

Acoustic Assessment Review

Proposed Padel Courts, Trowbridge Park, Trowbridge

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1 INTRODUCTION

ES Acoustics Ltd (ESA) have been commissioned by Trowbridge Town Council to undertake a review of the noise impact assessment prepared by KP Acoustics (KPA), in support of a proposed Padel Tennis facility in Trowbridge Park.

The planning application is broadly supported by the Local Planning Authority, who have commissioned this review, however is noted to have received objections from neighbouring uses, principally the users of a Bowls green to the east of the proposed Padel Tennis site.

The purpose of this report is to;

- Review the scenario as understood for context;
- Present the findings of the report review from a technical standpoint and outline any particular points of merit or shortcomings to be addressed.

This report has been prepared by Duncan Arkley MIOA, Principal Acoustic Consultant of ES Acoustics Ltd. A CV summary and proof of membership with the Institute of Acoustics are included in Appendix B.

2 REPORT REVIEW

The following review focuses on key sections of the report as referenced to provide information and detail.

2.1 Section 2.0 Site Surveys

“Weather conditions were generally dry with light winds and therefore suitable for the measurement of environmental noise. The measurement procedure complied with ISO 1996-2:2017 ‘Acoustics. Description, measurement and assessment of environmental noise - Part 2: Determination of environmental noise levels’.”

The methodology and standard referenced for the survey are correct and relevant for the assessment undertaken, whilst historical weather data can be referenced, with a preference for noting wind speeds and precipitation, this is rarely impactful on the outcomes of the assessment provided that weather conditions appear mild and reasonable at the time of the survey as reported.

The standard ISO 1996-2:2017 is appropriate and correct for the assessment conducted.

Figure 2.2 is missing the monitoring position, however, this is a suspected formatting error. Considering the noise sources in the area, and the site geography, the actual positioning of the monitor on site is unlikely to be critical to the assessment. It is assumed that the monitor was installed in free-field conditions.

Monitoring equipment and the calibrator appear to be in date at the time of the survey, there are no points of note regarding the equipment used.

2.2 Section 3.0 Noise Assessment Guidance

It is important to note that there is no fixed guidance available in the UK for the assessment of Padel Tennis facilities. As a relatively new noise source, the assessment must be made based on a review of other relevant standards to draw and determine sensible and reasonable noise emissions criteria, against which the potential noise impacts can be concluded.

This point itself is not raised in the report directly, however, a reasonable set of relevant standards appear to have been consulted and considered in the formation of the assessment criteria. Most importantly, IEMA guidelines appear to be considered as the primary assessment approach, which compares the existing noise profile to the noise profile including the padel tennis courts at the closest noise sensitive receptors – this aligns with common practice where similar types of noise sources are present.

2.3 Section 4.0 Environmental Noise Survey Results

There is nothing of note to report regarding the survey results. Representative background levels ($L_{A90,T}$) have been defined as the modal average, which is not unusual, however, in some cases more in-depth statistical distribution review is required.

In this case, the background noise level, L_{A90} , is unrelated to the remainder of the assessment and as such is immaterial, and the modal average is also considered a clean representation of the background noise level when reviewing the statistical distribution.

2.4 Section 5.0 Noise Impact Assessment

A summary of the criteria used to inform the assessment is presented in Section 5.1. This may have been useful to include in Section 3, but is clear and concise, and presents good reasoning for the criteria chosen.

The summary paragraph to follow correctly defines that context must be applied and considered in the assessment, with appropriate consideration for the sensitivity of receivers, and the acoustic character of the area.

Source noise levels shown in Section 5.3 are actually more onerous than those typically used in ES Acoustics assessment as measured 1st hand, because they are referenced at 5m distance from the activity, but broadly align with measured levels captured by ES Acoustics at 1m to the side of the centre court line.

One potential takeaway from this is that the source levels used may be referenced at 5m from the “player” rather than the court itself, which would equate to approximately 1m from the centre line. In the best case scenario, the noise levels used for the assessment are overly onerous and inherently robust, in the worst case scenario, the noise levels used for the assessment are directly comparable to the levels measured by ES Acoustics and are simply correct. In any event, there is no aspect of the source data which would adversely affect the robustness of the assessment.

Section 5.5 discusses the results of the modelling exercise, which cleanly demonstrates that at all noise sensitive receivers around the proposed site will be exposed to noise levels within the agreed noise emissions criteria defined earlier in the report. One point in favour of the KPA assessment is that the internal noise levels predicted consider a flat 10dB reduction for the openable window correction, rather than the 15dB stated Table 5.1, this is a deviation in favour of a more robust assessment.

3 CONCLUSION AND SUMMARY

In conclusion of the report review, there are no issues identified in the assessment as presented which would compromise the findings of the assessment or invalidate any findings. The assessment appears to have been conducted with a reasonable approach proportionate to the scenario under assessment. Any reporting issues identified are considered minor and are included for the purpose of completeness of this review, and are not material to the findings of the assessment.

4 ADDITIONAL COMMENTARY, OBJECTIONS RECEIVED

It is understood that strong objections have been received from the operators of the bowling green to the southeast of the proposed Padel Court site.

The assessment conducted already considers all noise sensitive receivers, and an outdoor sporting facility would not be considered a noise sensitive receiver; nor is there any standard against which to consider noise impacts on such a premises. In this context in particular, the remaining site is understood to already feature other outdoor sports, including tennis courts which present an inherently similar noise character, and are fully open-air.

One aspect of the objection received relates to disruption to communication whilst calling from one side of the green to the other. This would inherently create more noise in the immediate vicinity than any received noise from surrounding sports uses.

In the opinion of ES Acoustics, these objections are unfounded, and considering the acoustic character of the site and other uses in the area, there is no obligation to conduct any further assessment to consider the bowling green as a noise sensitive receptor.

GLOSSARY OF ACOUSTIC TERMINOLOGY

Decibel scale - dB

The decibel (dB) is a relative unit of measurement used in acoustics. The dB is a logarithmic ratio between a measured level and a reference level of 0 dB (i.e the threshold of human hearing). Simply put, the decibel compresses the wide range of sounds we hear into more manageable numbers.

Addition of noise from several sources

Sound produced by multiple sound sources are added logarithmically e.g. power ratio of 2 = 3dB, power ratio of 10 = 10dB. Therefore, two equally intense sound sources operating simultaneously produce a sound level which is 3dB higher than a single source e.g. 60dB + 60dB = 63dB.

Subjective impression of noise

Human response to sound is highly individualized 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

'A' Weighted Frequency Filter - dB(A)

The human ear is not equally sensitive in all frequencies. The A-weighting filter was devised to take this into account when undertaking noise measurements and allows a sound level meter to replicate the human ears response to sound.

$L_{Aeq, T}$

Sound can fluctuate widely over a given period. L_{Aeq} is the A-weighted equivalent continuous sound level, with T denoting the time period over which the fluctuating sound levels were averaged e.g. $L_{Aeq, 16h}$ is the equivalent continuous noise level over an 16 hour period.

L_{A90}

A-weighted sound level exceeded for 90% of the measurement period, calculated via statistical analysis. The L_{A90} descriptor is typically used to establish background sound levels for noise impact assessments

L_{A10}

A-weighted sound level exceeded for 10% of the measurement period, calculated via statistical analysis.

L_{AFmax}

A-weighted sound level maximum sound pressure level that has been measured over a given time period

GLOSSARY OF ACOUSTIC TERMINOLOGY

Octave Bands

The audio or frequency spectrum of the human ear is in the range of 20Hz to 20 kHz. The spectrum tells how the energy of the sound signal is distributed in frequency. Octave bands divides the audio spectrum into 10 equal parts. The International Standards Organisation defines the centre frequency of these bands as 31.5Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz.

Noise Rating (NR) Curves

A method of rating noise using a set of curves relating octave band sound pressure levels. Typically used for building services systems within offices

Airborne sound

Sound radiated from a source into the surrounding air e.g. musical instruments, tv/radio, machinery/equipment. Airborne sound insulation refers to the reduction or attenuation of airborne sound, usually via a solid partition between a source and receiver.

Impact sound

Sound resulting from the impact between colliding objects, e.g. footfall impact upon a floor. Impact sound insulation refers to the resistance of a floor to the transmission of impact sound, typically via the installation of a 'resilient layer'

Flanking sound

The transmission of airborne sound between two adjacent rooms by paths other than via the separating partition between the rooms, e.g. the abutment point of a wall and floor.

Structure-borne noise

Noise caused by the vibration of elements of a structure. This can result in reradiated noise, whereby the vibrating element transmits airborne sound into a space e.g. vibration caused by mechanical plant installed within a plant room which is not adequately isolated from the structure, or construction/demolition work in an adjacent building.

Reverberant sound

Sound in an enclosed space (usually a room), which results from repeated reflections at the boundaries. Reverberation time is the time taken for a steady sound level in an enclosed space to decay by 60dB, measured from the moment the sound source is switched off. A example of a typically reverberant space would be a classic church. Absorptive materials can be used to reduce reflections and reverberation times.

SQA Evidence is presented in the following pages

Duncan Arkley MIOA

Principal Acoustic Consultant

ES Acoustics Ltd

Qualifications

In 2012 I received a BSc (Hons) in Sound Engineering from Southampton Solent University. This was directly followed by Institute of Acoustics Certificates of Competence in both Environmental Noise Management, and Building Acoustics Measurement.

In addition to the above, I have also completed the Institute of Acoustics Diploma in Noise and Vibration Control.

Professional Experience

I have worked as an acoustic consultant since November 2012, joining ES Acoustics as Principal Consultant in May 2023. Over this time, I have gained experience dealing with the majority of aspects of acoustic consultancy, including, but not limited to:

- Environmental acoustics for industrial or commercial noise.
- Environmental acoustics for noise sensitive residential developments, and domestic plant noise assessments.
- Building acoustics assessments and design for specialist buildings, such as recording studios and rehearsal rooms.
- Internal acoustic design for residential developments, including private high-end residential developments.
- Workplace noise risk assessments for industrial sites.
- Vibration assessment and control for industrial machinery.
- Noise mapping for construction sites and commercial noise introduction.

I have also served as an Expert Witness with regards to noise and planning related issues at inquiries and hearings.

Memberships

I am a Member of Institute of Acoustics, which is the main regulating Body of Acoustics in the UK.

Certificate of Membership

This is to certify that

Mr Duncan Arkley

has been elected as a

Member

of the
Institute of Acoustics

*Given under the seal of the Institute
in accordance with the
Articles of Association and By-Laws*

President

David Waddington

Institute Secretary

[Signature]

Valid Until

28-02-2027

Membership Number

50103



The certificate remains the property of the Institute and shall be returned to the Institute on demand.
Membership of the Institute is subject to annual renewal

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