

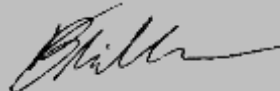
Christmas Parties, King's Meadow, Reading

Noise Assessment

Best Parties Ever Limited

Revision 0

19 October 2018

Role	Name	Position	Signature	Date
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1 Introduction

1.1 Appointment

1.1.1 F1 Acoustics Company Limited (F1AC) has been appointed by Best Parties Ever Limited to provide noise surveys and a noise assessment for a season of Christmas Parties being held at King's Meadow, Reading.

1.1.2 This report is a feasibility study for the operation of the Christmas parties at King's Meadow and details the criteria for the music noise from the events; the noise surveys, the prediction and assessment of the music noise and our conclusions.

1.1.3 A glossary of acoustic terms is provided in Appendix A.

1.2 Christmas Parties, 2018

1.2.1 The Christmas parties will be held within a marquee at King's Meadow, Napier Road, Reading from 23rd November 2018 to 22nd December 2018.

1.3 About F1 Acoustics Company Ltd

1.3.1 F1AC are specialists in event sound control and have provided services for venues and events including Glastonbury, Boomtown, Leeds Festival, Printworks London and Victoria Warehouse plus numerous other single stage and multi-stage events across the UK. We have a combined experience of over 20 years providing high quality sound control services and all of our Consultants are Members of the Institute of Acoustics. As well as entertainment sound control the company deals with the whole range of acoustics and noise issues and our staff have presented expert testimony at planning hearings and are accustomed in liaising with Local Authority Officers regarding noise issues.

2 Proposed Licence Conditions

2.1.1 The licence conditions detailed below have been proposed by Reading Borough Council:

- "1. There shall be no more than twenty party nights during each annual licence period. Dates and times of the events shall be notified in writing to the licensing authority and Environmental Protection team no later than 28 days before the first event is held.*
- 2. The event manager shall work closely with Reading Borough Council (RBC) and other responsible authorities to ensure that work required to achieve the licensing objectives is detailed, site specific and rigorously enforced.*
- 3. The event will be run in accordance with the event management plan submitted to the licensing authority. This event management plan will be updated and submitted to the licensing authority at least 28 days prior to the start of any event.*
- 4. Noise within the marquee shall be controlled by a noise limiter system. The system will be set to a level that will ensure that noise from the marquee is barely audible at the boundary of the nearest and all other residential premises. Barely audible for these purposes is defined as 5 dB (5 minute LAeq) below the background noise level taken as LA90 (measured over a 15 minute period between 22:00 hours and 23:00 hours when the premises is not operating). The system should be a compressor limiter system and once set by a qualified acoustic consultant i.e. a member of the Association of noise Consultants or Institute of Acoustics, should be locked within a cabinet for which only the event manager, authorised officers from RBC and the qualified acoustic consultant will hold keys.*
- 5. The noise monitoring manager (NMM) shall undertake noise monitoring whilst members of the public are on the licensed premises. This monitoring shall be conducted at the boundary of the closest domestic premises to include Kingfisher Place, The Lock House and Luscinia View:*

- 1. Every hour during the first three functions held each year at the premises and*

- 2. Regular monitoring at 19:00, 21:00, 23:00 and 00:30 during every successive function.*
- 6. Monitoring on the first three nights shall be conducted by a qualified acoustic consultant and NMM. The NMM must be competent in carrying out the noise monitoring on subsequent nights if they are to act without the support of a qualified acoustic consultant. Where the NMM has held this role in the previous year the qualified acoustic consultant shall conduct monitoring with the NMM for the first two events instead of the first three.*
- 7. A record detailing the location and time of all monitoring shall be entered into a logbook. A copy of the logbook shall be submitted to the Environmental Protection and Nuisance (EP&N) team each Monday during the event period.*
- 8. The NMM shall be provided with and keep charged and in good working order a mobile phone capable of receiving calls at all times when members of the public are on the premises, so that they are able to respond instantly to any complaints or queries relating to noise breakout from the venue.*
- 9. A written record of any complaints received arising from activities at the premises shall be kept in a log book. The log book shall be kept available at all times for the inspection by authorised officers. The logs shall be submitted to the EP&N team each Monday during the event period. A record shall include:*
 - 1. Name and address of the complainant*
 - 2. Complaint details and time and date of complaint*
 - 3. Details of persons who undertook investigation and the nature of the investigation*
 - 4. Any action taken as a result of the complaint; and*
 - 5. Details of feedback to the complainant*
- 10. Noise from the generators shall be inaudible at the boundary of the nearest and all other residential premises. Inaudible for these purposes is defined as 10 dB (5 minute LAeq) below the background noise level (L90*

measured over a 15 minute period between 22:00 and 23:00 hours when the premises are not operating).

11. No handling of goods or materials, which is audible from beyond the site boundary, shall be carried out at the premises between the hours of 20:00 and 08:00. This shall particularly include operations such as putting materials or bottles into waste or recycling containers.

12. There shall be no music on the dodgems/fair rides.

13. The premises licence holder shall install a refined speaker system which will not include sub bass loudspeaker units and provide a plan showing the location and orientation of the sound system to be installed before commencement of licensable activities.

14. No later than seven days before the first event held each year a letter detailing the following:

- 1. The dates and times of the proposed events*
- 2. The mobile telephone number that will be used during the event and an email address so that residents can contact the noise monitoring manager nominated in writing by the premises licence holder*
- 3. Details of the licensing conditions relating to noise control*
- 4. The email address of the EP&N team.*

shall be delivered to all domestic properties in the following roads: Luscinia View, Kingfisher Place, Kings Meadow Road, Thames side and Heron Island. A copy of the letter shall also be delivered to the EP&N team at RBC no later than seven days before the first event held each year.

3 Site Description and Proposed Application

3.1 Site Description

3.1.1 King's Meadow is a large open space located on Napier Road, Reading. It is bounded to the north by the River Thames, to the south by Napier Road, to the west by King's Meadow Road and to the east by Luscinia View.

3.1.2 The closest noise sensitive properties to the venue are residential properties on De Bohun Island to the north (Caversham Lock House), Kingfisher Place and King's Meadow Road to the west and Luscinia View to the east. There are no noise sensitive properties located to the south of the venue on Napier Road.

3.1.3 The site location and a marquee plan are provided in Figures 1 and 2.

3.2 Christmas Parties, 2018

3.2.1 The Christmas parties will be held within a marquee at King's Meadow, Napier Road, Reading. The parties will be held from Friday 23rd November to Saturday 22nd December, with events on no more than 20 nights.

3.2.2 The parties will start at 18:45 and end at 01:00. The parties will comprise of a drinks reception, pre-dinner entertainment, four-course dinner and a live show followed by a disco and a dodgems ride.

3.3 Noise Mitigation Measures

3.3.1 The following noise mitigation measures are proposed for the 2018 party season:

- The installed sound system will be highly distributed in order to achieve the sound coverage required within marquee while not having to run the speakers at high levels which could increase the off-site noise levels. The sound system in the reception area will be comprised of 6 speakers, compared to 2 in 2017, the sound system in the dining / dance floor area be will comprised of 16 speakers compared to 6 in 2017.
- Where possible all speakers will be orientated to face away from the noise sensitive receptors and mounted as low as possible

- There will be no sub bass loudspeakers (as in 2017)
- A noise limiter will be installed for the sound system (as in 2017)
- Thick internal drapes will be applied to the walls and ceiling of the marquee (as in 2017)
- An acoustic barrier (e.g. Echo barrier, Soundex or similar) will be installed along the full length of the north end of the marquee. Shown in Figure 2.
- An acoustic barrier (e.g. Echo barrier, Soundex or similar) will be installed along the west side of the marquee for the length of the dining / dance floor area. Shown in Figure 2.

4 Baseline Noise Survey

4.1 Noise Survey Information

4.1.1 Baseline noise monitoring was undertaken at the Site between 22:00 and 23:00 hours on Wednesday 3rd October 2018, in accordance with the proposed licence condition 4.

Attended 15-minutes measurements were carried out at locations representative of the noise sensitive receptors specified in the proposed conditions. The survey locations are shown in Figure 1.

Equipment and Calibration

4.1.2 The instrumentation used was a Rion NL-52 Sound Level Meter (SLM) and a Rion NC-74 Calibrator (F1AC-002 and F1AC-004).

4.1.3 The SLM had a field calibration check carried out prior to and immediately following the measurements and no significant deviation was recorded. All instrumentation used has been calibrated to traceable standards within two years.

Weather

4.1.4 The meteorological conditions during the survey period were mild, with a light wind and no precipitation. The weather was suitable for noise monitoring throughout.

4.2 Noise Survey Observations and Results

4.2.1 The noise environment at Kingfisher Place comprised road traffic on Napier Road, distant road traffic, trains and pedestrians.

4.2.2 The noise environment at Luscinia View comprised road traffic on Napier Road, distant road traffic, trains and pedestrians.

4.2.3 The noise environment at the Caversham Lock House comprised of running water at the weir and distant road traffic.

4.2.4 The noise levels measured during the baseline survey are presented in Table 4.1.

Table 4.1: Baseline Noise Survey Results

Survey Location	Period	L_{Aeq,T} dB	L_{A90,T} dB
Kingfisher Place	22:00 – 22:15	60	48
Luscinia View	22:22 – 22:37	58	46
Caversham Lock House	22:41 – 22:56	53	51

5 Noise Assessment

5.1 Music Noise Level Criteria

- 5.1.1 Proposed Noise Condition 4 states that noise from the marquee should be barely audible at the boundary of the nearest and all other residential premises. It specifies that barely audible for these purposes is defined as 5 dB ($L_{Aeq, 5min}$) below the background noise level taken as L_{A90} (measured over a 15-minute period between 22:00 hours and 23:00 hours when the premises is not operating).
- 5.1.2 Table 5.1 below details the off-site music noise level criteria for the music to be barely audible based on the definition above and the measured background levels detailed in Section 4.

Table 5.1: Off-site Music Noise Level Criteria

Survey Location	$L_{A90, 15min}$, dB	Off-site MNL Criteria $L_{A90, 15min}$ - 5, dB
Kingfisher Place	48	43
Luscinia View	46	41
Caversham Lock House	51	46

- 5.1.3 The noise assessment and sound propagation predictions are being undertaken to demonstrate that compliance with the proposed noise conditions is achievable. Once in operation it will not be possible to verify compliance with the criteria through measurements as the criteria are significantly lower than the existing ambient noise levels at the noise sensitive receptors.

5.2 Sound Propagation Predictions

- 5.2.1 Sound propagation predictions have been undertaken using ISO 9613-2 'Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation' [1]. The ISO 9613-2 predictions for the site have accounted for the attenuation from geometrical divergence, atmospheric absorption and ground effect between the dance floor within the marquee and the NSRs at Kingfisher Place, Luscinia View and the Lock House.
- 5.2.2 Typical variable atmospheric conditions have been considered to be a temperature of 10°C and 70 % relative humidity for the assessment. The attenuation from ground effect

has been calculated based on porous ground at the source and mixed ground at the receiver areas.

5.2.3 For the purposes of this assessment the sound system has been considered as a point source with the sound energy propagating spherically (evenly in all directions) from a height of 2 m above ground level. The directivity of the loud speakers has then been accounted for. The directivity attenuation applied has been taken from a representative loud speaker at 90°.

5.2.4 The attenuation provided by the marquee walls and the thick internal drapes and the proposed acoustic barrier have also been accounted for in the predictions. The attenuation applied to the predictions for the directivity of the loud speakers, marquee walls and drapes and the acoustic barrier are detailed in Table 5.2 below.

Table 5.2: Attenuation Terms

	Attenuation, dB							
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Speaker Directivity at 90°	-0.6	-3.2	-5.1	-8.9	-13.8	-18	-22.7	-22.8
Marquee walls and drapes	-5	-5	-10	-10	-10	-10	-10	-10
Acoustic barrier	-5	-5	-5	-5	-5	-5	-5	-5

5.2.5 Table 5.3 shows the normalised source input spectrum used which has been calculated from measurements taken at the dance floor of Best Parties Ever Christmas Parties in 2017. Table 5.4 shows the source input data used in the predictions.

Table 5.3: Normalised Source Spectrum

	Normalised Source Octave-band Spectrum							
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
L _{zeq} , dB	-19.7	-2.4	-7.4	-9.6	-11.4	-15.7	-16.3	-21.5

Table 5.4: Source Input Data

Easting	Northing	Ground height above sea level, m	Source height above ground level, m	L _{Aeq} , dB	Distance from Source, m
472056	173948	37	2	89	10

5.3 Prediction Results and Assessment

5.3.1 A summary of the predicted music noise levels at the three NSRs is given in Table 5.5 below.

Table 5.5: Prediction Results Summary

Receptor	Easting	Northing	Ground height above sea level, m	Source height above ground level, m	Distance from Source, m	L _{Aeq} , dB
Kingfisher Place	471896	173966	39	1.5	161	41
Luscinia View	472364	173885	37	1.5	314	39
Lock House	472020	174037	37	1.5	96	45

5.3.2 The prediction results show that with a music noise level of L_{Aeq, 5min} 89 dB on the dance floor and the mitigation measures as described in Section 3 with attenuation as presented in Table 5.2, the off-site music noise level criteria would be achieved.

5.3.3 The internal music noise level will be set in conjunction with assessments of the off-site music noise levels at the noise sensitive receptors. Once set the internal music noise levels will be controlled through the noise limiter system.

6 Summary and Conclusions

- 6.1.1 F1 Acoustics Company Limited (F1AC) has been appointed by Best Parties Ever Limited to provide noise surveys and a noise assessment for a season of Christmas Parties being held at King's Meadow, Reading.
- 6.1.2 The Christmas parties will be held within a marquee at King's Meadow, Napier Road, Reading from 23rd November 2018 to 22nd December 2018.
- 6.1.3 Noise mitigation measures including a highly distributed sound system, speakers orientated away from noise sensitive receptors and as low as possible, no sub bass speakers, a noise limiter installed for the sound system, thick internal drapes applied to the walls and ceiling of the marquee and acoustic barriers are proposed for the 2018 party season
- 6.1.4 Baseline noise monitoring was undertaken at the Site between 22:00 and 23:00 hours on Wednesday 3rd October 2018, in accordance with the proposed licence condition 4. Attended 15-minutes measurements were carried out at locations representative of the noise sensitive receptors specified in the proposed conditions.
- 6.1.5 Off-site music noise level criteria have been determined based on the proposed licence conditions and the measured background levels.
- 6.1.6 Sound propagation predictions have been undertaken using ISO 9613-2 'Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation'.
- 6.1.7 The attenuation provided by the marquee walls and the thick internal drapes and the proposed acoustic barrier have also been accounted for in the predictions.
- 6.1.8 The prediction results show that with a music noise level of $L_{Aeq, 5min}$ 89 dB on the dance floor and the mitigation measures as described in Section 3 with attenuation as presented in Table 5.2, the off-site music noise level criteria would be achieved.

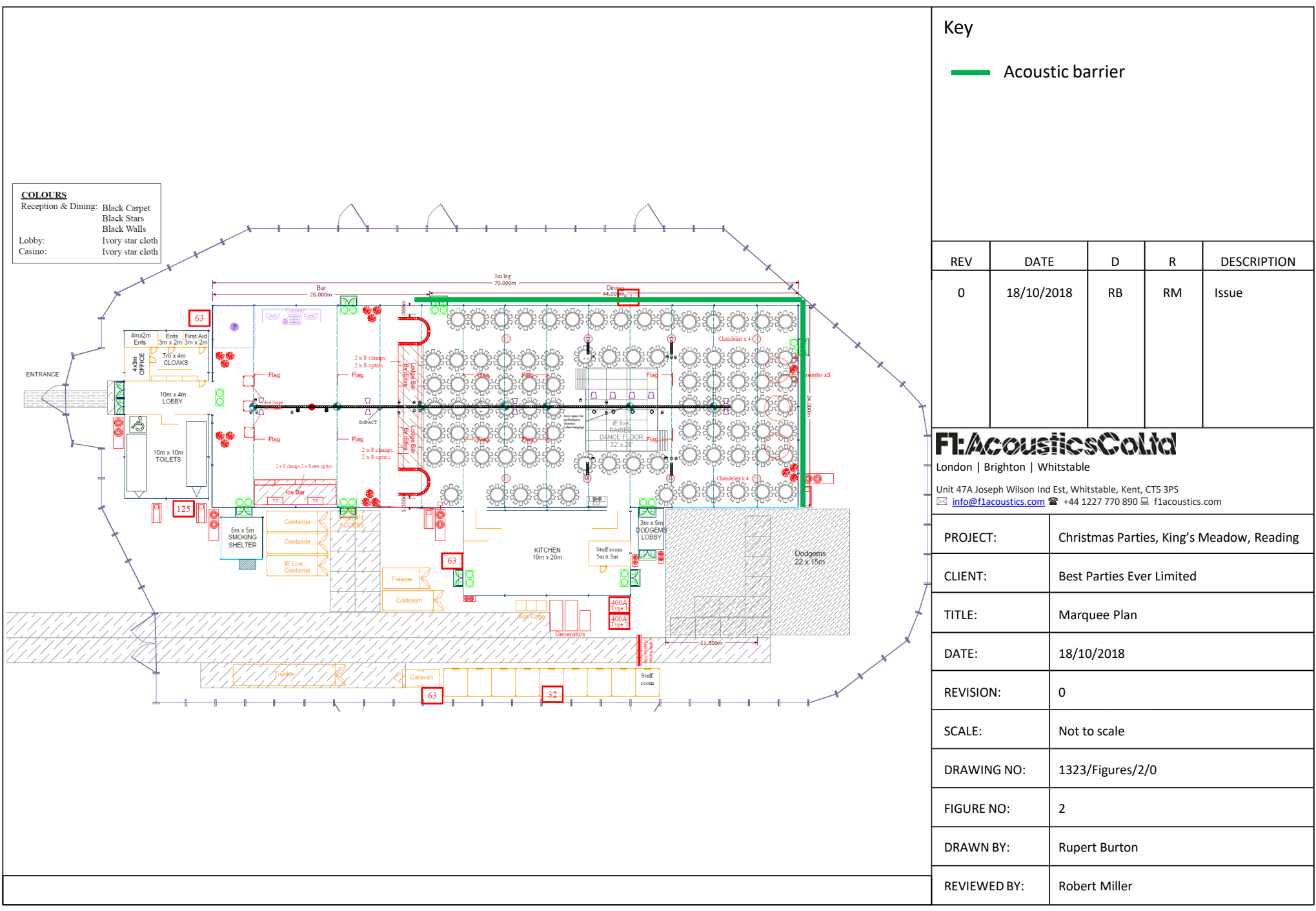
References

1. International Organization for Standardization 9613. Acoustics: Attenuation of sound during propagation outdoors. Part 2: General method of calculation. 1996.

Figures



Key				
Marquee Noise Sensitive Receptor Noise Survey Location				
REV	DATE	D	R	DESCRIPTION
0	18/10/2018	RB	RM	Issue
F1:AcousticsCoLtd				
London Brighton Whitstable				
Unit 47A Joseph Wilson Ind Est, Whitstable, Kent, CT5 3PS				
✉ info@f1acoustics.com ☎ +44 1227 770 890 🌐 f1acoustics.com				
PROJECT:		Christmas Parties, King's Meadow, Reading		
CLIENT:		Best Parties Ever Limited		
TITLE:		Site Location, Noise Sensitive Receptors and Noise Survey Locations		
DATE:		18/10/2018		
REVISION:		0		
SCALE:		Not to scale		
DRAWING NO:		1323/Figures/1/0		
FIGURE NO:		1		
DRAWN BY:		Rupert Burton		
REVIEWED BY:		Robert Miller		



Appendices

Appendix A

Glossary of Acoustic Terms

Noise is defined as unwanted sound. The range of audible sound is from 0 dB to 140 dB. The frequency response of the ear is usually taken to be about 18 Hz (number of oscillations per second) to 18,000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than at the lower and higher frequencies, and because of this, the low and high frequency component of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most used and which correlates best with the human subjective response to noise is the A-weighting. This is an internationally accepted standard for noise measurements.

The ear can just distinguish a difference in loudness between two noise sources when there is a 3 dB difference between them. Also when two sound sources of the same noise level are combined the resultant level is 3 dB higher than the single source. When two sounds differ by 10 dB one is said to be twice as loud as the other.

The subjective response to a noise is dependent not only upon the sound pressure level and its frequency, but also its intermittency. Various indices have been developed to try and correlate annoyances with the noise level and its fluctuations. The indices and parameters used in this report are defined below:

- **Background Noise Level** – The prevailing sound level at a location, measured in terms of the $L_{A90,T}$, on an equivalent day and at an equivalent time when no concert or sound checks are taking place.
- **dB(A)** – The A-weighted sound pressure level whereby various frequency components of sound are weighted (equalized) to reflect the way the human ear responds to different frequencies.
- **L_{Aeq}** – The equivalent continuous sound pressure level which at a given location over a given period of time contains the same A-weighted sound pressure level of a steady sound that has the same energy as the fluctuating sound under investigation.
- **L_{A90}** : This is the sound level that is exceeded for 90% of the measurement period and gives an indication of the sound level during quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial sound.
- **$L_{AN,T}$** – The A-weighted sound level exceeded for N% of the measurement period (T).
- **Music Noise Level (MNL)** – The L_{Aeq} of the music noise measured at a particular location.
- **Noise Consultant** – A person given responsibility by the organiser of the event for monitoring noise levels in accordance with the prevailing conditions, and who has the ability and authority to make decisions and implement changes in noise level during the event.