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Shelley College, Huddersfield Road, Shelley, Huddersfield

4 August 2026

17701-NIA-02-AA-R0

Noise Impact Assessment

Project Number
17701

Issued For
Sports Lab

Company registered in England & Wales no. 07958744

EXECUTIVE SUMMARY

This noise impact assessment has been undertaken in order to assess use of proposed sports pitches at Shelley College, Huddersfield Road, Shelley, Huddersfield.

A background noise survey has been undertaken as detailed in the report, in order to determine an appropriate noise emission criterion, in accordance with the requirements of the Kirklees Council and relevant standards and guidance.

Calculations were undertaken for the nearest receiver, identified as Houses on Shelly Woodhouse Lane and Stead Gate. It should be noted that if there are closer receivers that Clement Acoustics is not aware of, a reassessment will be necessary, and this should therefore be confirmed by the Client.

It has been demonstrated that compliance with the established criterion is expected.

If there is any deviation from the above, Clement Acoustics must be informed, in order to establish whether a reassessment is necessary.

Clement Acoustics has used all reasonable skill and professional judgement when preparing this report. The report relies on the information as provided to us at the time of writing and the assumptions as made in our assessment.

CONTENTS

LIST OF ATTACHMENTS

REVISION HISTORY

Issue	Date of Issue	Author	Reviewed	Authorised
R0	04/08/2026	**Jamie Newton** Senior Consultant BEng (Hons) MIOA	**Duncan Martin** Director BSc (Hons) MIOA	**Duncan Martin** Director BSc (Hons) MIOA

Issue	Comment
R0	First Issue

1.0 INTRODUCTION

Clement Acoustics has been commissioned by Sports Lab to measure existing background noise levels at Shelley College, Huddersfield Road, Shelley, Huddersfield. Measured noise levels have been used to determine noise emissions criteria for a proposed development of playing field facilities in agreement with the planning requirements of the Kirklees Council and relevant standards and guidance.

This report presents the results of the environmental survey followed by noise impact calculations and outlines any necessary mitigation measures.

An acoustic terminology glossary is provided in Appendix A.

2.0 SITE DESCRIPTION

The site is an existing school field to the south-west of Shelley College, bound by Shelley Woodhouse Lane to the west and a public footpath to the north. The surrounding area is predominantly residential in nature.

Current proposals are to install a 3G synthetic sports pitch, which will predominantly be used for football and rugby training. The pitch will also include a spectator area and wire fencing.

Houses on Shelly Woodhouse Lane and Stead Gate have been identified as the nearest affected receivers. These nearest noise sensitive receivers were identified through observations on-site. If there are any receivers closer than those identified within this report then a further assessment will need to be carried out. Therefore, the closest noise sensitive receiver should be confirmed by the Client before the work on the pitch begins.

Locations are shown in attached site plan 17701-SP1.

3.0 ENVIRONMENTAL NOISE SURVEY

3.1 Unattended Noise Survey Procedure

Measurements were undertaken at one position as shown on indicative site drawing 17701-SP1. The choice of this position was based both on accessibility and on collecting representative noise data in relation to the nearest affected receiver.

The surroundings and position used for the monitoring location are described in Table 3.1.

Position No.	Description
UN1	The microphone was mounted on a tripod 1.5 m above ground level approximately 50 m east of the nearest noise sensitive receptor (17 Shelley Woodhouse Lane) The microphone was positioned > 3.5 m from any vertical reflective surfaces[1]

Table 3.1 Description of unattended monitoring locations

Note [1]: The position was considered to be free-field according to guidance found in BS 4142: 2014 *'Methods for rating and assessing industrial and commercial sound'* (BS 4142: 2014), and a correction for reflections has therefore not been applied.

Continuous automated monitoring was undertaken for the duration of the survey between 16:00 on 8 July 2022 and 11:00 on 11 July 2022.

The measurement procedure generally complied with ISO 1996-2: 2017: '*Description, measurement and assessment of environmental noise*'.

3.2 Weather Conditions

At the time of set-up and collection of the monitoring the weather conditions were warm and dry with light winds. It is understood that the weather conditions during the unattended survey remained warm and dry with wind speeds below 5 m/s.

It is considered that the weather conditions did not significantly adversely affect the measurements and are therefore considered suitable for the measurement of environmental noise.

3.3 Equipment

The equipment calibration was verified, by means of a field verification check, before and after use and no abnormalities were observed.

The equipment used was as summarised in Table 3.2.

Position	Instrument	Manufacturer	Type
UN1	Class 1 sound level meter[1]	Svantek	957
-	Class 1 sound level meter calibrator[1]	Norsonic	1251

Table 3.2 Instrumentation used during the survey

Note [1]: Calibration certificates available upon request

3.4 Unattended Noise Survey Results

The $L_{Aeq:\ 5min}$, $L_{Amax:\ 5min}$, $L_{A10:\ 5min}$ and $L_{A90:\ 5min}$ acoustic parameters were measured at the location shown in site drawing 17701-SP1.

Measured noise levels are shown as a time history in Attachment 17701-TH1, with average ambient summarised in Table 3.3

Position	Time Period	Average ambient noise level, $L_{Aeq:\ T}$, dB
UN1	Daytime (07:00 - 23:00)	46
	Night-time (23:00 - 07:00)	43

Table 3.3 Average ambient noise levels

4.0 NOISE CRITERIA

4.1 Sports Pitches

Sports pitches will be assessed according to the recommendations of Sport England document 'Artificial Grass Pitches (AGP) Acoustics – Planning Implications'.

This document gives recommended methodologies for calculating the noise level due to AGP use at different receivers.

The guidance of the document with regards to setting a noise limit for noise emissions is as follows:

> *"The determining noise criteria for AGPs proximity to residential properties, to avoid moderate annoyance in the daytime and evenings, as set by the World Health Organisation's 'Guidelines for Community Noise': 50 dB LAeq(1hour) upper noise limit external to residential properties and within external living areas."*

4.2 IEMA Guidelines for Noise Impact Assessments: 2014

'Guidelines for Noise Impact Assessments': 2014, published by the Environmental Management and Assessment (IEMA) with input from the Institute of Acoustics, gives guidance on describing the impact of noise based on the change in noise level from similar noise sources.

As noise levels at the site are currently dominated by school operations, this guidance will be used in order to provide a stronger analysis of noise impact, relevant to the existing noise environment.

In this instance, the residential dwellings surrounding the site are considered to be a 'high' sensitivity receptor. As such, thresholds for the significance of changes in noise levels have been derived from the document as summarised in Table 4.1.

Relative Change	Magnitude of Impact
2.9 dB or less change in sound level	Negligible
3 to 4.9 dB change in sound level	Small
5 to 9.9 dB change in sound level	Medium
Greater than 10 dB change in sound level	Large

Table 4.1 Derived magnitude of impact for high sensitivity receptors

This assessment method will therefore compare the existing ambient noise levels as shown in Table 3.3 with the predicted noise levels at the receivers.
In order to present a robust assessment, noise impact will be compared against the average daytime L_{Aeq}, accounting for possible after-school use of the facilities.

5.0 NOISE IMPACT ASSESSMENT

5.1 Source noise levels

Proposals are for one large football pitch, with on-pitch markings allowing for up to three smaller 5-a-side pitches.

The guidance of the AGP document is that the noise level emanating from a sports pitch can be considered as follows:

> *"A typical free-field noise level from an AGP (at 10 m from the sideline halfway marking) = 58 dB LAeq(1 hour)"*

This is comparable to source noise measurements of a football pitch taken during a previous assessment of noise impact of a pitch.

Attended noise measurements of a football match at a different existing football pitch, were undertaken at two positions on 17 April 2021 at a similar site, to provide an understanding of noise generation due to football activities. The measurements include shouting, running and the sound of the ball being kicked. A level of $L_{Aeq,90\,min}$ 60 dB was measured 10 m from the sideline of the pitch during this assessment.

This louder measured level has been used in this assessment in order to present a robust assessment. The Measured spectral levels are shown in Table 5.1.

Noise Source	Sound Pressure Level (at 10 m from edge of pitch, dB) in each Frequency Band, Hz								
	63	125	250	500	1k	2k	4k	8k	dB(A)
Football Pitch	57	55	53	55	56	55	48	35	60

Table 5.1 Measured football pitch noise levels

The following comment was made by the Kirklees Council and relevant standards and guidance regarding a previous assessment of the proposed pitches:

> *"[the noise impact assessment] is modelled on the use of the full pitch and the submitted General Arrangement drawing from sportslabsconsult dated January 2022 Ref 3011 shows a number of pitches marked up which if used, would be closer to the NSRs. The applicant is therefore requested to remodel the report based on the side-line halfway marking of the smaller pitch (5-a-side?) which would be closer to the NSRs"*

As such, calculations will be made of the worst-case scenario of three smaller 5-a-side pitches operating simultaneously.

5.2 Receiver Locations

Houses directly east and north have been identified as the nearest noise sensitive receivers, as described in Table 5.2. These nearest noise sensitive receivers were identified through an onsite inspection and through available site plans.

Receiver Group	Descriptions
R1: 17 Shelley Woodhouse Lane	A large residential property located approximately 100 m east of closest pitch location.
R2: 1 Stead Gate	A residential property located approximately 160 m north of the closest pitch location

Table 5.2 Nearest noise sensitive receivers

5.3 Three Dimensional Noise Model

In order to assess the noise impact of proposed pitch, noise emissions have been assessed by developing a noise map. The noise model was constructed using the proprietary noise modelling software package CadnaA. The noise model was constructed utilising the following assumptions and parameters:

- Noise source modelled as area sources at a height of 1.5 m above ground
- 3 small 5-a-side pitches have been modelled as operating simultaneously
- Receiver placement:
    - Ground floor receivers are 1.5 m above ground level
    - Garden receivers are 1.5 m above ground

- Topography of the site has been taken from DEFRA LIDAR Composite DTM
- Hardness of the ground between the sources and receivers has been modelled as absorbative

It should be noted that all calculations in the CadnaA model, including those for distance and screening of intermediate building envelopes are undertaken according to International Standard ISO 9613-2:2025 '*Acoustics – Attenuation of sound during propagation outdoors. Part 2: General method of calculation*'. This standard is the preferred method stated in BS 4142 to minimise uncertainty.

The specific noise level has been derived by the use of the 3D noise map model following the calculation method stated in ISO 9613. Calculations are performed over single octave band from 63 Hz to 8 kHz.

Figure 5.1 shows a plan view of noise propagation from the site, towards the identified receptors, with noise sources and parameters as described above.

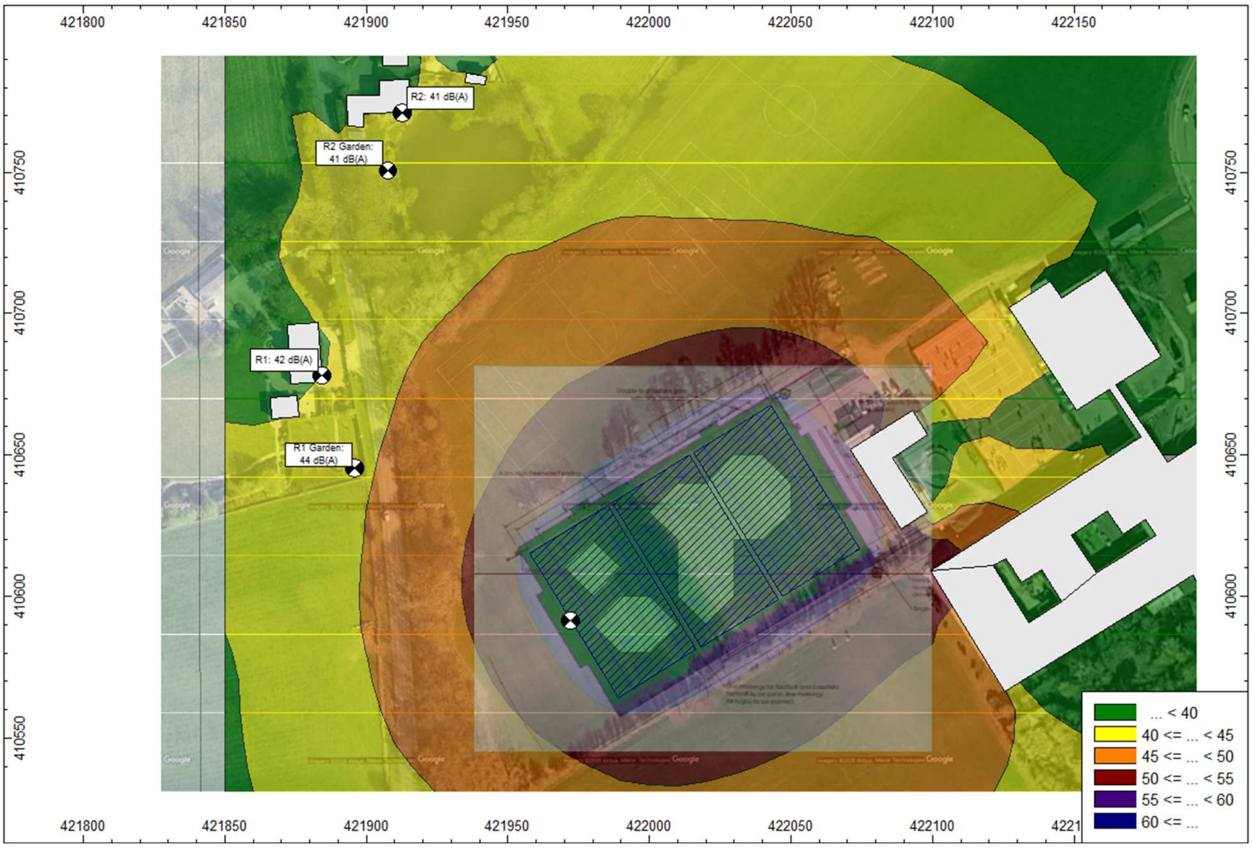

Figure 5.1: Modelled sports noise propagation

5.4 Noise Impact Assessment

Table 5.3 shows the highest noise levels for ground floor and garden locations at each receiver group, interrogated from the noise model.

Receiver	Average Daytime ambient noise level, $L_{Aeq: T}$	AGP Design Criterion	Highest Facade Noise Level at 1.5 m, $L_{Aeq: T}$	Highest Noise Level at Garden Location at 1.5 m, $L_{Aeq: T}$
R1: 17 Shelley Woodhouse Lane	46 dB(A)	50 dB(A)	42 dB(A)	44 dB(A)
R2: 1 Stead Gate			41 dB(A)	41 dB(A)

Table 5.3 Noise levels and project criterion at noise sensitive receivers – sports noise

As presented in Table 5.3, the proposed sports activities would be expected to meet the proposed criteria as defined in AGP.

It is also indicated that the impact of the use of the sports pitches would be negligible when assessed using the guidance set out by IEMA.

6.0 CONCLUSION

An environmental noise survey has been undertaken at Shelley College, Huddersfield Road, Shelley, Huddersfield. The results of the survey have enabled criteria to be set for noise emissions from the proposed sports pitches in accordance with the requirements of the Kirklees Council and relevant standards and guidance.

A noise impact assessment has then been undertaken using previously measured noise data and relevant guidance to predict the noise levels, due to the proposed pitches, at the nearby noise sensitive receivers.

Calculations show that noise emissions from the proposed sports pitches should meet the requirements of the Kirklees Council and relevant standards and guidance.

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Description:
Indicative site plan showing noise monitoring position and nearest sensitive receivers

Not to scale

Date	04 August 2026
Reference	17701-SP1
Project Name	Shelley College, Huddersfield Road, Shelley, Huddersfield
Image ©	Google Earth

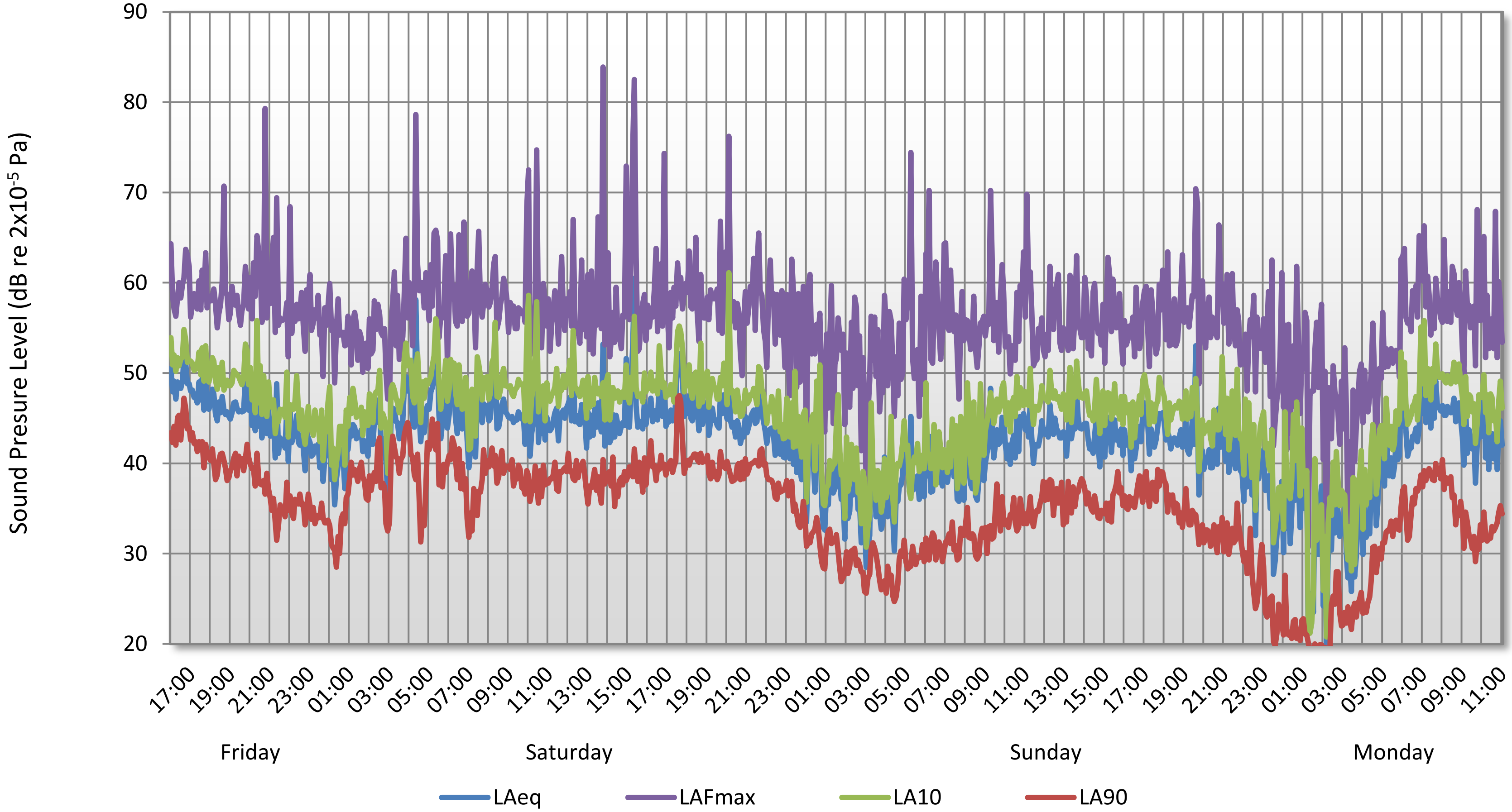
Key:	
	Unattended Noise Survey Position
	Noise Sensitive Receiver
	Pitch Location

Shelley College, Huddersfield Road, Shelley, Huddersfield

Position 1

Environmental Noise Time History

08 July 2022 to 11 July 2022



17701-TH1

APPENDIX A

GLOSSARY OF ACOUSTIC TERMINOLOGY

Absorption Coefficient α	The absorption coefficient of a material, usually measured for each octave or third-octave band and ranging between zero and one. For example, a value of 0.85 for an octave band means that 85% of the sound energy within that octave band is absorbed on coming into contact with the material. Conversely, a low value below about 0.1 means the material is acoustically reflective.
Acceleration	The rate of change of velocity, often measured in ms^{-2}. Commonly used to assess human response to vibration and for machine condition monitoring.
Accelerometer	A vibration transducer sensor that is used to measure acceleration.
Airborne noise	Noise which is fundamentally transmitted by way of the air and can be attenuated by the use of barriers and walls placed physically between the noise source and receiver.
Ambient Vibration	The all-encompassing vibration occurring at a given location, at a given time, composed of all vibration sources near and far.
Audible Range	The limits of frequency which are audible or heard as sound. The normal hearing in a typical young adult detects ranges from 20 Hz to 20 kHz, although some people can detect sound with frequencies outside these limits. Typically, as a person ages their audible hearing range decreases.
A-Weighting	A filter applied to the sound recording made by a microphone to approximate the response of the human ear.
Axis	A fixed reference line for the measurement of vibration in a particular direction. Vibration is commonly measured in transverse (T), longitudinal (L) and vertical (V) axes (or X, Y and Z).
Background Noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation. The L_{90} parameter, i.e. the level exceeded for not more than 90% of the time is often used as a descriptor of “background noise” for environmental impact studies.
Background Vibration	The underlying level of vibration in the ambient environment, measured in the absence of the vibration sources of interest.
Continuous Vibration	Vibration that continues uninterrupted over a defined period.
dB(A)	The human ear is less sensitive to low (below 125 Hz) and high (above 16 kHz) frequency sounds. A sound level meter duplicates the ear’s variable sensitivity to sound of different frequencies. This is achieved by building a filter into the instrument with a similar frequency response to that of the ear. This is called an A-weighting filter. Measurements of sound made with this filter are called A-weighted sound level measurements and the unit is dB(A).
Decibel [dB]	The unit that sound is measured in. Decibels are a logarithmic scale hence two equally intense sound sources operating together produce a sound level which is 3 dB higher than one alone and 10 identical, uncorrelated sources produce a 10 dB higher sound level.
Distance Attenuation	Sound which propagates from a point source in free air attenuates by 6 dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3 dB for each doubling of distance.
$D_{nT,w}$	Weighted Standardised Field Level Difference A measure of sound insulation performance of a building element. It is characterised by the difference in noise level on each side of a wall or floor. It is measured in-situ. It is a field measurement that relates to the R_w laboratory measured value but is not equal to it because an in-situ space is not of the same quality as a laboratory space. The value is indicative of the level of speech privacy between spaces. The higher its value the better the insulation performance.
Flanking	Flanking is the transfer of sound through paths around a building element rather than through the building element material directly. For example, sound travelling through a gap underneath a door or a gap at the top of a wall.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch, and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz. In the case of vibration, frequency is the number of oscillations that occurs per second. Frequency is measured in units of Hertz (Hz).
Ground-Borne Noise	Vibration propagated through the ground and then radiated as noise by vibrating building elements such as wall and floor surfaces. This noise is more noticeable in rooms that are well insulated from other airborne noise. An example would be vibration transmitted from an underground rail line radiating as sound in a bedroom of a building located above.
Impact Noise	Impact noise / structure-borne noise is generated when an object impacts with a separating element, causing that element to vibrate and re-radiate as noise in the receiving room. Common domestic examples of impact noise include footsteps and dropping objects.
Impulsive Noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.

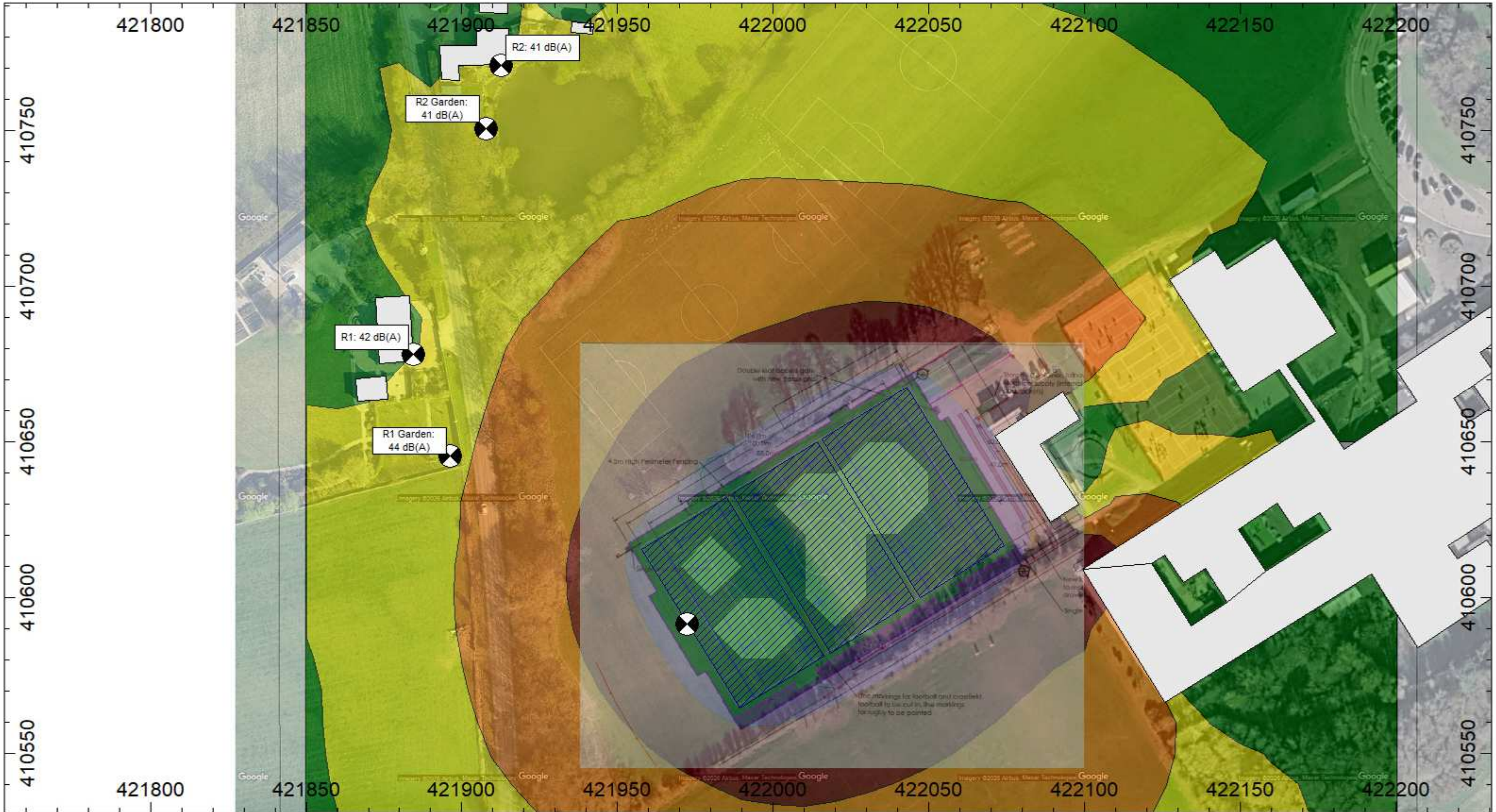
APPENDIX A

Impulsive Vibration	Vibration that rapidly builds up to a peak followed by a damped decay. May consist of multiple impulsive events, typically less than two seconds in duration.
Intermittent Noise	The level suddenly drops to that of the background noise several times during the period of observation.
Intermittent Vibration	Either interrupted periods of continuous vibration or repeated periods of impulsive vibration.
L_{10}	This is the level exceeded for not more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise
L_{90}	This is the level exceeded for not more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.
L_{eq}	The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq}. The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.
L_{max}	This is the maximum sound pressure level that has been measured over a period.
$L_{nT,w}$	Weighted Standardised Field Impact Sound Pressure Level As for $L_{n,w}$ but measured in-situ and therefore subject to the inherent accuracies involved in such a measurement. The equivalent measurement in a laboratory is the $L_{n,w}$. A lower value indicates a better performing floor.
Noise	Unwanted sound.
Octave	An octave represents a doubling or halving in frequency. Noise or vibration levels across a frequency spectrum are commonly given in octave or one-third octave frequency bands.
PPV	Peak Particle Velocity. The absolute maximum value of the vibration velocity signal measured in any axis during a given time interval.
Reflection	Sound wave reflected from a solid object obscuring its path.
R_w	Weighted Sound Reduction Index A measure of the sound insulation performance of a building element. It is measured in very controlled conditions in a laboratory. The related field measurement is the $D_{nT,w}$. The higher the value the better the acoustic performance of the building element.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound Absorption	The ability of a material to absorb sound energy by conversion to thermal energy.
Sound Insulation	Sound insulation refers to the ability of a construction or building element to limit noise transmission through the building element. The sound insulation of a material can be described by the R_w and the sound insulation between two rooms can be described by the $D_{nT,w}$.
Sound Level Meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound Power Level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 pico watt.
Sound Pressure Level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone referenced to 20 micro Pascal.
Structure-borne Noise	Audible noise generated by vibration induced in the ground and/or a structure. Vibration can be generated by impact or by solid contact with a vibrating machine. Examples of structure-borne noise include the noise of trains in underground tunnels heard to a listener above the ground, the sound of footsteps on the floor above a listener and the sound of a lift car passing in a shaft.
Subjective Impression of Noise	Sound intensity is not perceived directly at the ear; rather it is transferred by the complex hearing mechanism to the brain where acoustic sensations can be interpreted as loudness. This makes hearing perception highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a reasonable guide to help explain increases or decreases in sound levels for many acoustic scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud
20	About 4 times as loud

Appendix A

Tonal Noise	Sound containing a prominent frequency and characterised by a definite pitch.
Transmission Loss	The sound level difference between one room or area and another, usually of sound transmitted through an intervening partition or wall. Also the vibration level difference between one point and another. For example, if the sound level on one side of a wall is 100 dB and 65 dB on the other side, it is said that the transmission loss of the wall is 35 dB. If the transmission loss is normalised or standardised, it then becomes the R_w or R'_w or $D_{nT,w}$.
VDV	Vibration Dose Value. A measure of tactile vibration levels used to assess intermittent vibration.
Velocity	The rate of change of vibration displacement, usually measured in mms^{-1}.
Vibration	A mechanical phenomenon whereby oscillations occur about an equilibrium point; a periodic back-and-forth motion of an elastic body or medium, commonly resulting when almost any physical system is displaced from its equilibrium condition.



Sports Pitch Noise Levels, LAeq

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Notes:
The noise model was constructed using the proprietary noise modelling software package Cadna A.
The potential noise mitigation of a barrier at the nearby proposed buildings has been predicted using the calculation methodology outlined in ISO 9613-2.
The noise model was constructed utilising the following assumptions and parameters:
- Locations of obstacles such as screens or barriers in the propagation path
- Presence of reflecting surfaces
- Hardness of the ground between the sources and receivers
- Attenuation due to atmospheric absorption

... < 40 dB
40 <= ... < 45 dB
45 <= ... < 50 dB
50 <= ... < 55 dB
55 <= ... < 60 dB
60 <= ... dB

Area Source
Building
Receiver
Calculation Area

17701-Appendix_B

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