

AB acoustics

4 Cumbrian Close
High Crompton
Shaw
Oldham
OL2 7RH

T : 07771 567624

e-mail : leachabacoustics@aol.com

**Community on Solid Ground
Welsh Chapel
116B Egerton Road North
Whalley Range
Manchester
M16 0BZ**

**Environmental Noise Survey
Manley Park Play Centre
York Avenue
Whalley Range
Manchester
M16 0AS**

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4 Cumbrian Close
Shaw
Oldham**

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Introduction

AB Acoustics were commissioned by Holborow & Ormesher to undertake an environmental noise assessment for Community on Solid Ground of the proposal to build a Play Centre on land adjacent to the present building.

It is understood that the Play Centre will be constructed from trapizodial panels mounted off a steel framework with a base wall of external brick and internal blockwork.

Below is a photograph of the proposed site with the measurement location shown. The location was considered to be representative of the noise level experienced by the existing residential property adjacent to the proposed site.

The measurement times are as stated in the Results.



Proposed Site

Measurement Location

As can be seen from the above the proposed site is situated in a public park and is surrounded by existing residential property – there are commercial properties on both York Avenue and Clarendon Road.

At the end of the report are detailed a typical weeks activities at the Centre.

Depending upon the activities taking place the Centre is usually open from 10.00 / 10.30 until 21.00 hrs but on certain occasions could be open until 22.00 hrs.

The proposed new Centre will not increase significantly the number of children using it - at the present time it is used by people from the local area who arrive principally either on foot or by cycle.

The aim of the proposed development is to allow more room for the activities that already take place at the present time in the existing smaller building and allow the Youth Club to be run from the proposed new Centre which at the moment is run from the nearby Methodist Church Hall.

The likely activities in the Centre are to be Arts & Craft – Pool – Badminton in addition to those detailed at the end of the report.

The activities at the Centre are supervised by adults working on a ratio of 1 adult per 6 children.

Noise Assessment Criteria

The likelihood of complaints about noise from industrial plant can be assessed where the standard is appropriate using BS 4142 – 2014 – this has recently replaced the earlier standard BS 4142 : 1997

This standard describes methods for rating and assessing sound of an industrial / commercial nature. The methods described use outdoor sound levels to assess the likely effects of sound on people who might be inside / outside residential premises.

The significance of sound of an industrial / commercial nature depends upon the margin by which the rating level of the source exceeds the background sound level and the context in which the sound occurs.

The Standard is intended to be used for :

Investigating complaints regarding noise.

Assessing sound from proposed / new / modified or additional noise sources of an industrial / commercial nature.

Assessing sound at proposed new dwellings or premises used for residential purposes.

The sound level from a source when determined as a discrete entity distinct and free of other influences contributing to the ambient sound is referred to as the 'specific sound level'.

The specific sound level is evaluated at an identified location over the appropriate reference time intervals which are : 1 hours during the daytime – 07.00 to 23.00 hrs and 15 minutes during the night time – 23.00 to 07.00 hrs.

The specific noise may be subject to acoustic feature correction if the noise level at the measurement location is subjectively considered to contain certain acoustic features that may increase the significance of the impact of the noise over the background level.

If these features are present at the measurement location then the character correction is added to the specific sound level to arrive at the rating level.

The Standard requires the assessor to consider the subjective prominence of the character of the specific noise source at the measurement location / noise sensitive receptors and the extent to which the character of the noise will attract attention to it – such features are taken into account by applying the following corrections :

	Tonality	Impulsivity	Other Characteristics
Just Perceptible	+ 2 dB	+ 3dB	-
Clearly Perceptible	+ 4dB	+ 6 dB	-
Highly Perceptible	+ 6dB	+9 dB	-
Readily Distinctive against Residual Environment			+ 3 dB

If both tonal and impulsive characteristics are both present then two corrections can be made – however if only one is dominant then only one correction need be applied.

If no corrections are deemed appropriate then the Rating Level equals the Specific Noise Level.

An initial estimate of the impact of the specific sound is obtained by subtracting the measured background level from the rating level and considering the following :

- A) Typically the greater the difference the greater the impact.
- B) A difference of around + 10 dB or more is likely to be an indication of a significant adverse impact – depending on context.
- C) A difference of around + 5 dB or more is likely to be an indication of an adverse impact – depending on context.
- D) The lower the rating level is to the measured background level the less likely it is that the sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the measured background level this is an indication that the sound source will have a low impact depending upon context.

Where the initial estimate of the impact needs to be modified due to the context then all pertinent factors need to be taken into consideration – these include the following :

The absolute level of the sound.

The character and level of the residual sound compared to the character and level of the specific sound.

The sensitivity of the receptor and whether residential dwellings already incorporate design measures that secure good internal and outdoor conditions eg facade insulation – ventilation / cooling that reduces the need to open windows – acoustic screening.

The standard recognises that the response to sound can be subjective as well as to the local attitudes to the source of the sound and the character of the neighbourhood.

Also relevant are the World Health Organisation (WHO) Guidelines for Community Noise – these identify that sleep may be disturbed by short term noise events and the level associated with this is 45 dB LAmax inside the bedroom – this relates to 60 dB LAmax external to the bedroom.

In brief an 'Outdoor Living Area' should be subject to a noise level less than 55 dBA in order to prevent serious annoyance during the daytime and evening - a level less than 50 dBA is desirable to prevent moderate annoyance : reference World Health Organisation.

BS 4142 : 2014

Regarding the residential properties the survey was undertaken – as stated above - with respect to BS 4142 : 2014 .

It is now a requirement of BS 4142 to consider the potential uncertainty of the assessment – the steps taken to reduce uncertainty as far as practical included :

All the measurements were made with a Type 1 sound level meter with certificates of calibration and field calibration checks were undertaken after each series of measurements with a minimal drift (0.1 dB) recorded.

The weather conditions were considered ideal for environmental noise measurements with no rain – dry / damp surfaces - low wind speeds (< 5.0 m /sec).

Variations in ground cover between the proposed site and the receivers could affect the ground absorption and therefore the calculated levels at the various receivers – in order to reduce this problem it has been assumed that there is acoustically reflective ground cover over the various distances.

Inaccuracies that could result from estimates of the intervening ground cover – meteorological conditions etc. will not be significant.

The measurements were undertaken over a number of days / times in order to obtain – what is considered to be – a representative measurement of the existing noise climate at this location.

Therefore taking the above into account it is considered that the uncertainty has been controlled as far as practically possible with the results being over predicted rather than under predicted and therefore the above represents a robust assessment.

National Planning Policy Framework

This provides brief guidance on planning and noise – it states that planning policies and the resultant decisions should aim to :

A – 'avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of the development.'

B – 'mitigate and reduce to a minimum other adverse impacts on health and quality of life arise from the new development – this includes the use of conditions'.

C – recognise the development will often create some noise and existing businesses wanting to expand to develop in continuance of their business should not have unreasonable restrictions placed on them because of changes in nearby land uses since they were established.

D – identify and protect areas of tranquility which have remained relatively undisturbed by noise and are prized for their recreational and amenity value.'

BS 8233 : 2014

The above standard is used to assess noise within residential property and in 'private amenity areas' that can be attached to these properties. They are used to assess the design of new buildings (or refurbishment) rather than assess the effects of changes to the external noise.

However it is recognised that this is not always achievable in existing areas such as City Centres or adjacent to existing commercial development.

In such cases it is suggested that a compromise between the possible raised noise level and the advantages of the commercial development should be reached – therefore any development should be designed to achieve the lowest practical noise level and should not necessarily be prohibited.

The Qualitative Guidance NPPG

This new guidance issued in March 2014 is qualitative therefore it does not contain any quantitative guidance on acceptable noise levels.

Paragraph 10 states ' *Care should be taken, however, to avoid these (British Standards) being implemented as fixed thresholds as specific circumstances may justify some variation being allowed* ' .

Therefore it is clear that current guidance assumes that quantitative standards can be used provided that there is flexibility in their application.

In paragraph 5 various noise categories and thresholds are set out; up to and including "Noticeable and Intrusive" it seems likely that the intention would be to recognise that whilst the noise levels are not desirable, planning consent should be granted provided that the noise can be mitigated and the intrusion reduced to a minimum. "Noticeable and Intrusive" noise occurs when:

"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. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life."

Above the 'Significant Observed Adverse Effect Level ' - SOAEL – threshold, noise becomes 'Noticeable and Disruptive ' because

"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. 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."

Noise which is "Noticeable and disruptive" should be avoided; however, it is the next level of disturbance "Noticeable and very disruptive" that should be prevented.

It can be seen that the NPPG noise guidance envisages that if properties are provided with alternative ventilation and acoustic glazing, designed to ensure "acceptable" internal noise levels, then internal noise levels would not exceed the "Significant Observed Adverse Effect Level" and that planning consent could be granted. The guidance states "If the exposure is above this level the planning process should be used to avoid this effect occurring, by use of appropriate mitigation such as by altering the design and layout."

Equipment Used and Measurement Method

The noise levels were measured using a :

Bruel & Kjaer 2260 Sound Level Meter (Type 1 instrument)

Calibration was undertaken using a :

Bruel & Kjaer type 4231 calibrator

The measurements were carried out at the location shown at a height of 1500mm above the ground and away from reflecting surfaces.

The measurements were undertaken at the times stated in the results.

The location of the measurements are indicated on the plan above.

Results

These are tabulated below :

The measurements were undertaken over a number of days in order to obtain a more robust assessment.

Weather

Date	Wind Speed M/sec	Wind Direction	Temperature C	Rain	Cloud Cover %	Road Conditions
16/07/2020 15.00 hrs	0	-	15	No	100	Dry
20.30 hrs	1.2	NW	14	No	80	Dry
19/07.2020 20.30 hrs	0	-	13	No	50	Dry

Date	LA eq	LA 90	LA 10	LA max
16/07/2020 15.00 – 16.00hrs	55.8	43.2	-	--
20.15 – 21.15hrs	51.3	40.7		
19/07/2020 20.30 – 21.30hrs	50.4	39.8		

Over the measurement period the average LA eq is calculated to be **53 (53.0) dBA**

The noise consisted of passing traffic – bird song and general noise.

The lowest measured background was **39.8 dBA**

Internal Measurements

The following are library figures for the internal noise levels what are considered similar buildings. These are used as the actual internal noise level in the proposed Centre is unknown at the present time.

Location	Measurement Period	LA eq
Alder Grange School Rossendale Sports Hall	1 hour 14 Students	74 (74.2) dBA
Crompton House School Shaw	45 minutes 26 Students	80 (80.4) dBA
St Marys Play Group Shaw	30 minutes 22 Students	72 (72.3) dBA

As can be seen the above measured noise levels vary , the highest recorded being **80 dBA** – but the average level being **77 (76.7) dBA** .

The proposed Centre having dimensions of 14.65 m wide – 6.00m high and 22.2m long.

The distance from the facade of the proposed Play Centre to the nearest residential property on York Avenue is scaled at 36m (Reference : Google Earth)

Assessment Reference York Avenue

The noise level at the residential properties can be determined from -

$$L_2 = L_1 - 6 - R + 10 \log S - 11 - 20 \log r + DI$$

Where

L_2 = Calculated level at distance r metres

L_1 = Internal Level within building. This is assumed to be **80 dBA** (average = **77 dBA**) and could be regarded as the *worst case situation* as it is unlikely that this level will be the noise level within the whole of the building – See above

R = the sound reduction index of the building element – Kingspan (or similar) KS1000 AWP60 – $R_w = 25$ dB see enclosed data sheet

S = surface Area of building facing the residential property = $6.0 \times 14.65 = 87.9$ sq m

r = distance to houses on Claredon Road = **36 m**

DI = Directivity Index = **3**

$$L_2 = 80 - 6 - 25 + 10 \log 87.9 - 11 - 20 \log 36 + 3$$

$$L_2 = 29 \text{ (29.3) dBA.}$$

In this facade there are double doors – the size is assumed to be 2m by 2m therefore the area = 4 sq m.

The attenuation of this type of door is usually determined by the fit of the doors in the frame rather than the actual attenuation of the door – from experience this is of the order of $R_w = 20$ dB.

Therefore repeating the above :

$$L_2 = 80 - 6 - 20 + 10 \log 4 - 11 - 20 \log 36 + 3$$

$$L_2 = 21 \text{ (20.8) dBA.}$$

The attenuation of the base wall – from experience this is of the order of $R_w = 50$ dB – the area is approximately $2 \times 14.65 = 29.3$ sq m

Therefore repeating the above :

$$L_2 = 80 - 6 - 50 + 10 \log 29.3 - 11 - 20 \log 36 + 3$$

$$L_2 = 0 \text{ dBA.}$$

Therefore the calculated noise level at the residential properties on Claredon Road facing the proposed Play Centre extension will be : 29 (metal cladding) + 21 (doors) + 0 (base wall) = **30 (29.6) dBA.**

This is 9.8 dBA below the lowest measured background level.

The National Planning Guidance 2014 states that noise exposure defined by the response of people to the noise – briefly it states that :

Perception	Examples of Outcome	Increasing Effect Level	Action
Not Noticeable	No effect	No observed Effect	No Specific Measures required
Noticeable and not Intrusive	Noise can be heard – does not cause any change in behaviour or attitude	No Observed Adverse Impact	No Specific Measures required
Noticeable and Intrusive	Noise can be heard and causes small changes in behaviour and / or attitude – affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Impact	Mitigate and reduce to a minimum.

Assessment Reference Clarendon Road

The noise level at the residential properties can be determined from -

$$L_2 = L_1 - 6 - R + 10 \log S - 11 - 20 \log r + DI$$

Where

L_2 = Calculated level at distance r metres

L_1 = Internal Level within building. This is assumed to be **80 dBA** (average = **77 dBA**) and could be regarded as the *worst case situation* as it is unlikely that this level will be the noise level within the whole of the building – See above

R = the sound reduction index of the building element – Kingspan (or similar) KS1000 AWP60 – $R_w = 25$ dB see enclosed data sheet

S = surface Area of building facing the residential property = $6.0 \times 22.2 = \mathbf{133.2 \text{ sq m}}$

r = distance to houses on Clarendon Road = **21 m**

DI = Directivity Index = **3**

$$L_2 = 80 - 6 - 25 + 10 \log 133.2 - 11 - 20 \log 21 + 3$$

$L_2 = 36 \text{ (35.8) dBA.}$

The attenuation of the base wall – from experience this is of the order of $R_w = 50$ dB – the area is approximately $2 \times 22.2 = 44.4 \text{ sq m}$

Therefore repeating the above :

$$L_2 = 80 - 6 - 50 + 10 \log 44.4 - 11 - 20 \log 21 + 3$$

$$L_2 = 6\text{dBA.}$$

Therefore the calculated noise level at the residential properties on Claredon Road facing the proposed Play Centre extension will be : 36 (metal cladding) + 0 (doors) + 6 (base wall) = **36 dBA**.

This is 3.8 dBA below the lowest measured background level

The National Planning Guidance 2014 states that noise exposure defined by the response of people to the noise – briefly it states that :

Perception	Examples of Outcome	Increasing Effect Level	Action
Not Noticeable	No effect	No observed Effect	No Specific Measures required
Noticeable and not Intrusive	Noise can be heard – does not cause any change in behaviour or attitude	No Observed Adverse Impact	No Specific Measures required
Noticeable and Intrusive	Noise can be heard and causes small changes in behaviour and / or attitude – affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Impact	Mitigate and reduce to a minimum.

Recommendations

- That there are no 'holes' cut into the facade of the Units that face any of the residential properties for ventilation purposes etc
- Any ventilation units / air conditioning units that are mounted in line of sight of the residential property must have a noise output at least 10 dBA BELOW the measured background ie. The total noise output must not exceed 30 dBA.
- Wall – these should be constructed from steel trapizodial type panels that have a quoted Rw of at least 25 dB.

Conclusions

With respect to the proposed development of an extension to the Play Centre at Manley Park York Avenue Manchester the above shows that the use of the proposed Centre will not have detrimental effect on the amenity of the adjacent residential properties.

Roger Leach AMIOA

Monday	Coffee Morning	
	Community Advice Drop in	
	Yoga Exercise	
	Councillors Evening Surgery	
Tuesday	Womens Heritage Cultural Sessions	
	Sports & Fitness Sessions	
	CV Support and Employment Drop in	
Wednesday	Coffee Morning	
	After School Club	
	Boxercise	
	Youth Club	21-00
Thursday	Health & Wellbeing Workshops	
	Yoga Exercise	
	Sports & Fitness Sessions	21-00
Friday	Elder mens Group	
	Maths & English Classes	
	Youth Club	21-00
Saturday	Fitness Sessions	
	Junior Youth Club	21-00
	Senior Youth Club	21-00
Sunday	Community Bookings	
	Childrens Parties	22-00
		(11-00 - 16.00)

Manley Park Play Centre Weekly Schedule

Acoustic Test Results Appendix A - Wall/Facade Panel Construction

Octave Band Sound Reduction Index (R) and Weighted Sound Reduction Index (R_w)

Wall	Panel and Lining	Octave Band Sound Reduction Index R								R _w	C _r	Surface Weight Kg/m ²
		63	125	250	500	1k	2k	4k	8k			
1W	AWP/60 + no lining	15	16	19	23	26	22	39	–	25	-3	18
2W	AWP/60 + F	12	19	32	42	50	52	60	–	43	-10	30
3W	AWP/60 + W15	14	17	31	40	48	46	56	–	41	-10	28
4W	AWP/60 + W15 + F	17	24	37	45	52	54	64	–	47	-9	40
5W	AWP/60 + P + W12	16	22	37	45	51	50	63	–	46	-10	41
6W	AWP/60 + P + W12	18	23	35	44	49	50	61	–	45	-8	41
7W	AWP/60 + I + P + W	18	24	37	48	53	55	63	–	48	-10	4
8W	KS1000 RW/40 + I + L	13	14	29	38	40	45	55	–	38	-9	20
9W	KS1000 RW/40 + I + L	12	16	30	40	44	51	64	–	40	-9	20
10W	AWP/70 + no lining	20	15	17	23	18	25	40	46	24	-4	12.5

Key

AWP = Architectural Wall Panel with various profiles (Optimo, MR, EB, FL, MM, CX, WV, Longspan)

F = 10mm dense particle board (11.7kg/m²)

W15 = 15mm plasterboard (10kg/m²)

W12 = 12.5mm wallboard (7.9kg/m²)

P = 19mm dense plasterboard plank (15.2kg/m²)

I = Insulation (see construction description for details)

L = 0.7mm profiled steel liner sheet

The figures after the forward slash refers to the panel thickness in mm (ie AWP/60 = panel thickness of 60mm)

