

NOISE STATEMENT

**Proposed Redevelopment of Leisure Centre, Castle
Farm Recreation Centre, Kenilworth**
Prepared for: Mace UK Ltd.

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1.0 Introduction

Mace Ltd. has appointed SLR Consulting Limited (SLR) to prepare a Noise Statement for the proposed redevelopment of the Leisure Centre at Kenilworth.

It is understood that this Noise Statement will be submitted with planning application.

Whilst reasonable effort has been made to ensure that this report is easy to understand, it is technical in nature; to assist the reader, a glossary of terminology is included in Appendix 01.

2.0 Site Description

2.1 Existing Site

The Site is located off Fishponds Road as shown in Figure 2-1 below. In summary the site is:

- Bound to the west by open fields.
- Bound to the north by open fields with Castle Road beyond.
- Bound to the east by residential properties abutting Brookside Avenue.
- Bound to the south by open fields with Fishponds Road beyond.

Figure 2-1
Site Location



2.2 Proposed Site

The Illustrative Masterplan of the development “*Proposed Site Plan*” can be seen in Appendix 02.

In summary the development would include the following:

- Sports hall (6 courts at 34.5m x 27.2m) and store.
- Fitness suite with 80 stations, consultation room and office.
- Interactive activity studio.
- Dance studio.
- Flexible room/meeting room.
- Hygiene room.
- Two outdoor changing rooms with internal and external access for sports pitches.
- Dry changing.
- Reception, foyer and lobby.
- General office and managers office.
- Staff room and changing area.
- Served and vending store.
- Retail area.
- WCs (public – in addition to those within changing facilities).
- IT hub.
- Plant, services, lifts etc.
- New Scouting and Guiding facilities.
- A rebuilt and relocated petanque terrain.

Access to the site would be from Fishponds Road.

3.0 Assessment

3.1 On-Site Operational Noise

The noise impact of all commercial noise operations at the Site will be assessed in accordance with British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*.

BS4142:2014+A1:2019 is intended to be used to assess the potential adverse impact of sound, of an industrial and/or commercial nature, at nearby sensitive receptor locations within the context of the existing sound environment.

The scope of the guidance excludes the following noise sources:

- recreational activities, including all forms of motorsport.
- music and other entertainment.
- shooting grounds.
- construction and demolition.
- domestic animals.
- People.
- public address systems for speech.
- other sources falling within the scopes of other standards or guidance.

Where the specific sound contains tonality, impulsivity and/or other sound characteristics penalties should be applied depending on the perceptibility. For tonality a correction of either 0, 2, 4 or 6dB should be added; for impulsivity a correction of either 0, 3, 6 or 9dB should be added and if the sound contains specific sound features which are neither tonal nor impulsive a penalty of 3dB should be added.

In addition, if the sound contains identifiable operational and non-operational periods, that are readily distinguishable against the existing sound environment, a further penalty of 3dB may be applied.

The assessment of impacts contained in BS4142:2014+A1:2019 is undertaken by comparing the sound rating level, i.e. the specific sound level of the source plus any penalties, to the measured representative background sound level immediately outside the sensitive receptor location. Consideration is then given to the context of the existing sound environment at the sensitive receptor location to assess the potential impact.

- Once an initial estimate of the impact is determined, by subtracting the measured background sound level from the rating sound level, BS4142:2014+A1:2019 states that the following should be considered:
- Typically, the greater the difference, the greater the magnitude of the impact.
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. It is an indication that the specific sound source has a low impact.

BS4142:2014+A1:2019 notes that:

“Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.”

BS4142:2014+A1:2019 outlines guidance for the consideration of the context of the potential impact including consideration of the existing residual sound levels, location and/or absolute sound levels.

3.2 Off-Site Development Related Traffic Noise

SLR will calculate the impact of any increase in off-site development related traffic noise in accordance with the former Department of Transport and Welsh Office memorandum Calculation of Road Traffic Noise (CRTN), published in 1988.

CRTN sets out the UK standard methods and procedures to predict and measure road traffic noise. In the UK, road traffic noise is predicted and measured in terms of a statistical measure, equivalent to the 90th percentile. Termed the L_{A10} , this measure of noise is equivalent to the noise level exceeded for 10% of the measurement period. Most UK legislation that refers to road traffic noise uses this noise index over an 18-hour period, from 06:00 hours to 00:00 hours.

4.0 Baseline Noise Environment

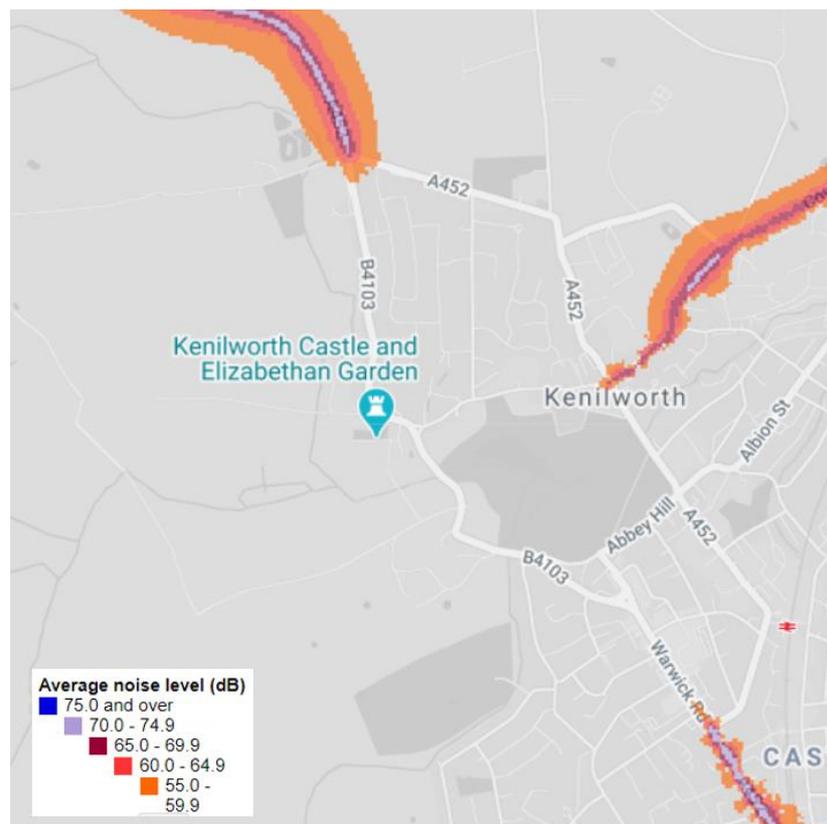
4.1 Desktop Assessment of Baseline Sound – Extrium Website

SLR has reviewed the strategic noise maps completed by Defra in 2017¹ and available on the Extrium website². The noise maps show estimated levels of road traffic noise on roads with more than 3,000,000 vehicle passages in a year (in 2017) and railway noise on lines with more than 30,000 movements a year (in 2012). The maps are available for the following indices:

- L_{den} (day-evening-night) - a 24-hour annual average noise level in decibels with weightings applied for the evening and night periods.
- $L_{Aeq,16h}$ - the annual average noise level (in dB) for the 16-hour period between 0700-2300.
- L_{night} - the night-time annual average noise level (in dB), where night is defined as 2300-0700.

Road noise maps of the $L_{Aeq,16h}$ and L_{night} indices in the Kenilworth area are shown in Figures 4-1 and 4-2³.

Figure 4-1
2017 $L_{Aeq,16h}$ Road Noise Map

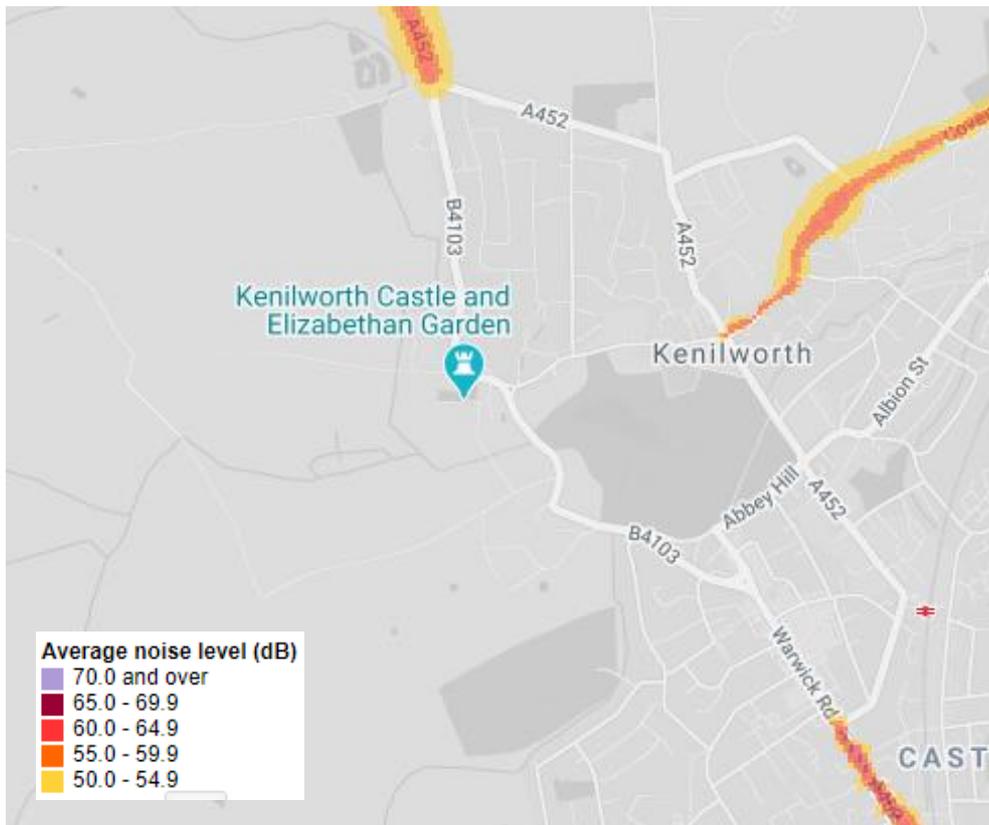


¹ Completed to meet the requirements of the Environmental Noise Directive (Directive 2002/49/EC) and the Environmental Noise (England) Regulations 2006 (as amended)

² www.extrium.co.uk/noiseviewer.html

³ The L_{den} map will not be referred to as weightings are applied to the evening and night-time periods so its use as a metric in this assessment are not applicable.

Figure 4-2
2017 L_{night} Road Noise Map



From an analysis of Figures 4-1 to 4-2 it is evident that the strategic noise maps completed by Defra do not cover the roads in the vicinity of the Site. However, this does not mean that environmental noise in the vicinity of the Site is low.

4.2 Desktop Assessment of Baseline Sound – Transport Assessment

With reference to existing baseline traffic flows on roads not covered by the Extrium website reference can be made to SLR Report 418.05578.00006 (dated January 2021). Within this report peak movements from Fishpond Road to the Castle Farm Recreation Centre were identified as ranging from 93 two-way movements to 142 movements per hour, with a maximum number of movements over a day of 1,183. With reference to this later value, if it is assumed that as a worst case the movements occur over an 18-hour period the ambient noise level at 10m from the carriageway edge would calculate as 53.1dB(A)⁴.

4.3 Baseline Sound Survey

Whilst the strategic maps are a useful indicator of the ambient sound near the Site, they cannot be used in a BS4142:2014+A1:2019 assessment as they do not include the Site areas and the background (L_{A90}) sound level is not presented. The background sound level in the vicinity of Noise Sensitive Receptors (NSR) is required for the BS4142:2014+A1:2019 assessment

⁴ CRTN 18-hour L_{A10} dB value minus 2dB(A).

Further to this Report SLR intend to undertake a series of background sound measurements at locations representative of the nearest NSRs to the Site, namely:

- Location 1 – Residential properties located on Castle Fish Ponds;
- Location 2 – Residential properties located on Brookside Avenue; and
- Location 3 – Residential properties located on Fishpond Receptors.

The proposed monitoring locations are shown in Figure 4-3.

Figure 4-3
Proposed Survey Locations



If the monitoring positions are deemed secure enough, the meters will be installed and left unattended to measure noise levels over a 96-hour period (to include a weekend). Further to the above, if the positions are not secure, the sound measurements would be undertaken over representative periods during a Sunday daytime and a Sunday night-time as these are the most sensitive periods of the week.

5.0 BS4142: 2014+A1:2019 Noise Assessment

SLR would predict the noise levels generated by any plant and on-site traffic movements associated with the Site at the nearest noise-sensitive properties to site using the proprietary software-based noise model, CadnaA, which implements the full range of UK noise prediction calculation methods.

- The noise sources are expected to include (but not be limited to):
- Fixed plant external noise sources such as condenser units;
- Breakout noise from open doors and louvres; and
- On-site traffic movements.

The predicted sound levels will be assessed against the measured background sound levels and site setting/context in accordance with the guidance contained in British Standard 4142:2014+A1:2019, and/or limits specified by the local authority.

A subjective opinion of the acoustic features associated with plant or on-site traffic movements (including loading/unloading operations) would also be included within the assessment; this may include penalties for tonal, impulsive, and/or intermittent aspects of the sound being generated by the plant at the nearest noise-sensitive receptors.

The results of the assessment would be used to determine whether noise levels generated by the Site would lead to adverse impacts at the nearest noise-sensitive receptors.

The assessment would indicate whether additional mitigation is required to reduce any identified impacts; the scope of this study includes consideration of generic mitigation measures but does not include detailed design of such measures.

6.0 Traffic Impact Assessment

SLR will undertake an assessment to include all off-site roads where traffic from the development is expected to increase existing flows by at least 10%. At this stage it is anticipated that only Fishpond Road would meet this criterion.

For each qualifying road the Basic Noise Level will be established for the 'With Scheme' and 'Without Scheme' Scenario for the Opening Year (short-term). The impact will be assessed with reference to Table 6-1 below.

Table 5-1
Site Traffic Noise Impact – Short Term

Magnitude	Noise Change $L_{A10,18hr}$ dB
Major	5.0+
Moderate	3.0 – 4.9
Minor	0.1 – 2.9
None	0.0

7.0 Conclusion

Mace Ltd. appointed SLR to prepare a Noise Statement for a proposed redevelopment of the Leisure Centre at Kenilworth.

This Noise Statement, which will be submitted with the planning application has:

- Detailed the existing and proposed use of the Site;
- Discussed the noise assessments that are expected to be required;
- Presented a desktop analysis of the baseline noise environment;
- Detailed a proposed baseline sound survey; and
- Presented the proposed methodologies for the BS4142:2014+A1:2019 noise assessment and the traffic impact assessment.

Following on from this Noise Statement, SLR will produce an Addendum Report to include the following:

- A baseline sound survey;
- A British Standard 4142:2014+A1:2019 assessment; and
- A traffic impact assessment.

The Addendum Report will be provided within the formal consultation period of the application.

APPENDIX 01

Glossary of Terminology

Appendix 01 – Glossary of Terminology

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table 01-1
Sound Levels Commonly Found in the Environment

Sound Level	Location
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at 1m away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

Acoustic Terminology

dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2×10^{-5} Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
L_{Aeq}	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L_{10} & L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{10} index to describe traffic noise.
L_{Amax}	L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{Aeq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

APPENDIX 02

Drawings

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