



**Noise Impact Assessment
Proposed Change of Use of
Domestic Swimming Pool for Private Hire**


Site:
433 Rotherham Road
Barnsley
South Yorkshire
S71 1UX

Client:
Mr F. Myers

Date:
23rd August 2018

Ref:
NIA/8061/18/7987/v1/Rotherham Road

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| Client: | Mr F. Myers 433 Rotherham Road Barnsley South Yorkshire S71 1UX | |
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1. INTRODUCTION

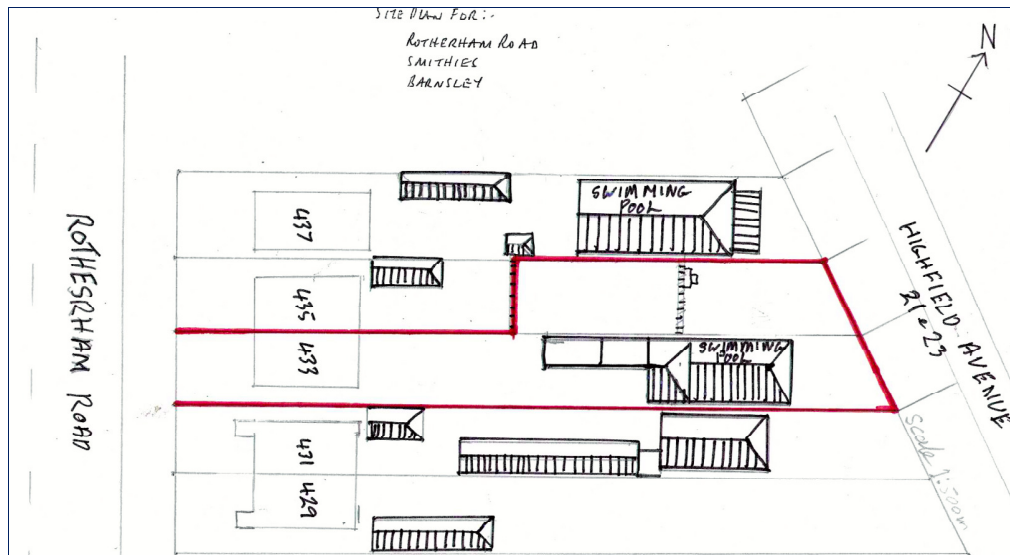
Overview

- 1.1 Environmental Noise Solutions Ltd (ENS) has been commissioned by Mr F. Myers to undertake a noise survey and assessment at the site of an existing domestic swimming pool at 433 Rotherham Road, Barnsley, S71 1UX.
- 1.2 This report details:
 - The methodology and results of a noise survey conducted at the site.
 - The impact assessment of noise sources, associated with the site operation, upon existing neighbouring noise sensitive receptors.
- 1.3 The report has been prepared for Mr F. Myers for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties referring to the report should consult Mr F. Myers and ENS as to the extent to which the findings may be appropriate for their use.
- 1.4 A glossary of acoustic terms used in the main body of the text is contained in Appendix A.

Site Description

- 1.5 The site is located to the north-east of Rotherham Road in Barnsley, as highlighted in red in Figure 1.1.

Figure 1.1: Site and Surrounding Area



- 1.6 The area surrounding the site is urban in character with residential dwellings to the north-west and south-east. To the south-west of the site is Rotherham Road (A633), a busy single carriageway linking the A61 to the A628.

- 1.7 The nearest Noise Sensitive Receptor (NSR) to the site is considered to be a neighbouring residential dwelling at 431 Rotherham Road (No. 435 is also understood to be owned by Mr F. Myers).
- 1.8 The proposals comprise the material change of use of a domestic swimming pool for private hire use. The swimming pool has been in situ and used for domestic purposes for a considerable amount of time including the use by friends and family. The pool is proposed to be rented out on an appointments system by parents and toddlers, people with disabilities and for purposes of physical rehabilitation. The pool will be open to small, private, pre-arranged bookings only.
- 1.9 The following information has been provided regarding the proposed operation of the pool:
 - Session durations of 1-hour.
 - Pool session times are to be between 09:30 – 20:30 hrs.
 - Client parking will be at the rear of No. 433 and 435 Rotherham Road, adjacent to the swimming pool.
 - 30-minute gap between sessions to allow vehicles to leave the site before the next client arrives.
 - No more than two cars to arrive per session.

2. NOISE ASSESSMENT GUIDANCE AND CRITERIA

National Planning Policy Framework

2.1 The National Planning Policy Framework¹ (NPPF) was updated in July 2018 and sets out the Government's planning policies for England and how these are expected to be applied.

2.2 Where issues of noise impact are concerned the NPPF provides brief guidance in paragraph 170 where it 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'.

2.3 Paragraph 180 advises that:

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

2.4 The NPPF also refers to the 2010 DEFRA publication, the Noise Policy Statement for England (NPSE) which reinforces and supplements the NPPF.

Noise Policy Statement for England

2.5 The Noise Policy Statement for England² (NPSE) sets out the long-term vision of promoting good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development. This long-term vision is supported by the following aims:

- Avoid significant adverse impacts on health and quality of life.
- Mitigate and minimise adverse impacts on health and quality of life.
- Where possible, contribute to the improvement of health and quality of life.

2.6 NPSE describes the following levels at which noise impacts may be identified:

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

¹ Ministry of Housing, Communities and Local Government. National Planning Policy Framework. July 2018.

² Government Department for Environment, Food and Rural Affairs. Noise Policy Statement for England. March 2010.

- SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.

2.7 According to the explanatory notes in the statement, where a noise level falls between the lowest observable adverse effect level (LOAEL) and a level which represents a significant observable adverse effect level (SOAEL):

'...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur.'

Planning Practice Guidance – Noise

2.8 In December 2014, *Planning Practice Guidance*³ (PPG) was updated online which provides additional guidance and elaboration on the NPPF. It advises that the Local Planning Authority should consider the acoustic environment in relation to:

- Whether or not a significant adverse effect is occurring or likely to occur.
- Whether or not an adverse effect is occurring or likely to occur.
- Whether or not a good standard of amenity can be achieved.

2.9 In line with the Explanatory Note of the NPSE, the PPG references the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG acknowledges that:

'...the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation'.

2.10 The PPG also provides general advice on the typical options available for mitigating noise. It goes on to suggest that Local Plans may include noise standards applicable to proposed developments within the Local Authority's administrative boundary, although it states that:

'Care should be taken, however, to avoid these being implemented as fixed thresholds as specific circumstances may justify some variation being allowed'.

IEMA Guidelines for Environmental Noise Impact Assessment

2.11 The Guidelines for Environmental Noise Impact Assessment⁴ provide recommendations for approaches to noise impact assessment in the context of the Environmental Impact Assessment (EIA) process. However, the principles in the guidelines are relevant to all types of project where noise effects are likely to occur, regardless of size including small developments which are not screened as EIA development.

³ Planning Practice Guidance (2014) – Noise <http://planningguidance.planningportal.gov.uk/blog/guidance/noise/>

⁴ Guidelines for Environmental Noise Impact Assessment, Institute of Environmental Management and Assessment (2014)

- 2.12 The guidelines provide a number of examples regarding approach to impact assessment. Table 2.1 replicates an example of noise impact magnitude descriptors used to assess traffic generated onto the highway network by a proposed development. This has been adopted in this instance as a means of assessing potential changes in noise level due to changes in access road and car park activity.

Table 2.1: Example Noise Impact Magnitude Descriptors

| Relative Change dB(A) | Magnitude / Scale of Change |
|-----------------------|-----------------------------|
| ≤ 2.9 | Negligible |
| 3 – 4.9 | Small |
| 5 – 9.9 | Medium |
| ≥ 10 | Large |

3. BASELINE NOISE SURVEY AND RESULTS

- 3.1 Noise monitoring was carried out on Tuesday 7th August 2018 to establish existing ambient noise levels in the vicinity of the site.
- 3.2 The adopted baseline noise monitoring position (shown as 'MP1' in Appendix B) was to the rear of No. 433 Rotherham Road, level with the rear garden of the neighbouring NSR.
- 3.3 At MP1, the noise environment was dominated by road traffic on Rotherham Road (A633). Other noise sources included birdsong and children playing in nearby residential gardens.
- 3.4 Noise measurements were undertaken using a Bruel & Kjaer 2250 Type 1 integrating sound level meter. The meter was connected to a windshield covered microphone positioned in free-field conditions (i.e. at least 3.5 metres from a vertical reflective surface) at a height of 1.5 metres above ground level.
- 3.5 The calibration of the measurement system was verified immediately before and after the survey period using a Bruel & Kjaer Type 4231 calibrator. No drift in calibration levels greater than 0.5 dB was noted.
- 3.6 Measurements consisted of A-weighted broadband parameters including L_{Aeq} , L_{A10} and L_{A90} together with linear octave band data.
- 3.7 During the survey the noted weather conditions were dry, clear, warm and calm with minimal air movement. Weather conditions were therefore considered appropriate for noise monitoring.
- 3.8 Table 3.1 presents a summary of the measured baseline noise data rounded to the nearest decibel.

Table 3.1: Summary of Noise Measurement Data at MP1 (07/08/2018)

| Time (hh:mm) | L_{Aeq} (dB) | L_{A10} (dB) | L_{A90} (dB) |
|---------------|----------------|----------------|----------------|
| 12:00 – 13:00 | 45 | 47 | 40 |
| 13:00 – 14:00 | 46 | 48 | 41 |
| 14:00 – 15:00 | 49 | 50 | 46 |
| 15:00 – 16:00 | 48 | 50 | 46 |
| 16:00 – 17:00 | 47 | 49 | 45 |
| 17:00 – 18:00 | 48 | 49 | 45 |
| 18:00 – 19:00 | 48 | 49 | 45 |
| 19:00 – 20:00 | 46 | 48 | 43 |

- 3.9 It can be seen that measured ambient noise levels at MP1 were between 45 - 49 dB $L_{Aeq (1hr)}$. The typical⁵ ambient noise level was 48 dB $L_{Aeq (1hr)}$.

⁵ Both the mode and median of the measured values were 48 dB $L_{Aeq (1hr)}$. This is therefore considered to be 'typical'.

4. NOISE ASSESSMENT

Source Noise Levels

- 4.1 In addition to the baseline noise monitoring exercise detailed in Section 3, several sample noise measurements were also taken on-site to characterise additional noise contributions associated with the proposals.
- 4.2 It is understood that the only site-specific noise source associated with the proposals comprises the additional vehicles arriving, parking and leaving the site. It is assumed that the proposals do not necessitate additional (or modifications to existing) external plant.
- 4.3 Noise levels were measured at a distance of 2 metres from each source. The evaluation considered the arrival and departure of two cars of different sizes and engine types - a Jaguar Sovereign 4.2 V8 Petrol and a Vauxhall Corsa 1.7 Turbo Diesel. These are considered to be indicative of the range of vehicle types anticipated on site.
- 4.4 In order to calculate the contribution of vehicle movements to the daytime ambient noise level, the measured Sound Exposure Level / Single Event Level (SEL) of each event has been considered. The SEL of a single discrete noise event is the level which, if maintained constant for a period of one second, would contain as much A-weighted sound energy as is contained in the actual noise event.
- 4.5 Table 4.1 presents a summary of the SEL source noise data for each measurement session rounded to the nearest decibel.

Table 4.1: Summary of Measured SEL Source Noise Data – 2m Distance

| Vehicle | Noise Source | SEL (dBA) |
|------------------|----------------------------|-----------|
| Jaguar Sovereign | Arrival on Access Road | 65 |
| | Door Open/Close | 63 |
| | Engine Start and Pull Away | 69 |
| Vauxhall Corsa | Arrival on Access Road | 70 |
| | Door Open/Close | 59 |
| | Engine Start and Pull Away | 69 |

- 4.6 The following formula may be used for calculating the L_{Aeq} level from the SEL:

$$L_{Aeq, T} = 10 \log_{10} [(n \times 10^{SEL/10}) / T]$$

where:

SEL = the average Sound Exposure Level
 n = number of event occurrences
 T = reference time period, in seconds

- 4.7 For a robust assessment, calculations assume:
- The higher of the two measured SEL noise levels, shown in Table 4.1, would be associated with each event.
 - Each car is fully occupied necessitating 4 no. of door open / close events per car.

- 4.8 Table 4.2 presents the calculated $L_{Aeq(1hr)}$ at 2m distance, due to the proposed vehicle movements.

Table 4.2: Summary of $L_{Aeq(1hr)}$ Source Noise Data – 2m Distance

| Noise Source | SEL (dBA) | No. of Events | T (s) | dB $L_{Aeq(1hr)}$ |
|----------------------------|-----------|---------------|-------|-------------------|
| Arrival on Access Road | 70 | 2 | 3600 | 37 |
| Door Open/Close | 63 | 8 | | 36 |
| Engine Start and Pull Away | 69 | 2 | | 36 |

Propagation

- 4.9 Noise levels associated with vehicle movements have been determined at the nearest NSR using a basic propagation calculation incorporating a distance attenuation correction.
- 4.10 For a robust assessment, calculations do not account for the potential additional attenuation that may occur due to the existing 2m high boundary fence between the site and neighbouring dwelling⁶. The calculated vehicle noise levels at the NSR are presented in Table 4.3.

Table 4.3: Calculated Vehicle Noise Levels at NSR

| Noise Source | Location | Nearest Distance from Source to NSR (m) | Noise Level at NSR dB $L_{Aeq(1hr)}$ |
|-------------------------------|--------------------------|---|--------------------------------------|
| Arrival on Access Road | Access Road | 4 | 34 |
| Door Open/Close | Car Park | 22 | 16 |
| Engine Start and Pull Away | Car Park and Access Road | 4 | 33 |
| Cumulative Noise Level | | | 37 |

Impact Assessment

- 4.11 With reference to the baseline noise data presented in Section 3, noise levels associated with vehicles arriving and leaving the site are calculated to be 11 dB below the typical ambient noise level in the vicinity.
- 4.12 Logarithmic law dictates that ambient noise levels do not increase when noise levels from additional sources are 10 dB below the existing noise level. It follows that there would be no change in ambient noise levels in the vicinity due to contributions from additional vehicle movements associated with the proposals. Therefore, no adverse impact is anticipated.
- 4.13 With reference to the example IEMA guideline impact magnitude descriptors, replicated in Table 2.2, an increase of 0 dB is deemed to be 'Negligible'. Therefore, the potential issue of vehicle noise requires no further consideration.

⁶ Although there will be no line of sight, between the NSR garden area or ground floor habitable areas, to the access road or parking area, the acoustic integrity of the structure could not be verified during the site visit to determine whether or not the fence could be classified as an 'acoustic barrier'.

5. SUMMARY AND CONCLUSIONS

- 5.1 A noise survey and assessment has been performed at the site of an existing domestic swimming pool at 433 Rotherham Road, Barnsley, S71 1UX.
- 5.2 In order to determine the existing ambient noise climate in the vicinity of the site, noise monitoring was undertaken on Tuesday 7th August 2018.
- 5.3 In addition to the baseline noise monitoring exercise, several sample noise measurements were also taken on-site to characterise additional noise contributions associated with the proposals (i.e. additional vehicles arriving, parking and leaving the site).
- 5.4 Noise levels associated with the proposals have been determined at the nearest NSRs. Noise levels associated with vehicles arriving, parking and leaving the site are calculated to be 11 dB below the typical ambient noise level in the vicinity. The assessment has determined that there would be no change in ambient noise levels in the vicinity due to contributions from additional vehicle movements associated with the proposals. Therefore, no adverse impact is anticipated.
- 5.5 With reference to the example IEMA guideline impact magnitude descriptors an increase of 0 dB is deemed to be 'Negligible'. Therefore, the potential issue of vehicle noise requires no further consideration.

APPENDIX A – Noise Parameters

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 μ Pa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 μ Pa).

A-weighting Network

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T , has the same mean-square sound pressure as a sound that varies with time. $L_{Aeq, 16hr}$ (07:00 - 23:00 hrs) and $L_{Aeq, 8hr}$ (23:00 - 07:00 hrs) are used to qualify daytime and night time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T . $L_{A10, 18hr}$ is the arithmetic mean of the 18 hourly values from 06:00 - 24:00 hrs.

$L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T . L_{A90} is typically taken as representative of background noise.

Rating Level ($L_{Ar, Tr}$)

The specific noise level plus any adjustment for characteristic features of the noise.

Weighted Sound Reduction Index (R_w)

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies (R_w is used to characterise the insulation of a material or product that has been measured in a laboratory).

APPENDIX B – Baseline Noise Measurement Position

