy

The predicted ambient noise level from the proposed recreational activities is also within the range of the existing road noise levels at the nearest sensitive receptors and in accordance with NPSE/PPG, noise from the recreational activities will have no observed effect level (NOEL) as “there is no detectable effect on health and quality of life due to the noise” on the residents at the nearest sensitive properties.

7. CONCLUSION

Sound Licensing has undertaken an environmental noise survey at the site in order to determine prevailing ambient and background noise levels that are representative of the nearest noise sensitive properties.

An assessment based on Sport England Artificial Grass Pitch (AGP) Acoustics – Planning Implications 2015 guidance, IEMA guidance, BS8233:2014, WHO Guidelines for Community Noise external & internal noise guidelines and National Planning Policy have been undertaken.

A predicted impact from the proposed additional recreational activities has been calculated using reference noise levels from Sport England AGP 2015.

The predicted noise level at 1m from the façade of the nearest sensitive receptor is below the suggested criteria (50dB) within the Artificial Grass Pitch (AGP) Acoustics – Planning Implications (Sport England 2015).

The resultant ambient noise levels from the proposed additional recreational activities will result in a negligible change to the existing noise levels at the nearest sensitive receptors in accordance with IEMA guidance.

The proposed recreational activities would result in a noise level of 53dB $L_{Aeq,T}$ within the external amenity areas of the nearest sensitive properties which is below the upper guideline level of 55dB $L_{Aeq,T}$ within BS8233:2014 and WHO community noise guidelines for desirable external ambient noise levels.

The ambient noise levels from the additional recreational activities, in accordance with NPSE/PPG, will have no observed effect level (NOEL) on the residents at the nearest noise sensitive properties.

APPENDIX A – Acoustic Terminology

Parameter	Description
Acoustic environment	Sound from all sound sources as modified by the environment
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far
Ambient sound level, $L_a = L_{Aeq,T}$	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
Background sound level, $LA_{90,T}$	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
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing (20×10^{-6} Pascals).
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	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
Measurement time interval, T_m	Total time over which measurements are taken
Rating level, $L_{Ar,Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound
Reference time interval, T_r	Specified interval over which the specific sound level is determined
Residual sound	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, $L_r = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T
Specific sound level, $L_s = L_{Aeq,Tr}$	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	Sound source being assessed

References:

BS 4142:2014 'Methods for rating and assessing industrial and commercial sound'
BS 8233:2014 'Guidance on Sound Insulation and noise reduction for buildings'
World Health Organisation 'WHO Guidelines for Community Noise 1999'
National Planning Policy Framework 2024 – Controller of HM Stationery Office
Noise Planning Statement for England 2010 - Controller of HM Stationery
Planning Practice Guidance 2019 – Controller of HM Stationery
Sport England 2015 'Artificial Grass Pitches (AGP) Acoustics – Planning Implication'
The Institute of Environmental Management & Assessment (2014) 'Guidelines for Environmental Noise Impact'

APPENDIX B – Figures

Proposed Site Plan



APPENDIX C – Calculations

Level distance given a LPA @ a distance (Assumes point source and Hemispherical)
(Pressure Calculations)

LPA = dB at distance of metre

dB level at metres = dB

Formula = $L_{PA1} = L_{PA2} - 20 \log (d_1/d_2)$

Sound Pressure Level @ 1m from Nearest Sensitive Façade = 54dB $L_{Aeq,T}$

Sound Pressure Level @ Nearest Garden Boundary (10m) = 58dB $L_{Aeq,T}$