

TOWN AND COUNTRY PLANNING ACT

1990

**APPEAL BY MR DREW PRICE AND MR JAMES BALL AGAINST
THE REFUSAL BY SOUTH CAMBRIDGESHIRE DISTRICT
COUNCIL OF A PLANNING APPLICATION FOR ‘A MATERIAL
CHANGE OF USE OF LAND THROUGH INTENSIFICATION TO
THE STATIONING OF CARAVANS FOR RESIDENTIAL
PURPOSES, NINE DAYROOMS AND THE FORMATION OF
HARDSTANDING ANCILLARY TO THAT USE.’**

**LAND TO THE SOUTH OF CHEAR FEN BOAT CLUB,
TWENTYPENCE ROAD, COTTENHAM, CAMBRIDGESHIRE,
CB6 8PX**

GPS REFERENCE: 21_1161B

LPA REFERENCE: 22/01703/FUL

PINS REFERENCE: APP/W0530/W/22/3308444

PROOF OF EVIDENCE OF TIM GREEN

ON BEHALF OF THE APPELLANT

(NOISE)

- i. My name is Tim Green. I am an Acoustic Consultant.
- ii. My work is primarily in Environmental Acoustics. I have over forty years of experience in monitoring and analysing sound, including 21 years employment with the BBC. I have worked in Environmental Acoustics since 2009, formerly as an Acoustic Consultant and Director of TGSacoustics Ltd from 2016 to March 2023, and also as an Associate Lecturer in Acoustics at the University of Derby between 2016 and September 2023. I currently work as an independent Acoustic Consultant.
- iii. My role at the University of Derby included work on Post-Graduate courses, namely the Master of Science in Applied Acoustics and the Institute of Acoustics (IOA) Post-Graduate Diploma in Acoustics and Noise Control. Other courses included the IOA Competency courses. During the 2020-2021 academic year, I provided medical leave cover as Programme Lead on the MSc in Applied Acoustics at Derby and as Lead on modules of the IOA Diploma.
- iv. I have a Masters Degree in Applied Acoustics (Distinction), the Institute of Acoustics Diploma in Acoustics and Noise Control (Special Commendation) and the Certificate of Competence in Environmental Noise Measurement.
- v. I am a Corporate Member of the Institute of Professional Sound.

1. STATEMENT OUTLINE

- 1.1 This statement addresses the noise issues raised in the refusal by South Cambridgeshire District Council of the planning application by Mr Drew Price and James Ball (ref: 22/01703/FUL) for 'a material change of use of land through intensification to the stationing of caravans for residential purposes , nine day rooms and the formation of hardstanding ancillary to that use' at Land to the south of Chear Fen Boat Club, Twenty Pence Road, Cottenham, Cambridgeshire, CB6 8PX.
- 1.2 Whilst the Environmental Sound Survey and Noise Impact Assessment was undertaken by myself when at TGSacoustics Ltd, I am willing and able to speak to this report in my current capacity as an Independent Acoustic Consultant.
- 1.3 The reporting of noise levels and the effects of mitigation was undertaken by TGSacoustics Ltd on the 24th of March 2023 as Report No. 02483 Version 1.1 (Appendix A, TGSacoustics, 2023).
- 1.4 Three further reports are referred to in this Proof of Evidence; the Sharps Redmore Sound Level Assessment Report of 2018 (Appendix D), submitted with the original planning application for the Mitchell Hill quarry, the Sharps Redmore Noise Technical Notes in 2018 (Appendix I), submitted in response to a request from Cambridgeshire County Council for additional information, and the LFAcoustics Periodic Noise Monitoring Report of 2020 (Appendix E), undertaken to demonstrate compliance with the noise limits presented in Condition 12 of the planning permission and carried out in accordance with the approved Noise Management and Mitigation Plan.

- 1.5 As well as identifying an acceptable acoustic environment for residents, the TGSacoustics Report also ensures that the workings are not sterilised by noise complaint, as Mitchell Hill quarry is a Mineral Safeguarding Area (Appendix G, Response Letter, 2022, page 1).
- 1.6 As the primary concern is the impact of noise on the site's occupants, the assessment is to ensure that the sound levels due to workings at Phase 6, immediately adjacent to the appeal site (hereinafter called 'The Site'), do not exceed the guidelines within the National Planning Policy Framework's Planning Policy Guidance: Minerals Technical Note (Planning Policy Guidance, 2014. Technical Note to NPPF – Minerals).
- 1.7 It is noted that as well as Phase 6, Phase 7 is also adjacent to The Site but with a significantly smaller length of shared boundary. This provides for fewer workings at the 'Minimum Distance', which is used to assess noise impacts (Appendix B, BS 5228-1:2009+A1:2014, Figure F.1, page 128). It also benefits from the same earth bund on The Site as that mitigating sounds from Phase 6, as it is returned along the eastern boundary (Appendix A, TGSacoustics, 2023, pages 35-36). Phase 7 will also include a subsoil bund running north to south between Phases 6 and 7 (Appendix H, Phase 7 Plan, 2020). As such, with Phase 6 as the worst-case scenario, an acceptable acoustic environment at Phase 6 would also apply to Phase 7.
- 1.8 BS 5228-1:2009+A1:2014 is applied to the assessment as it provides the calculation process where plant can be assessed individually for its sound characteristics and operational activity (Appendix B, BS 5228-1:2009+A1:2014, pages 128-138). From these individual levels, the total sound level from all the activities, assumed to be operating

simultaneously, can be calculated. This is in line with the assessment process applied by Sharps Redmore in 2018 (Appendix D, Sharps Redmore, 2018), for the successful planning application for commencement of workings at Mitchell Hill quarry.

1.9 The main body of The TGSacoustics Report is laid out across 13 pages and presents the outcomes, both of the measurement process, and that of the assessment process. It is written so as to be accessible to as wide a readership as possible, and certainly for those connected with the use of noise assessments within the planning process. Inevitably there are technical terms and references to guidance and British Standards. These are described in the Chapters of: Assessment Criteria (Appendix A, TGSacoustics, 2023, page 4-5), Sound Survey - Measurement Method (Appendix A, TGSacoustics, 2023, pages 6-7), and links are provided in the reference section (Appendix A, TGSacoustics, 2023, page 14) . Quotations are used where clarity is required and where technical terms are used out of necessity, a Glossary is provided (Appendix A, TGSacoustics, 2023, page 16).

1.10 It is, however, an essential condition of a technical, or scientific report, that it should meet the requirement of repeatability. As such, The TGSacoustics Report provides significant detail in the 25 pages of Appendices. These provide the detail that illustrates the conditions, data, process, and calculations that inform the measurement and assessment outcomes. This detail provides the transparency that would allow any assessment or critique of the TGSacoustics Report and its processes, by a suitability qualified and experienced acoustician. The raw data from the measurements and those of the audio files are available on request. However, it

would be common practice for those reviewing a report to also consider alternative measurement data for their own calculations, if the outcomes require confirmation.

- 1.11 The Periodic Noise Monitoring, undertaken by LF Acoustics in 2020 (Appendix E, LFAcoustics, 2020), provides such data. This monitoring exercise was carried out to demonstrate compliance with the Site Noise Limits, as expressed in Condition 12 of the original planning permission for Mitchell Hill quarry (Appendix F, Decision Notice, 2018). The results show normal operations were providing levels of between 5 dB and 7 dB below the Site Noise Limits within Condition 12.
- 1.12 The reasons for this are considered. Sharps Redmore took an onerous approach to their assessments whose outcomes defined the Site Noise Limits in Condition 12 and were still able to report that operating levels would be acceptable (Appendix D, Sharps Redmore, 2018, Table 6.1, page 13). The onerosity of this approach has been clearly illustrated by the Periodic Noise Monitoring report (Appendix E, LFAcoustics, 2020, pages 4-5). The Periodic Noise Monitoring measured levels that are significantly lower than those calculated by Sharps Redmore and that the measured figures in the LFAcoustics report also include everything in the sound environment, with levels influenced by birdsong and local traffic (Appendix E, LFAcoustics, 2020, pages 4-5). The Sharps Redmore calculations were based only on the noise of plant at the quarry and did not include any other environmental sounds. These observations indicate that the sound levels from actual operations at Mitchell Hill quarry are lower than the levels measured during the Periodic Noise Monitoring. The levels from normal operations will provide levels greater than 5 dB and 7 dB below the Site Noise Limits.

- 1.13 The TGSacoustics Report undertakes the same process, as applied by Sharps Redmore, in assessing the impacts at The Site. Both the more onerous procedures undertaken by Sharps Redmore, and the outcome of the Periodic Noise Measurements give weight to the robust nature of the conclusions reported by TGSacoustics (Appendix A, TGSacoustics, 2023). These are reported as contextual evidence within the TGSacoustics Report in support of the numerical outcomes.
- 1.14 Following a request from Cambridgeshire County Council for additional information, Sharps Redmore addressed the issue of lower Background Levels ($L_{A90(t)}$) measured on a single Saturday. Whilst measured at 4 dB lower than a week day at the position chosen for comparison, that of Grave Diggers Farm, they note that the meteorological conditions on the measurement day were non-neutral as there was the likelihood of a temperature lapse causing a sound shadow at ground level. They also note that this meteorological condition would affect the Michell Hill workings as well. (Appendix I, Sharps Redmore, 2018, page 4). This would potentially have a balancing effect; however, the contextual argument is not exploited further, and the new assessment is made to the figures measured on the Saturday.
- 1.15 The outcome of taking the measurement results for a Saturday results in changes to the operation of the screening plant, removal of stone crushing altogether and increasing the bund arrangements in response to the introduction of a log washer.
- 1.16 The Sharps Redmore Noise Technical Note also reassesses the Saturday and weekday impacts to Twenty Pence Cottage. This property will be impacted in a similar way to that of The Site. They conclude that the location of this property, with respect to the

changes to bunds, operations and to plant, is expected to provide satisfactory conditions at Twenty Pence Cottage ‘*..in the context of weekday and restricted Saturday operations*’ (Appendix I, Sharps Redmore, 2018, page 11).

- 1.17 The assessment by TGSacoustics, based on the Sharps Redmore plant noise calculations together with its own weekday Background Levels, is expected to retain its integrity in light of the further investigation by Sharps Redmore. As the outcomes from the Sharps Redmore Noise Technical Notes have been accepted by Cambridgeshire County Council by way of granting of planning permission.
- 1.18 The numerical outcomes within the TGSacoustics Report (Appendix A, TGSacoustics, 2023, page 10) demonstrate that during activity at Phase 6, and therefore Phase 7, the residents at the application site, known as Land to the South of Chear Fen Boat Club, can achieve an acoustic environment where the levels are below that of the NPPF Minerals Technical Note guidance (Planning Policy Guidance, 2014. Technical Note to NPPF – Minerals). This is further supported by contextual evidence provided by third party data. The following chapters in this Proof of Evidence detail the validity of the regulation and guidance, measurement, data, and the assessment process that form The TGSacoustics Report.

2. LOCATION

- 2.1 The Site is an area of land lying to the south of the Great Ouse river and the opposite side of the river to Chear Fen Boat Club. To the south of The Site lies the Mitchell Hill

quarry, with Phase 6 and 7 immediately adjacent to The Site. This land was still farmland at the time of the sound level measurements.

- 2.2 There are a number of small access roads and lanes in the surrounding area carrying very light traffic levels. The closest road of note is Twenty Pence Road (B1049) to the west, from which vehicle access is gained to the Site. The A10 lies 1.7 km to the east.
- 2.3 The Site itself has a significant earth bund already in place along its southern and eastern boundaries, providing mitigation of sound from the Mitchell Hill quarry workings.

3. METHODOLOGY

3.1 The Use of NPPF Minerals Technical Note and BS 5228-1:2009+A1:2014

- 3.2.1 The assessment is made to the guidance within the National Planning Policy Framework (NPPF, 2012 – updated 2024). The NPPF replaced the previous Minerals Policy Statement (MPS2), with the Planning Policy Guidance (PPG) Minerals Technical Note. This is a web-based guidance revised on 6th March 2014.
- 3.2.2 The TGSacoustics Report presents the necessary areas of the PPG Minerals Technical Note in Chapter 2 Assessment Criteria (Appendix A, TGSacoustics, 2023, pages 4-5), providing the detail required to undertake an assessment to that guidance.
- 3.2.3 The calculation process required to consider the sound levels due to operations, to be assessed to the guidance levels in PPG Minerals Technical Note, are provided by

BS 5228-1:2009+A1:2014. This provides methods for the varying stationary and mobile operating modes of plant via a flow chart (Appendix B, BS 5228-1:2009+A1:2014, page 128, Figure F.1). This informs the relevant method due to the data available, the operating times, distance from the receiver, any soft ground attenuation and effects of any mitigation present (Appendix B, BS 5228-1:2009+A1:2014, pages 129-138).

- 3.2.4 The TGSacoustics Report has followed the same criteria for these factors as that undertaken by Sharps Redmore (Appendix D, Sharps Redmore, 2020, page 10, 5.1).

3.2 Acquisition of Measurement Data

- 3.2.1 The measurement data was acquired in accordance with BS 7445-2: 1991, Description and Measurement of Environmental Noise – Part 2: Guide to the acquisition of data pertinent to land use (BS 7445-2:1991).
- 3.2.2 Twelve contiguous $L_{A90(t)}$ Background Level measurements were undertaken in 15-minute intervals informed by best practice in BS 4142:2014+A1:2019, Methods for Rating and Assessing Industrial and Commercial Sound (Appendix C), and to reflect those of the original Environmental Report from Sharps Redmore in 2018.
- 3.2.3 BS 4142:2014+A1:2019 includes further direction to that of BS 7445-2: 1991, on equipment to be used, measurement procedure, calibration and meteorological monitoring (Appendix C, BS 4142:2014+A1:2019, pages 3-5). This has been followed (Appendix A, TGSacoustics, 2023, pages 6-7). The monitoring position has been clearly identified, pictorially, within the TGSacoustics Report (Appendix A, TGSacoustics, 2023, page 6, Figure 3.1 & pages 37-38).

3.3 Assessment Procedures – Validity and Representative Nature of Data Used

- 3.3.1 The assessment process requires the measured figures to be valid and representative of the Background Level ($L_{A90(T)}$). This was achieved by following the process in BS 4142:2014+A1:2019 (Appendix C, Chapter 8, page 9) and acquiring the measurements in the same manner and time of day as those acquired by Sharps Redmore (Appendix D, page 7), allowing for direct comparison of both measured figures and that of the assessment process.
- 3.3.2 In the TGSacoustics Report the Background Levels ($L_{A90(T)}$) provided significant consistency in sound level, both during the measurement period and with those presented by Sharps Redmore (Appendix D, page 7).
- 3.3.3 This consistency is typical of Background Levels as they are generally governed by continuous or semi-continuous sounds, which are more often at a greater distance than the transient and/or higher-level sounds. The likely sources, that of the A10 to the east and the conurbations of Cottenham and Haddenham, are of a significant distance from The Site. With the Background sounds made up from numerous sources and locations, any variation in the resulting background level experienced at The Site is expected to be small.
- 3.3.4 The modal value of the 12 $L_{A90(15min)}$ measurements has been assumed. BS 4142:2014+A1:2019 directs that where multiple $L_{A90(T)}$ measurements are undertaken, the modal value can be used (Appendix C, BS 4142:2014+A1:2019, 8.1.4). However, the standard also states that the context and sources of sound should be described and reported (BS 4142:2014+A1:2019, 8.1.5). Contextually, an understanding

of the sources, that of a distant A road and of distant conurbations, that give consistent levels of background sound against temporal and location factors, allows the modal value of the measured levels to be used with confidence.

3.3.5 Furthermore, the maximum and minimum Background Levels do not vary significantly from the modal figure. The measurement results show that $\frac{2}{3}$ of levels are the same as, or vary from, the modal figure of 39 dB by only 1 dB. This gives further confidence in the use of the modal figure.

4.1.1 Background Levels ($L_{A90(T)}$) are a statistical measurement and it is the 'A'-weighted sound level, which is exceeded for 90% of the reference time 'T' (Watson & Downey, 2013) (Peters et al, 2011). As such, it is mathematically incorrect to aggregate and average the individual measurements and still consider it to provide a statistical representation of the Background Level (Appendix C, BS 4142:2014+A1:2019, page 11, Note 2), therefore the use of the modal value is considered to be robust .

3.3.6 Assessment process within BS 5228-1:2009 (Appendix B, page 128, Figure F.1), is used by Sharps Redmore with data informed by the predicted type and use of plant and intensity of workings for the Mitchell Hill planning application. TGSacoustics makes use of the same data model as used by Sharps Redmore and its additional and more onerous assumptions on sound levels (Appendix D, Sharps Redmore, 2018, 2.5-2.6, page 4 & 5.1-5.4, pages 10-11).

3.3.7 The Mitchell Hill quarry is exploited on a campaign basis and as such levels will vary within the different stages at a given phase area. The data, used by the Sharps Redmore assessment (Appendix D), is that of the greatest intensity of operations. It

has assumed simultaneous operation of all plant, which is not the case when extraction temporarily ceases whilst stockpiles of previously excavated material is being processed.

- 3.3.8 As such, the use by TGSacoustics of the Sharps Redmore process, data, and assumptions is considered to provide valid and robust approach.

3.4 Accuracy of the Process - Uncertainty

- 3.4.1 The TGSacoustics Report minimises uncertainty by the use of onerous and worst-case scenarios and by use of the same processes as applied by the Sharps Redmore report (Appendix D). This includes the correct implementation of BS 7445-2:1991 and BS 4142:2014+A1:2019 for measurement and the application of BS 5228-1:2009+A1:2014 for assessment against the NPPF PPG Minerals Technical Note.

4. MITIGATION

4.1 Barrier Mitigation

- 4.1.2 The initial workings remove the top soil and sub soil, this often forms the earth bunds then relied on as acoustic barriers. These are not normally in place at the start of excavation activities as the material itself is being worked. The earth bund at The Site, however, is currently in place and will therefore, attenuate the sound levels from the start of operations at Phases 6 and 7 (Appendix A, TGSacoustics, 2023, Photographs, pages 35-37).

4.1.3 Barrier attenuation calculations have been undertaken by the Maekawa method. This is the standard process undertaken for long thin barriers (Watson & Downey, 2013) (Peters et al, 2011).

4.1.4 All barrier calculations have been presented in The Report within the Plant Sound Level Calculations (Appendix A, TGSacoustics, 2023, pages 20-33), along with the calculations for distance and other influencing factors. These provide transparency such that a suitably qualified and experienced acoustician can assess or critique the calculations used within The Report.

4.2 Contextual Mitigation

4.2.1 There are factors not included in the numerical assessment. These contextual factors identify that the resulting impact levels reported are likely to be overstated (Appendix A, TGSacoustics, 2023, 6.8, page 12).

- The articulated dumper truck (ADT) data is increased by Sharps Redmore by 3dB over their measured data for those vehicles as a more onerous assessment.
- The assessment is by the closest point between source and receiver (the 'Minimum Distance'). This correctly reflects the worst-case scenario; however, a significant amount of working time will be at a greater distance to the receiver, and therefore a lower sound level, during the exploitation of Phase 6 and more so at Phase 7.
- The operating on-time of the excavator is assumed at 100% during the working day. This was not to be the case when operations were observed at Phase 4.

- The assumption that the receiver is downwind of the source for 100% of the time, whereas wind direction varies.
- The actual operations of top soil removal at Phase 4 were undertaken by two excavators of combined lower sound power level than the bulldozer level used for the predictions.
- Exploitation is on a campaign basis, providing periods of time when fewer activities and reduced use of plant occurs. As the assessment is undertaken on the basis of the most intense operations continuing for 100% of each stage, throughout the complete cycle of Phase 6 or 7, this does not reflect the lower sound levels likely to be experienced in the periods of reduced activity.

All of these factors increase the likelihood of lower levels impacting The Site during operations at Phase 6 and Phase 7. With the working of Phase 6 and 7 predicted to be 21 months, with Phase 6 estimated at 9 months (Appendix A, TGSacoustics, 2023, page 34), this reduces the impacts to those of a more temporary nature.

5. RESULTING ASSESSMENT OF IMPACT AT THE SITE

- 5.1 During Temporary Works at Phase 6, the predictions based on Bulldozer operations has an impact level of 55 dB $L_{Aeq(1h)}$. This is below the temporary limit of 70 dB $L_{Aeq(1h)}$.
- 5.2 The cumulative impacts from routine activities at Phase 6 has an impact level of 47 dB $L_{Aeq(1h)}$. This is below the threshold of 49 dB, given by Background Level of 39 dB +10 dB.

- 5.3 The results from both operating modes are also applicable to Phase 7 and are all the more robust by the contextual observations and arguments supporting the likelihood of lower levels than reported.
- 5.4 The changes to plant, bunds, and operations, identified in the Sharps Redmore Noise Technical Note (Appendix I), preserve the acceptable conditions on weekdays, as does the change of use of plant and operations on Saturdays, which also provides acceptable conditions. These changes maintain the validity of the TGSacoustics Report as the outcomes of those variations, detailed in the Sharps Redmore Noise Technical Notes, were accepted by Cambridgeshire County Council through their granting of planning permission on that basis.

6. CONCLUSION

- 6.1 The future operations at Phase 6 of Mitchell Hill mineral workings have been assessed for their impact at the Appeal Site. These are detailed in the TGSacoustics, 2023 Report No. 02489, V1.1.
- 6.2 Measurements were undertaken in March of 2023 to provide baseline Background Levels for the assessment at The Site. The sound levels for stationary and mobile plant have been taken from those used within the original report by Sharps Redmore which informed the successful planning application for the Mitchell Hill mineral quarry.

- 6.3 The Site does not exceed the limits provided in the Minerals Technical Note to the NPPF from either routine activities, or for temporary workings, neither at Phase 6 nor Phase 7.
- 6.4 The satisfactory result is considered to be based on onerous, or worst-case scenarios. The Periodic Noise Monitoring undertaken, and observations of Phase 4 operations, support the onerous nature of assumptions made in the initial prediction process by Sharps Redmore, providing a greater margin of acceptability to that reported by them.
- 6.5 The additional work undertaken by Sharps Redmore to assess variations in plant, and Saturday working, informs the validity of the outcomes in the TGSacoustics Report.
- 6.6 Significant detail, providing transparency in the conditions, data, process, and calculations that inform the measurement and assessment, have been reported.
- 6.7 With the assumptions laid out in the TGSacoustics Report, The Site achieves an acceptable acoustic environment when assessed by the procedures within BS 5228:2009-1+A1:2014 and the guidance limits provided in the Minerals Technical Note to the NPPF.
- 6.8 Both an acceptable acoustic environment for the residents of The Site and the required safeguarding of the mineral workings are achieved.



21st January 2025

Acoustic Consultant

Appendices (provided in Zip file)

A – TGSacoustics Ltd, 2023, Environmental Sound Survey and Noise Impact Assessment

B – BS 5228-1:2009+A1:2014

C – BS 4142:2014+A1:2019

D – Sharps Redmore, 2018, Sound Level Assessment Report

E – LFAcoustics, 2020, Periodic Noise Monitoring

F – Decision Notice, 2018

G – Response Letter, 2022

H – Phase 7 Plan, 2020

I – Sharps Redmore, 2018, Noise Technical Notes

References

British Standards Institution, BS 7445-2:1991. Description and Measurement of Environmental Noise – Part 2: Guide to the Acquisition of Data pertinent to Land Use. [on-line copy] Available at: <https://www.bsigroup.com/en-GB/search-results/?q=BS+7445-2>

Peters, R.J., Smith, B.J., Hollins, Margaret, 2011. Acoustics and Noise Control 3rd ed. Routledge, Taylor Francis Group, published 2013

Planning Policy Guidance, 2014. Technical Note to NPPF – Minerals. [online copy] Available at: <https://www.gov.uk/guidance/minerals#Noise-emissions>

Watson, R. and Downey, O. (2013) The Little Red Book of Acoustics. Blue Tree Acoustics, UK.