ACOUSTIC CONSULTANTS LTD

Noise Impact Assessment

Proposed Skate Park
Lynton Way Park, Sawston, CB22 3EA

Reference: 11204/JL

Client:
Sawston Prish Council

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1. Introduction

Sawston Parish Council appointed Acoustic Consultants Limited to undertake an environmental noise assessment for the proposed skatepark at Lynton Way Park, Sawston, CB22 3EA.

The assessment includes the prediction of noise emission from the skatepark at the nearby noise-sensitive properties, based on noise level data from activities measured at existing skateparks.

A site noise survey has been completed to determine the existing residual noise climate during the proposed hours of use.

The author of this report is a Full Member of the Institute of Acoustics (MIOA) with over 7 years of experience within the field of noise and acoustics.

2. The Site

The proposed skatepark is located at Lynton Way Park, Sawston, CB22 3EA to the north of an existing playground area.

The site is located within a residential area with The Icknield Primary School to the south and residential dwellings to the east, north and west which are considered the nearest noise sensitive receivers (NNSRs).

The proposal includes for a small concrete skatepark. The use of the site is not formally restricted although there is no significant artificial lighting, so the use is generally restricted to the hours of daylight.

The following Google Maps image shows the location of the site and surrounding area.

Figure 1: Site location and Proposed Skatepark Location (red)

3. Planning and Noise

3.1. National Planning Policy Framework

The National Planning Policy Framework (NPPF) was published in March 2012 and revised in July 2021. Section 15 entitled 'Conserving and enhancing the natural environment' addresses noise as a requirement of planning. Paragraph 174 states:

"174. Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability…"

Paragraph 185 states:

"185. 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:

a) 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;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."

3.2. National Planning Policy Framework

The National Planning Policy Framework (NPPF) was published in March 2012 and revised in December 2024. Section 15 entitled 'Conserving and enhancing the natural environment' addresses noise as a requirement of planning. Paragraph 187 states:

"187. Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible,

help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and."

Paragraph 198 states:

"198. 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:

a) 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
b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and
c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation. "

The document does not prescribe any assessment methodology or criteria to assess the adverse effect of noise and refers you to the NPSE.

3.3. Noise Policy Statement for England

The NPPF refers to the Noise Policy Statement for England (NPSE). This was published in March 2010 and aims to provide clarity regarding current policies and practices to enable noise management decisions to be made within the wider context, at the most appropriate level, in a cost-effective manner, in a timely fashion, and applies to all forms of noise including environmental noise, neighbour noise and neighbourhood noise.

The NPSE sets out the long-term vision of Government noise policy. This long-term vision is supported by three noise policy aims as follows:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

avoid significant adverse impacts on health and quality of life;
mitigate and minimise adverse impacts on health and quality of life; and
where possible, contribute to the improvement of health and quality of life."

The NPSE introduces the concept of "Significant adverse" and "Adverse" impacts of noise which relate to the noise policy aims. These are applied as follows:

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.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur. With regard to where there is potential for noise impact it states the following in relation to the second noise policy aim:

"The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur."

The NPSE does not provide any assessment criteria for the noted effect levels and each case must be considered on its merits. The NPSE does, however, emphasise that in dealing with noise Local Planning Authorities are required to take a balanced approach in considering the benefits of development against any adverse effects which arise. Paragraph 2.18 of the NPSE is particularly relevant in this respect and states:

"There is a need to integrate consideration of the economic and social benefits of the activity or policy under examination with proper consideration of the adverse environmental effects, including the impact of noise on health and quality of life. This should avoid noise being treated in isolation in any particular situation, i.e. not focusing solely on the noise impact without taking into account other related factors."

The planning need is outside the scope of noise and acoustics and will need to be addressed by others.

3.4. Planning Practice Guidance, Noise

The Planning Practice Guidance (PPG) on noise referred to here is based on the current version (January 2019) as provided on the Planning Guidance Website. It states that,

"Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment."

It provides generic guidance on how to determine the noise impact and what factors could be a concern.

It includes the option types to mitigate any adverse effects of noise stating that there are four broad types of mitigation. These are engineering, layout, using planning conditions or obligations and noise insulation.

Paragraph 5 of the PPG provides a table identifying the effect level and examples of effect relating to the impact effect levels provided in the NPSE. The table is duplicated below:

Table 1: PPG Noise – Perception of Effect Levels

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

The table does not provide any objective assessment which equates to the noted effect levels. However, the PPG identifies that where noise is audible, it is not necessarily intrusive. The effect and impact on people are based primarily on the level of noise.

4. Relevant Noise Guidance for Skatepark Assessment

The following sections outline what we consider to be relevant guidance and suitable noise criteria within the context of the national planning policy.

4.1. World Health Organisation 'Guidelines for Community Noise'

The World Health Organisation 'Guidelines for Community Noise' published in 1999 gives the following description of community noise.

"Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources except noise at the industrial workplace. Main sources of community noise include road, rail and air traffic, industries, construction and public work, and the neighbourhood. Typical neighbourhood noise comes from premises and installations related to the catering trade (restaurant, cafeterias, discotheques, etc.); from live or recorded music; sport events including motor sports; playgrounds; car parks; and domestic animals such as barking dogs."

This includes "sport events" and, as such, the use of skatepark sites.

For noise levels internally and externally to dwellings it states:

"In Dwellings. The effect of noise in dwellings, typically, are sleep disturbance, annoyance and speech interference. For bedrooms the critical effect is sleep disturbance. Indoor guideline values for bedrooms are 30 LAeq for continuous noise and 45 LAmax for single sound events. Lower noise levels may be disturbing depending on the nature of the noise source. At night-time, outside sound levels about 1 metre from façades of living spaces should not exceed 45 dB LAeq, so that people may sleep with bedrooms open. This value was obtained by assuming the noise reduction from outside to inside with the window open is 15 dB. To enable casual conversation indoors during daytime, the sound level of interfering noise should not exceed 35 dB LAeq. The maximum sound pressure level should be measured with the sound pressure meter set at "fast"."

Based on the same methodology used to determine the night time noise level (with a 15 dB(A) for an open window) outside a residential property, the daytime noise level about 1 metre from façades of living spaces should not exceed 50 dB LAeq.

Table 4.1 of the document provides guidelines for community noise in specific environments, suggesting noise levels at which adverse health and annoyance effects are likely. The relevant noise criteria are as follows:

Table 2: WHO Noise Criteria

Specific Environment	Critical Health Effect	$L_{eq(T)}$ dB(A)
Outdoor living area	Serious annoyance, daytime and evening	55
	Moderate annoyance, daytime and evening	50
Dwelling indoors	Speech intelligibility & moderate annoyance, daytime & evening	35

According to the WHO guidance, moderate annoyance is caused by noise levels exceeding 50 $L_{Aeq(T)}$ dB externally and 35 $L_{Aeq(T)}$ dB internally. With relation to the adverse effect level, we would consider this the threshold of the Lowest Observed Adverse Effect Level.

Therefore, where noise levels from the proposed development do not exceed 50 $L_{Aeq(T)}$ dB externally and 35 $L_{Aeq(T)}$ dB internally, the effect is below the Lowest Observed Adverse Effect Level and will have no adverse effect. The noise level of the skatepark may be noticeable but not intrusive and is considered acceptable in planning terms.

The equivalent noise level is determined over a specific time period. The World Health Organisation guidelines for residential developments are typically equivalent noise levels calculated over a 16-hour daytime period.

In our opinion, a skatepark 16-hour assessment period may not truly reflect the noise impact as it takes into account times of use and non-use. We would propose an alternative, more stringent but appropriate assessment time period of one hour, $L_{Aeq\ (1\ hour)}$. Therefore, we would suggest the more stringent target noise level of 50 dB $L_{Aeq\ (1\ hour)}$ is more suitable for the more sensitive evening time.

The WHO criteria were reviewed in a report by the National Physical Laboratory (reference CMAM16) which states:

"Exceedance of the WHO guideline values does not necessarily imply significant noise impact and indeed, it may be that significant impacts do not occur until much higher levels of noise exposure are reached."

Therefore, it is not necessarily the case that where these levels are exceeded the noise will adversely affect nearby residential properties.

4.2. Comparative Assessment

The criteria set out in section 4.1 is an absolute level in a dwelling or external amenity area. As such, it does not consider existing noise levels on or around the site. However, for certain applications it may be more suitable to consider a comparative assessment as part of the overall impact assessment.

For example, this would be a site where the existing noise levels already exceed the WHO guideline values. This existing noise for example, could be due to transportation noise or other sporting facilities.

In terms of noise level changes, withdrawn Planning Policy Guidance 24 states in the Glossary under dB (A) the following:

"Measurements in dB (A) broadly agree with people's assessment of loudness. A change of 3 dB (A) is the minimum perceptible under normal conditions, and a change of 10 dB (A) corresponds roughly to halving or doubling the loudness of a sound. The background noise level in a living room may be about 30 dB (A); normal conversation about 60 dB (A) at 1 metre; heavy road traffic about 80 dB (A) at 10 metres; the level near a pneumatic drill about 100 dB (A)."

The Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment, Version 1.2 published in November 2014 categorises the significance of a change in noise level, this is summarised as follows and taken from Table 7-14 of the guidance.

Table 3: IEMA Impact from the Change in Sound Levels (Table 7-14)

Sound Level Change LpT	Long-term impact classification	Short-term impact classification
≥ 0 dB and < 1 dB	Negligible	Negligible
≥ 1 dB and < 3 dB		Minor
≥ 3 dB and < 5 dB	Minor	Moderate
≥ 5 dB and < 10 dB	Moderate	Major
≥ 10 dB	Major	

Where noise from the proposed development does not exceed the existing noise climate, the increase in noise will be no more than 3 decibels. It is expected there will be no observed effect on nearby residential properties. This would be applicable where noise levels currently exceed the WHO guidelines which would be used as a lower limit. The noise levels are both measured in the $L_{Aeq(T)}$ parameter over the same time period, T.

Where noise levels do not exceed the WHO guidelines, a higher change could be considered acceptable without having an observed adverse effect as the noise levels are suitably low.

4.3. Transient Sounds

To assess noise from short term sources, we have considered separately the noise from individual skatepark obstacles such as quaterpipes/box jumps and rails. There is no specific guidance for the maximum noise level of environmental noise during the daytime and, as such, we have taken a pragmatic approach in considering the most appropriate available guidance.

By assessing both the equivalent noise level for continuous use of the skatepark and the maximum noise level of discrete events, we consider that this addresses the character of the noise.

4.4. Proposed Assessment Methodology

The aim of the assessment is to determine whether noise from the proposed skatepark can be controlled to acceptable levels during the proposed hours of use.

It is proposed to assess the development against the WHO guidelines and the existing noise climate. Where the predicted noise level of the skatepark is below the WHO guidelines threshold for the onset of 'moderate annoyance' in terms of the NPPG, the development will have 'no observed adverse effect'.

Where noise from the skatepark exceeds the WHO guidelines but does not exceed the existing noise climate, the increase in the ambient noise climate will be no more than 3 decibels and have a negligible impact.

The above impact is expected to have no observed effect on nearby residential properties. The NPPG states that the perception of 'No Observed Adverse Effect' is 'noticeable and not intrusive' and gives an example outcome as follows:

"Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life."

The 'No Observed Adverse Effect' level falls below the Lowest Observed Adverse Effect Level of the NPPG.

It is also considered necessary to consider the maximum noise levels generated by the use. However, there is no directly appropriate criteria for daytime maximum noise levels and as such we provide this information and assessment for consideration by the Local Planning Authority.

5. Site Noise Monitoring

A partially attended site noise survey was undertaken from 11:00 on Wednesday 19th to 11:15 on Thursday 20th February 2025. The purpose of the noise survey was to determine the existing ambient noise climate at a location representative of the nearest noise sensitive residential property during the proposed hours of use.

5.1. Monitoring Equipment

Sound Pressure Levels were measured using Class 1 sound level meters with a half-inch condenser microphone, using the 'fast' setting. The equipment is checked regularly using a Quality System meeting the requirements of British Standard EN ISO/IEC 17025:2017 "General requirements for the competence of testing and calibration laboratories"; in accordance with British Standard EN 10012:2003 "Measurement management systems. Requirements for measurement processes and measuring equipment"; and traceable to the National Standards. This equipment was checked and calibrated as noted below and the certificates are available for inspection.

Table 4: Equipment and Calibration Status

Equipment Description / Manufacturer / Type	Serial Number	Date of Calibration	Calibration Certification Number
SLM, NTI, XL2	A2A-16312-E0	09/01/2024	1507318-1
Pre-Amp, NTI, MA220	8599	09/01/2024	1507318-1
Microphone, NTI, MC230A	A17498	09/01/2024	1507318-1
Calibrator, Larson Davis, CAL200	13392	16/01/2025	1511018-1

The measurement equipment was checked before and after use with the noted calibrators and no significant drift was detected.

5.2. Weather Conditions

The weather conditions were as follows and are not considered to have adversely affected the survey data:

Table 5: Noise Survey Weather Conditions

Date	Wind Speed (m/s)	Wind Direction	Temperature (°C)	Humidity (%)	Precipitation (time/hrs)	Cloud Cover (%)
19/02/2025	5	SE	5	75	0	100
20/02/2025	5	S	12	88	0	100

5.3. Monitoring Procedure

Noise monitoring was undertaken in one representative of the nearest noise sensitive receivers to the proposed skatepark.

During the measurements the noise climate was primarily determined by noise within the playground and pedestrian noise on the park paths. The microphone was in a free-field position, approximately 1.5 metres above ground on a tripod. The monitoring location is shown on the figure below:

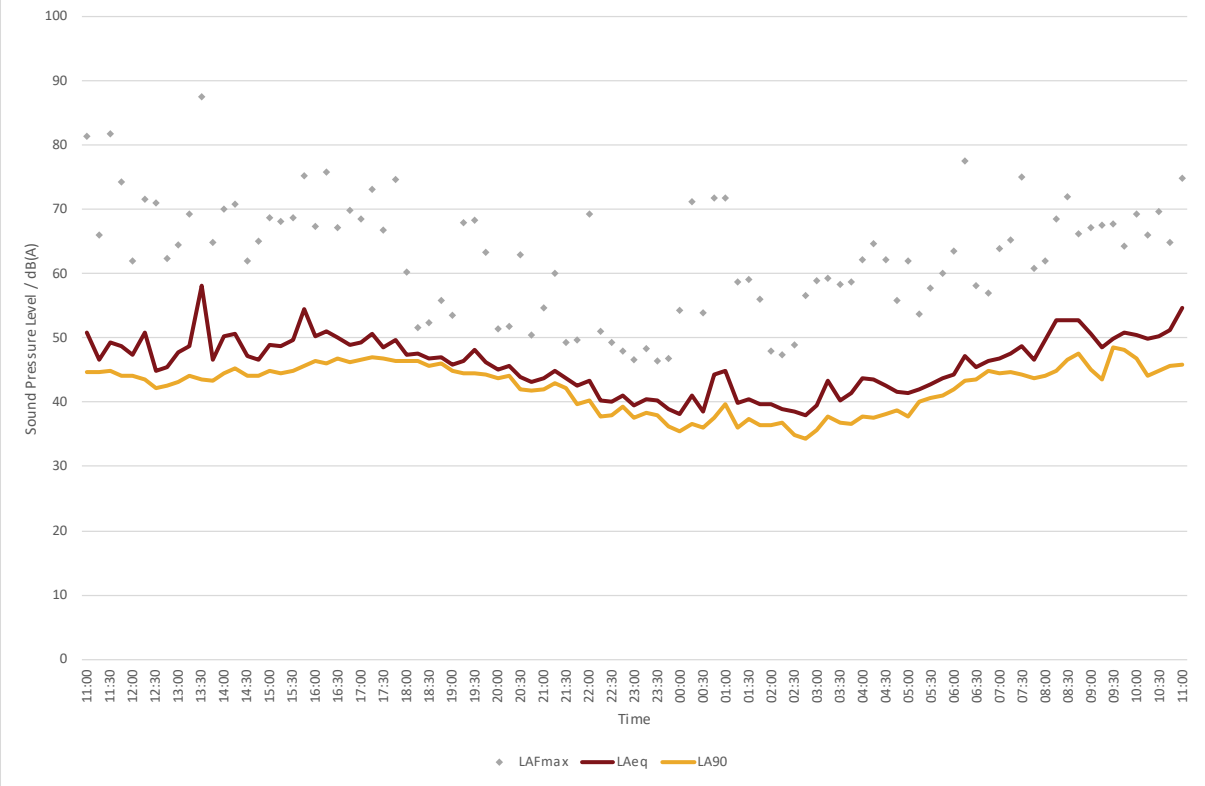
Figure 2: Monitoring Location

5.4. Measured Noise Levels

5.4.1. Monitoring Location

The following chart provides the measured noise levels for the duration of the measurement period.

Chart 1: Measured noise levels at the monitoring location



The following table provides the equivalent residual noise levels over each hour.

Table 6: Measured noise levels at the monitoring location

Time	$L_{Aeq,1\ hour}$ (dB)	Time	$L_{Aeq,1\ hour}$ (dB)
11:00	49	19:00	47
12:00	48	20:00	45
13:00	53	21:00	44
14:00	49	07:00	48
15:00	51	08:00	52
16:00	50	09:00	50
17:00	50	10:00	51
18:00	47	-	-

6. Concrete Obstacle Noise Monitoring

An attended site noise survey was undertaken on the 2nd June 2023 to determine noise levels from a skater using concrete obstacles at an existing skate park at Dame Emily Park in Bristol.

The monitoring was arranged by ACL with a local competent skateboarder using the obstacles for the purposes of the measurements.

6.1. Monitoring Equipment

Sound Pressure Levels were measured using Class 1 sound level meters with a half-inch condenser microphone, using the 'fast' setting. The equipment is checked regularly using a Quality System meeting the requirements of British Standard EN ISO/IEC 17025:2017 "General requirements for the competence of testing and calibration laboratories"; in accordance with British Standard EN 10012:2003 "Measurement management systems. Requirements for measurement processes and measuring equipment"; and traceable to the National Standards. This equipment was checked and calibrated as noted below and the certificates are available for inspection.

Table 7: Equipment and Calibration Status

Equipment Description / Manufacturer / Type	Serial Number	Date of Calibration	Calibration Certification Number
SLM, NTI, XL2	A2A-19376-E0	19/07/2021	UK-21-064
Pre-Amp, NTI, MA220	8322	19/07/2021	UK-21-064
Microphone, NTI, MC230A	A20671	19/07/2021	UK-21-064
Larson Davies, CAL 200	18914	04/07/2022	44362

The measurement equipment was checked before and after use with the noted calibrators and no significant drift was detected.

6.2. Weather Conditions

During the measurement, the weather was dry with an air temperature of 18 degrees centigrade. Wind speeds during the noise monitoring exercise were 3 metres per second, with a predominantly easterly direction.

6.3. Monitoring Procedure

The microphone was in a free-field position, approximately 1.5 metres above ground on a tripod. The sound level meter was moved to a different position for each obstacle so that there was a clear line of site for the full run of the trick on the obstacle. The direction of each run measured activity was approximately 2-3 seconds.

The aim of the monitoring was to determine comparative noise levels to the activities measured at Harpenden Skate Park.

The following figure shows the location of each obstacle and gives a reference number for the tabulated measurement results.

Figure 3: Dame Emily Park Skate Park Obstacles

Table 8: Measured Noise Levels

Reference	Description	Distance	$L_{Aeq,T}$ (dB)	$L_{AF,Max}$ (dB)
1	Box jump	5	69	79
2	Rails	5	70	85
3	Vertical Ramp	5	72	89
4	Box jump/quarterpipe/spine	5	67	82
5	Box jump/quarter pipe	5	72	89
6	Half pipe	5	71	83
7	Box grinding rail	5	74	93*
8	Box jump/grinding rail	5	74	93*

These obstacles included a metal griding edge fixed to the concrete obstacle.

7. Similar Size Skatepark Noise Monitoring

An attended site noise survey was undertaken on the 19th February 2025 to determine noise levels from the use of a similar size skatepark to the one proposed at an existing skate park at Haslingfield Skatepark in Cambridge.

The monitoring was undertaken by ACL while bike and scooter riders were using the obstacles for the purposes of the measurements.

7.1. Monitoring Equipment

Sound Pressure Levels were measured using Class 1 sound level meters with a half-inch condenser microphone, using the 'fast' setting. The equipment is checked regularly using a Quality System meeting the requirements of British Standard EN ISO/IEC 17025:2017 "General requirements for the competence of testing and calibration laboratories"; in accordance with British Standard EN 10012:2003 "Measurement management systems. Requirements for measurement processes and measuring equipment"; and traceable to the National Standards. This equipment was checked and calibrated as noted below and the certificates are available for inspection.

Table 9: Equipment and Calibration Status

Equipment Description / Manufacturer / Type	Serial Number	Date of Calibration	Calibration Certification Number
SLM, NTI, XL2	A2A-16312-E0	09/01/2024	1507318-1
Pre-Amp, NTI, MA220	8599	09/01/2024	1507318-1
Microphone, NTI, MC230A	A17498	09/01/2024	1507318-1
Calibrator, Larson Davis, CAL200	13392	16/01/2025	1511018-1

The measurement equipment was checked before and after use with the noted calibrators and no significant drift was detected.

7.2. Weather Conditions

During the measurement, the weather was dry with an air temperature of 2 degrees centigrade. Wind speeds during the noise monitoring exercise were 3 metres per second, with a predominantly northernly direction.

7.3. Monitoring Procedure

The microphone was in a free-field position, approximately 1.5 metres above ground on a tripod. The sound level meter was moved to a different position for each obstacle so that there was a clear line of site for the full run of the trick on the obstacle. The direction of each run measured activity was approximately 2-3 seconds.

The following figure shows the location of each obstacle and gives a reference number for the tabulated measurement results.

Figure 4: Haslingfield Skatepark

Table 10: Measured Noise Levels

Reference	Description	Distance	$L_{Aeq,T}$ (dB)	$L_{AF,Max}$ (dB)
1	Quarterpipe	2	68	78
2	Quarterpipe	2	64	76
3	Grinding rail	1	76	83

8. Skatepark Noise Emission Prediction

8.1. Nose Modelling Parameters

A noise model has been generated of the development site. The skatepark location and surrounding area has been determined from the provided drawings.

The surrounding area has been determined from Google Maps imagery.

All buildings in the vicinity of the playing fields have been built within the model. The height of these buildings has been determined via Google Maps imagery.

Third-order reflections are calculated.

The site and surrounding areas are considered to be flat.

The ground is considered to be soft, apart from roads and car parks which are considered to be hard.

The sound reduction provided by the boundary fences around the gardens is not considered in the modelling as it cannot be demonstrated that the construction complies with the requirements of ISO 9613.

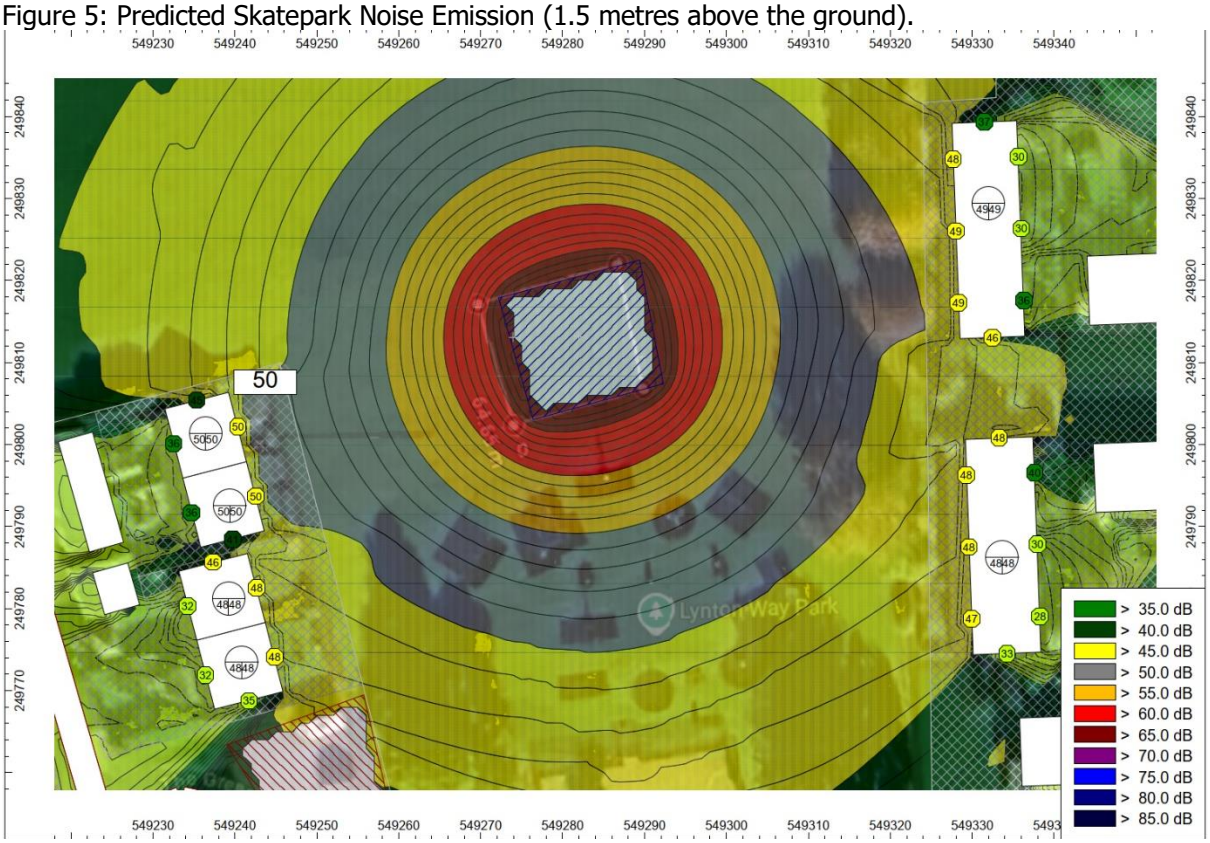
The noise map in Figure 5 below shows noise emission from the skatepark's predicted at ground floor level (1.5 metres above the ground), which is typical of a 'daytime' habitable room in a house and external amenity areas.

9. Skatepark Predicted Noise Levels

The following figure shows the predicted noise emission from the proposed skatepark.

For the skatepark general noise we have considered a worst-case scenario were the highest measured $L_{Aeq,T}$ during the noise surveys has been assumed to be constant during a full hour which would result in a level of 74 dB $L_{Aeq\ (1\ hour)}$.

Figure 5: Predicted Skatepark Noise Emission (1.5 metres above the ground).



The highest predicted noise level from the proposed skatepark is 50 dB $L_{Aeq\ (1\ hour)}$ at the nearest existing dwellings.

The predicted noise level is equal to the criterion of 50 dB $L_{Aeq\ (1\ hour)}$ derived from WHO 1999 as being the threshold for the onset of moderate community annoyance.

The World Health Organisation provides a sound reduction through an open window of 15 dB(A) which results in a predicted internal equivalent noise level of 35 dB $L_{Aeq\ (1\ hour)}$ at the NSRs.

The highest predicted noise level in the gardens is 50 dB $L_{Aeq\ (1\ hour)}$ at the existing dwellings which is within the proposed criterion of 50 dB $L_{Aeq\ (1\ hour)}$.

9.1. Change in Noise Levels at Existing Dwellings

The following table gives overall change in noise level and IEMA classification at the most noise sensitive locations of the existing NSRs, based on the existing ambient noise level, the predicted skatepark noise levels above and the proposed operating hours:

Table 11: Change in noise levels at the existing NSRs

Time	Existing Equivalent Noise Level, $L_{Aeq,1hr}$	Predicted Equivalent Noise Level, $L_{Aeq,1hr}$	Change	Long Term Impact
07:00	48	50	3.5	Minor
08:00	52		4.2	Minor
09:00	50		1.7	Minor
10:00	51		3.5	Minor
11:00	49		2.5	Minor
12:00	48		3	Minor
13:00	53		3.2	Negligible
14:00	49		4.6	Minor
15:00	51		5	Minor
16:00	50		6.5	Minor
17:00	50		7.1	Minor
18:00	47		4.4	Minor
19:00	47		2.1	Moderate
20:00	45		3	Moderate
21:00	44		2.8	Moderate

As can be seen in the table above the pitch has a 'negligible' to 'moderate' impact on the existing noise climate at the existing NSRs.

The predicted change in noise levels above are acceptable due to the noise level from the skatepark being within the WHO guidelines criterion of 50 dBA, as being the onset of moderate annoyance. It should be noted that the Sport England guidance on skatepark acoustics suggests that the change in noise level method of assessment is most appropriate when the existing noise levels are high (meaning the existing noise levels already exceed the WHO guidelines noise level of 50 dBA).

In this instance, the existing residual noise levels in the area are low, between 44 and 47 dB $L_{Aeq,1hour}$ between 19:00 and 22:00 hours. As such, we would consider the 'moderate' change in noise levels during the evening to not be the deciding factor, and achieving the WHO guidelines criterion should take precedence.

9.2. Assessment of Transient Noise Levels

9.2.1. Noise from Quarterpipe/Box Jump

If we consider the maximum noise level from a skateboard using a quarterpipe/box jump, a typical level is in the order of 82dB(A) at 5 metres.

Noise modelling has been undertaken using noise mapping software Cadna:A by Datakustik. This uses the calculation method of ISO 9613 to predict noise levels. Predictions have been undertaken to determine the maximum noise levels from an individual point source at multiple locations around the pitch.

The highest predicted maximum noise level from the highest individual source location is 62 dB $L_{Amax,fast}$ at the nearest existing dwellings.

9.2.2. Noise from Grinding Rail

If we consider the maximum noise level from a skateboard using a quarterpipe/box jump, a typical level is in the order of 93dB(A) at 5 metres.

Noise modelling has been undertaken using noise mapping software Cadna:A by Datakustik. This uses the calculation method of ISO 9613 to predict noise levels. Predictions have been undertaken to determine the maximum noise levels from an individual point source at multiple locations around the pitch.

The highest predicted maximum noise level from the highest individual source location is 69 dB $L_{Amax,fast}$ at the nearest existing dwellings.

9.3. Assessment of Maximum Noise Levels

There are no specific noise criteria for maximum noise levels from this type of noise during the day. There is a night time maximum noise criterion of 45dB $L_{Amax(fast)}$ for bedrooms at night in BS8233:2014 and WHO1999. With sound reduction through an open window this would equate to 60dB $L_{Amax(fast)}$ outside a dwelling.

During the daytime, a higher maximum noise level is likely to be permissible but is not stated in any relevant guidance documents. The difference between the daytime and night time equivalent noise criteria in both WHO and BS8233:2014 is 5 decibels, it may therefore be that a 5 decibel increase to the maximum noise level is appropriate.

The predicted maximum noise levels from quarterpipe/box jumps are within the criteria of 65dB $L_{Amax(fast)}$ externally to the existing nearest sensitive dwellings and thus, considered acceptable.

However, maximum noise levels from grinding rails are 4dB above the criterion 65dB $L_{Amax(fast)}$ to the NNSRs. As such, the inclusion of this type of obstacles should be avoided.

10. Summary and Conclusions

Sawston Parish Council appointed Acoustic Consultants Limited to undertake an environmental noise assessment for the proposed skatepark at Lynton Way Park, Sawston, CB22 3EA.

The assessment includes the prediction of noise emission from the skatepark at the nearby noise-sensitive properties, based on noise level data from activities measured at existing skateparks.

A noise model has been generated of the development site, utilising these previous measurements as its basis.

The highest predicted noise level from the proposed skatepark is 50 dB $L_{Aeq\ (1\ hour)}$ at the nearest existing dwellings.

The predicted noise level is equal to the criterion of 50 dB $L_{Aeq\ (1\ hour)}$ derived from WHO 1999 as being the threshold for the onset of moderate community annoyance.

The World Health Organisation provides a sound reduction through an open window of 15 dB(A) which results in a predicted internal equivalent noise level of 35 dB $L_{Aeq\ (1\ hour)}$ at the NSRs.

The highest predicted noise level in the gardens is 50 dB $L_{Aeq\ (1\ hour)}$ at the existing dwellings which is within the proposed criterion of 50 dB $L_{Aeq\ (1\ hour)}$.

The predicted maximum noise levels from quarterpipe/box jumps are within the criteria of 65dB $L_{Amax(fast)}$ externally to the existing nearest sensitive dwellings and thus, considered acceptable. However, maximum noise levels from grinding rails are 4dB above the criterion 65dB $L_{Amax(fast)}$ to the NNSRs. As such, the inclusion of this type of obstacles should be avoided.

The predicted noise levels at the existing NSRs have been compared against the existing noise climate. Based on the IEMA guidelines the proposals result in a 'negligible' to 'moderate' change in noise levels. This change in noise level is considered acceptable due to the absolute noise levels being within the WHO guidelines threshold for moderate annoyance, and the suitably low internal ambient noise levels at the nearest noise sensitive dwellings. It should be noted that the Sport England guidance on skatepark acoustics suggests that the change in noise level method of assessment is most appropriate when the existing noise levels are high (meaning the existing noise levels already exceed the WHO guidelines noise level of 50 dBA).

In this instance, the existing residual noise levels in the area are low, between 44 and 47 dB $L_{Aeq,1hour}$ between 19:00 and 22:00 hours. As such, we would consider the 'moderate' change in noise levels during the evening to not be the deciding factor, and achieving the WHO guidelines criterion should take precedence.

With regards to planning policy, we would expect that the development would potentially be noticeable but not intrusive and would result in 'no observed adverse effect'. This is defined in the PPG as 'Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.

Based on the above, the proposals are considered acceptable in terms of noise.

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