



REPORT

NOISE IMPACT ASSESSMENT

SITE ADDRESS

SACKVILLE SCHOOL, LEWES ROAD, EAST GRINSTEAD,
WEST SUSSEX RH19 3TY



REFERENCE

HA/AF628-2024/V2

HEALTHY ABODE ACOUSTICS
BUILDING ACOUSTICIANS & ENVIRONMENTAL NOISE CONSULTANTS

Our Ref HA/AF628-2024/V2
Site Address Sackville School, Lewes Road, East Grinstead, West Sussex RH19 3TY
For Sackville School
Client Address Sackville School, Lewes Road, East Grinstead, West Sussex RH19 3TY
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EXECUTIVE SUMMARY

- Sackville School instructed Healthy Abode Ltd t/a as HA Acoustics to undertake a noise impact assessment for the proposed installation of an artificial 3g Multi Use Games Area (MUGA) also known as an Artificial Grass Pitch (AGP) or HTP. The facility to comprise two pitches, located at Sackville School, Lewes Road, East Grinstead, West Sussex RH19 3TY.
- AF628 V2 has been amended following a slight design change of the proposed layout.
- HA Acoustics has undertaken an environmental noise survey at the site in order to determine prevailing background noise levels that are representative of the nearest noise sensitive receptors (NSR).
 - NSR1-NSR3 is the rear façade of residential properties, located to the north of the site at approximately 20 metres from the proposed AGP boundary.
 - NSR4 is the side façade of a residential property, located approximately 90 metres from the proposed AGP boundary to the east.
- A baseline noise survey and assessment has been undertaken in line with the guidance contained in BS7445-1:2003 'Description and measurement of environmental noise. Guide to quantities and procedures', measurements being logged every continuous second and continuous 15-minute periods. The unattended survey was conducted between Thursday 23rd November 2023 – Thursday 30th November 2023 at three fixed monitoring points, located to the north and east site boundaries.
- The operational hours of the AGP's shall be as required, 08:00-21:00 weekdays, 08:00-18:00 Saturdays and 10:00-14:00 Sundays. The typical background operational noise level has been calculated at 40dB $L_{A90, \text{operational hour}}$ at NMP1-NMP3.
- Noise calculations of the proposed AGP's have been undertaken using all available details and plans provided by the client and obtaining manufacturers' specifications. In order to provide a robust assessment, the effect of both sports pitches being simultaneously played on has been considered, Mitigation measures have been recommended to help protect the properties to the north.

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1. INTRODUCTION

- 1.1. Sackville School instructed Healthy Abode Ltd t/a HA Acoustics to undertake a noise impact assessment at Sackville School, Lewes Road, East Grinstead, West Sussex RH19 3TY for submission as part of documentation to be provided to the Local Authority, Mid Sussex District Council.
- 1.2. Sackville School, Lewes Road, East Grinstead, is proposing to install a new Hockey and Football artificial grass pitch (AGP) and athletic track with floodlighting to the north of the schools playing fields, onto the existing football and hockey court area. The noise from games played on the AGP's could affect existing noise sensitive properties nearby.
- 1.3. The purposes of this report are:
 - 1.3.1. To determine prevailing environmental noise levels affecting surrounding properties due to nearby noise sources (e.g. road traffic, school, commercial plant etc.);
 - 1.3.2. Based on the above, to assess external noise levels in accordance with the requirements of NPPF (2012, 2018, 2023), NPSE (2010) and Sport England Guidance;
 - 1.3.3. Based on the above, to assess external noise levels in accordance with the requirements of Sport England guidance;
 - 1.3.4. To assess internal noise levels in accordance with WHO (1999) 'Guidelines for Community Noise' and BS 8233 (2014); and
 - 1.3.5. To undertake an assessment to demonstrate compliance with the Local Authority noise requirements.

2. SITE DESCRIPTION

- 2.1 Sackville School, Lewes Road, East Grinstead, West Sussex RH19 3TY (hereafter referred to as ‘the site’) is an independent day school for mixed 11 to 18 years with large playing fields and sports facilities located to the north and east of the school buildings, wrapping to the south.
- 2.2 The site sits on the corner of Lewes Road – the A22, which borders the site to the south and Bourg De Peage Avenue which borders the site to the east. On the opposite side of Bourg De Peage Avenue, is Estcots Primary School. Residential premises border the site to the north and east boundary of the school and further afield to the south and west.
- 2.3 Site plans can be seen in appendix A (SP1-SP3).
- 2.4 The nearest noise sensitive receptor’s (NSR1-NSR3) are noted to be the rear and side façade of residential premises located to the north of the proposed AGP’s, at approximately 20 metres. NSR1 and NSR2 are located off Elm Drive and NSR3 is located off Sycamore Drive. NSR4 is the side façade of a residential premises located to the east at approximately 90m from the proposed AGP’s location.
- 2.5 It can be confidently assumed that if the noise impact assessment indicates that the specific sound source has 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.
- 2.6 At the time of installation and collection of the monitoring equipment, the dominant noise sources emanated from road traffic and some educational and residential activity noise. These noise sources are considered normal to the site location. No significant abnormal noise sources were identifiable. It is considered that the measured noise levels are reasonable given the location of the measurement position.

3. EXTERNAL NOISE EMISSION CRITERIA

3.1. Artificial grass pitches (AGPs) are a key part of the modern sporting landscape and provide valuable facilities for local communities. The Sports England Design Guidance Note; Artificial Grass Pitch (AGP) Acoustics – planning implications new guidance (2015), is the only guidance relating to AGPs and acoustics. It draws upon the World Health Organisation (WHO) ‘*Guidelines for Community Noise*’ (1999) and *The National Planning Policy Framework (NPPF)* (2012).

3.2. The proposed site lies within the jurisdiction of the Local Authority, Mid Sussex District Council. An acoustic report is required to support a planning application.

3.3. National Planning Policy Framework (2023)

3.4. In March 2012, the National Planning Policy Framework (NPPF) came into force and was revised in 2019, 2021 and 2023. This document replaces a great many planning guidance documents, which previously informed the planning system in England.

3.5. The NPPF (2023) sets out the Government’s economic, environmental and social planning policies for England and these policies articulate the Government’s vision of sustainable development.

3.6. The Noise Policy Statement for England (NPSE) published 2010 applies to ‘*all forms of noise, including environmental noise, neighbour noise and neighbourhood noise*’.

3.7. Paragraph 185 of the NPPF (2023) considers noise, stating:

“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- *c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.”*

3.8. National Planning Policy is guided by the NPPF. With regard to noise, the terms 'significant adverse impact' and 'other adverse impacts' are defined in the explanatory notes of the 'Noise Policy Statement for England' (NPSE). These state that there are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

- 'NOEL – No Observed Effect Level, this is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise, and
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.

3.9. Extending these concepts for the purpose of this NPSE leads to the concept of SOAEL – significant observed adverse effect level. This is the level above which significant adverse effects on health and quality of life occur'. However, no specific noise limits for LOAEL and SOAEL have been defined. Therefore, guidance from other acoustic standards must be employed to determine suitable levels within the overall principal of the National Planning Policy Framework; such as BS 8233: 2014.

3.10. **World Health Organisation (WHO) 'Guidelines for Community Noise'**

3.11. Noise from sport, such as football and rugby being played on AGP is considered as a community noise. The World Health Organisation (WHO) 'Guidelines for Community Noise' published in 1999 gives the following description of community noise:

"Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources except noise at the industrial workplace. Main sources of community noise include road, rail and air traffic, industries, construction and public work, and the neighbourhood. Typical neighbourhood noise comes from premises and installations related to the catering trade (restaurant, cafeterias, discotheques, etc.); from live or recorded music; sport events including motor sports; playgrounds; car parks; and domestic animals such as barking dogs"

3.12. **Sports England AGP guidance (2015)**

3.13. The Sports England AGP guidance (2015), gives a noise criteria of 50dB L_{Aeq} at 1m from facades of living spaces, based on referencing a 15dB reduction from a partially open window and daytime internal noise levels of 35 dB L_{Aeq} , daytime, as seen in BS 8233: 2014.

3.14. The Sports England AGP guidance (2015), states:

“Where noise from the new source (the AGP) does not exceed the existing noise climate the increase in noise will be no more than 3 decibels. This is the minimum that can normally be perceived. The noise levels are both to be measured using the L_{Aeq} parameter over the same time period, T.”

3.15. Sports England AGP guidance (2015) states that “the most significant noise levels were found to be generally derived from the voices of players” (with the exception of Hockey) and provides the following levels for a typical match on AGP:

“From the measurement data, a typical free-field noise level of 58 dB L_{Aeq} , 1 hour at a distance of 10 metres (m) from the sideline halfway marking has been determined as representative for noise from an AGP.”

3.16. If required, impact noises such as the ball striking the kickboards can be mitigated by installing shock absorbing noise reduction measures.

3.17. **BS4142: 2014+A1:2019**

3.18. It is not suitable to use British Standard **(BS) 4142: 2014+A1:2019 Methods for rating and assessing industrial and commercial sound to consider the** impact of noise emanating from a proposed AGP.

3.19. Section 1.3 states,

“The standard is not intended to be applied to the rating and assessment of sound from:

- a) recreational activities including all forms of motorsport;*
- b) music and other entertainment;*
- c) shooting grounds;*
- d) construction and demolition;*
- e) domestic animals;*
- f) people;*
- g) public address systems for speech; and*
- h) other sources falling within the scopes of other standards or guidance.”*

3.20. **Noise Criteria**

3.21. It is understood that the proposed AGP’s will be utilised by the school and clubs. The proposed hours of use are 08:00 – 21:00 hours Monday – Friday, 08:00 – 18:00 Saturdays and 10:00-14:00 hours on Sunday.

3.22. Considering the NPPF (2023), NPSE (2010) and Sports England Guidance, the noise criteria will, therefore, be set level with the measured typical background operational hours. In this case, the criteria to be met is a maximum noise level of 40 dB $L_{Aeq,T}$ measured at the NSR's.

3.22.1. It should be noted that this is 10dB below the criteria set by the Sports England AGP guidance (2015), which gives a noise criteria of 50dB L_{Aeq} at 1m from facades of living spaces, based on referencing a 15dB reduction from a partially open window and daytime internal noise levels of 35 dB L_{Aeq} , daytime, as seen in BS 8233: 2014.

4. ENVIRONMENTAL NOISE SURVEY METHODOLOGY

4.1 An unmanned environmental noise survey was undertaken at three measurement locations at the north and east façade of the site. The survey was undertaken between 12:30 hours on Thursday 23rd November 2023 and 11:30 hours on Thursday 30th November 2023.

4.2 The sound level meter's (SLM) were mounted onto a tripod approximately 1.5 metres above ground level to two locations on the north boundary and one location to the east boundary. The positions are considered to be 'free-field'. The position is considered to be representative of background noise levels at the nearest identified NSR. The monitoring position is identified in Appendix A.

4.3 The equipment used for the noise survey is summarised in Table 4.1.

Equipment	Description	Quantity	Serial Number
Svantek 977	Class 1 automated logging sound level meter	1	69701
ACO Pacific 7052E	Class 1 ½" microphone	1	71699
Svantek 977	Class 1 automated logging sound level meter	1	34192
ACO Pacific 7052E	Class 1 ½" microphone	1	32452
Svantek 977	Class 1 automated logging sound level meter	1	46457
ACO Pacific 7052E	Class 1 ½" microphone	1	64237
Larson Davis CAL200	Class 1 Calibrator	1	14432

Table 4.1 Description of Equipment used for Noise Survey

4.4 Ambient, background and maximum noise levels (L_{Aeq} , L_{A10} , L_{A90} and L_{AmaxF} respectively) were measured throughout the noise survey in consecutive 15-minute periods.

4.5 The noise survey and measurements were conducted, wherever possible, in accordance with BS7445-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'. Measurements were made generally in accordance with ISO 1996-2:2007 '*Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels*'.

4.6 The noise monitoring equipment was calibrated before and after the noise survey period. No significant drift was recorded. Equipment calibration certificates can be provided upon request.

4.7 Weather conditions were noted to be:

4.7.1 during installation – mild (approximately 13° Celsius), dry, with clear to cloudy skies (approximately 10-30% cloud cover) and a light wind (<5m/s).

4.7.2 during collection – cold (approximately 3° Celsius), with cloudy skies leading to partially clear skies (approximately 40-90% cloud cover) and a light wind (<5m/s).

4.7.3 throughout the entire noise survey period – cold to mild (approximately -4-14° Celsius), generally dry, with clear to cloudy skies (approximately 0-100% cloud cover) and a light wind (<5m/s).

4.8 These weather conditions were checked against and confirmed by the use of the Met Office mobile application available on smart phone technology. These conditions were maintained throughout the whole survey period and are considered reasonable for undertaking environmental noise measurements.

5. NOISE SURVEY RESULTS

5.1. The ambient and background noise levels at the measurement position as seen in appendix A are provided below in table 5.1 and have been based on an analysis of the monitoring data. The time histories can be seen in appendix B (TH1-TH3).

	Ambient Noise Level $L_{Aeq, 15min}$	Typical Background Noise Level $L_{A90, 15min}$
Position 1		
Day (07:00 – 23:00)	47 dB	40 dB
Night (23:00 – 07:00)	38 dB	27 dB
Operating Hours (08:00-22:00 Monday – Friday, 09:00-21:00 Saturdays, 09:00-19:00 Sundays)	47 dB	40 dB
Position 2		
Day (07:00 – 23:00)	49 dB	39 dB
Night (23:00 – 07:00)	43 dB	32dB
Operating Hours (08:00-22:00 Monday – Friday, 09:00-21:00 Saturdays, 09:00-19:00 Sundays)	48 dB	42 dB
Position 3		
Day (07:00 – 23:00)	47 dB	40 dB
Night (23:00 – 07:00)	37 dB	30 dB
Operating Hours (08:00-22:00 Monday – Friday, 09:00-21:00 Saturdays, 09:00-19:00 Sundays)	46 dB	40 dB

Table 5.1 Summary of typical noise measurement data

5.2. These noise levels are considered normal to the site location. No significant abnormal noise sources were identifiable during installation or collection of the equipment. It is considered that the measured noise levels are reasonable given the location of the measurement position.

6. NOISE IMPACT ASSESSMENT

6.1 Background & context

6.2 It is proposed to install two artificial grass pitch (AGP) with flood lighting. Table 6.1 provides the Sports England provided sound levels for games played on AGP.

	Reference Sound Pressure Level	
	$L_{Aeq,1 \text{ hour}}$	$L_{AF,max}$
Sports England AGP (2015) provided levels*	58 dB $L_{Aeq,1 \text{ hour}}$	N/A

Table 6.1 – Sports England AGP levels

6.3 The Sports England AGP guidance is an average of multiple games (Football, Rugby and Hockey) and ages played on artificial 3g grass and therefore these levels will be used in the calculations.

6.4 Sports England AGP (2015) states that when a site is in an open location, such as this one, noise levels of 50 dB $L_{Aeq,1 \text{ hour}}$ can be achieved at a distance of 40m at 1.5m above the ground. The typical background level during proposed operating hours is 43 dB $L_{A90, \text{operational hours}}$, which is lower than the 50 dB $L_{Aeq,1\text{-hour}}$ as recommended criteria under Sports England AGP (2015) and WHO (1999) guidance.

6.5 Noise Modelling

6.6 Noise modelling has been undertaken to assess the noise impact of a game at the proposed location at the NSR's using the typical levels as provided by the Sport's England Guidance. This is based on a Sport England guidance, noise emission level of 58dB(A) $L_{Aeq,T}$ at 10m.

6.7 The 2D noise models can be found in Appendix D and shows the layout of the predicted sound transmission from the AGP's.

6.8 The noise model takes into account local topography, distance attenuation and screening provision of existing and/or proposed features (e.g. noise barriers/extension of a building).

6.9 The height of adjacent buildings have been estimated through the use of the on-site survey and site photographs and included within the model. The nearby buildings are low level, typically 2-3 storeys. Therefore, noise modelling emission levels are considered representative for each storey.

6.10 Based on Sports England guidance levels the predicted noise emissions from the site have been determined by inputting a noise emission sound power level of 98 dB L_w for the pitch. The Sound Power Level has been input as an area source, as shown in Appendix D. This has then been modelled to illustrate the noise level contours over distance and topography effects to the NSR's.

6.11 The noise contour map shows the effect of noise breaking out from a game played on the AGP's without taking into account or modelling noise from any other nearby sources, such as road traffic, bird song, educational and residential activity, which creates the background source. The background level on the map, has been set to the measured typical background level at 40 dB(A) $L_{A90, \text{Operational Hours}}$.

6.12 The AGP Guidance and WHO guidance give an external level of 50dB $L_{Aeq,T}$ at 1 metre from the NSR's, and NPPF (2023) and NPSE (2010) give guidance to the typical background noise level, as measured at 40 dB(A) $L_{A90, \text{Operational Hours}}$.

6.13 Noise Impact Assessment:

6.14 With no other noise sources, the noise model predicts (see appendix D1 & D2) the noise levels at the NSR's to be:

6.14.1 The calculated rating noise level at the NSR1 facade is **53-54dB $L_{Aeq, \text{operational hours}}$** and **13-14 dB above** the typical background noise level (40dB $L_{Aeq,T}$) and **3-4 dB(A) above** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

6.14.2 The calculated rating noise level at the NSR2 facade is **52-53dB $L_{Aeq, \text{operational hours}}$** and **12-13 dB(A) above** the typical background noise level (40dB $L_{Aeq,T}$) and **2-3 dB(A) above** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

6.14.3 The calculated rating noise level at the NSR3 facade is **52-54dB $L_{Aeq, \text{operational hours}}$** and **12-14 dB(A) above** the typical background noise level (40dB $L_{Aeq,T}$) and **2-4 dB(A) above** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

6.14.4 The calculated rating noise level at the NSR4 facade is **46-47dB $L_{Aeq, \text{operational hours}}$** and **6-7 dB(A) above** the typical background noise level (40dB $L_{Aeq,T}$) however **3-4 dB below** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

6.15 **Mitigation:**

6.16 **Acoustic Barrier** – Due to noise levels and proximity of receptors, an acoustic barrier has been recommended as a mitigation measure and incorporated into the noise model along the North boundary at a height of 3m (see Appendix D3&D4) and slightly wrapped to the east and west flank. A reduction of between 2-5dB is predicted by incorporating a noise barrier to the north. The calculated rating noise level with mitigation is predicted to be at:

6.16.1 **49-51dB $L_{Aeq, operational\ hours}$** at the façade of NSR1 which is **9-11 dB above** the typical background noise level (40dB $L_{Aeq,T}$) and **1 dB(A) above – 1dB(A) below** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

6.16.2 **47-50dB $L_{Aeq, operational\ hours}$** at NSR2 , which is **8-10 dB(A) above** the typical background noise level (40dB $L_{Aeq,T}$) and **0-2 dB(A) below** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

6.16.3 **47-50dB $L_{Aeq, operational\ hours}$** at NSR3, which is **7-10 dB(A) above** the typical background noise level (40dB $L_{Aeq,T}$) and **0-3 dB(A) below** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

6.16.4 Levels at NSR4 are not predicted to change with an acoustic barrier installed to the north as a mitigation measure.

6.17 The following recommended mitigation measures have also been provided for consideration, to help reduce noise levels:

6.17.1 **Noise Management Plan** - Noise emissions may be effectively reduced through good facility management, and good practice as detailed in a Noise Management Plan. It is recommended that a Noise Management Plan (NMP) is updated or created to include management of the AGP. The NMP should be distributed to staff and facility users. The NMP should include a complaints log kept, the documents periodically reviewed and enforced as necessary.

6.17.2 **Vibration Clamp Panels** - If required, impact noises such as the ball striking the protective fence can be further mitigated by installing shock absorbing inserts, such as EPDM insert, which are cited between the clamp bar and post, which help to eliminate the rattle noise from the fence when it is stuck by a ball.

6.17.3 **Hockey Kickboards** – Should the pitches be utilised for Hockey, the kickboards could incorporate a soft absorptive cover to help reduce impact strike sounds as the puck/ball hits against them.

6.18 **Site Context**

6.19 As guidance advises, the impact must be considered within the context of the site and the surrounding acoustic environment. The following must, therefore, also be taken into consideration when determining the potential impact that may be experienced:

6.19.1 The assessment is undertaken at the most affected existing residential windows. The impact on all other nearby residential windows will be lower due to screening and distance attenuation.

6.19.2 The site is already in use by the school for free-time (e.g. break / lunch time) and for PE classes, sports clubs. The area they are proposing the new AGP's is currently used for the sports proposed and comprises a hard standing, gravel like ground. This area is understood to be used during school hours and for sports clubs. Therefore noise levels and usage are likely to remain the same with the new AGP's for the periods the area is currently in use (for example, during school hours).

6.19.3 It should be noted that the above assessment is based on the AGP's being in constant operation during the proposed operational hours. Given that the AGP's will not operate constantly, the above assessment is considered to be representative of the worst case.

6.20 Considering the NPPF (2012, as amended 2023) and NPSE (2010) guidance, the predicted noise impact during school operational hours and existing club operational times is a "Low Observed Adverse Effect Level (LOAEL)". It is recommended that the acoustic barrier is installed for mitigation, as it is predicted to reduce noise levels at NSR1-NSR3 by 2-5dB which should assist in reducing noise levels in the proposed extension of operation.

6.21 Considering, British Standard 8233:2014 '*Sound insulation and noise reduction for buildings – Code of Practice*' give recommendations for acceptable internal noise levels in residential properties. Assuming worst case conditions, of the closest window being for a bedroom, BS8233:2014 recommends

35 dB(A) as being acceptable internal resting/sleeping conditions during the daytime. According to BS8233:2014, the façade of a residential dwelling; with a window partially open for ventilation offers 15 dB attenuation. Therefore, taking into account this reduction for a partially open window with the proposed mitigation, the internal noise level with operational AGP's would be between 31-36dB dependent upon NSR; which is just above or predominantly lower than the acceptable internal noise level as seen under BS8233: 2014.

7. UNCERTAINTY

7.1 The levels of uncertainty in the data and calculations are considered to be low given the robust exercise undertaken in noise monitoring and the confidence in the statistical analysis.

7.2 All measurements taken on-site by instrumentation are subject to a margin of uncertainty. This is relatively small, with a sound level meter manufacturer's margin of uncertainty at ± 1.1 dB. It is due to the tolerances associated with the Class 1 sound level meter and calibrator equipment used to measure background.

7.2.1 The meter and calibrator used have a traceable laboratory calibration and were field calibrated before and after the measurements.

7.3 Sports England's data for noise levels from games played on AGP is likely to be robust. Detailed calculations and resultant noise levels at the residential location are considered to be confidently predicted.

7.4 Uncertainties associated with the noise model using SoundPLAN Essential 5.1 are as follows;

7.4.1 Topographical map data, used to establish the digital ground model, was acquired from the Department for Environment Food & Rural Affairs (DEFRA) survey data download.

7.4.2 Building heights and building floor heights have been estimated. Receptor positions at buildings have been estimated for ground floor and first floor levels to be best representative of noise sensitive receiver positions.

7.5 Uncertainty in the calculated impact has been reduced by the use of a well-established calculation method.

8. CONCLUSION

8.1. A noise assessment has been undertaken at Sackville School, Lewes Road, East Grinstead, West Sussex RH19 3TY. The noise survey was undertaken at three fixed monitoring points, representative of the nearest noise sensitive receptor.

8.2. Following on-site measurement of pre-existing noise levels, calculations have been made of the noise level of the proposed AGP's at the NSR. From this assessment, the potential noise impact has been determined.

8.3 The noise model predicts the noise levels from sport activities on the AGP's at the NSR's to be:

8.3.1 The calculated rating noise level at the NSR1 facade is **53-54dB** $L_{Aeq, \text{operational hours}}$ and **13-14 dB above** the typical background noise level (40dB $L_{Aeq,T}$) and **3-4 dB(A) above** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

8.3.2 The calculated rating noise level at the NSR2 facade is **52-53dB** $L_{Aeq, \text{operational hours}}$ and **12-13 dB(A) above** the typical background noise level (40dB $L_{Aeq,T}$) and **2-3 dB(A) above** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

8.3.3 The calculated rating noise level at the NSR3 facade is **52-54dB** $L_{Aeq, \text{operational hours}}$ and **12-14 dB(A) above** the typical background noise level (40dB $L_{Aeq,T}$) and **2-4 dB(A) above** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

8.3.4 The calculated rating noise level at the NSR4 façade is **46-47dB** $L_{Aeq, \text{operational hours}}$ and **6-7 dB(A) above** the typical background noise level (40dB $L_{Aeq,T}$) however **3-4 dB below** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

8.4 Due to noise levels and proximity of receptors, an acoustic barrier has been recommended as a mitigation measure and incorporated into the noise model along the North boundary at a height of 3m. A reduction of between 2-5dB is predicted by incorporating a noise barrier to the north. The calculated rating noise level with mitigation is predicted to be at:

8.4.1 **49-51dB $L_{Aeq, operational\ hours}$** at the façade of NSR1 which is **9-11 dB above** the typical background noise level (40dB $L_{Aeq,T}$) and **1 dB(A) above – 1dB(A) below** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

8.4.2 **47-50dB $L_{Aeq, operational\ hours}$** at NSR2 , which is **8-10 dB(A) above** the typical background noise level (40dB $L_{Aeq,T}$) and **0-2 dB(A) below** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

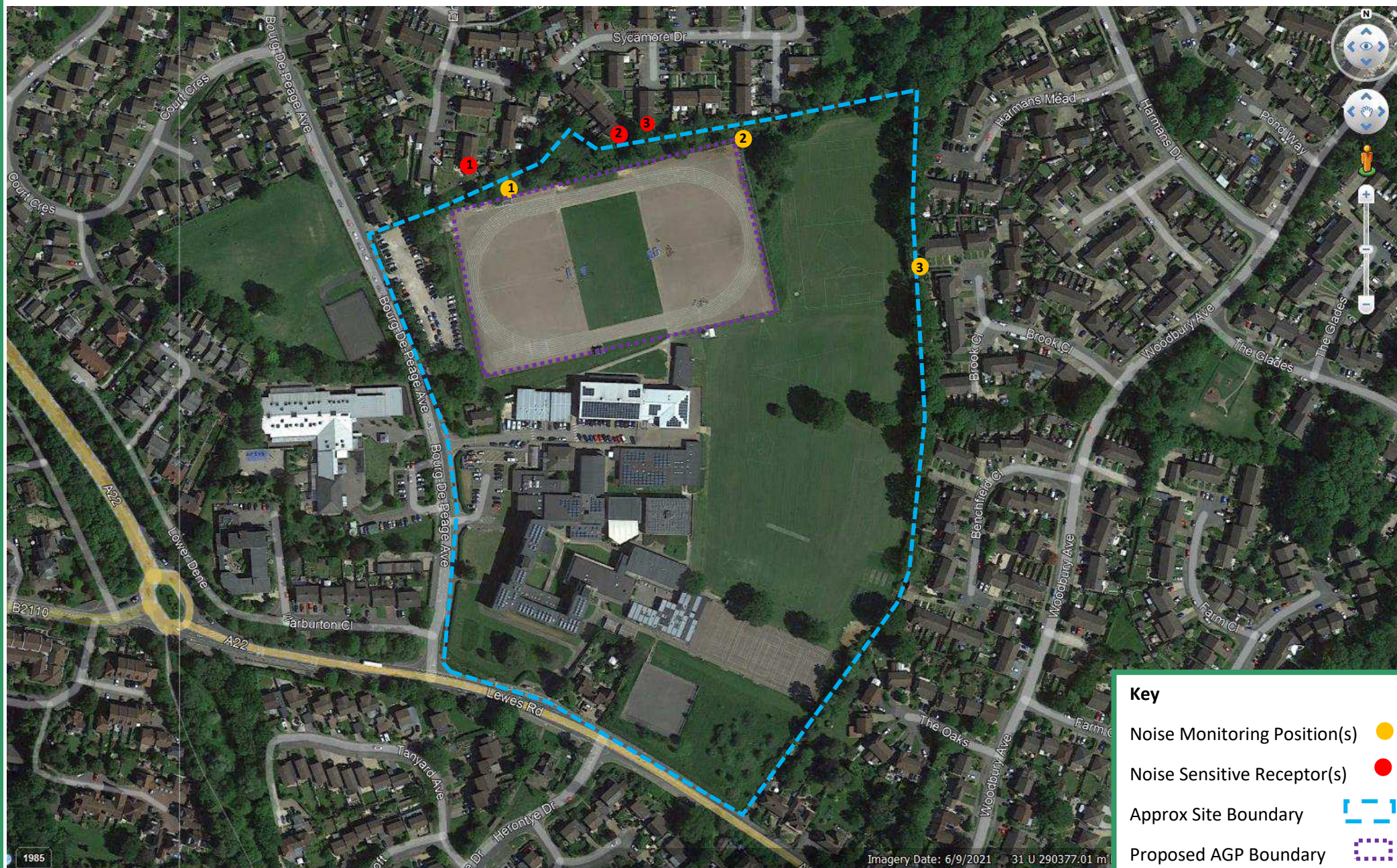
8.4.3 **47-50dB $L_{Aeq, operational\ hours}$** at NSR3, which is **7-10 dB(A) above** the typical background noise level (40dB $L_{Aeq,T}$) and **0-3 dB(A) below** the AGP Guidance and WHO external guidance noise level (50dB $L_{Aeq,T}$).

8.4.4 Levels at NSR4 are not predicted to change with an acoustic barrier installed to the north as a mitigation measure.

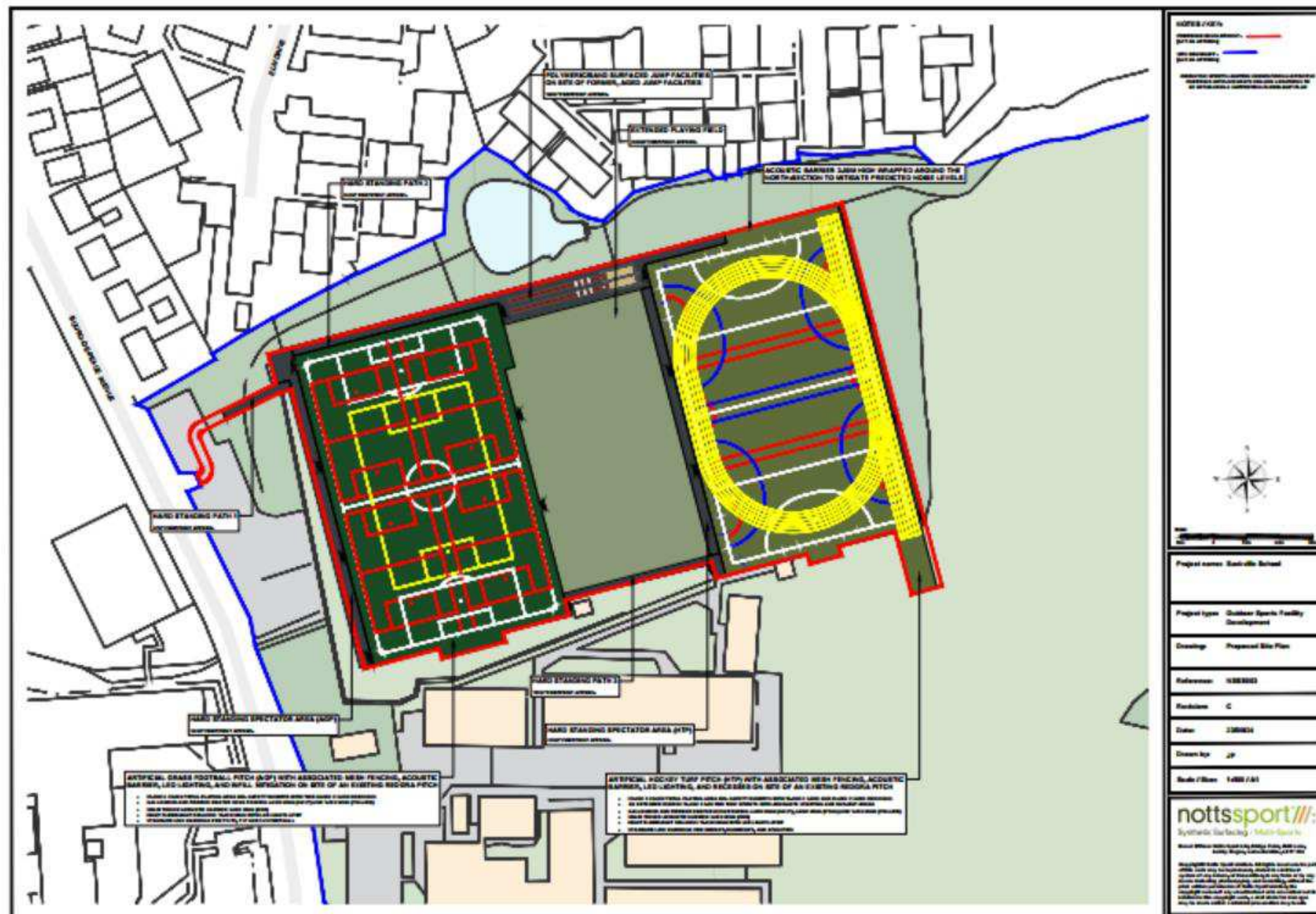
8.3. Considering the NPPF (2012, as amended 2023) and NPSE (2010) guidance, the predicted noise impact during school operational hours and existing club operational times is a “Low Observed Adverse Effect Level (LOAEL)”, when considering the results of the noise survey, the 2D noise mapping, illustrative layouts, site context and the calculation. It is recommended that the acoustic barrier is installed for mitigation, as it is predicted to reduce noise levels at NSR1-NSR3 by 2-5dB which should assist in reducing noise levels in the proposed extension of operation. Additional mitigation measures have also been provided.

Appendix A – Site Plan (SP1)

Source: Google Earth



Source: Provided by Client



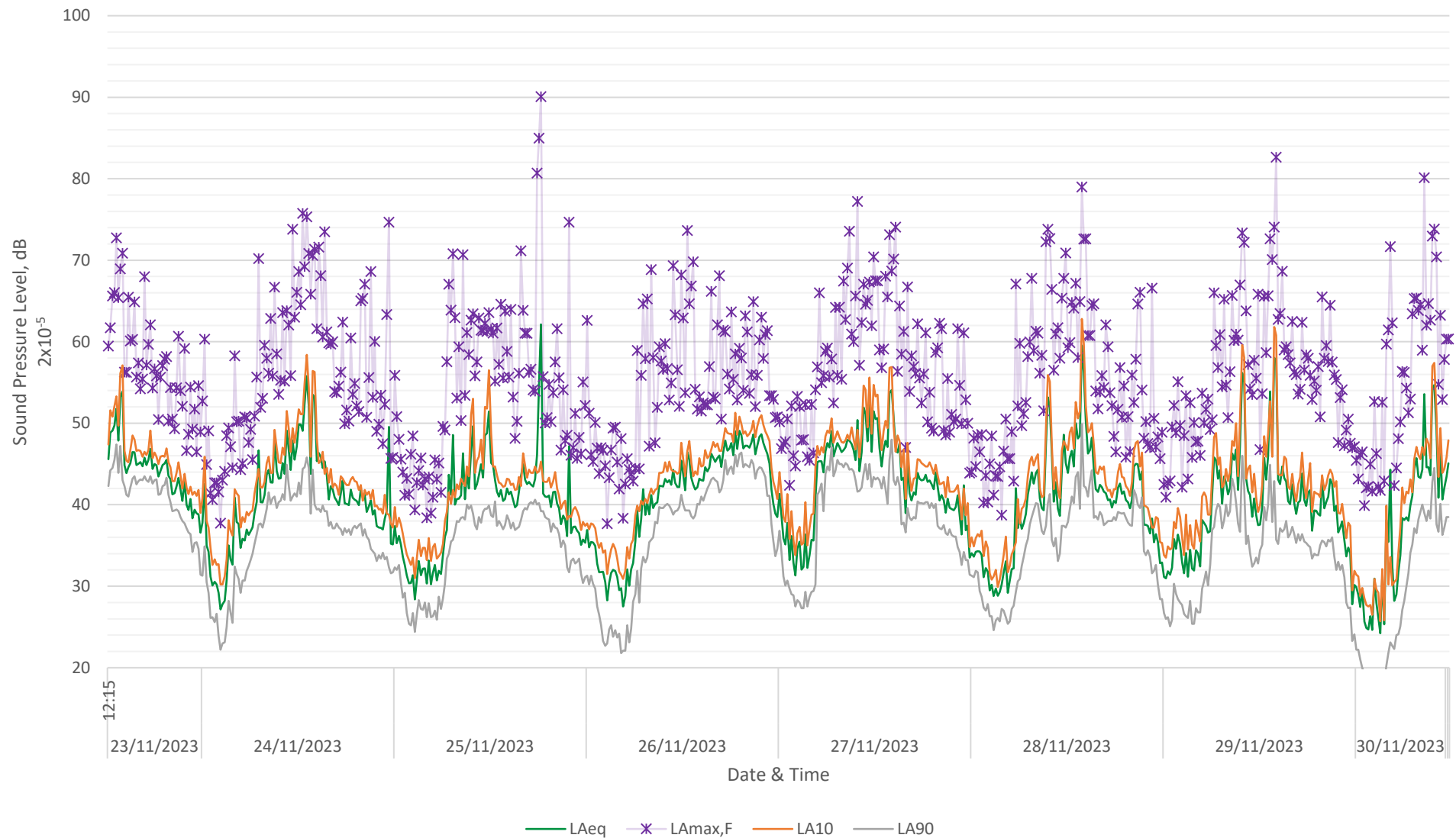
Appendix A – Site Plan (SP3)

Source: Provided by Client



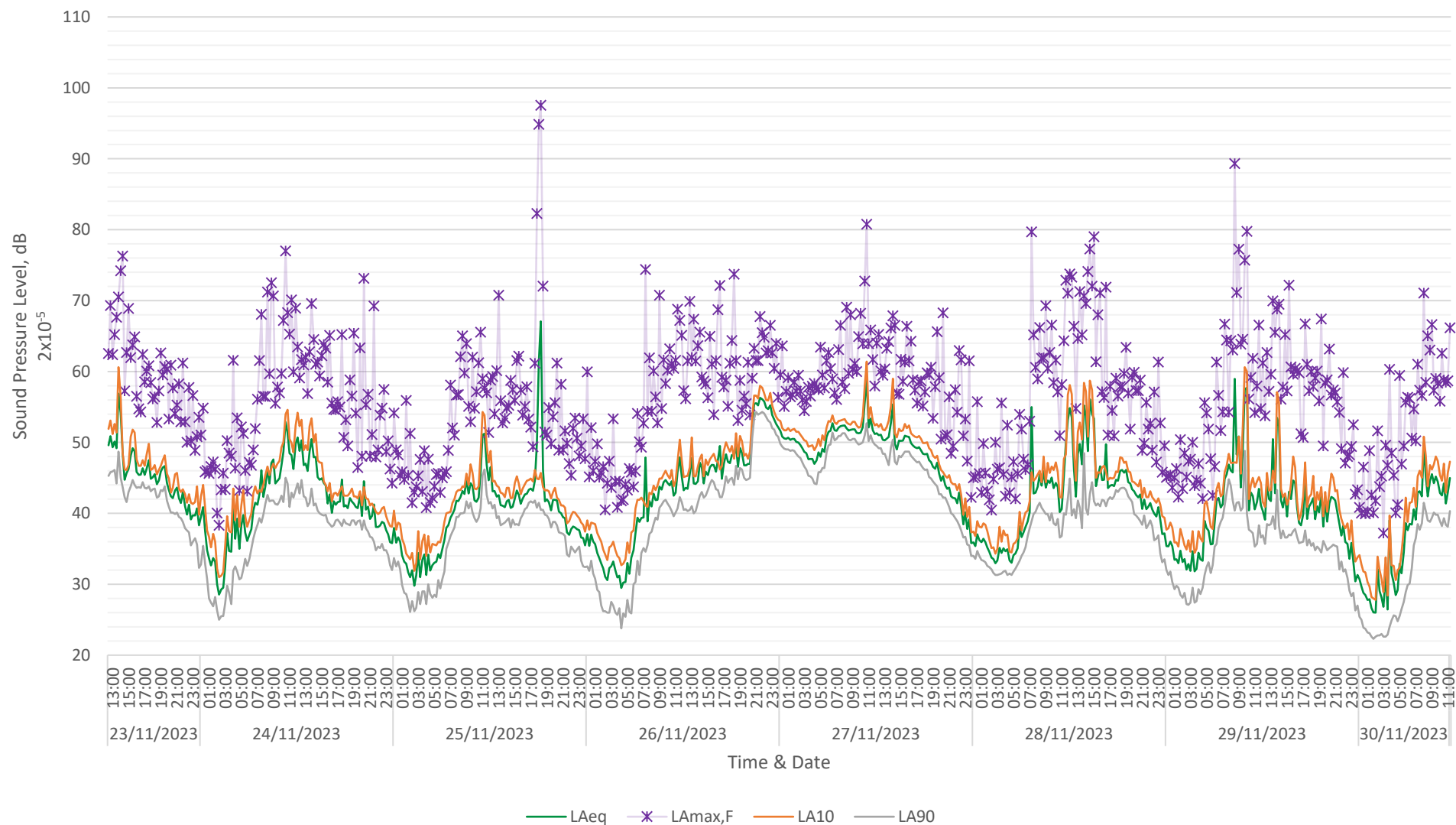
Appendix B - Time History 1 (TH1)

Sackville School, Lewes Road, East Grinstead
Thursday 23 November 2023 - Thursday 30 November 2023
Position 1



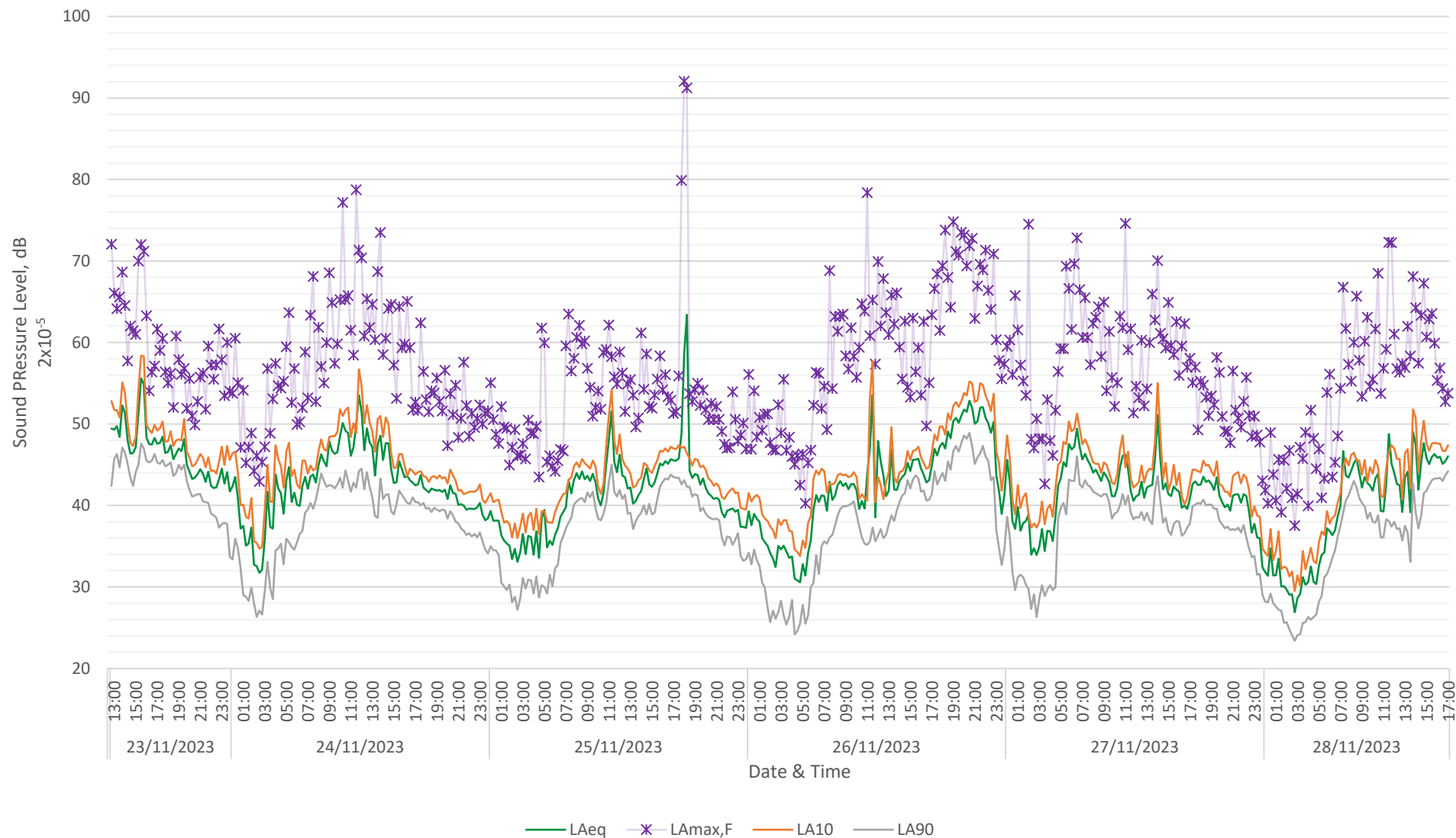
Appendix B - Time History 2 (TH2)

Sackville School, Lewes Road, East Grinstead
Thursday 23 November 2023 - Thursday 30 November 2023
Position 2



Appendix B - Time History 3 (TH3)

Sackville School, Lewes Road, East Grinstead
Thursday 23 November 2023 - Tuesday 28 November 2023
Position 3



Artificial Grass Pitch (AGP) Acoustics - Planning Implications

Design Guidance Note

Comparison of AGP noise against existing noise climate

In some circumstances, an alternative assessment methodology may be appropriate such as where there are changes to an existing natural turf or AGP pitch, or where existing noise levels in the area are high.

The IOA/EMA³ Working Party Consultation Draft 2002 categorises the significance of a change in noise level. Although this is currently at a draft stage, it provides some helpful guidance on the impact of changes in noise levels.

A 'slight' impact is considered for an increase less than 3 decibels. This generally conforms with the withdrawn Planning Policy Guidance Document 24 statement that a change of 3 dB(A) is the minimum perceptible under normal conditions.

Where noise from the new source (the AGP) does not exceed the existing noise climate the increase in noise will be no more than 3 decibels. This is the minimum that can normally be perceived. The noise levels are both to be measured using the L_{Aeq} parameter over the same time period, T.

In some instances it may be beneficial to use both a comparative and absolute assessment method.



Typical noise levels

Noise levels 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 most significant noise source from typical AGP sports sessions is voice

From the measurement data, a typical free-field noise level of 58 dB $L_{Aeq}(1 \text{ hour})$ ⁴ at a distance of 10 metres (m) from the sideline halfway marking has been determined as representative for noise from an AGP.

A typical free-field noise level from an AGP (at 10 m from the sideline halfway marking)
= 58 dB $L_{Aeq}(1 \text{ hour})$

³ Institute of Acoustics (IOA) / Institute of Environmental Management & Assessment (IEMA)

⁴ Equivalent noise level $L_{Aeq}(T)$ is an average of the varying noise levels over a time period T, in this case, 1 hour as the duration of a typical AGP session.



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Appendix D1 - Points Map

Author: Josie Nixon MIOA

Signs and symbols

-  Receiver
-  Receiver at building
-  Proposed AGP

1 : 2130

0 10 20 40 60 80 m



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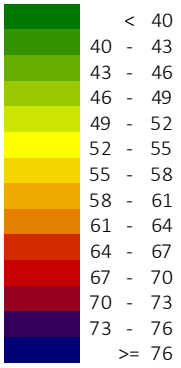
Appendix D2 - Noise Map

Author: Josie Nixon MIOA

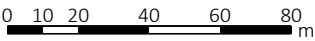
Signs and symbols

 Proposed AGP

Levels in dB(A)



1 : 2130





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Appendix D3 - Points Map
with mitigation

Author: Josie Nixon MIOA

Signs and symbols

- Acoustic Barrier
- Receiver
- Receiver at building
- Proposed AGP

1 : 2130
0 10 20 40 60 80 m



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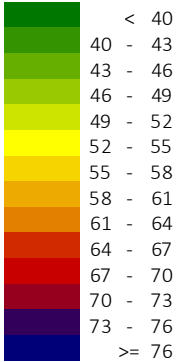
Appendix D4 - Noise Map
with mitigation

Author: Josie Nixon MIOA

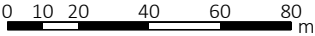
Signs and symbols

- Acoustic Barrier
- Proposed AGP

Levels in dB(A)



1 : 2130





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