



**Three Spires Acoustics Ltd**

Enabling event success & regulatory compliance since 2008

# The Drum Shed

Meridian Water, Units 4, 5, 6, 6a &b

Orbital Business Park

5 Argon Road, Edmonton

London

N18 B3W

## Venue Noise Management Plan

for Broadwick Live Ltd



**Three Spires Acoustics Ltd**

2 SykeIngs | Richings Park | Iver| Bucks | SL0 9ET

Tel: 01753 651185 | Mobile 079393 24063

email:[chris@threespiresacoustics.co.uk](mailto:chris@threespiresacoustics.co.uk) | Web:<http://www.threespiresacoustics.co.uk/home>



# THE DRUM SHED

## NOISE MANAGEMENT PLAN

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# 1. INTRODUCTION

## 1.1 General

Three Spires Acoustics Ltd (TSA) have been commissioned by Broadwick Live Ltd to produce a Noise Management Plan for The Drum Shed, which is a proposed new music venue at Meridian Water, Units 4, 5, 6, 6a&b, Orbital Business Park, 5 Argon Road, Edmonton, London, N18 3W.

The Noise Management Plan (NMP) has been required by the client in order to detail the noise management methodology that will be implemented in order to demonstrate how the operation of the venue will promote the Licensing Act 2003 objective of the prevention of public nuisance from live and recorded amplified music as required by the Licensing Authority at the London Borough of Enfield.

## 1.2 Consultants Experience

Three Spires Acoustics is an acoustic consultancy specialising in providing advice to the entertainment industry and licensing authorities on matters relating to the management of sound and regulatory compliance at outdoor and indoor events.

The team of consultants have experience dealing with many outdoor concerts and events throughout the UK including; Parklife, Field Day, Bluedot, Lost Village Festival, and SW4 at Clapham Common amongst many others.

Consultants have membership of the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH) and the Institute of Licensing (IOL) and several members of staff have a regulatory or sound engineering background.

Chris is also part of the current Institute of Acoustics (IOA) working party looking into Good Practice Guidance for Noise Control from Places of Entertainment and also on the working party which has been formed by the Chartered Institute of Environmental Health Officers (CIEH) to review and update the Code of Practice on Environmental Noise Control at Concerts 1995, which has now been withdrawn.

As well as the provision of sound and acoustic design/management for entertainment venues, the company deals with a range of noise and regulatory control issues and our staff have presented expert testimony at planning and licensing hearings.

### 1.2.1 Professional Associations

Members of The Institute of Acoustics (MIOA)

Members of The Institute of Licensing (AMIOL)

Members of the Chartered Institute of Environmental Health Officers (MCIEH)

Chartered Environmental Health Practitioner (CEnvH)

### 2. SITE AND VENUE DESCRIPTION

2.1.1 The Drum Shed is a proposed new music venue at Meridian Water, Units 4, 5, 6, 6a&b, Orbital Business Park, 5 Argon Road, Edmonton, London, N18 B3W. The venue consists of 4 warehouse units (Unit 4,5, 6a and 6b), two units will be used to house stages and two to house facilities such as bars, food concessions, dressing rooms and a medics centre. The closest residential areas are;

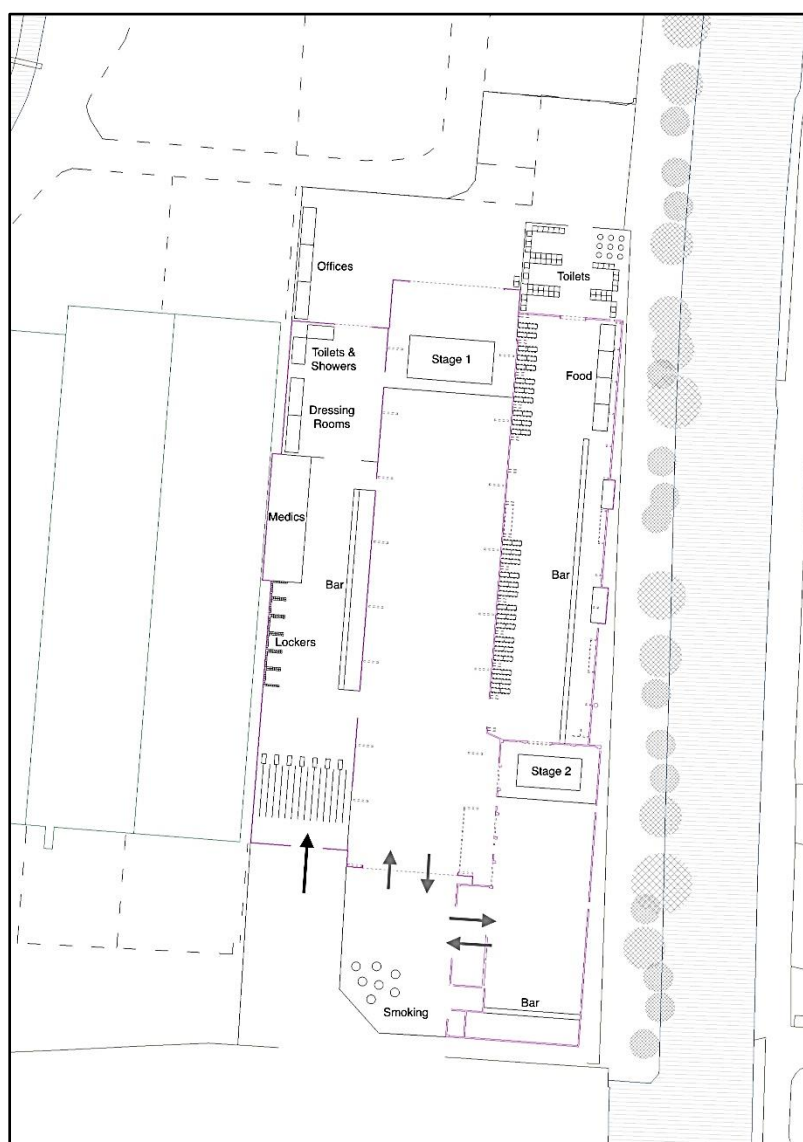
- Waterhall Close to the south east of the site in the LB Waltham Forest.
- Heybourne Road to the east of the site
- Ching Way to the west of the site
- Albany Road to the north east of the site

2.1.2 Live and recorded music forms part of the regulated entertainment, which will be subject to premises licence conditions related to noise control. An aerial photograph of the site is presented in Figure 1 below. Figure 2 below details the plan of the site venue.

Figure 1. Aerial Map of Event Site



Figure 2. Drum Shed Venue Plan



- 2.1.3 The construction of Unit 5 (Stage 1) is double skin steel profile sheeting with 200mm thermal insulation, two sets of large panel doors made of the same material as the walls. The building offers a reasonable level of noise attenuation. The roof structure is of similar design but also contains Perspex light panels. Photographs of the venue spaces are contained in Appendix D.
- 2.1.4 Unit 6 (Stage2) is constructed of standard brick walls, 2 x roller shutters to the external, 4 x concertina shutters opening internally into units 6b, asbestos and composite sheets to the roof on steel roof trusses. One metre of glazing under the eaves on the river lee side and two sets of fire doors. The sound insulation performance for unit 6 is considered to be less than Unit 5 and further buildings works are planned to ensure it meets at least the same performance standard as unit 5.

## 2.2 Proposed Operating Schedule

2.2.1 The proposed operating schedule will reflect that which is outlined in the Premises Licence.

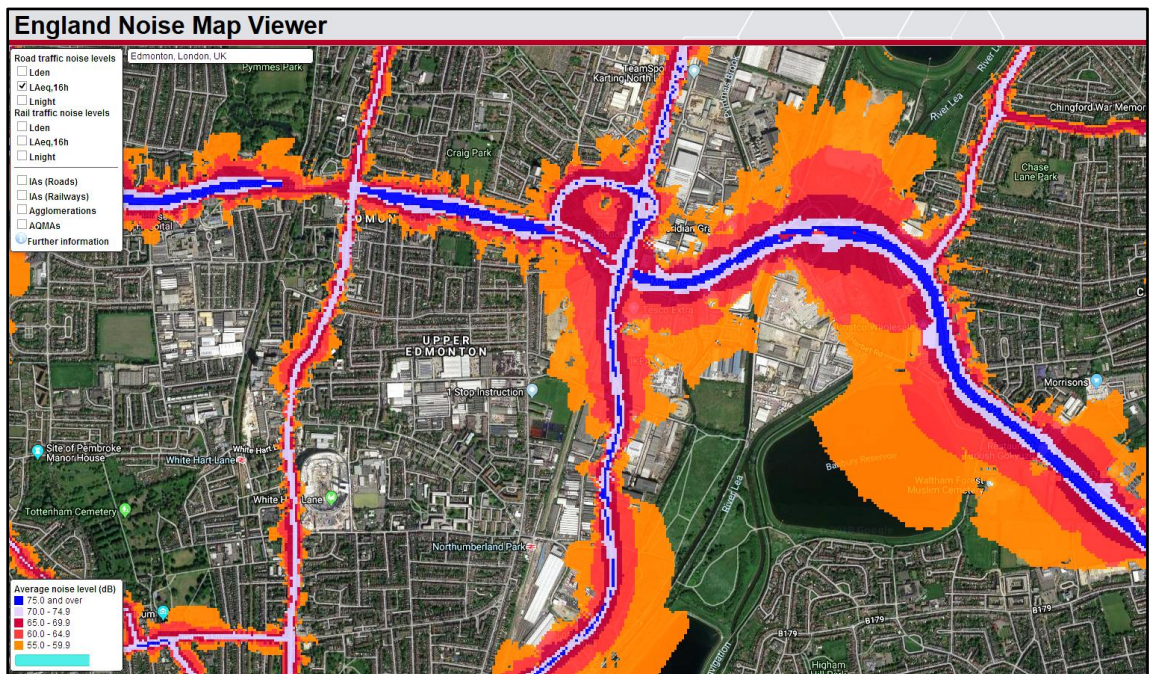
## 2.3 Acoustic Environment

2.3.1 The area around the site is that of a urban outer city location with major road and rail networks close to existing commercial/industrial and residential properties. The acoustic environment is likely to be dominated by transportation noise from road vehicles and passenger trains using these arterial routes as well as local traffic and commercial premises related noise.

2.3.2 DEFRA has published strategic noise map data that provide a snapshot of the estimated noise from major road and rail sources across England in 2012. The data was developed as part of implementing the Environmental Noise Directive. The noise contour map for the area around the site is presented in Figure 3 below and includes the modelled LAeq,16hour noise contours for the major road. Note that the contours do not include rail contours or industrial noise so the actual levels are likely to be higher.

2.3.3 The map indicates that area to the north and east of the site are likely to experience noise exposure from daytime transportation noise between 55 to 75dB LAeq,16hour. The residential area of Highham Hill to the south of the site and close to Banbury Reservoir is likely to experience noise below 55dB LAeq,16hour.

Figure 3. DEFRA Noise Contour Map





### 3. REGULATORY FRAMEWORK

#### 3.1 Licensing Act 2003

3.1.1 The explanatory notes to the Act state that it provides for a unified system of regulation of the activities of the sale and supply of alcohol, the provision of regulated entertainment, and the provision of late night refreshment. In the Act, these activities are referred to collectively as “the licensable activities”.

3.1.2 The purpose of the system of licensing for licensable activities is to promote four fundamental objectives (“the licensing objectives”). Those objectives are –

- the prevention of crime and disorder;
- public safety;
- the prevention of public nuisance; and
- the protection of children from harm.

3.1.3 The system of licensing is achieved through the provision of authorisations through personal licences, premises licences, club premises certificates and temporary event notices. The objective regarding the prevention of public nuisance is most often linked to noise and the explanatory notes to the Act advise that “The four licensing objectives aim to ensure that the carrying on of licensable activities on or from premises is done in the public interest. The third licensing objective, the prevention of public nuisance, will not extend to every activity which annoys another person but will cover behaviour which, when balanced against the public interest, is found to be unacceptable.” Applicants for a licence must demonstrate within their operating schedule the means by which they intend to meet this objective. When noise is being considered, Local Authority “responsible authorities” (typically Environmental Health departments), must have regard to this objective when considering making a representation or applying for a review of a Premises Licence.

#### 3.2 Public Nuisance

3.2.1 Responsible authorities and other persons (formerly “interested parties”) may make representations based on the public nuisance objective. Neither the Licensing Act 2003 nor the Statutory Guidance define public nuisance, although the Guidance states that licensing authorities should adopt the “broad common law” meaning. In summary, the common law states that public nuisance means.

- Any nuisance is “public” which materially affects the reasonable comfort and convenience of the life of a class of her Majesty’s subjects.
- Public nuisance is a nuisance which is so widespread in its range and indiscriminate in its effect that it would not be reasonable to expect one

person to take proceedings on his own to put a stop to it; but that it should take on the responsibility of the community at large.

- The question whether the local community within that sphere comprises a sufficient number of persons to constitute a class of the public is a question of fact in every case.
- A sufficiently large collection of private nuisances i.e. to more than one person/household, can be a public nuisance.
- Nuisance is assessed qualitatively in terms of factors including frequency of event, duration, time of day, absolute level, etc. and must materially unreasonably interfere with the ordinary use of property

3.2.2 Therefore, with respect to the promotion element of the public nuisance objective, operators and responsible authorities can place proportionate restrictions and conditions on a licence, where appropriate to ensure that noise from regulated entertainment is below the threshold for public nuisance; appropriate to the circumstances of the proposed or actual licensed premises, taking into account those who may be affected by noise associated by the operation of a license.

### 3.3 Conditions

3.3.1 The guidance which accompanied the Licensing Act 2003 states that each application must be considered on its own merits. Any conditions attached to licences and certificates must therefore be tailored to the individual style and characteristics of the premises and associated events taking place and standardised conditions applied to every licensed premises should be avoided.

3.3.2 Case law and Statutory Guidance confirms that conditions attached to a licence must be appropriate to promote one or more of the four licensing objectives. Any conditions must also be expressed in unequivocal and unambiguous terms to avoid legal dispute. Conditions must also be precise and proportionate, and should avoid duplication of existing legislation such as Health & Safety at Work etc. Act 1974 and the Environmental Protection Act 1990 (EPA).

### 3.4 Inaudibility

3.4.1 Inaudibility conditions have been popular in the past but have faced sufficient criticism in the courts, e.g. R (Developing Retail Ltd) v South East Hampshire Magistrates Court, Administrative Court, 4th March 2011, and now have been determined that the phrase is incompatible with the requirements of the Licensing Act 2003 and planning requirements, as it is imprecise, unreasonable and disproportionate with the Licensing Act 2003 objectives or planning requirements under National Planning Policy Guidance (NPPG) 2014.

### 3.1 Noise Act 1996 and Licensed Premises

- 3.1.1 The powers under the Noise Act 1996 are in addition to those possessed by local authorities under the Environmental Protection Act 1990 and the Noise and Statutory Nuisance Act 1993 on statutory nuisance.
- 3.1.2 Following a complaint of excessive noise being emitted from licensed premises between 23:00 hrs and 07:00 hrs, Local Authorities may investigate under the Noise Act 1996 (as amended by the Clean Neighbourhoods and Environment Act 2005). If they consider the noise to be exceeding the “permitted level”, they can serve a warning notice on the person they consider to be responsible.
- 3.1.3 If the noise persists after the warning notice has been served, the Local Authority can measure the noise against the “permitted level”. It is an offence to exceed the permitted level and offenders can be issued with a Fixed Penalty Notice (£500 for licensed premises) at that time or later, or can be prosecuted.
- 3.1.4 The “permitted level” (as set out in The Permitted Level of Noise (England) Directions 2008) is 34 dBA, if the underlying level of noise is no more than 24 dBA; or 10 dBA above the underlying level of noise where this exceeds 24 dBA.
- 3.1.5 The Measuring Devices (Noise Act 1996) (England) Directions 2008 approves devices that can be used to measure noise, containing requirements for their verification and calibration and sets out how measurements of noise must be conducted.

### 3.2 Research that Informed the Noise Act 1996

#### 3.2.1 DEFRA- Noise From Pubs And Clubs Phase II-NANR-163 May 2006

- 3.2.2 NANR 92 informed the “Noise from Pubs and Clubs Phase II” (NANR 163) research, which in turn provided the justification for the application of the Noise Act 1996 (as amended by the Clean Neighbourhoods and Environment Act 2005) to licensed premises.
- 3.2.3 The research looked at the subjective response of individuals using a range of quantitative measures derived from physical measurements of entertainment noise established in Phase 1 of the project described above. The objective of the research was to establish an effective methodology for internal noise assessment of one-off type music events from licensed premises between 23:00 hrs to 07:00 hrs.
- 3.2.4 However, part of the research included controlled testing and field trials which also examined the correlation of external noise assessment methods with subjective response of individuals regarding the acceptability of entertainment noise levels, judged as a regular event. The metrics which provided the best overall correlations with subjective response for assessment of entertainment noise and which are pertinent to the Licence Review are discussed below.

### 3.2.5 Absolute LAeq & LCeq

3.2.6 Both the LAeq and LCeq metrics had stronger correlations than other metrics for external assessment of noise from entertainment events. However, the report stated that an entertainment noise criteria based on absolute LAeq or LCeq, would be difficult to use where the existing ambient noise level without the entertainment noise was close to, equal to, or above the threshold level and would need to be used in conjunction with subjective judgment. This is likely to be more of a problem for an external assessment situation, but can be allowed for by using decibel subtraction because the metric is based on the overall noise energy in the assessment period rather than the distribution of noise levels during the measurement.

## 4. NOISE GUIDANCE AND STANDARDS

### 4.1 Institute of Acoustics – Good Practice Guide of the Control of Noise from Pubs and Clubs 2003.

4.1.1 The guidance was produced in 2003 and despite the lack of noise level based guidelines in the document the qualitative advice did feature prominently and is reproduced below:

4.1.2 Section 2.4 Music, singing and speech, both amplified and non-amplified, are common sources of noise disturbance arising from the premises. As far as these sources are concerned, the purpose of developing the objective noise criteria mentioned should be to attempt to ensure that:

*for premises where entertainment takes place on a regular basis, music and associated sources should not be audible inside noise-sensitive property at any time. In the absence of the objective criteria, what is 'regular' should be determined on a local basis to reflect local expectations and should be incorporated by local authorities in their planning and enforcement policies and*

*for premises where entertainment takes place less frequently, music and associated sources should not be audible inside noise-sensitive property between 23:00 and 07:00 hours. For other times, appropriate criteria need to be developed which balance the rights of those seeking and providing entertainment, with those who may be disturbed by the noise.*

### 4.2 Institute of Acoustics - Draft Good Practice Guidance on Noise Control from Places of Entertainment 2018

4.2.1 The draft document, which will hopefully be published this year, provides good practice guidance for the assessment and control of noise from indoor venues and premises which provide regulated entertainment or the like.

4.2.2 The guide can be used by venue operators, acoustic consultants, environmental health practitioners and other regulatory control officers in the assessment, management and control of noise from entertainment venues. It can also be useful for assisting with planning

and licensing matters relating to both existing or proposed venues, as well as other forms of noise sensitive development potentially affected by noise from such venues.

4.2.3 The guidance provides detailed information on:

- the legal context of entertainment noise
- different types of noise sources
- the use of risk assessment process to assist in judgements about entertainment noise impact
- the different types of assessment criteria and metrics that can be used to assess the impact
- the use of Noise Management Plans
- Mitigation measures amongst as well as other information relevant to music venues

4.2.4 The guide describes an Assessment Criteria Framework and states:

*The overall objective is to ensure that within the appropriate policy and legislative setting, entertainment noise does not cause a significant adverse impact (i.e. nuisance to noise-sensitive receptors living and/or working in proximity to the entertainment venue) and aim for adverse impacts to be duly mitigated.*

*Consequently, the Table below provides an example of how an assessment framework may be populated and proposes a range of noise levels which have been used in typical situations and proven to be effective in the control of entertainment noise, so as to achieve the aforementioned objective.*

*Practitioners are therefore required to exercise a degree of professional judgement in determining specific criteria that are justified, on a case-by-case basis.*

**Table 1. Draft IOA GPG Assessment Criteria Framework Table**

Time of Day	External Criteria	Range	Effective $L_{EN} - L_{WEN}$ Level Difference
<b>Day/Eve</b>	Entertainment Noise level (EN) $Leq,t$ min shall not increase the residual noise by more than	0 to +5 dB	$L_{EN} - L_{WEN} = -10$ to +3
<b>Night</b>	Entertainment Noise level (EN) $Leq,t$ min shall not increase the residual noise level by more than	0 to +3 dB	$L_{EN} - L_{WEN} = -10$ to 0
Internal Criteria			
<b>Day/Eve</b>	Entertainment Noise level (EN) $Leq,T$ min shall not increase the residual noise/ by more than.	0 to +3 dB Or NR 20-30	$L_{EN} - L_{WEN} = -10$ to 0

Time of Day	External Criteria	Range	Effective $L_{EN} - L_{WEN}$ Level Difference
Night	Entertainment Noise level (EN) $Leq,T min$ shall not increase the residual noise/ by more than.	-10 to -5 dB Or NR 15-25	$L_{EN} - L_{WEN} = -10$ to -5

### 4.3 Code of Practice on Environmental Noise Control at Concerts 1995

4.3.1 The Code of Practice was primarily concerned with noise control from outdoor concerts, however it stated in Section 3 Guideline Notes to Table 1:

*For indoor venues used for up to about 30 events per calendar year an MNL not exceeding the background noise by more than 5 dB(A) over a fifteen minute period is recommended for events finishing no later than 23.00 hours.*

*For events continuing or held between the hours 23.00 and 09.00 the music noise should not be audible within noise-sensitive premises with windows open in a typical manner for ventilation*

### 4.4 World Health Organisation (WHO) Community Noise Guidelines 1999

4.4.1 The WHO guideline values for community noise, which include entertainment noise, are appropriate to what are termed “critical health effects”. This means that the limits are at the lowest noise level that would result in any psychological or physiological effect. The guidelines have recently been updated (October 2018) but still references some of the guidelines levels in the 1999 document. Although they are mainly considered for use with transportation noise sources such as road, rail and aircraft, they are useful in providing some guidance on negative sleep effects.

4.4.2 They state that if negative effects on sleep are to be avoided the  $Leq,8hr$  should not exceed 30dB(A) for continuous noise.

## 5. VENUE RISK ASSESSMENT

5.1.1 The IOA Draft GPG on Noise Control from Places of Entertainment risk assessment has been undertaken to inform the range of noise criteria which will be appropriate for this type of venue. The outcome of the risk assessment is 18 which is in the medium risk range. The full risk assessment is reproduced in Appendix C. The outcome of the risk assessment along with the specific nature of the proposal has therefore informed appropriate music noise limits (MNL’s).

### 5.2 Proposed Significance Criteria

5.2.1 Table 3 presents the proposed music noise limit levels for daytime and night-time at noise sensitive receptors.

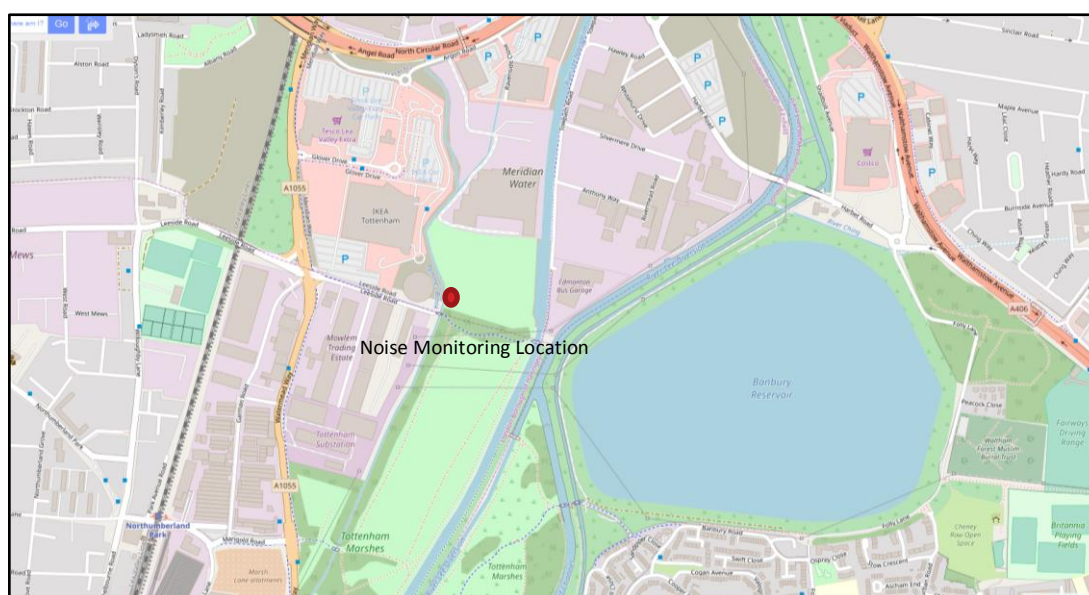
**Table 2. Proposed External Noise Assessment Criteria**

Time of Day	External Criteria	MNL Limit	Effective $L_{EN} - L_{WEN}$ Level Difference
Day/Eve	Entertainment Noise level (EN) Leq,5 min shall not increase the residual noise by more than	5 dB	$L_{EN} - L_{WEN} = +3$
Night	Entertainment Noise level (EN) Leq,5min shall not increase the residual noise level by more than	3 dB	$L_{EN} - L_{WEN} = 0$

## 6. NOISE SURVEY

6.1.1 In order to assist in establishing appropriate night time music noise limits, a noise survey was carried from 10:18 on Saturday 27<sup>th</sup> October to 13:04 on Monday 29<sup>th</sup> October. The noise monitor was located on an area of unoccupied land close to Leaside Road and identified in Figure 4 below. This area was chosen for security reason and enabled continuous monitoring throughout a weekend period and is considered to provide a reasonable indicator of ambient and noise levels within the vicinity of the site.

**Figure 4. Noise Monitoring Location**



6.1.2 The sound level meter were set to record all broadband and statistical A weighted and octave band sound pressure levels including L90 and Leq. Measurements were simultaneously made of 1 minute and 15minute time intervals . Measurements were obtained using the following instrumentation complying with the Type 1 specification of IEC 60651, IEC 61260 and IEC 61672;

- Brüel and Kjaer 2250 Integrated SLM Serial Nos 3010392
- Brüel and Kjaer 4231 Field Calibrator 3001533

6.1.3 The equipment was calibrated using a B&K 4231 field calibrator both before and after the survey and no significant drift was observed. Full calibration certificates are available upon request. Measurements were supplemented with timed and triggered audio recordings to enable post measurement analysis.

6.1.4 Post measurement analysis of the periodic audio recordings indicated that the acoustic environment is dominated by road traffic noise from the A406 North Circular Road. Tables 4 and 5 below presents the summary of the results for the monitoring period.

**Table 3. Summary Table of LAeq,15min, LCeq,15min & LA90,15min Measurement Results (07:00-23:00)**

Day (07.00-23.00) LAeq,15min Range	Day Modal LAeq,15min dB(A)	Day (07.00-23.00) LCeq,15min Range	Day Modal LCeq,15min	Day (07.00-23.00) LA90,15min Range	Day Modal LA90,15min
53-58	56	60-69	65	52-56	54

**Table 4. Summary Table of LAeq,15min, LCeq,15min & LA90,15min Measurement Results (23:00-07:00)**

Night (23.00-07.00) LAeq,15min Range	Night Modal LAeq,15min dB(A)	Night (23.00-07.00) LCeq,15min Range	Night Modal LCeq,15min	Night (23.00-07.00) LA90,15min Range	Night Modal LA90,15min
51-56	52	58-65	59	49-55	50

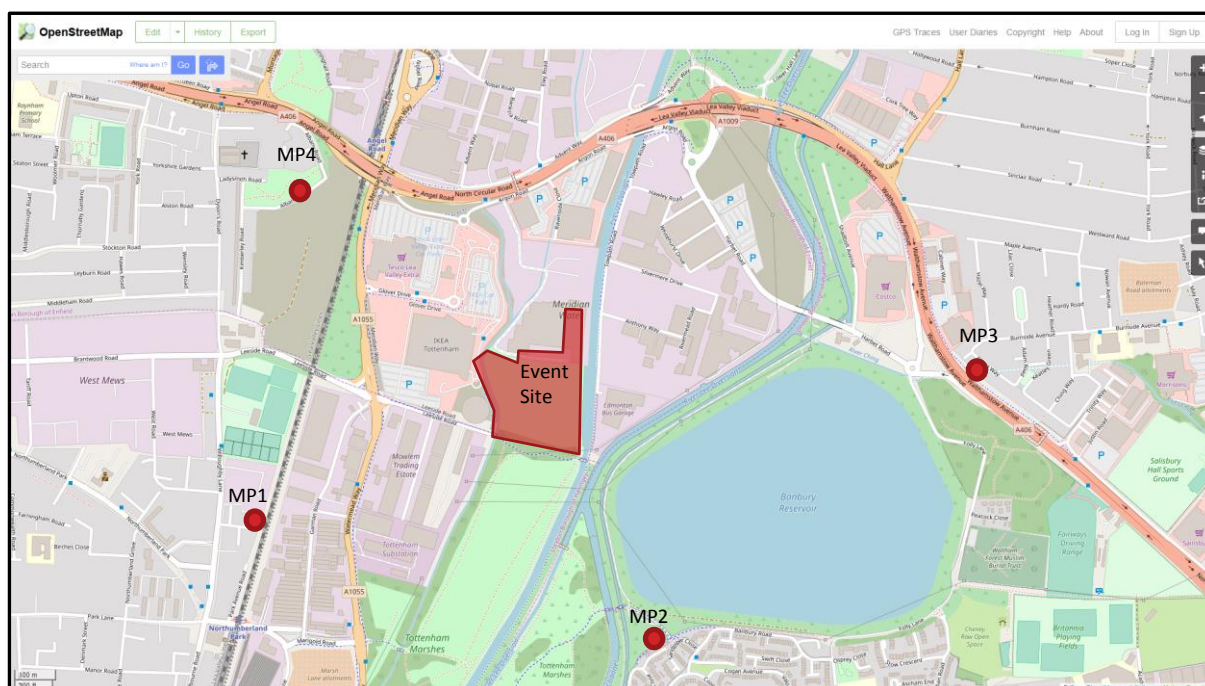
6.1.5 Table 6 details the indicative external limits levels which have been based on the ambient noise survey. It is anticipated that a further more detailed survey may be undertaken to establish more precise ambient levels at each noise sensitive receptor location.

**Table 5. MNL Limits Day Time and Night Time**

TIME OF DAY	Locations	LAeq,5min	LCeq,5min
Day/Eve	All Locations	59	68
Night		55	62



Figure 5. Proposed Noise Monitoring Locations



## 7. RATIONALE FOR PROPOSED MUSIC NOISE LIMITS

7.1.1 It is considered that the proposed music noise limits align with the IOA Draft Good Practice Guidance on Noise Control from Places of Entertainment 2018 and will be significantly below the Noise Act 1996 (as amended). The area around the venue site has a relatively vibrant acoustic environment, due primarily to road traffic noise from the Northern Circular A406, railway noise and existing industrial and commercial noise. The proposed use is between October and December 2019 when the mean night-time temperature is below 10°C, therefore it is unlikely that residents will have windows open for ventilation or cooling purposes. It is therefore considered that the proposed limits will promote the LA03 objective of the prevention of public nuisance.

7.1.2 For a public nuisance to exist the noise nuisance must be both excessive and unreasonable and more than just mere annoyance. The determination takes into account a number of factors or objectives tests which include:

- The absolute level of noise and its characteristics
- The duration and frequency of its occurrence
- The time of the noise (day or night)
- The characteristics of the neighbourhood
- The nature of the care activity is carried out
- Where the noise takes place and is experienced

- 7.1.3 The number of people affected – this factor is especially pertinent, because for a public nuisance to exist it must affect a number of persons within a community or neighbourhood who suffer to an unreasonable extent from noise emanating from the licensed site.
- 7.1.4 Regarding inaudibility internally, case law has determined that inaudibility is not a condition which is compatible with the Licensing Act 2003 requirements, as it would be imprecise, unreasonable and disproportionate with the Act’s objectives.
- 7.1.5 Therefore a limit has been designed that is below the permitted level defined within Noise Act 1996 i.e
- NA96 Permitted Level = 34dB LAeq,5minutes, measured internally with windows closed.
  - This approximates to 59-64dB (windows closed 25-30dB attenuation)
- 7.1.6 The research that informed the Noise Act 1996 indicated that at lower levels the A weighted Leq,T metric provided the best indicator of community annoyance. However a low frequency limit has also been applied in order to take account of some of the problems associated with modern music and the “repetitive dance beat” which anecdotally can cause annoyance.
- 7.1.7 It is therefore consider that the rationale for the music noise limits is justified and aligns with national and international guidance and standards and the music noise limits are set at appropriate levels in accordance with the requirements of the Licensing Act 2003

## 7.2 Predictions

- 7.2.1 In order to determine the sound propagation characteristics between the proposed music stages and those living nearby who might be affected by noise, indicative music noise propagation calculations have been carried out.
- 7.2.2 The following factors have been taken into account when calculating these noise levels. Table 7 below presents the results the calculations. Further calculation details is presented in Appendix B.
- Distance attenuation
  - The directivity factor: A combination of the sound system design and the orientation of the stage and receptor (taken to be -20 dB at 120° to – 180°, - 10 dB at 60° – 120° ; and 0 dB at 0° – 60° from the centreline of the PA system)
  - Attenuation from Unit 5 & 9 (estimated to be 25dB(A) and 16dB(C))
  - Barrier attenuation from buildings, site structures and topography taken to be of 5dB (partial line of sight and 10dB no line of sight)
  - Front of house levels at stages (indicative levels used from similar event)
  - No ground attenuation included.

Table 6. Unit 5 and Unit 6- Predicted Day Time Music Noise Levels at Monitoring Locations

Location	Predicted MNL dB LAeq,T	Predicted MNL dB LCEq,T
MP1 – Heybourne Rd	41	63
MP2 – Waterhall Close	48	70
MP3- Ching Way	31	53
MP4- Albany Rd	23	45

7.2.3 Post 23:00 Predictions are presented in Table 8 below.

Table 7. Unit 5 and Unit 6 Predicted Night Time Music Noise Levels at Monitoring Locations

Location	Predicted MNL dB LAeq,T	Predicted MNL dB LCEq,T
MP1 – Heybourne Rd	37	56
MP2 – Waterhall Close	44	63
MP3- Ching Way	27	46
MP4 – Albany Rd	19	38

7.2.4 The indicative results from the music noise predictions indicate that music noise can be controlled to ensure that the proposed music noise limit levels can be achieved.

## 8. SOUND TESTING

8.1.1 Sound testing for Stage 2 was undertaken on Wednesday 7<sup>th</sup> November 2018. A Funktion One F121 sound system was installed in the warehouse which provided sufficient sound power to acoustically excite the entire event space. A representative music track (Howling by Frank Weidemann (Ame Remix), which provided suitable dynamic and spectral range including female vocal content, was then played on a loop at event levels and simultaneously measured at external monitoring and proxy locations. Audio recordings were undertaken to enable post measurement analysis.

8.1.2 The results from the monitoring are summarised in Tables 9 and 10 below. Location MP3 and MP4 were not included as noise levels from the A406 North Circular were considered to be significantly above any potential music noise emissions from the Unit 5 location that would be audible at these locations.

Figure 6. Sound Test Monitoring Locations



Table 8. Sound Test Results – All doors closed

Location	Representative LAeq,T	Representative LCEq,T	Observations
Internal FOH Position	104	116	Music level above those proposed to ensure audibility at proxy position
Proxy 1(end of field 230m )	55	77	Music noise audible, bass and female vocal distinct, distant traffic noise also clearly audible. contribution from wind noise
MP1 – Heybourne Rd	54	66	Music noise completely inaudible. Periodic train pass increase LAeq,1min to 68dB. Local and distant traffic noise dominant along with some commercial noise from industrial estate and wind in trees. Strong wind gusts
MP2 – Waterhall Close	48	62	Music noise completely inaudible. Distant traffic noise dominant and wind in trees. Strong wind gusts
Proxy 2(front of building@ 70m )	68	89	Music noise clearly audible bass and female vocal distinct above ambient noise.
Canal Boats	60	76	Music noise audible, bass and female vocal more distinct, distant traffic noise also clearly audible contribution from wind noise

Table 9. Sound Test Results – Fire Doors Open

Location	Representative LAeq,T	Representative LCeq,T	Observations
Internal FOH Position	103	116	Music level above those proposed to ensure audibility at proxy position
Proxy 1(end of field 230m )	54	76	Music noise audible, bass and female vocal distinct, distant traffic noise also clearly audible. contribution from wind noise.
MP1 – Heybourne Rd	54	66	Music noise completely inaudible. Periodic train pass increase LAeq,1min to 68dB. Local and distant traffic noise dominant along with some commercial noise from industrial estate and wind in trees. Strong wind gusts
MP2 – Waterhall Close	48	63	Music noise periodically very faintly audible. Distant traffic noise dominant and wind in trees. Strong wind gusts
Canal Boats	62	80	Music noise clearly audible, bass and female vocal more distinct, distant traffic noise also clearly audible contribution from wind noise

Table 10. Sound Test – Post 23:00 FOH Levels

Location	Representative LAeq,T	Representative LCeq,T	Observations
Internal FOH Position	97	109	Post 23:00 Proposed Levels
Proxy 1(end of field)	52	71	Music noise just audible, distant traffic noise dominant.
Canal Boats	53	71	Music noise audible, distant traffic noise dominant

8.1.3 The results from the noise test indicate that the unit 5 building structure offers a reasonable level of sound insulation and that internal levels of up to 102dB(A) and 115dB(C) during the day will result in offsite levels below the proposed music noise limits and at or below typical ambient noise levels at offsite monitoring locations.

8.1.4 Post 23:00 internal levels of up to 98dB(A) and 108 (C) are likely to result in offsite levels that are in compliance with the music noise limits at the proposed monitoring locations subject to doors remaining closed during this period. Further works to the building structures will be undertaken to ensure music noise breakout from the units is minimised.

8.1.5 It is considered that the outcome of the sound test confirms that the proposed internal music noise levels for Unit 5 are appropriate for the promotion of the public nuisance objective under the Licensing Act 2003 whilst still providing good audience experience levels.

8.1.6 Music noise levels at the canal boats maybe subject to levels above the proposed criteria, however it is considered that due to their temporary nature and the very limited number of

boats affected, this would not constitute the necessary sphere of effect required under the public nuisance objective as defined under the Licensing Act 2003.

## 9. VENUE CONTROL PROCEDURES

9.1.1 In order to ensure that LA03 requirements are promoted and upheld, the following noise control procedures, will be implemented at The Drum Shed venue. A brief outline of the procedures are provided below.

### 9.2 Organisational Controls

9.2.1 It is understood that residents will be informed of a contact telephone number (that will be attended by event management staff throughout events) to enable them to register a comment/complaint with respect to noise. Residential properties shall be made aware and will be advised of:

- The times of the events
- Any sound check or rehearsal times
- A telephone number to contact in the event of a comment/complaint

Liaison will take place with the Local Authority's Licensing and Environmental Health Departments to agree aspects such as sound propagation test times, complaint logging and assessment and contact protocols. A copy of the complaint log is presented in Appendix B.

### 9.3 Sound Propagation and Pre-Event Tests

9.3.1 Sound propagation tests will be carried out before the start of the events in October 2019. These involve playing pre-recorded music through the sound systems and measuring sound levels simultaneously at the FOH positions within the site and at the specified monitoring locations. The sound system can then be fine-tuned by using the PA characteristics and Digital Signal Processing, such that the maximum attenuation can be achieved from inside to outside the site and a maximum level can also be set at the mixer positions in order that Premise Licence conditions can be complied with.

### 9.4 Music Noise Limit Monitoring

9.4.1 During the first event music noise monitoring will be undertaken at the specified community receptor and proxy locations. The proxy location will have permanent web enabled connectivity to a central control point, other locations will be visited on a rotational basis. Once the correlation between the proxy location and the offsite locations has been validated through live checks, it is anticipated that this can be used as an assessment point for other events within the season as a compliance monitoring system.

9.4.2 The music sound levels at the mixing desk positions and the proxy positions can be continually monitored in terms of 15 minute and 1 minute LAeq, LCEq. This information will be relayed to the central control point. This point will be permanently monitored and will enable real time music levels to be viewed via a laptop computer. Should the proxy monitoring levels

reach a critical level it will be possible to view the relevant onsite FOH levels and judge whether a particular stage has caused the exceedance or whether this may be due to other extraneous environmental factors. Where necessary an intervention can then be made via the central control point to the sound engineer to reduce the onsite levels at the relevant mixer stage positions.

- 9.4.3 Music noise monitoring will then be undertaken by a competent person to proactively monitor noise at the proxy location/s on a rational basis for the duration of each event and feedback monitoring data to event management staff. Additional periodic auditing can then be undertaken by the acoustic consultant to ensure that controls are effective.

### 9.5 Compliance Reporting

- 9.5.1 A compliance report will be issued to the client after the first event and where acoustic audits have been requested.

### 9.6 Review

- 9.6.1 The Noise Mgt Plan will be periodically reviewed in order that venue operating policy and regulatory requirements are being maintained and where possible system will be enhanced to continually improve performance.

## 10. CONCLUSION

- 10.1.1 Three Spires Acoustics Ltd (TSA) have produced this Noise Management Plan on behalf of Broadwick Live for The Drum Shed music venue at Meridian Water, Units 4, 5, 6, 6a&b, Orbital Business Park, 5 Argon Road, Edmonton, London, N18 B3W.
- 10.1.2 The Noise Management Plan (NMP) details the noise management methodology that will be implemented in order to demonstrate how the operation of the venue will promote the Licensing Act 2003 objective of the prevention of public nuisance from live and recorded amplified music as required by the Licensing Authority at the London Borough of Enfield
- 10.1.3 It is considered that the rationale for the music noise limits is justified and aligns with national and international guidance and standards and the music noise limits are set at appropriate levels in accordance with the requirements of the Licensing Act 2003 to promote the prevention of public nuisance.
- 10.1.4 Noise predictions and sound testing have been undertaken which confirm that the venue is a viable location for the proposed events.
- 10.1.5 A comprehensive noise management system, including sound system design, monitoring and community engagement will be in place to promote the LA03 objective and the licence holder and promoters are committed to a continual improvement strategy.

It is therefore considered that the Noise Management Plan adequately demonstrates that the event will promote the Licensing Act 2003 objective of the prevention of public nuisance and therefore, from a noise control perspective, can be granted a Premises Licence.



Appendix A: Site Plan



Appendix B Results

Table 11. Daytime LAeq,T Predictions Unit 5 and Unit 6

Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP1 – Heybourne Rd	Unit 5	879	35	28	0	25	10	102	39
	Unit 6	859	30	29	0	25	10	102	38
								<b>Combined LAeq</b>	<b>41</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP2 WaterHall Close	Unit 5	772	35	27	0	25	5	102	45
	Unit 6	725	30	28	0	25	5	102	44
								<b>Combined LAeq</b>	<b>48</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP3 Ching Way	Unit 5	962	35	29	10	25	10	102	28
	Unit 6	959	30	30	10	25	10	102	27
								<b>Combined LAeq</b>	<b>31</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP4 Albany Rd	Unit 5	670	35	26	20	25	10	102	21
	Unit 6	759	30	28	20	25	10	102	19
								<b>Combined LAeq</b>	<b>23</b>

Table 12. Daytime LCEq,T Predictions Unit 5 and Unit 6

Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP1 – Heybourne Rd	Unit 5	879	35	28	0	16	10	115	61
	Unit 6	859	30	29	0	16	10	115	60
								<b>Combined LAeq</b>	<b>63</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP2 WaterHall Close	Unit 5	772	35	27	0	16	5	115	67
	Unit 6	725	30	28	0	16	5	115	66
								<b>Combined LAeq</b>	<b>70</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP3 Ching Way	Unit 5	962	35	29	10	16	10	115	50
	Unit 6	959	30	30	10	16	10	115	49
								<b>Combined LAeq</b>	<b>53</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP4 Albany Rd	Unit 5	670	35	26	20	16	10	115	43
	Unit 6	759	30	28	20	16	10	115	41
								<b>Combined LAeq</b>	<b>45</b>

Table 13. Night-Time LAeq,T Predictions Unit 5 and Unit 6

Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP1 – Heybourne Rd	Unit 5	879	35	28	0	25	10	98	35
	Unit 6	859	30	29	0	25	10	98	34
								<b>Combined LAeq</b>	<b>37</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP2 WaterHall Close	Unit 5	772	35	27	0	25	5	98	41
	Unit 6	725	30	28	0	25	5	98	40
								<b>Combined LAeq</b>	<b>44</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP3 Ching Way	Unit 5	962	35	29	10	25	10	98	24
	Unit 6	959	30	30	10	25	10	98	23
								<b>Combined LAeq</b>	<b>27</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP34 Albany Rdy	Unit 5	670	35	26	20	25	10	98	17
	Unit 6	759	30	28	20	25	10	98	15
								<b>Combined LAeq</b>	<b>19</b>

Table 14. Night-Time LCEq,T Predictions Unit 5 and Unit 6

Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP1 – Heybourne Rd	Unit 5	879	35	28	0	16	10	108	54
	Unit 6	859	30	29	0	16	10	108	53
								<b>Combined LAeq</b>	<b>56</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP2 WaterHall Close	Unit 5	772	35	27	0	16	5	108	60
	Unit 6	725	30	28	0	16	5	108	59
								<b>Combined LAeq</b>	<b>63</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP3 Ching Way	Unit 5	962	35	29	10	16	10	108	43
	Unit 6	959	30	30	10	16	10	108	42
								<b>Combined LAeq</b>	<b>46</b>
Receptor	Stages	Distance	FOH	Distance Correction	Directivity	Attenuation from Structure	Barrier Attenuation	FOH Level	Level at NSR
MP34 Albany Rdy	Unit 5	670	35	26	20	16	10	108	36
	Unit 6	759	30	28	20	16	10	108	34
								<b>Combined LAeq</b>	<b>38</b>

Appendix C: Venue Risk Assessment

Criteria	Risk Rating
<b>Number of Events</b>	
• <30 per year and no more than 1 event per week	0
• > 30 and< 51 events per year and no more than 2 per week	3
• Weekly, or more frequently	6
<b>Time of Event</b>	
• Up to 21:00 hrs	0
• Up to 23:00 hrs	3
• After 23:00 hrs	6
<b>Noise Sensitive Receptors</b>	
• None in close proximity	0
• One, or more, in close proximity (e.g. up to 50 metres)	3
• Structurally adjoining	6
<b>Venue Sound Insulation performance</b>	
• Purpose built - robust sound insulation	0
• Average – not purpose built but with moderate sound insulation	3
• Poor – weak sound insulation	6
<b>How Loud are Events?</b>	
• Quiet e.g. can talk normally	0
• Moderately loud e.g. need to raise voice to communicate	3
• Loud e.g. need to shout to be heard	6
<b>Confidence in Management<sup>[1]</sup></b>	
• High – well-prepared NMP, no or very few noise complaints	0
• Moderate - informal controls in place, few complaints	3
• Low - no controls, poor compliance history, history of complaints	6
<b>TOTAL</b>	<b>18</b>
<b>RISK RATING</b>	
<b>LOW</b>	<b>&lt;15</b>
<b>MEDIUM</b>	<b>15-25</b>
<b>HIGH</b>	<b>25+</b>

<sup>[1]</sup> Confidence in management should be judged objectively i.e. qualitatively but fairly and in the same manner for different Operators. Reference to sources of information such as regulatory records and/or the applicant/Operator’s operating schedule, etc. may be helpful in supporting choices in reaching risk rating decisions.

**Appendix D: Comment /Complaint Form**

Drum Shed 2019	Noise Complaint/Comment
Date and Time Complaint Received	
Name of Complainant	
Address of Complainant	
Telephone number and email of complainant	
Location of noise disturbance (address)	
Time disturbance noted	
Nature of complaint(Vocal, Bass, Music in General- Inside or outside)	
Additional Comment	
Visit Requested	
Action Taken	

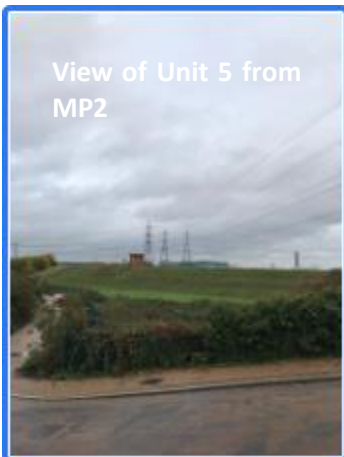
Appendix E: Photographs

Front of Unit 5



Rear of Unit 5





### Appendix F: Glossary of Terms

**‘A’ weighting (dB(A)):** A frequency dependent correction which weights sound to correlate with the sensitivity of the human ear to sounds of different frequencies.

**Ambient Noise:** A measure of the typical noise (excluding any unusual events) present at a site, or in a room. This is usually described in terms of  $LA_{eq,T}$ .

**Audible:** Sound that can be heard or is perceptible by the human ear.

**Background Noise:** A measure of the underlying noise (excluding any unusual events) which is present at a site before a new noise source is introduced. This is usually described in terms of the  $LA_{90}$  level: the sound pressure level exceeded for 90% of the time.

**Decibel (dB):** A unit used for many acoustic quantities to indicate the level of sound with respect to a reference level.

**External Amenity Space:** An outdoor area near to a residential building which is designed and intended primarily for leisure and recreational use by the occupants of the dwelling. This will include gardens, patios, balconies, roof gardens and terraces.

**Hertz:** The tonal quality of a sound is described and measured in terms of the frequency content and is commonly expressed as octave or third octave bands, the latter being the division of the octave bands into three for finer analysis, across the frequency spectrum. The smaller the octave band or third octave band centre frequency number defined in terms of Hz, the lower the sound. For example 63 Hz is lower than 500 Hz and is perceived as a deeper sound. The attenuation due to air absorption and natural barriers increases with frequency i.e. low frequencies are always the most difficult to control

**Inaudible:** Sound that cannot be heard or is imperceptible to the human ear.

**$LA_{90,T}$ :** Sound pressure level exceeded for 90% of the measurement period “T” or ‘background level’.

**$LA_{eq,T}$ :** Equivalent continuous sound pressure level measured over the time period “T”

**$L_{Amax}$ :** The maximum RMS A weighted sound pressure level

**Music Noise Level (MNL):** The  $Leq$  of music noise measured at a particular location.

**Noise:** Unwanted sound.

**Noise assessment:** A basic evaluation of an acoustic environment by a suitably qualified person to assist in the determination of a planning application..

**Noise impact:** the noise level of the source under consideration, and/or any change in noise levels due to the scheme, and/or the relationship between the noise level of the source under consideration and a descriptor of the existing noise climate; at a receptor or group of receptors.

**Noise effect:** the consequence of the noise impact e.g. annoyance, sleep disturbance, speech interference, disruption of learning/teaching, health consequences, fauna displacement etc. Noise



impact and noise effect are related to each other and the noise effect is related to the magnitude of the noise impact as well as other factors e.g. sensitivity of the receptor, duration of the noise, how frequently it occurs, the time of day or night it occurs, whether the noise is temporary, reversible or permanent etc.

**Noise level (Lp):** the logarithmic measure of the RMS sound pressure of a sound relative to a reference value that represents the threshold of hearing. It is measured in decibels (dB) e.g.  $L_p = 20 \lg(p/p_0)$  dB re  $20 \mu\text{Pa}$  for air.

**Noise sensitive premises / developments:** Principally comprising residential premises, hospitals, schools and hotels. Other premises and sites may be deemed to be noise sensitive depending upon circumstances.

### Typical sound pressure levels

