



DG ACOUSTICS

NOISE IMPACT ASSESSMENT REPORT FOR A PROPOSED PADEL TENNIS FACILITY

1045-R01-VA

MAY 2026

MR ASH GORECIA

CRABBET PARK

TURNERS HILL ROAD, WORTH, CRAWLEY DOWN, CRAWLEY, RH10 4ST



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-	30 th April 2026	Draft issue for comments.	Daniel J. Green MIOA
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Executive Summary (Non-Technical)

This report presents a Noise Impact Assessment in support of a proposed padel tennis facility at Crabbet Park, Crawley. The development comprises six padel courts, a clubhouse building and a café.

The assessment has considered noise from padel tennis activity (including ball impacts and player activity), and fixed plant associated with the café (kitchen extract system).

The potential impact of noise has been assessed at nearby existing properties, as well as at land allocated for future residential development to the south of the site.

Assessment Approach

Padel tennis is a recreational activity and is therefore assessed as community sports noise, rather than industrial or commercial noise. A bespoke and proportionate assessment approach has been adopted, based on national planning policy, World Health Organization (WHO) guidance, and established good practice for outdoor sports facilities.

Noise levels have been predicted using detailed acoustic modelling, assuming a robust worst-case scenario in which all courts are in use simultaneously.

Impact on Existing Properties

The assessment demonstrates that noise from the proposed padel facility would be significantly lower than the existing sound environment at the nearest residential properties and hotel accommodation.

Predicted noise levels are also well below recognised guideline values for external amenity. As a result, the development is not expected to give rise to any adverse impact on residential amenity.

In planning terms, the development is considered to fall within the No Observed Adverse Effect Level (NOAEL), meaning that noise would not result in any meaningful change to the quality of life of nearby occupants.

Future Residential Development

Land to the south of the site is allocated for future housing. While these properties do not yet exist, a forward-looking assessment has been undertaken to ensure that the proposed development does not prejudice future residential use.

The assessment indicates that:

- In the absence of mitigation, noise from the padel courts could be perceptible at the closest future dwellings;

- However, a mitigation strategy has been identified which is capable of reducing noise to acceptable levels.

This mitigation involves the potential installation of an acoustic lining or enclosure to the padel canopy structure.

To ensure a robust outcome, it is recommended that this mitigation be secured through a planning condition, such that it is implemented prior to the occupation of nearby future dwellings, if required.

With this approach in place, the development would remain fully compatible with the future delivery of housing on the adjacent allocated land.

Kitchen Extract System

Noise from the café kitchen extract system has been assessed separately in accordance with BS 4142.

The assessment demonstrates that:

- Noise from the extract system would be very low at existing properties and effectively inaudible;
- At future residential receptors, noise levels would also be low and unlikely to give rise to adverse impacts.

As a precautionary measure, additional attenuation can be incorporated into the system design to ensure that plant noise remains well below background sound levels.

Overall Conclusion

The proposed development has been assessed using a robust and proportionate methodology and has taken into account both existing and future receptors.

The findings demonstrate that:

- There would be no adverse noise impact on existing properties;
- Potential impacts on future residential development can be effectively controlled through a secured mitigation strategy; and
- Fixed plant associated with the development can be designed to operate without adverse impact.

Overall, the development is considered to be acceptable in acoustic terms and compliant with national and local planning policy relating to noise.

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- APPENDIX A: Acoustic Glossary
- APPENDIX B: Padel Tennis Background Information
- APPENDIX C: Acoustic Mitigation / Acoustic Lining System Sound Reduction Information

1 Introduction

- 1.1 DG Acoustics Ltd (“DGA”) has been instructed by Mr Ash Gorecia (“the Client”) to undertake a Noise Impact Assessment in support of a proposed development at Crabbet Park, Turners Hill Road, Worth, Crawley Down, Crawley RH10 4ST (“the Site”).
- 1.2 The proposed development comprises a padel tennis facility including six standard courts, club accommodation, and ancillary uses, including a café.
- 1.3 The primary objective of this assessment is to determine the potential impact of noise arising from the proposed development on nearby and future noise-sensitive receptors, and to identify any mitigation measures necessary to ensure that impacts are acceptable in planning terms.

Scope of Assessment

- 1.4 The assessment considers:
- Noise from padel tennis activity (including ball impacts, player activity, and interaction with court structures);
 - Noise from fixed plant associated with the café (kitchen extract system);
 - Impacts at existing receptors and at potential future receptors associated with allocated housing land.
- 1.5 The assessment assumes a reasonable worst-case operational scenario, whereby all courts are in simultaneous use during peak periods.

Assessment Approach

- 1.6 Noise from padel tennis activity has been assessed as community / recreational sports noise, and not as industrial or commercial sound. Accordingly, the methodology set out in BS 4142 has not been applied to padel activity.
- 1.7 Instead, a bespoke assessment framework has been developed based on:
- National planning policy;
 - World Health Organization (WHO) community noise guidance;
 - Established good practice for outdoor sports noise (including Sport England guidance);
 - Consideration of acoustic character (including impulsive sound features).
- 1.8 Noise from fixed mechanical plant (kitchen extract system) has been assessed separately in accordance with BS 4142, as appropriate.

Report Structure

1.9 The structure of this report is as follows:

- Section 2: Site context, receptors and development proposals
- Section 3: Planning policy, standards and assessment criteria
- Section 4: Baseline sound environment
- Section 5: Source sound levels for padel tennis activity
- Section 6: Acoustic modelling methodology and results
- Section 7: Noise impact assessment – padel tennis
- Section 8: Noise impact assessment – kitchen extract system
- Section 9: Conclusions

1.10 As this report is technical in nature, a glossary of acoustic terminology is presented in **Appendix A**. An expanded glossary is also available on our website¹.

¹ <https://www.dgacoustics.co.uk/acoustic-reference-library>

2 Site Context and Proposed Scheme Information

Site Location and Surroundings

- 2.1 The application site is located within the grounds of Crabbet Park to the east of Crawley, and would utilise the access road, which currently serves Holiday Inn London Gatwick Worth and Nuffield Health Crawley.
- 2.2 The wider site contains Holiday Inn London Gatwick Worth to the northeast, Nuffield Health Crawley to the northeast beyond the Holiday Inn, car parking for both aforementioned businesses, and various other detached buildings to the north, comprising some residential dwellings in addition to some offices and disused buildings.
- 2.3 **Figure 2.1** shows the application site boundary in the context of the surrounding area:



Figure 2.1: Site location

- 2.4 Road traffic from the M23 motorway is the dominant and most continuous source of environmental noise at the Site.

Existing Noise-Sensitive Receptors

- 2.5 The closest existing noise-sensitive receptors relative to the proposed padel tennis facility are shown below:

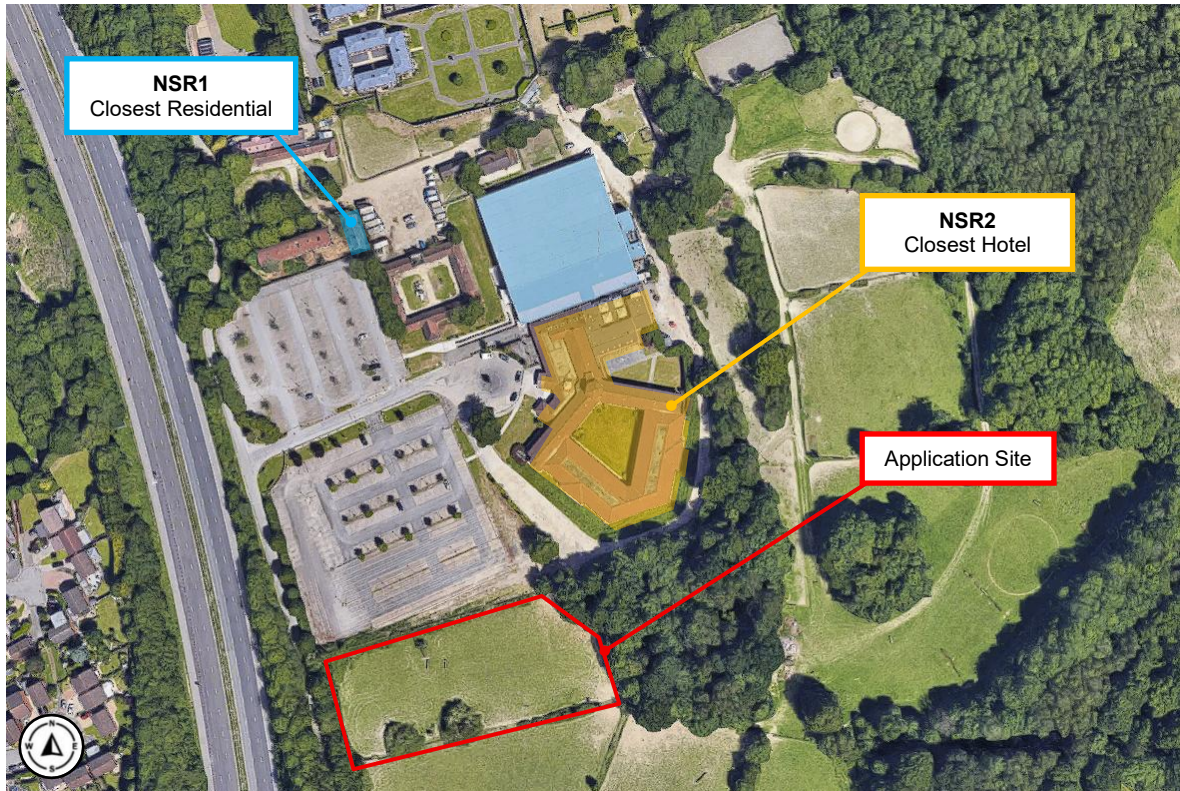


Figure 2.2: Closest noise-sensitive receptors (existing)

Future Noise-Sensitive Receptors

- 2.6 In addition to existing receptors, the Site lies adjacent to land allocated in draft for future residential development. While these receptors are not yet present, they represent a potential future constraint on the operation of the proposed facility.
- 2.7 To ensure that the proposed development does not prejudice the delivery of allocated housing, a forward-looking assessment has been undertaken considering a representative worst-case future receptor location (NSR3).
- 2.8 The assessment has been used to:
- Identify whether noise impacts could arise in the absence of mitigation; and
 - Define mitigation measures capable of ensuring acceptable noise levels at future residential receptors.
- 2.9 This approach is consistent with the principles of good acoustic design and the “agent of change” principle, ensuring compatibility between existing and future land uses.
- 2.10 **Figure 2.3** below shows the application site in the context of the future receptors:



Figure 2.3: Closest noise-sensitive receptors (future)

- 2.11 Assessments would be undertaken for the initial and future scenarios, as additional mitigation would likely be required if and when future housing is brought forward, which could be adopted by the Padel facility at a later date.

Proposed Development

- 2.12 The proposed development comprises the construction of a padel tennis facility.
- 2.13 To account for the level differences, the padel courts have been tiered with the landscape to reduce overall bulk, and the ancillary building has also been stepped back at the first floor to create a cafe terrace. The lower ground floor keeps a limited footprint, and the courts will sit on driven piles to reduce excavation.
- 2.14 The padel court cover is formed from a flexible polyester sheet over a steel frame. The ancillary building is to be clad in black aluminium cladding panels to evoke the rural surroundings and has a sedum roof to invite biodiversity and reduce hard surfaces. There are small amounts of visible retaining wall, which are to be stone-clad.
- 2.15 A proposed 3D visualisation of the padel tennis building is shown in **Figure 2.4**.



Figure 2.4: Proposed padel building 3D visualisation (Image Reference: Gavin Jones Architecture)

- 2.16 Note that the canopies would provide no meaningful reduction with respect to noise transmission, but would allow year-round use of the courts.
- 2.17 The proposed padel canopy structure has been designed such that additional acoustic mitigation can be incorporated if required.
- 2.18 A mitigation strategy has been developed whereby enhanced acoustic lining or enclosure can be applied to the canopy structure to reduce sound emissions toward the allocated housing land.
- 2.19 To ensure robustness in planning terms, it is recommended that any required mitigation be secured via an appropriate planning mechanism, such as a condition or obligation, linked to the delivery or occupation of the allocated housing.
- 2.20 As padel tennis is a relatively new and emerging sport, additional background information is provided in **Appendix B**.
- 2.21 The main sound sources that comprise padel include:
- Racquet-on-ball contact, which was the most dominant source in terms of both frequency and overall sound level;
 - Player vocalisations;
 - The ball making contact with the metal fence along the side of the court; and
 - The ball making contact with the glass at either end of the court.
- 2.22 These factors form the basis of the assessment presented in the following sections of this report.
- 2.23 For the purposes of assessment, a reasonable worst-case operational scenario has been assumed, whereby all courts are in simultaneous use during peak periods. This approach ensures that predicted sound levels represent a robust upper bound of typical operational conditions.

3 Planning Policy, Standards and Acoustic Criteria

Planning Context

Government National Planning Policy: NPPF, NPSE, NPPG

- 3.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England, including those relating to noise and its impact on health and quality of life.
- 3.2 Paragraph 187 of the NPPF states that planning policies and decisions should contribute to and enhance the natural and local environment by preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of noise pollution.
- 3.3 Paragraph 198 states that planning policies and decisions should 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 sensitivity of the site or wider area. In doing so, they should:
- 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; and
 - Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.
- 3.4 The Noise Policy Statement for England (NPSE) provides the overarching policy framework for noise management. It introduces three key aims:
- 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."
- 3.5 In achieving these aims, the NPSE defines the following effect levels:
- **SOAEL (Significant Observed Adverse Effect Level):** The level above which significant adverse effects occur and should be avoided.
 - **LOAEL (Lowest Observed Adverse Effect Level):** The level above which adverse effects can be detected, and mitigation and minimisation of noise should be applied.
 - **NOEL (No Observed Effect Level):** The level below which no effects are detectable.

3.6 The National Planning Practice Guidance (NPPG) on noise supports the NPPF and NPSE and provides guidance on how noise should be considered in planning decisions, including the assessment of adverse impacts and appropriate mitigation.

3.7 **Table 3.1** summarises the NPSE noise exposure hierarchy.

Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific Measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate & reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

Table 3.1: Noise exposure hierarchy

Local Planning Policy

3.8 The adopted Mid Sussex District Plan 2014–2031 forms the statutory development plan. The principal policy is Policy DP29 (Noise, Air and Light Pollution), which requires that development is designed, located and controlled to minimise noise impacts on health, quality of life, neighbouring properties and the wider environment. The policy allows the Local Planning Authority to require a noise assessment and expects appropriate mitigation where significant noise may arise.

3.9 In addition, Policy DP26 (Character and Design) requires that development safeguards the amenity of surrounding occupiers, including protection from unacceptable noise impacts.

3.10 The Council's Planning Noise Advice Document Sussex November 2023 (PNAD) is a material consideration and provides detailed guidance on the assessment of noise. Section 5 identifies outdoor sports and recreational uses as having the potential to generate intermittent and impulsive noise, particularly in quieter suburban or rural environments. The guidance highlights the need to consider the frequency and character of use, impacts at nearby noise-sensitive receptors, and the incorporation of appropriate mitigation measures.

3.11 The PNAD also advises that operational controls, such as hours of use and management measures, may be required where necessary to minimise noise impacts and protect residential amenity.

Assessment Framework

3.12 There is currently no UK-specific standard for the assessment of noise from padel tennis. Accordingly, a bespoke and proportionate assessment framework has been developed.

3.13 This framework draws upon:

- National planning policy (NPPF, NPSE, NPPG);
- World Health Organization (WHO) Guidelines for Community Noise;
- Established good practice for outdoor sports noise (including Sport England guidance);
- Professional judgement and relevant international standards relating to acoustic character.

3.14 This approach is consistent with current industry practice for assessing community and recreational sound sources.

World Health Organization 'Guidelines for Community Noise'

3.15 The World Health Organization (WHO) Guidelines for Community Noise define community noise as noise emitted from all sources except industrial workplaces, and includes sports and recreational activities.

3.16 The guidance advises that, to enable speech communication indoors, external daytime noise levels at residential façades should not exceed 50 dB $L_{Aeq, 16 \text{ hour}}$, assuming a partially open window.

3.17 For outdoor living areas, the WHO states:

- 55 dB $L_{Aeq, 16 \text{ hour}}$ represents the onset of serious annoyance; and
- 50 dB $L_{Aeq, 16 \text{ hour}}$ represents a desirable level to protect the majority of people from moderate annoyance.

3.18 The WHO further advises that evening and night-time noise levels should be 5–10 dB lower than daytime levels. While specific evening criteria are not defined, it is common practice within UK noise assessments to adopt a 5 dB reduction for the evening period as a reasonable and proportionate approach.

3.19 On this basis, the following indicative external criteria are derived for residential receptors:

- Daytime: 50–55 dB L_{Aeq}
- Evening: 45–50 dB L_{Aeq}

3.20 These values are applied with professional judgement, taking into account the site-specific context, most notably the baseline environmental sound climate.

BS 8233:2014 ‘Guidance on sound insulation and noise reduction for buildings’

3.21 BS 8233:2014 provides guidance on internal ambient noise levels within dwellings. Recommended values are summarised in **Table 3.2**.

Room	Daytime (07:00-23:00)	Night-time (23:00-07:00)
Living Room	≤ 35 dB $L_{Aeq,16hr}$	N/A
Dining Room	≤ 40 dB $L_{Aeq,16hr}$	N/A
Bedroom	≤ 35 dB $L_{Aeq,16hr}$	≤ 30 dB $L_{Aeq,8hr}$

Table 3.2: BS 8233:2014 indoor ambient noise levels for dwellings

3.22 These guideline values relate to steady, anonymous noise sources and are not directly applicable to short-duration outdoor sports noise. However, they provide useful context regarding acceptable internal noise environments and are referenced for completeness.

Sports England

3.23 Sport England guidance on Artificial Grass Pitches (AGPs) provides relevant good practice for the assessment of outdoor sports noise.

3.24 Although not specific to padel tennis, the types of noise generated (player vocalisation, ball impacts, and interaction with enclosure structures) are comparable.

3.25 The guidance identifies WHO criteria as the most appropriate benchmark for assessing community sports noise and recommends the use of external façade levels.

3.26 Importantly, the guidance highlights that long-term averaging periods (e.g. $L_{Aeq,16\text{ hour}}$) are not suitable for intermittent sports activities, as they dilute periods of actual use.

3.27 Instead, a shorter assessment period of $L_{Aeq, 1\text{ hour}}$ is recommended, representing a typical duration of play and providing a more realistic assessment of potential noise impact.

3.28 This approach is widely accepted in practice for community sports facilities and is adopted within this assessment.

Consideration of the Impulsive Nature of the Sound Source

- 3.29 Padel tennis is characterised by intermittent ball impacts and player activity, which exhibit impulsive acoustic characteristics when in close proximity.
- 3.30 Note that this does not automatically mean that the sound may be perceived as impulsive at a receptor location when factoring in distance attenuation and screening.
- 3.31 It is well established that impulsive noise can be more perceptible and potentially more intrusive than continuous noise of the same equivalent level.
- 3.32 International Standard ISO 1996-1:2017² recognises that A-weighted noise levels alone may not adequately account for such characteristics and allows for the application of acoustic feature corrections where appropriate.
- 3.33 The standard identifies categories of impulsive sound and associated adjustments, with regular impulsive sources (including ball games) typically attracting corrections in the order of +5 dB.
- 3.34 International Standard ISO/PAS 1996-3:2022³ provides a method for quantifying impulsivity, typically resulting in corrections in the range of 0 to 9 dB depending on the prominence of the sound at the receptor position. For context:
- The lower range of $\approx 0\text{-}3$ dB would correspond to sounds that are weakly impulsive rather than distinctly impulsive; typically, a situation where impacts are present but heavily masked (e.g. warehouse pallet movements, distant car door slams, etc).
 - The middle range of $\approx 4\text{-}6$ dB would correspond to sounds that are clearly perceptible, impulsive sounds (e.g. skip loading, vehicle tailgate slams, light piling or percussive groundworks, etc).
 - The upper range of $\approx 7\text{-}9$ dB would correspond to sounds that are highly impulsive, sharp or attention-grabbing (e.g. impact piling, drop forging, explosive or blasting activity, gunshots or hammer strikes on metal, etc).

Applicability of BS 4142

- 3.35 BS 4142 provides a methodology for assessing the impact of industrial and commercial sound sources.
- 3.36 Padel tennis activity is characterised by:
- Human-generated sound (player activity and vocalisation);

² ISO 1996-1:2016 Acoustics — Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures

³ ISO/PAS 1996-3:2022 Acoustics — Description, measurement and assessment of environmental noise Part 3: Objective method for the measurement of prominence of impulsive sounds and for adjustment of L_{Aeq}

- Intermittent sports-related impacts (ball strikes and enclosure interaction);
- Non-mechanical, non-industrial sound sources.

- 3.37 On this basis, BS 4142 is not considered an appropriate primary assessment methodology for padel tennis activity and has therefore not been applied in determining noise impact.
- 3.38 However, the general principle within BS 4142 that acoustic character (e.g. impulsivity) can influence perception is recognised. This principle has been considered qualitatively, and where appropriate, through the application of an acoustic character correction by analogy.
- 3.39 Where impulsive characteristics are considered likely to be perceptible, BS 4142 notes that a correction in the range of +3 to +9 dB may be applied to the predicted L_{Aeq} levels, depending on the prominence of the sound at the receptor position.

Application of Impulsivity Correction

- 3.40 Based on significant experience of assessing padel tennis facilities, it is the view of DGA that, typically, a 0-3 dB correction is most applicable for padel tennis, depending on the level of predicted noise vs the prevailing ambient noise climate of the area, i.e. there is a dependence on the level of masking sound provided by the baseline sound climate as to how prominent the impulsive characteristics of padel may be perceived.
- 3.41 **Table 3.3** provides a typical guideline for the application of impulsivity corrections for indicative purposes only.

Predicted vs Baseline Ambient Sound	Typical Impulsivity Correction	Notes
-15 dB below	0 dB	Sufficient masking sound should be present such that impulsive characteristics are not clearly distinguishable
-10 dB below	0 – 3 dB	The majority of racquet strikes are masked by the existing baseline ambient sound, but harder-hitting strikes might be perceptible at a low level
-5 dB below	3 dB	Some masking sound is present, but the majority of racquet strikes are perceptible at a low level
Equal to background	5 dB	Very little masking sound is present, with the majority of racquet strikes being perceptible
+5 dB or greater above	6 – 9 dB	Racquet strikes would be clearly perceptible

Table 3.3: Typical guidelines for the application of impulsivity corrections to L_{Aeq} levels

- 3.42 In practice, the perceptibility of impulsive characteristics from padel tennis is highly dependent on the level of masking provided by the prevailing acoustic environment. At locations where the specific padel sound level is notably below the ambient sound level,

impulsive characteristics are typically reduced in perceptual prominence and may not be distinguishable to receptors.

Summary

- 3.43 In the absence of specific UK guidance for padel tennis, a robust and proportionate assessment framework has been developed based on established national policy, World Health Organization guidance, and relevant good practice for outdoor sports facilities.
- 3.44 The approach adopts external amenity-based noise criteria, supported by a 1-hour assessment period and consideration of acoustic character, to ensure consistency with planning policy objectives and typical Environmental Health practice.
- 3.45 A pragmatic approach is adopted whereby impulsive characteristics are considered at receptor locations, taking into account distance, attenuation, and the prevailing acoustic environment.
- 3.46 Based on the above review of policy and guidance, the following assessment approach has been adopted:
- External residential amenity criteria derived from WHO Guidelines:
 - i) Daytime (07:00–19:00): 50–55 dB $L_{Aeq, 1 \text{ hour}}$
 - ii) Evening (19:00–23:00): 45–50 dB $L_{Aeq, 1 \text{ hour}}$
 - Assessment period:
 - i) $L_{Aeq, 1 \text{ hour}}$, reflecting the typical duration of padel play sessions
 - Acoustic character:
 - i) Potential impulsive characteristics considered at receptor locations
 - ii) Where appropriate, a correction of 0 dB to +5 dB may be applied, in line with the standards discussed above
 - iii) This would be informed by a comparison of the predicted sound levels from the padel facility against the existing baseline environmental sound climate to determine the likelihood of impulsive sound being perceptible at the receptor locations
 - Assessment approach:
 - i) Primary assessment at 1 metre from the façade of the closest receptors, representing internal conditions with windows partially open, in line with WHO guidance
 - ii) Consideration of external amenity areas (e.g. gardens and patios) as key receptors of impact, reflecting typical daytime and evening use

- 3.47 This approach is considered consistent with national planning policy, proportionate to the scale and nature of the development, and reflective of current industry practice for outdoor sports noise assessments.
- 3.48 In the context of this assessment, acceptability is determined with reference to the NPSE effect hierarchy, with particular emphasis on demonstrating that noise levels associated with the development would fall within the No Observed Effect Level (NOEL) or No Observed Adverse Effect Level (NOAEL) at nearby residential receptors.

4 Baseline Sound Conditions

- 4.1 A baseline noise survey has been undertaken by Pace Consult on site, as detailed in Report Reference PC-25-0047-RP1 dated 12th March 2025.
- 4.2 For brevity and simplicity, the noise monitoring positions and noise survey results are summarised in **Figure 4.1**.

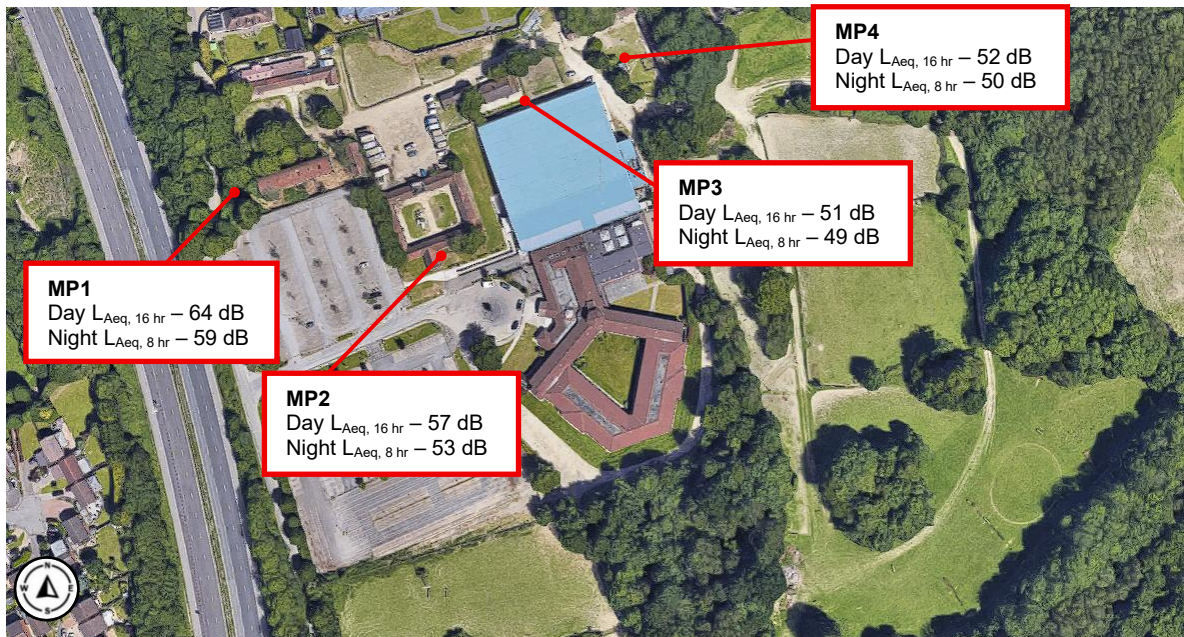


Figure 4.1: Pace Consult noise measurement positions and survey results

- 4.3 The main source of environmental noise across the site is associated with road traffic from the M23. Based on propagation of road traffic noise from the M23 across the site, the following façade levels are considered representative:



Figure 4.2: Expected noise levels at NSR façades

5 Padel Tennis Source Sound Levels

- 5.1 Sound levels from an existing padel tennis facility at a location within the UK have been previously measured. Measurements were undertaken over 2 no. 30-minute matches between four players.
- 5.2 The following sound events were captured during the measurement process:
- Racquet-on-ball contact, which was the most dominant source in terms of both frequency and overall sound level;
 - Player's shouting;
 - Ball hitting the metal fence along the side of the court; and
 - The ball striking the glass at either end of the court.
- 5.3 The sound level meter was positioned on a tripod at a height of 1.5 metres above ground and a distance of 1 metre from the centre line of the court. The resultant measurement data is shown in **Table 5.1**.

Description	Measured Sound Level
Specific sound level of padel tennis activity	65.3 dB LAeq, 30 min at 1m 65.6 dB LAeq, 30 min at 1m
Typical maximum sound levels of padel tennis activity	64 – 80 dB LAmax, 1 sec at 1m

Table 5.1: Source sound levels of padel tennis activity

- 5.4 The typical maximum sound level range of racquet-on-ball strikes has been derived from a statistical analysis of LAmax, 1 sec values measured during the full 1-hour period of padel activity, as shown in **Figure 5.1**.

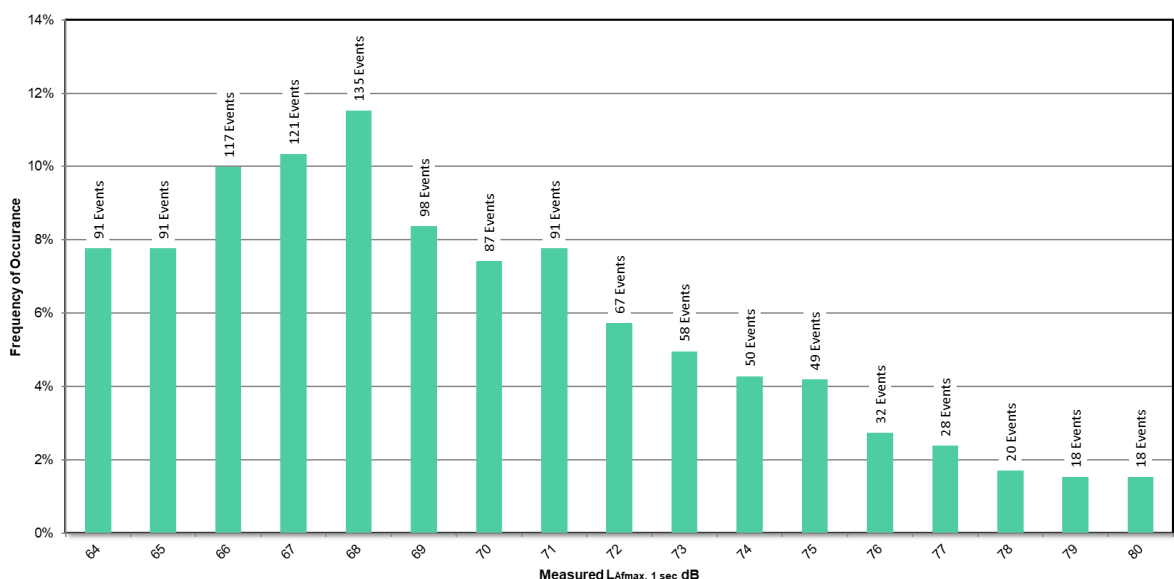


Figure 5.1: Padel tennis statistical distribution of maximum racquet strike events

- 5.5 The statistical analysis above clearly evidences the variation in sound levels throughout a padel tennis match. This is simply the inherent nature of the sport, with the variations being directly attributed to the force with which the ball is struck.
- 5.6 Note that some event levels occurred outside of the range reported above, but have been omitted from the analysis due to the frequency of occurrence being less than 1%.
- 5.7 The $L_{Aeq, 30 \text{ min}}$ would be considered comparable to $L_{Aeq, 1 \text{ hour}}$ sound levels, assuming that the courts are in continuous use.
- 5.8 The measured data is considered representative of typical recreational padel tennis activity. The assessment assumes regular play conditions rather than elite-level or tournament play; however, the use of L_{Aeq} over representative match durations inherently captures a range of play intensities.
- 5.9 Due to the emergence of padel tennis as a popular sporting activity, an Institute of Acoustics branch meeting has recently covered the topic. To ensure the veracity of the data above, additional source sound level data is presented from the branch meeting in **Table 5.2**.

Description	Measured Sound Level
Ambient Sound Level (Sides)	60 dB $L_{Aeq, 1 \text{ hr @ } 5 \text{ m}}$ 52 dB $L_{Aeq, 1 \text{ hr @ } 17 \text{ m}}$
Maximum Sound Level (Ends and Sides)	69 – 72 dB $L_{Amax, 1 \text{ sec @ } 5 \text{ m}}$

Table 5.2: Additional source sound level data of padel tennis activity

- 5.10 Note that the sound levels in the data sets reported above are comparable due to the variations in measurement distance from an area source (i.e. an area whereby a discrete sound level event could occur at any individual point within the area).
- 5.11 Based on extensive experience with measuring and assessing padel tennis sound, the measured sound pressure levels would be equivalent to a sound power level of 91 dB(A), with the sound power distributed over the full playing area of the padel court as an area source of 20 metres by 10 metres.

6 Acoustic Modelling

- 6.1 To demonstrate the expected sound propagation from the proposed padel tennis facility to the surrounding area, an acoustic modelling exercise has been conducted using SoundPLAN 9.1.

Calculation Methodology

- 6.2 SoundPLAN considers various inputs, including the topography of the surroundings, buildings, screening (e.g. boundary walls), and calculates sound propagation and barrier screening effects based on ISO 9613-1:1993 '*Acoustics - Attenuation of sound during propagation outdoors. Part 1: Calculation of the absorption of sound by the atmosphere*', and ISO 9613-2:2024 '*Acoustics - Attenuation of sound during propagation outdoors. Part 2: Engineering method for the prediction of sound pressure levels outdoors*'.

Model Parameters

- 6.3 The general modelling parameters are detailed below:
- Topographical Data – DTM (digital terrain model) LiDAR 0.5m data sourced from <https://www.blueskymapshop.com/>
 - Building Data – Sourced from Google Earth to inform building locations and heights
 - Ground Absorption – Set based on ground type:
 - i) Open fields – 1.0
 - ii) Hard standing areas – 0.1
 - Reflections – Calculated up to the third order to ensure that reflections from glazed padel screens, local screening/buildings are accurately considered within the model.
 - Temperature – 10°C, Relative Humidity – 70%
- 6.4 The padel-specific modelling parameters are detailed below:
- Padel Canopy Structure Sound Reduction – the majority of the padel tennis canopy structure is comprised of a stretched tensile fabric. The sound reduction performance would be expected to be in the region of $R_w (C; C_{tr})$ 3 (-1:-1) dB, which would be the minimum performance of such a material type. The sides of the padel canopies would be considered open.
 - Padel Canopy Structure Absorption Coefficients – the single octave band absorption coefficient data of each material has been selected based on a library of data. The overall coefficients are: Padel Court (0.3), Padel Fabric (0.5), Glazed Elements (0.1).
 - Padel Source Sound Levels – an area source has been input into the acoustic model to cover each full court area at a height of 1.5 metres above ground. For the full-sized

courts, the sound power has been set to 91 dB(A), which correlates with the sound levels measured on site from the padel activity. For the touch courts, which have a smaller area, the sound power has been set to 88 dB(A).

Acoustic Model Results

- 6.5 The model assumes simultaneous operation of all courts, representing a reasonable worst-case scenario for typical peak usage.
- 6.6 The results of the acoustic model are shown in **Figure 6.1** for the existing scenario, and includes receptor positions for the future scenario, whereby allocated houses may be brought forward.



Figure 6.1: 2D acoustic model output of existing scenario + allocated housing

- 6.7 The assessment has identified that, in the absence of mitigation, noise levels at the closest potential future residential receptors could approach or exceed external amenity guideline values.
- 6.8 To address this, a mitigation strategy has been developed whereby the padel canopy structures can be enhanced through the application of an acoustic lining system. An example is presented in **Figure 6.2**, which is the MAL22 acoustic lining system from Direct Acoustics.



Figure 6.2: Example of MAL22 acoustic lining applied to the underside of a canopy structure

- 6.9 This mitigation is capable of providing a substantial reduction in sound emissions toward the allocated housing land, providing a sound reduction of R_w 22 dB (see datasheet in **Appendix C**).
- 6.10 To ensure the development remains compatible with future residential use, it is recommended that this mitigation be secured through an appropriate planning mechanism, such that it is implemented prior to the occupation of the nearest residential dwellings, unless a subsequent noise assessment demonstrates that it is not required.
- 6.11 To demonstrate the effectiveness of the mitigation, repeat calculations have been undertaken with the same parameters as those described in Paragraphs 6.3 and 6.4, with the MAL22 lining applied to the roof, and south, east and west façades of the canopy structures. Note that the north-facing façade, which faces away from the allocated housing zone, would be left open for ventilation purposes.
- 6.12 The results of the acoustic model, including the mitigation, are shown in **Figure 6.3**.

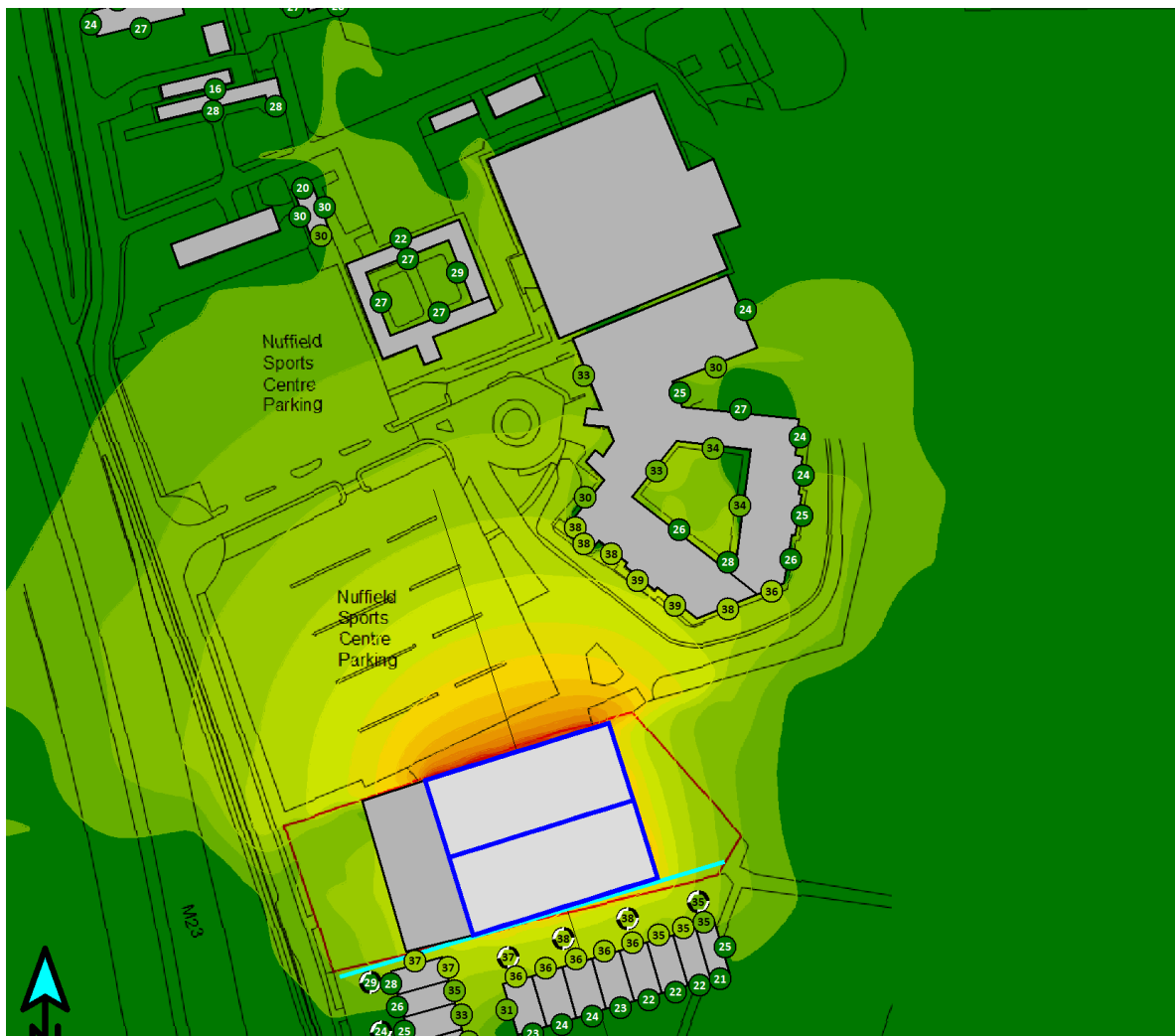


Figure 6.3: 2D acoustic model output of future scenario, including noise mitigation to reduce noise transmission to the allocated housing zone

7 Noise Impact Assessment – Padel Tennis

Predicted Sound Levels at Closest Noise Sensitive Receptors

- 7.1 Based on the findings of the acoustic modelling exercise, the worst-case absolute sound levels generated by the proposed padel tennis facility are compared against the established day (07:00 – 19:00) and evening (19:00 – 23:00) baseline sound levels in **Table 7.1**.

NSR	Time Period	Baseline Sound Level L _{Aeq, T}	Worst-Case Sound Level Predicted at Closest Receptor	+ / - vs Existing Baseline
NSR 1: Closest Residential	Daytime 07:00-23:00	64 dB L _{Aeq, 12 hour}	32 dB L _{Aeq, 1 hour}	-32
NSR 2: Closest Hotel	Daytime 07:00-23:00	59 dB L _{Aeq, 12 hour}	40 dB L _{Aeq, 1 hour}	-19
NSR 3: Closest Future Residential (no mitigation)	Daytime 07:00-23:00	59 dB L _{Aeq, 12 hour}	52 dB L _{Aeq, 1 hour}	-7
NSR 3: Closest Future Residential (with mitigation)	Daytime 07:00-23:00	59 dB L _{Aeq, 12 hour}	37 dB L _{Aeq, 1 hour}	-22

Table 7.1: Predicted sound levels from the padel facility at the closest noise-sensitive receptors

- 7.2 The results consider simultaneous operation of all courts, representing a reasonable worst-case scenario for typical peak usage.

Application of Impulsive Sound Correction

- 7.3 In the case of NSRs 1 and 2, the predicted sound levels at the receptors from the padel activity are a considerable margin below the current baseline sound levels on site.
- 7.4 Therefore, in these cases, the baseline ambient sound environment would provide a high degree of masking, such that padel-related sound would be of low perceptual prominence relative to the prevailing acoustic environment.
- 7.5 Based on the above, no correction for impulsive characteristics would be applied for these cases.
- 7.6 In the case of NSR3 (future residential receptors), predicted sound levels in the unmitigated scenario are closer to the prevailing ambient sound levels.
- 7.7 In this situation, intermittent padel-related noise events may be perceptible, and a small acoustic character correction (e.g. +3 dB) could be applicable.
- 7.8 This reinforces the need for mitigation in the event that the allocated housing is brought forward, as demonstrated by the mitigated scenario.

Comparison of Padel Facility Sound vs Established Criteria

- 7.9 **Table 7.2** provides a comparison of the predicted padel facility sound emissions vs the WHO guideline levels.
- 7.10 While the WHO guideline values are not statutory limits, they provide a widely accepted benchmark for assessing external amenity.
- 7.11 In this context, they are used alongside consideration of the prevailing ambient sound climate and acoustic character to determine the likely significance of noise effects.

NSR	Time Period	Guideline Levels L_{Aeq, T^*}	Worst-Case Sound Level Predicted at Closest Receptor	+ / - vs Criterion
NSR 1 Closest Residential	Daytime 07:00 – 19:00	50-55 dB $L_{Aeq, 1 \text{ hr}}$	32 dB $L_{Aeq, 1 \text{ hour}}$	-18 to -23
	Evening 19:00 – 23:00	45-50 dB $L_{Aeq, 1 \text{ hr}}$		-13 to -18
NSR 2 Closest Hotel	Daytime 07:00 – 19:00	50-55 dB $L_{Aeq, 1 \text{ hr}}$	40 dB $L_{Aeq, 1 \text{ hour}}$	-10 to -15
	Evening 19:00 – 23:00	45-50 dB $L_{Aeq, 1 \text{ hr}}$		-5 to -10
NSR 3: Closest Future Residential (no mitigation)	Daytime 07:00 – 19:00	50-55 dB $L_{Aeq, 1 \text{ hr}}$	52 dB $L_{Aeq, 1 \text{ hour}}$	+2 to -3
	Evening 19:00 – 23:00	45-50 dB $L_{Aeq, 1 \text{ hr}}$		+7 to +2
NSR 3: Closest Future Residential (with mitigation)	Daytime 07:00 – 19:00	50-55 dB $L_{Aeq, 1 \text{ hr}}$	37 dB $L_{Aeq, 1 \text{ hour}}$	-13 to -18
	Evening 19:00 – 23:00	45-50 dB $L_{Aeq, 1 \text{ hr}}$		-8 to -13

Table 7.2: Predicted sound levels from the padel facility vs WHO Guideline Levels

*derived from WHO guidance

Discussion of Results

- 7.12 At NSRs 1 and 2, noise levels from the proposed padel activity are significantly below the WHO guideline levels.
- 7.13 Even if a precautionary correction of up to +3 dB were applied to account for potential impulsive characteristics, the resultant sound levels would remain well below both baseline ambient levels and relevant guideline criteria. The conclusions of the assessment would therefore remain unchanged, irrespective of an impulsivity correction.
- 7.14 At NSR 3, mitigation would be required to achieve compliance with the WHO criteria. If no mitigation is applied, then the WHO criteria would be exceeded at the allocated housing zone. While the WHO guideline values are not statutory limits, they provide a useful benchmark and are considered alongside the prevailing ambient sound climate and acoustic character.

- 7.15 It is the professional opinion of DGA that the mitigation should be applied upon planning consent being granted for the plots of allocated housing immediately adjacent to the padel facility.
- 7.16 It is considered appropriate that the mitigation is secured through a planning condition linked to the occupation of the nearest residential dwellings within the allocated housing land. This ensures that mitigation is implemented only if and when required, while maintaining compatibility between the development and future residential use.

Assessment of Impacts (Existing Receptors)

- 7.17 The assessment demonstrates that, at existing receptors, predicted noise levels from the proposed padel activity are significantly below both the prevailing ambient sound climate and relevant external amenity guideline values.
- 7.18 On this basis, the development is not expected to give rise to any adverse effect on residential amenity and would fall within the No Observed Adverse Effect Level (NOAEL) as defined by the Noise Policy Statement for England.

Assessment of Impacts (Future Receptors / Allocated Housing)

- 7.19 The assessment indicates that, in the absence of mitigation, noise from the padel facility could give rise to an adverse effect at the nearest potential future residential receptors.
- 7.20 However, the proposed mitigation strategy is capable of reducing noise levels such that they fall comfortably below guideline values and within the range of the prevailing ambient sound environment.
- 7.21 To ensure robustness in planning terms, it is recommended that the identified mitigation be secured through an appropriate planning mechanism, such that it is implemented prior to the occupation of the nearest residential dwellings, unless it can be demonstrated through further assessment that such mitigation is not required.

8 Noise Impact Assessment – Kitchen Extract System

Proposal

- 8.1 The proposal would involve the installation of a kitchen extraction fan and associated ductwork to serve the café.
- 8.2 The extraction fan itself would be located within the kitchen of the café, with the ductwork running vertically and the flue terminating at the roof level. The proposed upper ground floor plan is shown in the figure below, with the location of the extraction fan and vertical flue highlighted in yellow:

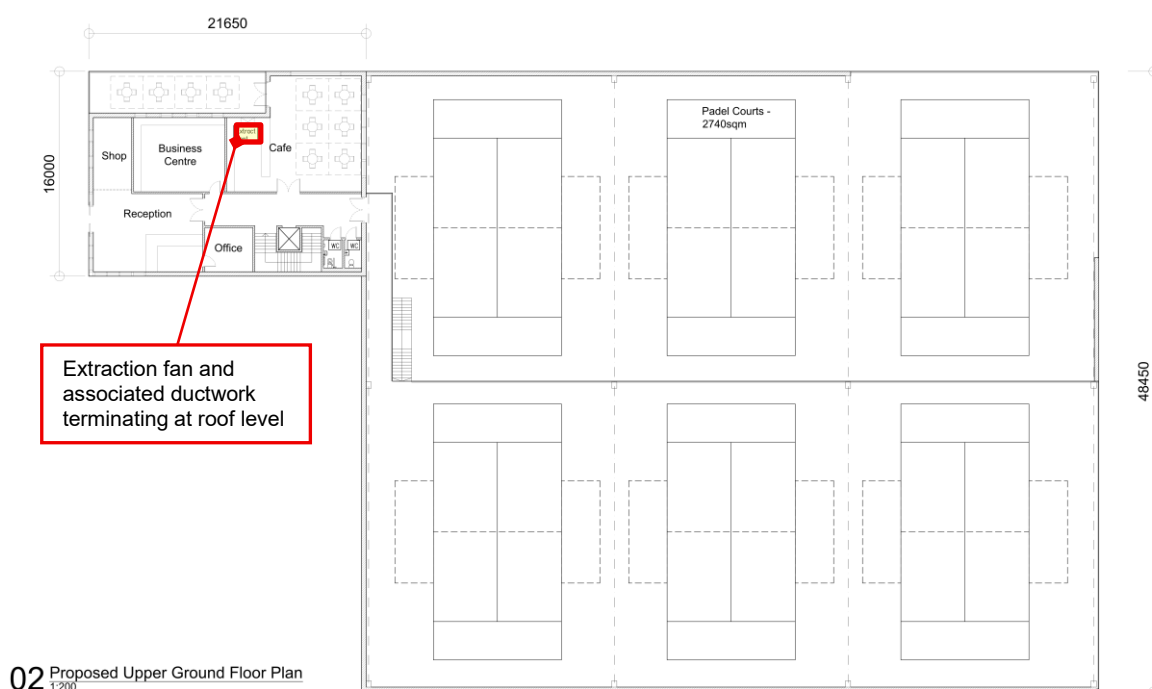


Figure 8.1: Upper ground floor plan showing proposed installation location of kitchen extraction fan and associated ductwork

- 8.3 The proposed make and model number of the fan, and the single octave band/overall sound levels sourced from the manufacturer, are detailed in **Table 8.1**.

Helios Gigabox GBW500/4	Octave Band Centre Frequency, dB							dB(A)
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
Exhaust sound power levels	72	75	76	78	75	71	67	83

Table 8.1: Sound power levels of the proposed kitchen extraction fan

- 8.4 The kitchen extract system is expected to operate during the café opening hours, which are anticipated to fall within daytime and early evening periods. The system is not expected to operate during night-time hours (23:00–07:00).

- 8.5 For the purposes of this assessment, a daytime assessment period of 1 hour has been adopted, consistent with BS 4142 methodology.

Local Authority Guidance

- 8.6 'Planning Noise Advice Document: Sussex' states that new noise-generating plant and equipment should be assessed in accordance with BS 4142:2014+A1:2019. A summary of this British Standard is presented below.

BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

- 8.7 BS 4142:2014+A1:2019 provides a method for assessing the impact of industrial and commercial sound on noise-sensitive receptors by comparing the Rating Level of the specific sound source with the background sound level (L_{A90}).
- 8.8 The initial estimate of impact is based on the difference between the Rating Level and background sound level:
- A difference of around +10 dB or more indicates a likely significant adverse impact.
 - A difference of around +5 dB indicates a potential adverse impact.
 - Where the Rating Level is equal to or below the background level, this indicates a low impact.
- 8.9 The Rating Level is derived from the Specific Sound Level (L_{Aeq}) with the addition of acoustic feature corrections, where applicable, to account for characteristics such as tonality, impulsivity, intermittency, or other distinctive features.
- 8.10 The assessment also requires consideration of context, including:
- The absolute sound levels, particularly in very quiet or very noisy environments;
 - The character of the sound relative to the existing acoustic environment and its potential to be distinguishable or incongruous; and
 - The sensitivity of the receptor, including any existing mitigation such as façade insulation or acoustic screening.
- 8.11 Background sound levels used in the assessment should be representative of typical conditions during the relevant assessment periods. The standard reference periods are 1 hour during the daytime (07:00–23:00) and 15 minutes during the night-time (23:00–07:00).
- 8.12 The outcome of the assessment is determined through a combination of the initial quantitative comparison and professional judgement, taking into account the specific context of the site and surrounding environment.

Background Sound Levels

- 8.13 The background sound levels have been derived from the baseline survey undertaken by Pace Consult, as detailed in Report Reference PC-25-0047-RP1 dated 12th March 2025.
- 8.14 The lowest measured daytime background sound level across all monitoring locations was L_{A90} 46 dB. This value has been adopted for the purposes of assessment as a robust and conservative representation of background sound conditions, ensuring that the assessment reflects a worst-case scenario.
- 8.15 It is noted that background sound levels at individual receptor locations may be higher than this value; therefore, the use of L_{A90} 46 dB is considered to provide a suitably precautionary basis for assessment.

Calculated Sound Levels at the Closest Noise Sensitive Receptors

- 8.16 The noise model produced as part of the padel tennis exercise has been adapted to calculate the Specific Sound Level of the extraction fan at the closest noise-sensitive receptors (NSRs).
- 8.17 The sound power of the extraction system has been set to the source sound power levels detailed in **Table 8.1**, and input within the model as a point source at 1.5 metres above the roof level to reflect the termination point of the flue.
- 8.18 A summary of the noise model output is shown in **Figure 8.2**.



Figure 8.2: Noise map of kitchen extraction system noise emissions (Specific Sound Level calculation)

- 8.19 In accordance with BS 4142, acoustic feature corrections have been considered at the receptor locations to account for any perceptible characteristics such as tonality, impulsivity or intermittency.
- 8.20 The need for such corrections depends on the audibility and perceptual prominence of the specific sound relative to the prevailing background sound environment.
- 8.21 At the existing receptors (NSRs 1 & 2), the predicted Specific Sound Levels are significantly below the representative background sound level. In such circumstances, the sound from the plant would be effectively masked by the existing sound environment and would be unlikely to be perceptible. On this basis, no acoustic feature corrections have been applied.
- 8.22 At the future receptor (NSR 3), the predicted Specific Sound Level is closer to the background sound level and may be just perceptible under certain conditions. As a

precautionary approach, a +2 dB correction for potential tonal characteristics has been applied.

8.23 No corrections for impulsivity or intermittency are considered necessary, as the plant is expected to operate steadily and continuously.

8.24 **Table 8.2** compares the Rating Sound Level calculated at each receptor location against the minimum background sound level during daytime hours, when the extraction fan might be in use.

Receptor	Background Sound Level dB $L_{A90, T}$	Worst-Case Specific Sound Level at Receptor dB $L_s = L_{Aeq, Tr}$	Worst-Case Rating Level at Receptor dB $L_{Ar, Tr}$	+/- Compared vs Minimum Background Sound dB
Existing	46	28	28	-18
Future (allocated housing)		40	42	-4

Table 8.2: Summary of the unmitigated Rating Levels at the receptor façade

8.25 As noted in BS 4142:2014+A1:2019, “the lower the rating level is relative to the measured background sound level, the less likely it is that there will be an adverse impact or significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound having a low impact, depending on the context”.

8.26 In the case of the existing receptors (NSRs 1 and 2), as the Rating Level is so far below the background sound level, it is clear that the introduction of this source would result in no impact, irrespective of the context.

8.27 In the case of the future receptor (NSR 3), the Rating Level is calculated to be slightly below the adopted background sound level. In accordance with BS 4142, this indicates a low impact.

8.28 However, given:

- the potential for future residential development in closer proximity to the site; and
- the desire to ensure a robust and future-proof design,

8.29 it is recommended that additional mitigation be incorporated to provide a further margin below the background sound level.

8.30 A design target of achieving a Rating Level of approximately 5–10 dB below the background sound level is considered appropriate to ensure that plant noise remains effectively imperceptible in the context of the future sound environment.

8.31 This can be achieved through the incorporation of an in-line attenuator within the ductwork.

- 8.32 This level of mitigation could typically be achieved through the incorporation of an appropriately specified in-line attenuator within the ductwork.
- 8.33 The final selection of attenuation measures should be confirmed at detailed design stage, taking into account:
- required acoustic performance across octave bands;
 - system pressure drop;
 - regenerated noise; and
 - overall system efficiency.
- 8.34 It is recommended that a condition be attached to any planning consent requiring that fixed plant and equipment associated with the development shall be designed and installed such that the Rating Level, as determined in accordance with BS 4142, does not exceed a level minus 10 dB below the representative background sound level at the nearest noise-sensitive receptors.
- 8.35 This will ensure that plant noise does not give rise to adverse impacts on residential amenity.

9 Conclusion

- 9.1 This report has assessed the potential noise impact of a proposed padel tennis facility at Crabbet Park, including both padel activity and associated plant.
- 9.2 The assessment demonstrates that:
- At existing receptors, noise from the padel courts would be significantly below the prevailing sound environment and relevant guideline levels, and would not give rise to any adverse impact on residential amenity. The development would fall within the No Observed Adverse Effect Level (NOAEL).
 - At future residential receptors within the allocated housing land, noise could be perceptible in the absence of mitigation. However, an effective and deliverable mitigation strategy has been identified, capable of reducing noise to acceptable levels. This can be secured through a planning condition linked to the occupation of the future dwellings.
 - Noise from the café kitchen extract system, assessed in accordance with BS 4142, would be well below background sound levels at existing and future receptors, and would not result in adverse impact.
- 9.3 With appropriate mitigation secured for future receptors, the proposed development would:
- Not give rise to adverse noise effects;
 - Not prejudice the delivery of allocated housing; and
 - Be acceptable in acoustic terms and compliant with planning policy.

APPENDIX A: Acoustic Glossary

Acoustic Glossary of Terms

Absorption

The process by which sound energy is converted into heat when it strikes a surface, reducing reflected sound within a space.

Absorption Coefficient (α)

A value between 0 and 1 describing how much sound a material absorbs at a given frequency. A value of 0 indicates total reflection; 1 indicates total absorption.

Addition of Noise Sources

Because decibels are logarithmic, multiple sound sources combine logarithmically rather than arithmetically; two equal sound levels increase the overall level by 3 dB (e.g. 60 dB + 60 dB = 63 dB), and a tenfold increase in sound energy results in a 10 dB increase.

Ambient Noise Level

The prevailing background noise level at a location, typically measured over a representative period and expressed as L_{Aeq} .

Airborne Sound

Sound transmitted through the air (e.g., speech, music, traffic noise).

Airborne Sound Insulation

The ability of a building element (wall, floor, façade) to reduce airborne sound transmission between spaces.

Break-In Noise

External noise entering a building through façades, glazing, ventilation systems, or building elements.

Break-Out Noise

Noise generated inside a building that escapes to the external environment.

dB (Decibel)

A logarithmic unit used to express sound level. Because the scale is logarithmic, a 10 dB increase represents a tenfold increase in sound energy.

dB(A)

A-weighted decibels. A measurement scale that adjusts sound levels to reflect human hearing sensitivity.

Flanking Transmission

Sound transmission that bypasses the main separating element via adjoining structures (e.g., floors, ceilings, cavity walls).

Frequency (Hz)

The rate at which a sound wave oscillates, measured in Hertz (Hz). Low frequencies are perceived as bass; high frequencies as treble.

Impact Sound

Sound generated by direct physical contact with a structure (e.g., footsteps on a floor).

Impact Sound Insulation

The ability of a floor/ceiling system to reduce transmission of impact sound, typically expressed as $L_{nT,w}$ or $L'_{nT,w}$.

$L_{Aeq,T}$

The equivalent continuous A-weighted sound level over a measurement period T.

L_{Amax}

The maximum instantaneous A-weighted sound level recorded during a measurement period.

L_{A90}

The A-weighted sound level exceeded for 90% of the measurement period; commonly used to describe background noise.

Noise Rating (NR)

A method used to assess internal noise from building services against standardised curves.

Octave Band

A frequency band where the upper limit is twice the lower limit. Used for detailed acoustic analysis.

Peak Particle Velocity (PPV)

The maximum instantaneous velocity of a vibrating particle in a structure, typically expressed in mm/s, used to assess the potential for building damage and, in some cases, human perception of vibration.

Rating Level (L_{A,rTr})

The specific sound level plus any applicable acoustic feature corrections (e.g., tonal or impulsive characteristics), as defined in BS 4142.

Reverberation Time (RT60)

The time taken for sound to decay by 60 dB within a room after the source has stopped. A key parameter in room acoustics.

R_w (Weighted Sound Reduction Index)

A single-number rating of airborne sound insulation performance for walls and floors, measured in laboratory conditions.

Sound Pressure Level (SPL)

The measured level of sound at a specific location, expressed in decibels (dB).

Sound Reduction Index (R)

A measure of a building element's resistance to airborne sound transmission.

Sound Insulation

The reduction of sound transmission between spaces.

Structure-Borne Sound

Sound transmitted through solid building elements rather than through the air.

Subjective Impression of Noise

Human response to sound is highly individualised and often based on psychological factors such as emotion and expectation. Sensitivity to sound typically depends on the loudness, pitch, duration of the occurrence, and time of occurrence (e.g. a sound source could cause annoyance during the night where it would not during the day). The following table is a guide to explain increases or decreases in sound levels for many scenarios.

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

Third-Octave Band

A frequency band one-third the width of an octave band, allowing for more detailed analysis.

Vibration Dose Value (VDV)

A cumulative measure of vibration exposure over time, expressed in $\text{m/s}^{1.75}$, used to assess human response to intermittent or transient vibration (e.g. as defined in BS 6841-1).

APPENDIX B: Padel Tennis Background Information

Padel Tennis Background Information

Padel tennis is an innovative racquet sport played on an enclosed court approximately a third the size of a tennis court. Padel racquets are solid but perforated and made of ethylene-vinyl acetate, which is covered in plastic or carbon, depending on the build quality.

The balls used are similar to tennis balls but with lower pressure. Both the racquet and ball factors result in the ball's velocity being lower than in tennis, and the ball is served underhand.

The padel court is enclosed on all sides; the end walls are comprised of 3m high safety glass, which laps around the sides by 4 metres on either side. The remaining 12m sides of the enclosure are a metal cage-type construction. An example court is shown in Figure 2.

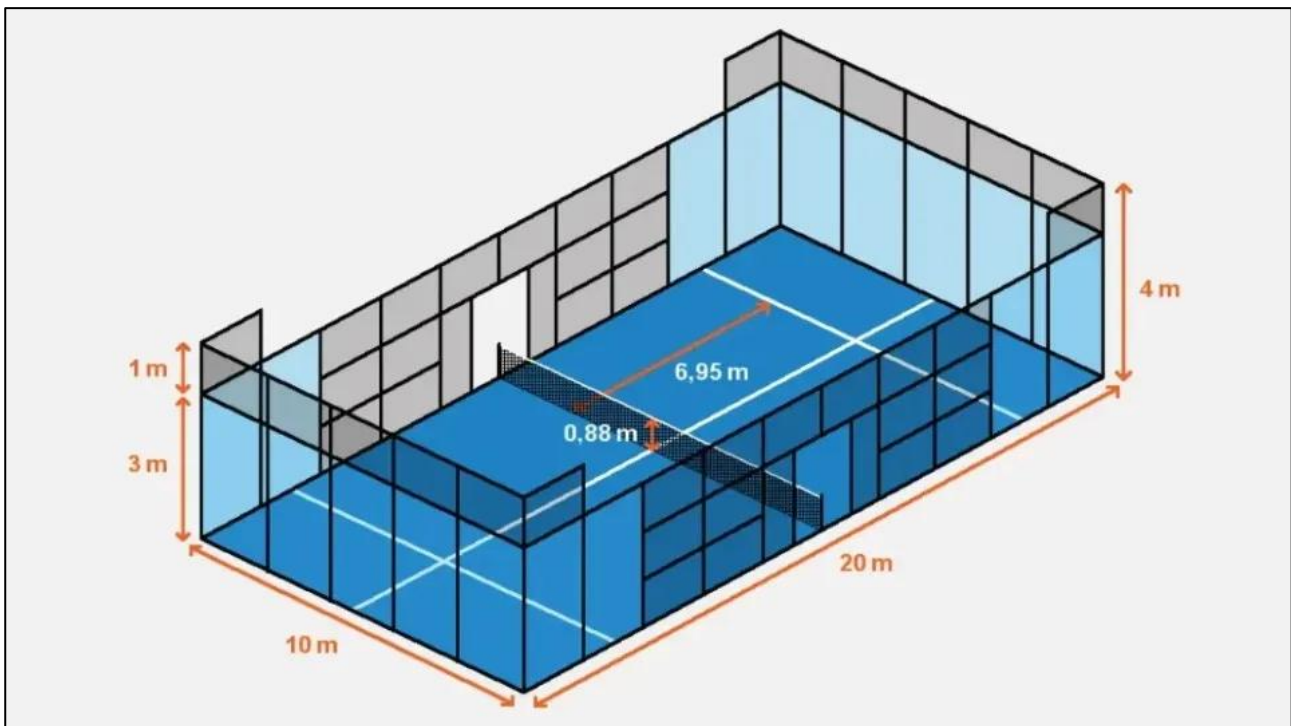


Figure 1 Padel Court (Image Reference: Padel Athletes)

Padel play involves ball contact with the glass and metal sections of the enclosure. However, unlike squash, the ball is not typically hit directly off the glass walls but generally rebounds from them at the end of its trajectory. A crucial point of clarification is that playing off the glass walls is integral to the game of squash, whereas it is not with padel tennis. However, the rules of padel tennis do not exclude a player from striking the ball directly into the glass wall on their side of the court to project the ball over to the other side of the court, although this was observed not to be typical within normal play and would be considered an infrequent event.

Other general observations of the padel tennis sport noted that the character of noise is not dissimilar to tennis. However, the key differences are that padel tennis is a more intense game with the shorter court resulting in more frequent ball contact, in addition to the noise source of the ball deflecting off the enclosure walls. Maximum levels (L_{Amax}) appear to be marginally lower in padel tennis due to the lower velocity of play. Average noise levels (L_{Aeq}) are marginally louder due to more frequent ball contact, generally more vocal participants, and reflected sound due to the glass walls.

Additional information on the differences in sound characteristics of padel and tennis can be read within the Clarke Saunders White Paper¹.

¹ <https://clarkesaunders.com/images/CSA%20white%20paper%20PADEL%20NOISE.pdf>

APPENDIX C: Acoustic Mitigation / Acoustic Lining System Sound Reduction Information

Data Sheet 5

Test Number: 6
Client: Direct Acoustics
Test Date: 02/11/2018
Sample Height: 2.2 m
Sample Width: 2 m
Sample Weight: 6.9 kg/m²

Test Room:
Air Temperature: 11.8 °C
Air Humidity: 61 %
Volume: 115 m³

Receiving

12.6 °C

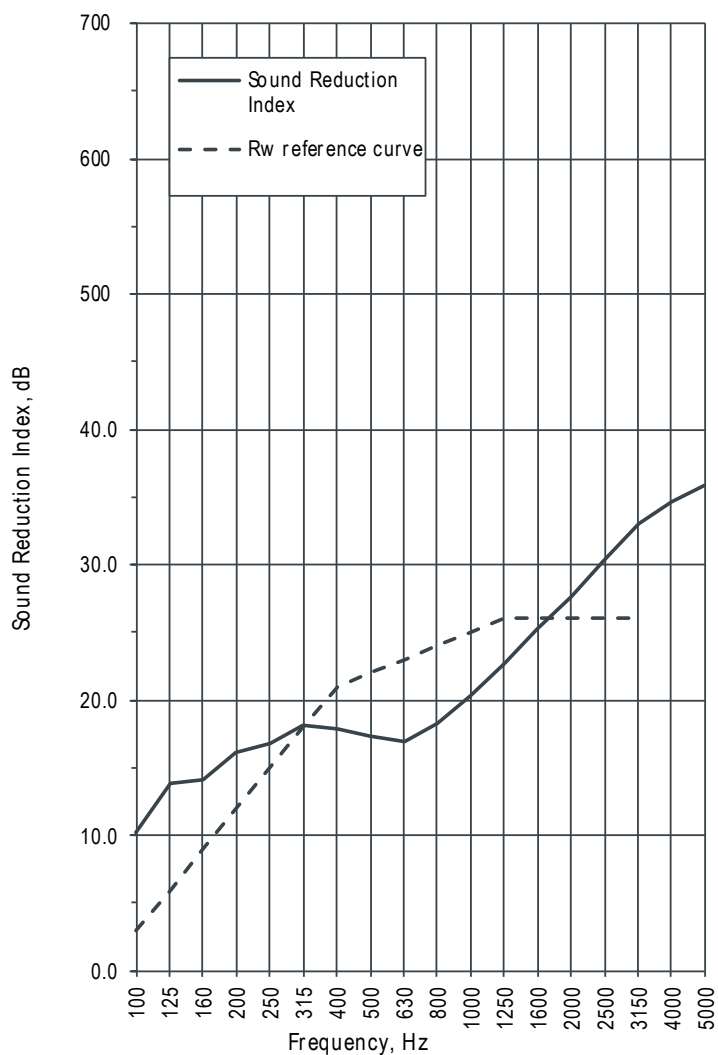
57 %

300 m³

Air Pressure: 1015 mbar

Product: MAL22

Freq, f Hz	Sound Reduction Index, dB	
	1/3 Oct	Octave
50+	14.3	11.3
63+	13.5	
80+	8.6	
100	10.2	12.4
125	13.9	
160	14.1	
200	16.1	16.9
250	16.8	
315	18.1	
400	17.9	17.3
500	17.3	
630	16.9	
800	18.3	20.1
1000	20.3	
1250	22.7	
1600	25.3	27.3
2000	27.7	
2500	30.4	
3150	33.1	34.4
4000	34.6	
5000	35.9	
6300+	36.8	37.2
8000+	36.9	
10000+	38.0	
Average 100-3150	19.9	Version v3.1



Rating according to BS EN ISO 717-1:2013

R_w(C;C_{tr})= 22 (-1; -3) dB

* shows measurement corrected for background

> shows measurement limited by background

+ shows Frequency beyond standard and not UKAS accredited

