



Noise Impact Assessment

Playzone Pilots, Scotland Hall Road Recreation Ground, Manchester
Presented to Manchester City F.C. City in The Community Foundation

Issued: November 2019

Delta-Simons Project No. 18-1673



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This report has been prepared by Apex Acoustics Limited as term framework suppliers of Acoustic Services to and on behalf of Delta-Simons.

Executive Summary

Site and Report Context	This report provides a noise impact assessment of the Playzone sports facilities proposed in Scotland Hall Road Recreation Ground, Manchester. The new Playzone will include similar fenced football and basketball facilities as the existing facilities.
Summary	The noise generation of activities associated with the new and existing facilities are expected to be the same, both in terms of noise level and in terms of duration. The noise impact of the proposed development on the noise sensitive receptors will not increase the noise level at the receptors, not change the character of the existing noise. The impact would be considered as negligible and would not be above the level associated with adverse effects. When comparing the change with the guidance in the Planning Practice Guidance Notes the impact would be: 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.
Conclusions and Recommendations	The predicted noise impacts are at a level which is below the level where a LOAEL would occur. In terms of planning policy, it is assessed that the development will not exceed a LOAEL and meets with national planning policy. The development should therefore not be refused planning permission on the grounds of noise.
This is intended as a summary only. Further detail and limitations of the assessment is provided within the main body of the Report.	

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1 Introduction

1.1 Appointment

- 1.1.1 Delta-Simons, working with our approved technical specialist Apex Acoustics, was instructed by Manchester City F.C. City in the Community Foundation (the 'Client') to undertake the noise impact assessment of the Play Zone proposed in Scotland Hall Road Recreation Ground in Manchester.
- 1.1.2 The Play Zone is proposed to consist of basketball, cross-play and football tennis courts and panna playground and will replace existing sports facility within the park.

1.2 Site Location and Context

- 1.2.1 The proposed development is located within Scotland Hall Road Recreation Ground in Manchester, approx. 50 m from the Scotland Hall Road to the east and approx. 50 m from the Amos Avenue to the south.
- 1.2.2 The Recreation Ground consists of a basketball court with fences football goals and basket hoop at each end and play areas for children.
- 1.2.3 The identified noise sensitive receptors, residential buildings, are located approx. 30 m to the north of the proposed Play Zone. The gardens border with the north boundary fencing of the Recreation Ground.
- 1.2.4 The outline of the proposed development with the surrounding areas is shown in Figure 1.



Figure 1 The proposed development location outlined in red with the surrounding areas and measurement position, P1, indicated by yellow marker

- 1.2.5 Within the outline of the development boarder there is an existing sport pitch, which is currently open for public use.
- 1.2.6 The arrangement of the new Play Zone and the adjacent grass football pitch is shown in Figure 2.

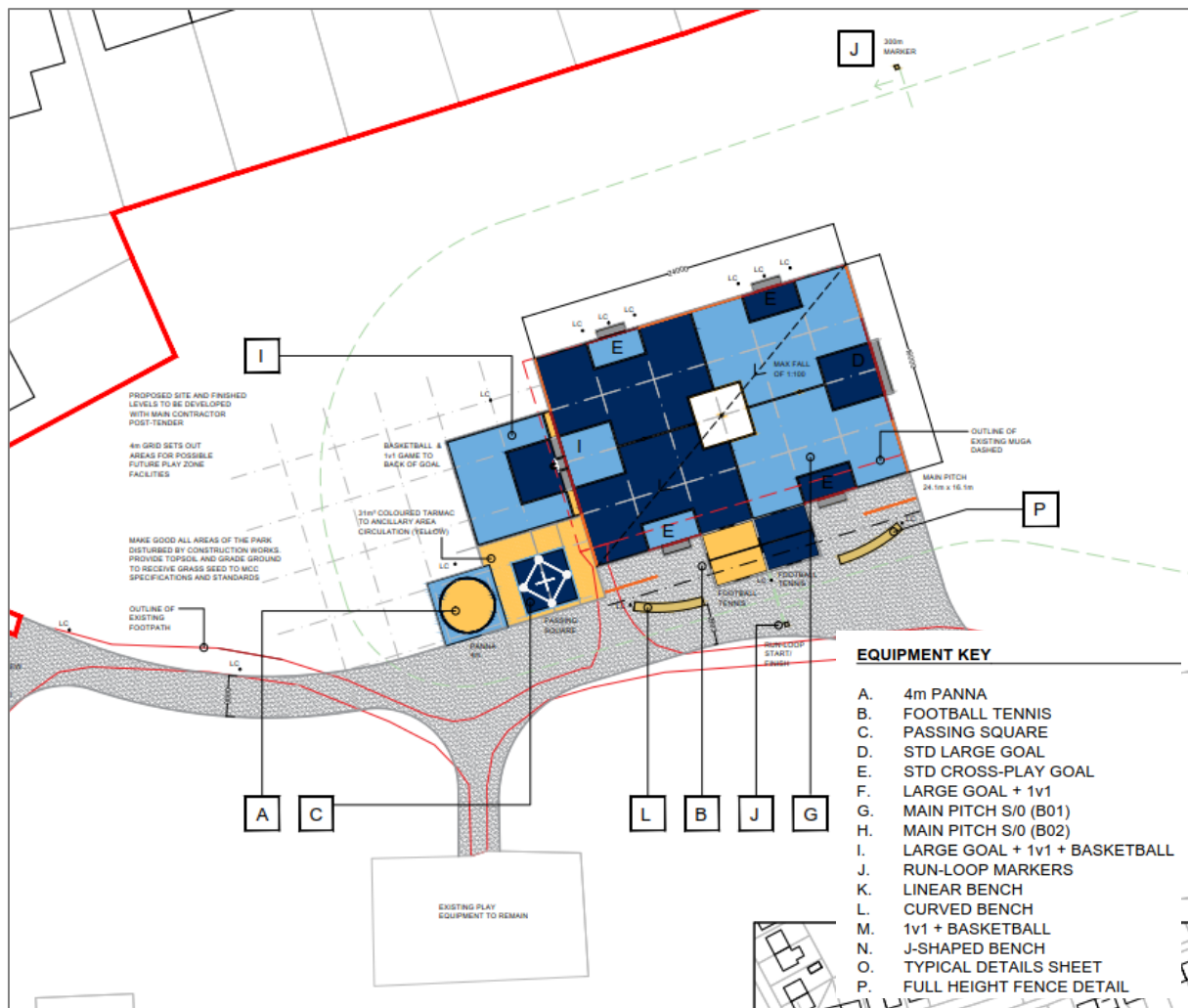


Figure 2 The proposed development showing the location of the Play Zone activities

1.2.7 The standard limitations associated with this assessment are presented in Appendix A.

2 Legislation and Policy

2.1 National Planning Policy Framework

2.1.1 The National Planning Policy Framework (NPPF, 2019), Reference [1], sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced. In respect of noise, Paragraph 170, 180 and 182 of the NPPF states the following:

2.1.2 Paragraph 170:

"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..."

2.1.3 Paragraph 180:

"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;*
- ▲ *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; ... "*

2.1.4 Paragraph 182:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

2.2 Noise Policy Statement for England (NPSE)

2.2.1 The NPPF is consistent with the Noise Policy Statement for England (NPSE, 2010), Reference [2], which states three policy aims are 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."*

2.2.2 NPSE outlines the following key phrases for defining an impacts significance:

2.2.3 "There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

- ▲ 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.

Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

▲ SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

- 2.2.4 Together, the first two aims of the NPPF and the NPSE require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

“... 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.”

2.3 Planning Practice Guidance for Noise

- 2.3.1 Planning Practice Guidance for noise, Reference [3], advises on how planning can manage potential noise impacts in a new development.
- 2.3.2 It explains how to recognise when noise could be a concern and describes how effects levels could be derived. These are summarised in Table 1.

Table 1 – Description of likely responses at effects levels

Perception	Examples of Outcomes	Increasing Effect Level	Action
Noticeable and not intrusive	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.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level - LOAEL			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, 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. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level - SOAEL			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, 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. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid

3 Relevant guidance and standards

3.1 ANC Guidance

- 3.1.1 Noise from the Play Zones will generally consist of noise from people communicating during the activities and from impacts of balls on the sports equipment and with the fencing surrounding the games area.
- 3.1.2 No specific standards are currently in existence that explicitly detail the methodology and approach to be undertaken when assessing the noise impact from these types of leisure facilities.
- 3.1.3 The ANC Environmental Noise Measurement Guide, Reference [4], provides the following guidance for sports facilities:
- 3.1.4 In the absence of specific guidance for measurement and assessment of community facilities it is important to include contextual factors and the extent to which the noise source is integrated into the sound scape in which it is set. It is often more appropriate, and more robust, to adopt a number of assessment methodologies to provide a balanced approach, rather than relying on a single protocol (e.g. a BS4142 assessment) which is applied beyond its documented scope. Frequency of occurrence and timings can be important factors as well as the actual noise levels.

3.2 WHO Guidelines for Community Noise

- 3.2.1 WHO Guidelines for Community Noise, Reference [5], provides guidelines for noise levels in various environments, including outdoor living areas.
- 3.2.2 For noise levels for dwellings it makes the following comments:
- 3.2.3 To protect the majority of people from being seriously annoyed during the daytime, the sound pressure level on balconies, terraces and outdoor living areas should not exceed 55 dB L_{Aeq} for a steady, continuous noise. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound pressure level should not exceed 50 dB L_{Aeq} .
- 3.2.4 The time base for L_{Aeq} for “daytime” and “night-time” is 16 hr and 8 hr, respectively. No separate time base is given for evenings alone, but typically, guideline value should be 5 –10 dB lower than for a 12 hr daytime period.
- 3.2.5 Therefore, during an evening, steady noise levels should not exceed 50 dB L_{Aeq} to protect the majority of people from serious annoyance.

3.3 IEMA Noise assessment guidelines

- 3.3.1 The IEMA noise assessment guidelines, Reference [6], address the key principles of noise impact assessment and are applicable to all development proposals where noise effects are likely to occur.
- 3.3.2 The document includes a detailed method for assessing impacts and includes the principle of a comparative assessment, between baseline and proposed noise levels, particularly for situations where the character of the noise will stay the same, but there may be a potential change in the level of the noise.
- 3.3.3 The classification of the impacts, due to changes in noise levels, taken from the IEMA guidelines are reproduced in Table 2.

Table 2 – IEMA Impact from change in Sound Levels

Impact Classification	Sound Level Change L_p, T
Negligible	> 0 dB and < 1 dB
Minor	> 1 dB and < 3 dB
Moderate	> 3 dB and < 5 dB
Major	> 10 dB

- 3.3.4 Where noise from the proposed development does not increase the existing noise climate by no more than 3 decibels. It is expected there will be no observed adverse 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 is the $L_{Aeq(T)}$ parameter over the same time period, T.

3.4 Proposed Assessment Methodology

- 3.4.1 It is proposed to assess the development against the WHO guidelines. Where the predicted noise level of the new Play Zones 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'.
- 3.4.2 It is considered that where the proposal exceeds the WHO guidelines but does not increase the existing evening noise climate by more than 3 decibels there will be no adverse effect on the nearby noise sensitive residential properties. It is our opinion that this would also fall within the Lowest Observed Adverse Effect Level of the NPPG.
- 3.4.3 The NPPG states that the perception of 'No Observed Adverse Effect' can be '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."*
- 3.4.4 The 'No Observed Adverse Effect' level falls below the Lowest Observed Adverse Effect Level of the NPPG and meets with national planning policy.

4 Existing acoustic environment

4.1 Measurements

- 4.1.1 The existing acoustic environment was measured between 11:30 and 12:30 hours on the 30th October 2019.
- 4.1.2 The measurement position is shown in Figure 1.
- 4.1.3 The microphone was located 1.7 metres above ground level, which is representative of the façade windows height and external amenity spaces of the residential buildings, potentially most exposed to the potential Play Zone noise.
- 4.1.4 The microphone was located away from other reflecting surfaces such that the measurements are considered free-field.
- 4.1.5 The equipment used is listed in Table 3.

Table 3: Equipment used

Equipment	Model	Serial no.
Sound Level Meter	NTi XL2	A2A-12479-E0
Calibrator	Larson Davis CAL 200	13405

- 4.1.6 Both meter and calibrator have current calibration certificates traceable to national standards. The sound level meter has been calibrated within the last two years and calibrator has been calibrated within the last year in accordance with the guidance of BS 4142; calibration certificates are available on request.
- 4.1.7 The equipment was field-calibrated before and after the measurements with no significant drift in sensitivity noted.
- 4.1.8 A picture of the measurement in progress is shown in Figure 3 and Figure 4.



Figure 3 The measurements in progress at position P1



Figure 4 The measurements in progress at position P1; view on the basketball court and residential buildings

4.1.9 Data was recorded in single-octave band frequencies at one-second intervals throughout the measurement period.

4.1.10 At the time of the measurements the average wind speed was up to 3.5 m/s, no precipitation occurred, and the temperature was around 12-15°C.

4.2 Ambient sound level

4.2.1 The ambient sound level is the level consisting of all noise sources including specific noise source and residual noise levels. For this assessment, the specific sound sources are the activities within the sports areas of the Recreation Ground and these occurred during the 10-minute period of measurements and can be considered as representative for the specific sound sources.

4.2.2 The identified noise sources are as following:

- ▲ passing vehicles on Amos Road and Scotland Hall Road;
- ▲ passing trains;
- ▲ talking and shouts of pedestrians and nearby residents;
- ▲ activities on basketball court (shouts, kicked ball hitting the ground and fence);
- ▲ voices of people at the playground area; and
- ▲ aircraft.

4.2.3 The result of L_a measurements is shown in Table 4.

Table 4: Summary of the measured ambient sound level

Location	$L_{Aeq, 10min}$ (dB)
P1	54

4.2.4 A time history of the measured L_a is shown in Figure 5.

4.3 Residual and background sound levels

4.3.1 The 1-hour measurements of residual noise levels, L_r , were undertaken when the activities associated with the basketball court were not occurring.

4.3.2 The road traffic on Amos Road / Scotland Hall Road and train passes were observed to be dominant noise sources above others.

4.3.3 Other noises were caused by people's talking, aircraft flights, birdsong and dog's barking.

4.3.4 The residual and background noise levels are summarised Table 5.

Table 5: Summary of the measured background sound level

Location	$L_{Aeq, 1hrs}$ (dB)	$L_{A90, 1hrs}$ (dB)
P1	50	44

4.3.5 A time history of the measured sound levels is shown in Figure 5.

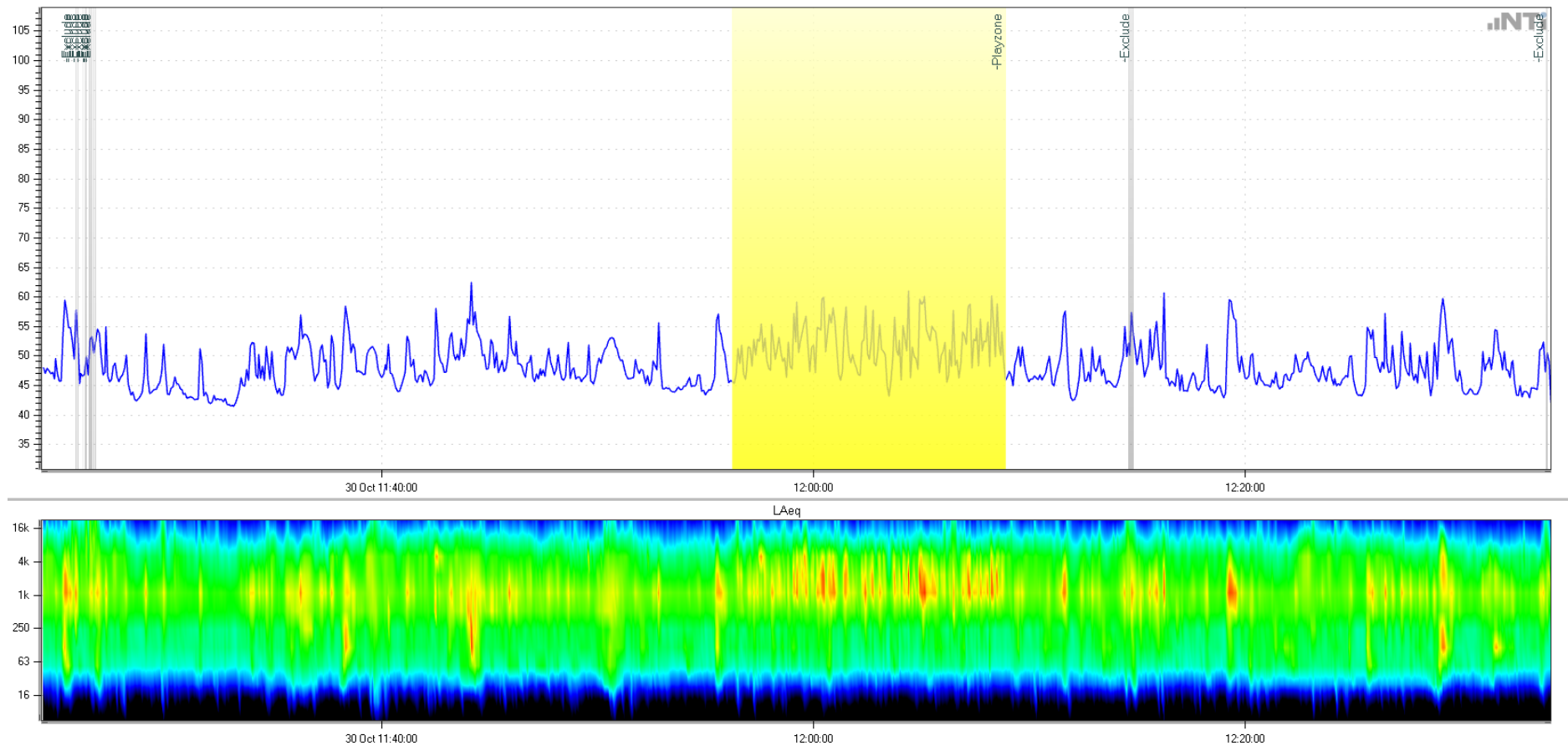


Figure 5 The time history of $L_{Aeq,T}$ of noise levels measurements at P1 (the time period when sport activities were occurring is marked in yellow)

4.4 Maximum noise levels of identified noise sources

- 4.4.1 The highest maximum noise levels for each acoustic event (e.g. a car pass-by, a person's shout etc.) have been identified and summarised in Table 6.

Table 6 The highest maximum noise levels, $L_{AF,max}$ identified during the noise survey

Date and time of the event	$L_{AF,max}$ (dB)	Event description
30/10/2019 12:16 PM	75	dog barking
30/10/2019 12:04 PM	73	shout (basketball court)
30/10/2019 12:00 PM	71	shout (basketball court)
30/10/2019 12:07 PM	69	shout (basketball court)
30/10/2019 11:59 AM	68	shout (basketball court)
30/10/2019 12:05 PM	68	shout (basketball court)
30/10/2019 12:02 PM	67	shout (basketball court)
30/10/2019 11:42 AM	67	train signal
30/10/2019 12:08 PM	67	shout (basketball court)
30/10/2019 11:44 AM	67	passing vehicle
30/10/2019 12:01 PM	66	shout (basketball court)
30/10/2019 12:06 PM	66	shout (basketball court)
30/10/2019 11:57 AM	65	shout (basketball court)
30/10/2019 12:03 PM	64	shout (basketball court)
30/10/2019 11:45 AM	64	dog barking
30/10/2019 12:26 PM	63	passing vehicle
30/10/2019 12:29 PM	63	passing vehicle
30/10/2019 11:56 AM	63	shout (basketball court)
30/10/2019 12:19 PM	62	passing vehicle
30/10/2019 11:36 AM	62	passing vehicle

- 4.4.2 The maximum noise levels associated with the existing courts and playground were measured at the edge of the Park, closer to the noise sources than the facades of the nearby residential receptors. The noise levels at the receptors would therefore be lower than the measured levels when considering the impact due to the sports areas alone.

5 Proposed Play Zone Noise Impact

5.1 Identified noise sources

- 5.1.1 It is anticipated that the main noise sources from the proposed Play Zone include shouting/talking and ball impact on fences.
- 5.1.2 It is assumed that the activities associated with the proposed Play Zone will be undertaken during the daytime only.
- 5.1.3 Based on a study of Artificial Grass Pitches (AGP) by C. Vaughan, Reference [7], the majority of $L_{Aeq,T}$ values at 10 m fall within the range of 56 dB to 58 dB.
- 5.1.4 In this assessment, 58 dB $L_{Aeq,T}$ at 10 m from the perimeter of the sports pitch is used.
- 5.1.5 Noise transmission and propagation is modelled to determine the sound impact on nearest residential buildings and the gardens, using proprietary software, CadnaA,
- 5.1.6 The model parameters and assumptions are summarised in Table 7.

Table 7 Modelling parameters and assumptions

Parameter	Source	Details
Model dimensions	Google Earth	British Transverse Mercator coordinates
Site location and layout	Architects' drawings	Architects' drawings,
Topography – within site and outside of site	Site observations and Google Street view	Modelled with no changes in topography
Building heights – proposed buildings	Drawings	Architects' drawings
Building heights – outside of Site	Site observations and Google Street view	3 m per storey + 3 m roof (residential properties)
Receptor positions	Site observations and Google Street view	On the residential buildings' façades closest to the source at a height of 2 m and 5 m to represent ground and first window heights respectively
Building and barrier absorption coefficient	ISO 9613-2	0.21 to represent a reflection loss of 1 dB
G, Ground factor	ISO 9613-2	Hard ground, $G = 0$; Porous ground, $G = 1$
Max. order of reflections	Apex Acoustics	Three

- 5.1.7 A plan view and a 3D perspective of the CadnaA model are shown in Figure 6 and Figure 7 respectively.



Figure 6: Plan view of the CadnaA model

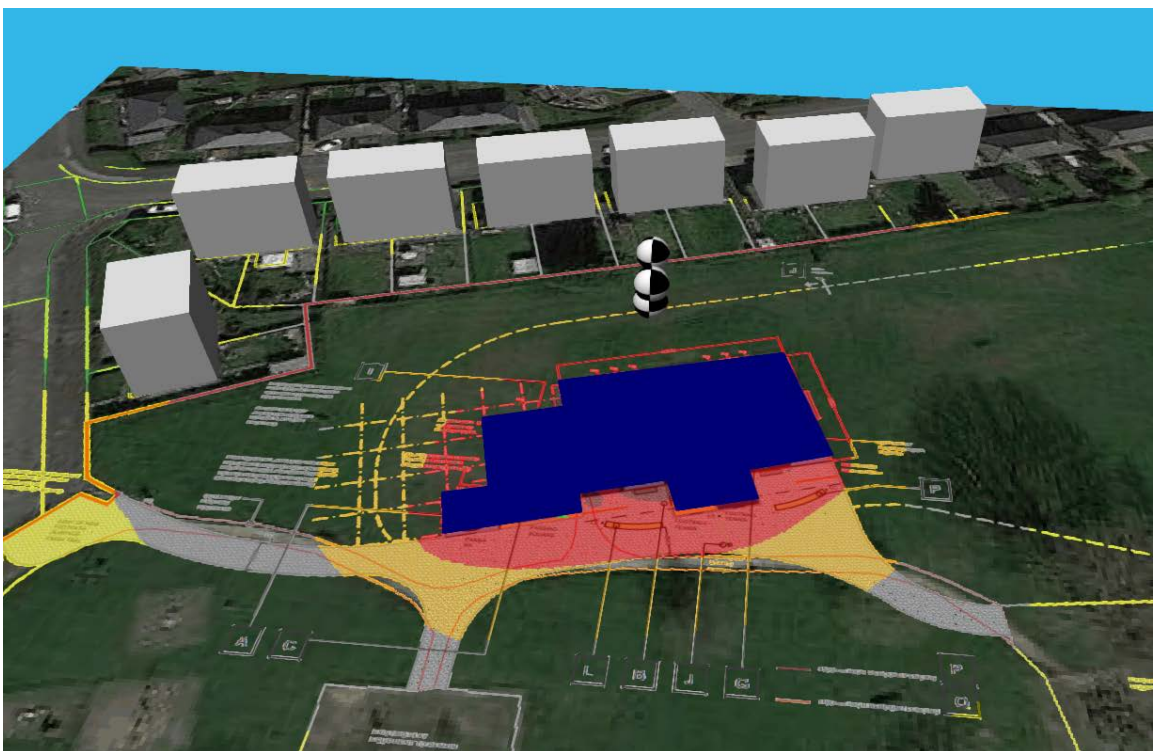


Figure 7: 3D view of the CadnaA model

5.2 Calculations results

- 5.2.1 The results of calculated noise levels at the facades of noise sensitive buildings are shown in the Figure 8. The sound level grids calculated at 1.7 m above the ground show the noise impact from the proposed Play Zone within the nearest gardens.

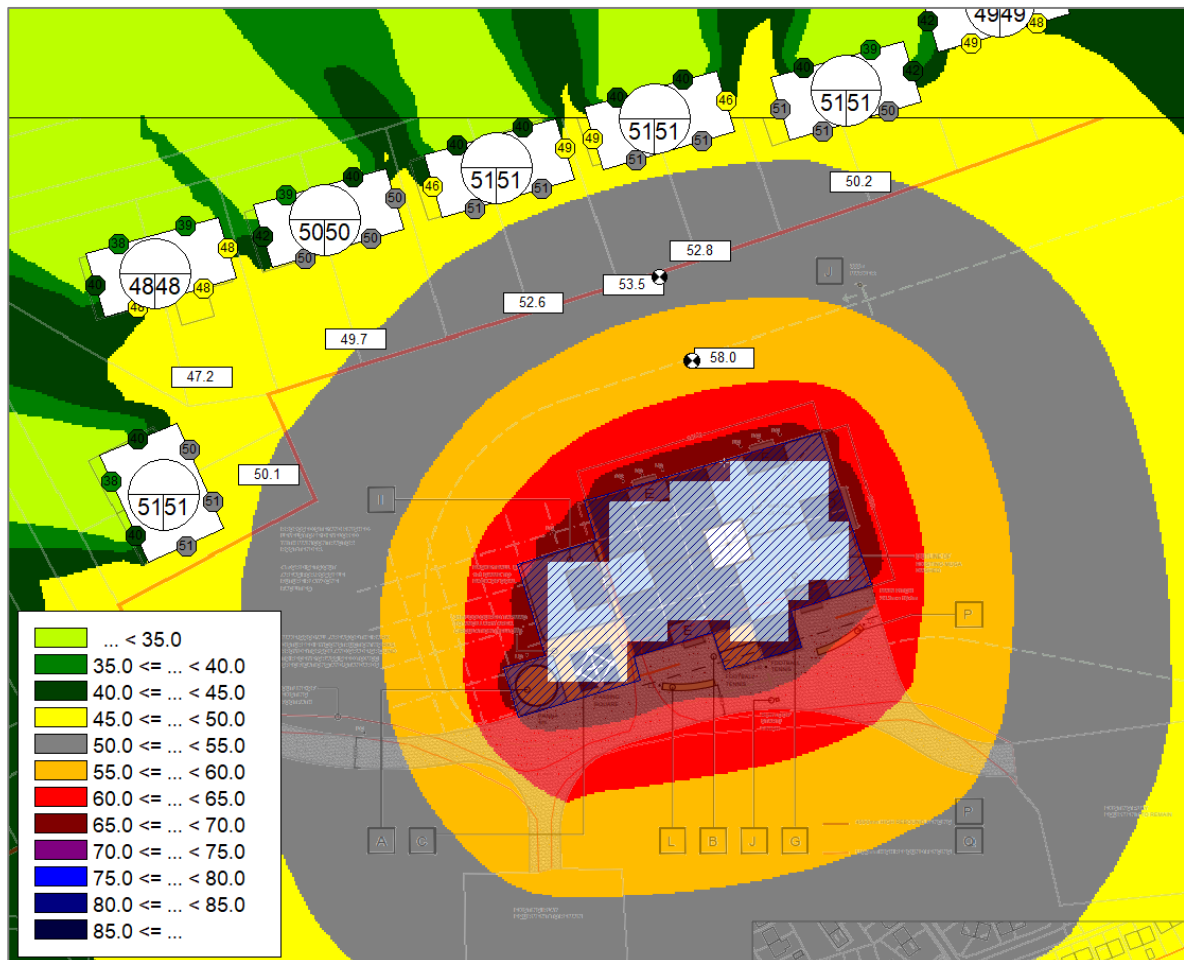


Figure 8: The sport activities noise impact levels calculated at the facades and within the gardens

- 5.2.2 Both noise levels results calculated in a model (based on C. Vaughan research) and measured during the noise survey at the P1 position are consistent. That confirms that the measurement results can be considered as representative for the proposed Play Zone noise impact.
- 5.2.3 The worst-case scenario results of modelling calculations are summarised in Table 8.

Table 8 Noise impact calculations results for the worst-case scenario

Location	Parameter	Result
Façade	L _{Aeq} (dB)	51
Garden		53

6 Assessment

6.1 Existing noise levels

- 6.1.1 The measured noise impact of road traffic and railway are considered to be representative and typical for the daytime noise impact affecting the residential buildings.
- 6.1.2 The measured residual noise at the location representative of the receptors, is 50 dB $L_{Aeq,T}$ which is the limit of the WHO guideline noise levels for outside spaces.
- 6.1.3 The noise impact of the existing sports activities on the residential building increase the noise levels at the measurement location up to 54 dB $L_{Aeq,T}$, which is calculated to be 53 dB $L_{Aeq,T}$, within the gardens and up to 51 dB $L_{Aeq,T}$ at the residential facades.

6.2 Noise impact of the proposed Play Zone on the noise sensitive receptors

- 6.2.1 The new Play Zone will include similar fenced basketball facility as the existing one, which is considered to be the dominant noise source of the proposed development.
- 6.2.2 The noise generation of activities associated with the new and existing sport areas are expected to be the same in terms of the character and duration of the sports activities.
- 6.2.3 Hence, the proposed Play Zone noise impact, in terms of both equivalent and maximum levels, are expected to maintain the same.
- 6.2.4 It is understood, that the sport activities will not be undertaken after 21:00, therefore it is unlikely that the development will have a potential to cause the sleep disturbance of the local residents.
- 6.2.5 In terms of IEMA guidance, the noise impact of the proposed development on the noise sensitive receptors will not increase the noise level at the receptors and will not change the character of the existing noise, and therefore the impact would be considered as negligible and would not be above the level associated with adverse effects.
- 6.2.6 When comparing the change with the guidance in PPGN the impact would be:
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.
Which is below the level where a LOAEL would occur.
- 6.2.7 In terms of planning policy, it is assessed that the development will not exceed a LOAEL and meets with national planning policy.

7 Summary and Conclusions

- 7.1.1 Delta-Simons, working with our approved technical specialist, Apex Acoustics, was instructed by the Manchester City F.C City in the Community Foundation (the 'Client') to undertake the noise impact assessment of the Play Zone proposed to be located in Scotland Hall Road Recreation Ground, Manchester on the nearby residential buildings.
- 7.1.2 The existing acoustic environment was measured, including ambient noise (consisting of sounds from sport activities undertaken at the basketball court) and residual noise (mainly consisting of road traffic noise, railway noise, people's talking and shouts, dogs' barking, birdsong and aircraft flights).
- 7.1.3 The new Play Zone will include similar fenced basketball facility as the existing one.
- 7.1.4 The noise generation of activities associated with the new and existing play areas are expected to be the same, both in terms of equivalent and maximum noise level and in terms of duration.
- 7.1.5 Also, the measured noise levels results are consistent with the C. Vaughan research of sports activities, therefore the measurement results can be considered as representative for the proposed development impact.
- 7.1.6 In terms of IEMA guidance, the noise impact of the proposed development on the noise sensitive receptors will not increase the noise level at the receptors, not change the character of the existing noise. The impact would be considered as negligible and would not be above the level associated with adverse effects.
- 7.1.7 When comparing the change with the guidance in PPGN the impact would be:
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.
Which is below the level where a LOAEL would occur.
- 7.1.8 In terms of planning policy, it is assessed that the development will not exceed a LOAEL and meets with national planning policy.
- 7.1.9 It is assessed that the proposed development does not have a potential to significantly change the existing noise impact on the residential buildings located at the close proximity to the Recreation Ground.

8 References

- [1] NPPE, "National planning policy framework, Department for Communities and Local Government," February 2019.
- [2] NPSE, "Noise policy statement for England, Department for Environment, Food and Rural Affairs," 2010.
- [3] PPGN, "Planning Practice Guidance - Noise".
- [4] ANC Environmental Noise Measurement Guide; October 2013
- [5] Guidelines for Community Noise, Edited by Birgitta Berglund, Thomas Lindvall, Dietrich H Schwela, World Health Organisation, 1999.
- [6] IEMA Noise Assessment guidelines for environmental noise impact assessment, 2014
- [7] The assessment of noise from all weather sports pitches, Charley Vaughan, IOA Acoustics Bulletin Vol 43 No 1 January/February 2018.

Appendix A - Limitations

Limitations

The recommendations contained in this Report represent Delta-Simons professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client and others. Delta-Simons conclusions, opinions and recommendations has been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

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