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clarkesaunders.com

WINCHESTER (HEAD OFFICE)
[redacted]

LONDON
[redacted]

EXETER
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AS13140 ST GEORGE'S HILL PADEL, WEYBRIDGE
Expert Opinion

I have been instructed to review and comment on three reports on the noise impact of Padel courts proposed at the St George's Hill Lawn Tennis Club will have on the amenity of residential neighbours.

These references and revision number of the reports I have been asked to review are:

Report A	206/0157/M1 revision 0: Noise monitoring with and without trial court
Report B	P22-158-R03v1 June2022: Assessment of Noise Impact from...
Report C	UK.16088652-01 DRAFT: Independent Technical Review (Noise)

My practice, Clarke Saunders Acoustics (or CSA), is well known to London Boroughs and Home Counties planning authorities, with whom we have a good working relationship. Details of the qualifications and experience of myself and my team are available if this information would be helpful.

In recent years I have been instructed on numerous cases which involve the review and appraisal of work conducted by other acousticians and have built a reputation for providing pragmatic and balanced opinions, rather than dwelling on unnecessary or confusing technical pedantry. In a number of instances, these reviews have been commissioned by the local planning authority themselves to assist in navigating more complex issues involving apparent conflicts between experts.

Case Summary

Along with numerous other rackets clubs, St George's Hill Lawn Tennis Club is keen to engage with the current surge of interest in the sport of Padel, a short form tennis variant, by constructing a facility in which their members can play.

A temporary trial court was installed in 2021 to test the concept and to enable the potential for neighbour disturbance to be evaluated. Report A was commissioned by the club at that time to assist in quantifying the potential for disturbance from the trial court.

The club's plans were then refined, and a planning application was submitted for three Padel courts and an associated two storey outbuilding in summer 2022, with which Report B was submitted as supporting evidence.

Due to the apparent complexity of the issues at hand, concerned residents from St George's Hill Residents Association then commissioned a technical review, Report C, to assess the merits of the application as described in Report B.

Considerable technical content within all three reports has served to muddy the waters somewhat, and I have been appointed to provide high level explanation and set out the implications of the proposals in a readily digestible format to assist the decision making process.

Temporary Padel Court Trial – Report A

A number of shortcomings concern me about this report. It may be that a more comprehensive report was issued to the client, and that this 'memorandum' presents only a summary of a more comprehensive piece of work. Even if that were the case, however, some aspects are problematic.

Data is presented, but not really explained. Time history graphs identify the precise times of other specific activities e.g. 'dog barking' and 'gardener' but do not provide any information on when the trial Padel court was actually in use.

The 'with' and 'without' Padel court activity comparison was made 'without' on 6-7th April (during Easter children's tennis camp) and then the 'with' experiment was conducted three weeks later on 27-29th April, when the children in question would have returned to school.

A much more direct and immediate comparison would have been possible, and more useful. Padel play could have been monitored during and between activity on the temporary court, with play suspended for periods to provide direct 'with' and 'without' comparisons.

The appropriateness of the comparison of average levels shown is questionable, to say the least, seeming to show the use of Padel courts somehow reducing ambient noise levels. Nevertheless, the report concludes that the Padel courts will be audible, and noticeable. It is vague about the extent to which the character of the sound of the sports differs and concludes that sound levels are similar and that the slight differences in characteristics are not significant. No justification or explanation is given for this judgement on significance.

I am told that that the trial court exercise also involved the tennis club management and neighbours listening to and discussing the sound of a Padel game in progress, and concluding that resultant sound of Padel in this context would be disturbing and that the club would go to additional lengths to seek to address this. It appears that the report author was either uninvolved in these experiential observations or considered them to be less relevant than the numerical comparisons.

My conclusion in relation to Report A is that it rather missed the opportunity of the temporary Padel court trial to thoroughly investigate the impact of the proposal, and set an initial expectation for accepting the proposal on the premise that the activity would be broadly equivalent to tennis.

Planning Application Submission – Report B

This report uses Padel noise survey data from another site, the Roehampton Tennis Club, rather than referring to any of the findings from the Padel trial at St George's Hill, either measured or observed.

Once again, the difference between characteristics of noise generated by the two sports appears to be identified, but then dismissed. [ref paras 4.13 and 4.16]. It is becoming clear as increasing numbers of Padel court noise assessments[1] are submitted around the country that these differences do need to be considered, and while it is true that insufficient information is available to quantify how much more disturbing Padel noise is, the resultant uncertainty should be highlighted in a comparative assessment of this nature, rather than dismissed.

I find the assertions that this report presents a robust worst-case assessment to be somewhat overstated. The word 'robust' appears six times and 'worst-case' ten times within the report, referring to the assumption that three high intensity Padel games are running concurrently, and that there will be additional benefit from the proposed fabric canopy over the courts, which has not been included in the modelling.

[1] The attached document "CSA White Paper – Differences in Sound Characteristics of Padel and Tennis" presents our independent findings, including reviews of numerous other planning submissions.

The application is for three courts, presumably based on the premise that there will be sufficient demand for this popular new sport to use these courts. The eventuality that all three are used at once, for a sport that seems to be intrinsically rather high-intensity, would seem to me a likely daily occurrence. The suggestion that a fabric canopy might provide some tangible acoustic benefit is something of a stretch in my view, considering the openness of the structure and the negligible sound insulation properties of such fabric. Indeed, if there were any significant levels of sound reflected down from the canopy, this would seem more likely to increase reflected sound levels at neighbouring dwellings rather than reduce them.

I consider the phrasing of report B to be somewhat misleading. In stating that predicted Padel noise levels will be *"lower than even the lowest measured existing prevailing noise levels at most locations",* the reader might be forgiven for thinking Padel would be quieter than background sounds; not particularly noticeable, possibly inaudible. The comparison made however is against L_{Aeq} average values however, not the underlying background levels denoted by L_{A90}. This is flagged in report C – see below, which does accurately confirm that Padel noise will clearly be heard by neighbours, a point on which report B is silent.

The following conclusion is the key finding of report B.
4.49 Taking into account the noise mitigation provided by the proposed acoustic screens, the Padel court match noise is not anticipated to result in any adverse noise impact on the local residents and would be within the Lowest Observed Adverse Effect Level (LOAEL).

It is based on the assumption that the different character of Padel noise is not significant, for which no substantiation is provided. It is clear that the sound of the new sport will be heard by neighbours, and with the inherent uncertainty around response to this sound, it is only reasonable to conclude that there could be some impact on amenity. The conclusion is that there is no adverse impact.

The significance of the impact is for the planning authority to judge, and it may be that the resultant loss of amenity could be judged to lie between the LOAEL and the SOAEL (Significant Observed Adverse Effect Level). It may well be that, considered in the appropriate planning balance, it is acceptable to allow this amenity impact, but it is important for the planning authority to appreciate that it is not nil as the Applicant's report suggests, and needs to be considered carefully.

Independent Technical Review – Report C

I find the third report to be particularly disappointing. Having been instructed to provide a peer review to explain and test Report B by the St George's Hill Residents Association, the authors have satisfied themselves on the survey methodology, modelling and other numerical aspects of Report B. They did usefully make the point noted above clarifying the audibility of Padel noise by neighbouring residents, but they repeat the Report B conclusions and seem to accept the fundamental assumptions which I have flagged above.

The bold statement that the character of noise will not be intrusive is not substantiated in any of the reports, and based on the assumption that any difference from tennis is insignificant.

The seemingly definitive assertion that the noise impact is below, or 'within' the LOAEL is the key finding of Report B in planning terms, and this is not questioned or tested at all in Report C.

Conclusions

Uncertain aspects of the noise impact from the proposed use, in particular the different character of Padel noise should have been addressed, rather than dismissed.

The extent to which the sound is likely to be noticed by neighbours has been downplayed, unsubstantiated opinions expressed as to significance and erroneous statements have been made relating to the notional LOAEL threshold.

Successive reports, including a technical review of the Applicants' submission, have continued in the vein of accepting the assumed equivalence of Padel and tennis

My considered expert opinion, therefore, is that the reports cannot be relied upon to provide the reassurance the local planning authority would need to ensure the impact on residential amenity has been established and can be considered in the planning balance in relation to this planning application.

Yours sincerely

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DIFFERENCES IN SOUND CHARACTERISTICS OF PADEL AND TENNIS

CLARKE SAUNDERS ACOUSTICS WHITE PAPER

Introduction

Padel, also called Padel Tennis, has been popularised in Spanish speaking countries following its invention in Mexico in 1969. It is a relatively new and fast-growing sport in the UK, it having gained popularity in Europe over the last decade.

Proponents of the game describe it as easier to pick up and reach a reasonable level of competence than tennis, with players of differing abilities more easily able to play together. As a result it is said to be more sociable and accessible, and is therefore an attractive proposition for tennis clubs to add to their offering.

Consequently a number of tennis clubs in the UK have built, and many more are considering construction of Padel courts which, due to the nature of the enclosing screen structure, require a planning application.

Meanwhile, local authority environmental health practitioners are starting to express concerns over whether the sound generated by this activity is more disturbing to the residential amenity of neighbours than 'normal' tennis, and to what extent this ought to be catered for in the planning process.

At CSA we have been instructed to assess the noise impact of a number of Padel court planning applications, variously on behalf of the applicant, concerned neighbouring residents and the local planning authority.

This white paper presents the results of a non-project specific 'deep dive' into the matter, which we intend to use as the starting point for broader discussions with other acousticians, the Padel industry, and local planning officials.

Scope

Our study is intended to address the knowledge gap at the heart of the potential planning issue around construction of Padel courts;

Is Padel demonstrably more disturbing than Tennis?

Human response to sound is very complex and subject specific. Metrics we use to assess other noise sources, such as aircraft noise for example, are based on averages of large social survey responses, rather than any individual's specific reactions. To answer this type of question comprehensively, therefore, requires extensive dose-response relationship studies which are beyond the scope of this exercise.

Our slightly modified aim, therefore, is to identify objective aspects of sound generated by Padel play which quantify the differences in technical characteristics between the sports perceived by the listener.

Follow up studies might then be able to go on to consider the significance of these differences and work towards providing guidance on to what extent and in what circumstances mitigation is warranted, and if so what form this might take.

Functional Differences between Tennis and Padel

On a fundamental level the sports are very similar. The court layout, scoring and gameplay of Padel is almost identical to tennis, the primary differences being a physically smaller court with enclosing walls to the rear (extending partially to the

sides) which allow rebounds, and shorter solid rackets, originally referred to as 'paddles'.

Our review included observing both Padel and tennis matches in progress at a local tennis club[1], reviewing footage of elite level competitions online and conducting controlled noise survey measurements while also experimenting with playing both games at a novice level.

It is clear that Padel features longer, more frequent extended rallies involving exchanges of volleys. Serving is always underarm in Padel, requiring less preparation and the contained court reduces time spent retrieving balls.

Tennis features more forceful hitting and more powerful serves, but less frequent impact sounds. Singles tennis features less frequent rallies of volleys than doubles. Padel is always played as a doubles sport by default.

Padel allows rebounds from the glass walls, and occasionally the ball is struck directly against the wall to rebound into play.

Literature Review

We reviewed readily accessible public domain information from planning applications across the London Boroughs and other UK metropolitan authorities. This search identified 18 noise impact assessments undertaken by a range of other consultancy firms (we excluded our own CSA reports).

Of these assessments, 15 relied on information gathered from noise surveys at other Padel courts, two used the generic guidance given in Sport England's Design Guidance Note[2], and one was based on typical data provided by the client. Some companies used the same source survey data for multiple assessments, such that we have a range of noise data from seven individual Padel court surveys, in additional to those we have conducted at CSA.

The surveys ranged from single courts to multi-court regional Padel centres. Some contain information on the skill level of the players involved and the nature of the games – from novice instruction to social and competitive.

Most surveys differentiated between noise emissions to the side, where the Padel court is open, and to the ends which are enclosed by the glass walls. A number of them then went on to helpfully quantify noise levels at increasing distance from the court, which is helpful in understanding the nature of the transition from near to far field propagation characteristics.

In assessing the significance of the Padel noise, most reports provided a comparison with otherwise prevailing ambient conditions in the absence of Padel activity to set the impact in the context of the surrounding soundscape. In most instances, the context being at a facility where tennis was already being played, this involved a comparison between Padel and tennis.

In a number of instances, the differences between the two sports were based on conjecture only, assuming for example that the slightly lower pressure and slower hitting speeds involved in Padel would make the individual noise events slightly

[1] Winchester Racquets and Fitness – with thanks for their assistance
[2] Sport England Design Guidance Note – Artificial Grass Pitch (AGP) Acoustics (2015)

lower in level and therefore the noise emissions overall slightly quieter. This does not seem to be consistent with the findings of assessments which involved comparative survey measurements.

In some of the reports there was inconsistency in the direct comparisons due to the different sizes of the courts and the resultant ambiguity over the location of the source in each case with respect to the measurement location.

Little differentiation is provided in the character of the hitting sounds of tennis racket versus Padel racket on ball, the majority of reports stressing the similarities rather than identifying any differences.

Head-to-head Comparisons

Informed by previous assessments of our own, and the review described above, we undertook specific tests to better understand the differences between the sports we were starting to identify.

These tests have provided us with objective data on the following aspects, which helps us to quantify the sounds associated with Padel, to present the extent to which it can be differentiated from tennis in particular.

(a) Impact Sound Character

Padel rackets are not strung like tennis rackets[3], they comprise a solid EVA rubber core and a fibreglass or carbon face. The racket face is perforated with holes to allow it to be moved through the air more easily. The resultant impact sound differs audibly from a tennis ball strike, which is slightly more resonant. In onomatopoeic terms, we have used the words 'thunk' and 'bop' to characterise tennis and Padel impacts respectively. Although clearly audible, some of the analyses reviewed from other practitioners did not show the difference clearly using an octave band spectrum comparison, although it can be identified in our own data and through more sophisticated analyses.

(b) Impact Sound Level

As noted above, differences in court size, and therefore variations in noise source to measurement location distances, plus the influence of the glass end walls acting both as acoustic barriers and reflectors, make the direct comparison of the noise output level from the tennis and Padel a non-trivial exercise. These factors need to be considered very carefully when making comparisons between different racket sports. In the context of the configuration and alignments of the courts we at CSA have studied, depending on the assessment metric used and the nature of the comparison, Padel tends to give rise to slightly higher levels of sound than tennis.

(c) Wall Impacts

Although mentioned in a number of the other assessments reviewed, our experience is that the ball-wall impact sound is much less significant than ball strikes. The ball hits the glass walls most frequently after first bouncing on the floor, so is traveling relatively slowly. Shots involving a ball strike

[3] 'Racket' is preferred to according to the OED, but racquet is an accepted alternative spelling.

directly against the wall are relatively infrequent in gameplay, and tend to be finesse shots, rather than the kind of power strike that squash players may be accustomed to – this is an ineffective strategy that a player is only likely to ever attempt once.

(d) Strike Frequency

The increased strike frequency of Padel over tennis is more marked at elite competition level. At world tour major finals events a tennis ball is struck typically every 8 seconds on average during a men's singles match, during which there are significant pauses between points, reducing only slightly to 7.5 seconds in doubles, whereas the comparable figure in elite Padel world tour finals is one hit every 2.8 seconds.

This differentiation is much less marked at the amateur level. From our own tests we saw a hit rate of once per 3.3 seconds for doubles tennis and 2.0 seconds for Padel. Differences in strike frequency become significant when considering the merits of comparing event noise maxima or energy average noise levels over time.

Conclusions

It is clear that there are both differences and similarities between Padel and tennis. We have studied the differences in more detail and developed some technical descriptions of the key aspects identified, while also recognising areas in which the sports are similar.

We can only answer the question set at the outset of this paper in an equivocal sense, however. We have identified, and to some extent quantified some of the differences in the sports, but the extent to which these differences can be established to illicit a different response in terms of neighbour disturbance cannot be determined without studying the experiential aspects of these differences from the perspective of neighbouring residents.

As numbers of applications continue to rise for Padel courts, it may be useful for the Padel industry to engage more widely with acoustics practitioners. This would increase the knowledge base and help define guidelines in terms of assessing noise impacts, both as absolute levels and when considered in comparison to existing tennis courts and/or other sports and recreation facilities.

Clarke Saunders Acoustics is an independent consultancy practice specialising in applying both rigor and pragmatism to real world challenges. We are actively engaged in development of best practice guidance and standards across the acoustics industry, collaborating with colleagues, stakeholders and decision makers. To continue this discussion on Padel noise, or any of the other multitude of areas in which acoustics touches all our lives please reach out to us at m[redacted]