



Sydney Cricket Ground Trust

**ALLIANZ STADIUM: EVENT NOISE
MONITORING (ONE DIRECTION, 7
FEBRUARY 2015)**

February 2015

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Project Reference: 4054

Document Title: ALLIANZ STADIUM: EVENT NOISE MONITORING (ONE DIRECTION, 7 FEBRUARY 2015)

Client: Sydney Cricket Ground Trust

Document Reference: /Network/Projects/4054/Reporting/4054_OneDirection_07022015_V03.odt

Version:	Description:	Date:	Author:	Checked by:	Approved by:	Signature:
00	Draft for internal review	10/02/15	BW	SW	-	-
01	Final for client	11/02/15	BW	SW	SW	
02	Revised Final	20/02/15	BW	SW	SW	
03	Revised Final	25/02/15	BW	SW	SW	
04						

Company:

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Executive Summary

Monitoring of noise levels at sensitive receptors in the area surrounding Allianz Stadium was undertaken during the One Direction concert on the 7th February 2015 to determine compliance with the following noise criteria defined in the site's Noise Management Plan (NMP):

'During sound test(s), rehearsal(s) and concert(s), L_{Amax} and the L_{Cmax} measured at the specified locations described in Section 15.4 will not exceed:

ii) For activities conducted at the SFS: 80 dB(A) and 100dB(C).'

The monitoring period included all sound checks, rehearsals and performances constituting the night.

Throughout the monitoring, noise levels were recorded every two minutes, and observations were made as to the source of noise and potential exceedances at each location. The noise level recorded represents the highest RMS noise level recorded during the two minute period. Hence, even where exceedances are identified it is possible that for the majority of the two minute period, receptor noise levels were compliant with the NMP criteria.

During the commencement of supporting act 'Samantha Jade' the first 2 minute period was measured to be 1 dB over the dB(C) criteria, and the system was adjusted accordingly. The NMP makes allowance for this initial correction and therefore, this single exceedance does not constitute a breach of the noise conditions.

During the One Direction performance one period was measured to exceed the dB(C) limit, and the sound engineer was quickly informed and the levels reduced to within limits for the remainder of the performance. Generally the levels were a minimum of 5 dB below both dB(A) and dB(C) criteria during the performances. Throughout the evening, performance levels within the venue did not vary significantly, and changes to levels externally are believed to be influenced by local meteorology or speaker system anomalies. It is however noted that the system in use was of the highest quality and best suited to reduce noise spillage from the venue.

One complaint was received by the Trust during the performance on the 7th February 2015, relating to the duration of the amplified noise.

The event personnel were informed that the NMP requires the event to conclude at 22:30 hrs. The stage performance on the 7th concluded at 22:27 hrs, and pre-recorded music with a significantly reduced volume ceased at 22:30.

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1 INTRODUCTION

1.1 SCOPE OF ASSESSMENT

Sydney Cricket Ground Trust commissioned Air Noise Environment Pty Ltd to conduct event noise monitoring during the One Direction series of concerts as required under the Noise Management Plan (NMP) for the facility¹.

This report presents a summary of the results of the monitoring and a comparison with the noise criteria for the event as defined in the NMP.

1.2 EVENT DETAILS

The concert events were held at Allianz Stadium (SFS) on Saturday 7 and Sunday 8 February 2015, with sound checks and rehearsals on Friday 6 February, 2015. This report presents the noise monitoring and results for the performance of the concert of the 7 February 2015.

The approximate schedule for the amplified rehearsal was as follows:

- Gates Open, with background pre-recorded music: 5:30 pm – 6:20 pm
- Support Act 'Samantha Jade': 6:20 pm – 6:40 pm
- Support Act 'McBusted': 7:05 pm – 7:40 pm
- 'One Direction': 8:40 pm - 10:30 pm.

1.3 EVENT NOISE CRITERIA

Noise limits for concert events held at the SFS are provided in the site's NMP as follows:

'7.1.1 Concerts

Both dB(A) and dB(C) limits are specified for concerts as a particular impact on local receivers of amplified music is low-tone bass sounds – measured in dB(C).

During sound test(s), rehearsal(s) and concert(s), L_{Amax} and the L_{Cmax} measured at the specified locations described in Section 15.4 will not exceed:

- ii) For activities conducted at the SFS: 80 dB(A) and 100dB(C). '*

Section 15.4 of the NMP details the monitoring positions that must be considered as follows:

'Description Of Location

For both sporting events and concerts attended monitoring locations will be as set out below.

- b) For activities taking place at the SFS:*

¹ Sydney Cricket and Sports Ground Trust (SCGT) Noise Management Plan for Sydney Cricket and Sports Ground Trust (November 2008)

- *At a point within one (1) metre of the boundary nearest to the SFS at 234 Moore Park Road, Paddington; and*
- *At a point within one (1) metre of the boundary nearest to the SFS of 10 Alexander Street, Paddington'*

1.3.1 Variation of Prevention Notice

In December 2015 the NSW EPA issued a Variation of Prevention Notice, with the following additions relevant to concert performance noise:

- **Concerts:** A concert must not commence prior to 1000 hours or finish after 2230 hours on any day. Notwithstanding the above, concerts may continue until 2300 hours if an occurrence beyond the control of the Trust delays the concert. The total length of a concert must not be greater than five (5) hours.
- **Exemption for exceedences at the start of new performances:** An exceedence of the noise level limit in condition 15(a) by a maximum of 5 dB(A) and/or 5 dB(C) during a single (5) minute period during the first ten (10) minutes of the performance of each new act will not be taken to be a breach of condition 15.
- Noise levels measured when wind speed exceeds 5 m/s (at microphone height) should not be used to measure compliance with noise limits in the Notice, as wind generated noise may limit measurement accuracy. During periods of wind greater than 5 m/s the Trust must continue to take all reasonable and feasible actions to minimise noise.

The exemption for exceedences at the start of new performances is intended to give the mixing desk operators time to respond to changes in conditions (e.g. meteorology), or unfamiliarity with the system (new operator). Subsequent exceedences will be considered as normal.

2 MONITORING METHODOLOGY

2.1 MONITORING POSITIONS

Monitoring during the sound checks and rehearsal were undertaken at two fixed monitoring positions as required by the NMP. Table 2.1 presents a summary of the monitoring locations assessed during the event, with the monitoring positions identified on Figure 1.

TABLE 2.1: SUMMARY OF MONITORING POSITIONS

Position	Description
1	Fixed monitoring position located within 1 m of the front boundary of 234 Moore Park Road
2	Fixed monitoring position located within 1 m of the front boundary of 10 Alexander Street



Figure 1: Noise Monitoring Positions (External Fixed Locations)

In addition to compliance monitoring, Event Noise Management staff were present at the front of house (FOH) position to advise the compliance status of noise levels to the production team throughout the event. It was noted that a dedicated sound engineer was monitoring the overall volumes throughout the shows on behalf of the Promoter, and worked directly and actively with ENM personnel.

2.2 OPERATORS

During the monitoring undertaken on 7 February 2015, Air Noise Environment personnel were located at each position identified in Figure 1. The monitoring exercise was undertaken by the following personnel:

- Mixing Desk: Beau Weyers, BEng(Mech), RPEQ, MAAS;
- Position 1: Glen Slough: AssocDeg(Audio Eng), MSc, MAAS, MAES; and
- Position 2: Roger Treagus: BA, MA Env. Stud, MAAS.

2.3 MONITORING EQUIPMENT

Table 2.2 presents a summary of the equipment used the monitoring. All sound level meters conform to Australian Standard 1259 "Acoustics - Sound Level Meters", (1990) as Type 1 precision sound level meter and have an accuracy suitable for both field and laboratory use.

The sound level meters and calibrator have been checked, adjusted and aligned to conform to the Type 1 specifications within the last 24 months and issued with a conformance certificate.

TABLE 2.2: SUMMARY OF MONITORING EQUIPMENT

Position	Instrument Model	Instrument Serial	Instrument Calibration Due Date	Calibrator Model	Calibrator Serial	Calibrator Calibration Due Date
1	B&K 2250 Lite	2741104	26/09/15	Pulsar 105	62686	30/10/15
2	Norsonic 140	1405257	1/10/16	Pulsar 105	62686	30/10/15
Front of House	Norsonic 140	1405256	20/1/17	Pulsar 105	62686	30/10/15

Field calibrations of each of the instruments were also undertaken prior to and immediately after the monitoring was completed. Less than 0.5 dB drift occurred over the measurement periods. All instruments were fitted with a windshield and monitoring was completed at a height of 1.5 m above ground level.

2.4 WEATHER CONDITIONS DURING THE EVENT

During the sound check and rehearsal, a light to moderate north-easterly breeze was observed in the area, tending to calm in the last half hour. Clear skies were observed throughout. Temperatures ranged from 24°C to 26°C.

Table 2.3 presents a summary of the meteorological data from Sydney Airport for the event. It is noted that there was no rain during the amplification period.

TABLE 2.3: SUMMARY OF METEOROLOGICAL DATA

Date time	Temp	Cloud	Cloud base (m)	Gust kmh	Press	Rain	Rel hum	Wind dir	Wind spd (kmh)
07/11:30pm	23.7	-	-9999	17	1020.7	0	66	N	13
07/11:00pm	23.8	-	-9999	24	1020.7	0	65	N	17
07/10:30pm	24	Mostly clear	900	24	1020.7	0	65	NNE	19
07/10:00pm	23.6	Mostly clear	900	28	1020.5	0	67	NNE	24
07/09:30pm	23.8	-	-9999	30	1020.5	0	66	NNE	20
07/09:00pm	23.9	Mostly clear	1500	33	1020.4	0	65	NNE	20
07/08:30pm	23.8	-	-9999	35	1020.2	0	61	NE	26
07/08:00pm	24	-	-9999	33	1020.2	0	58	NE	26
07/07:30pm	24.3	-	-9999	33	1020.2	0	56	NE	28
07/07:00pm	24.6	-	-9999	32	1020	0	56	NE	26
07/06:30pm	25.6	-	-9999	35	1020	0	51	ENE	30
07/06:00pm	25.7	Mostly clear	1500	37	1020	0	50	ENE	28
07/05:30pm	26.3	Mostly clear	1350	37	1020.2	0	46	ENE	30
07/05:00pm	26.4	Mostly clear	1200	33	1020.4	0	49	ENE	26
07/04:30pm	26.2	Mostly clear	1200	35	1020.7	0	47	ENE	26
07/04:00pm	26.5	Mostly clear	1350	35	1020.9	0	48	ENE	28

3 RESULTS OF MONITORING

3.1 MONITORING RESULTS

Noise monitoring results were recorded at each location every two minutes throughout the monitoring period (4:45 pm to 10:30 pm). During each two minute period notes were also made regarding the sources of noise in the area and the source of any potential exceedances of the noise criteria. It is noted that the noise level recorded represents the highest RMS noise level recorded during the two minute period. Hence, even where exceedances are identified it is possible that for the majority of the two minute period, receptor noise levels were compliant with the NMP criteria.

During the sound checks/rehearsals completed on the 6th of February Event Noise Management (ENM) staff completed tests to determine adjustments to the sound system to reduce external noise levels. These changes included reduction of the volume of specific speakers, reduction of problem frequencies, and turning off specific speakers. The sound engineer also programmed limiting dB(A) and dB(C) values corresponding to those at the threshold of compliance externally. These changes were programmed into the sound system for the event.

During the commencement of supporting act 'Samantha Jade' the first 2 minute period was measured to be 1 dB over the dB(C) criteria, and the system was adjusted accordingly. The NMP makes allowance for this initial correction and this does not constitute an exceedance.

During the One Direction performance on the 7th of February one period was measured to exceed the dB(C) limit by 1 dB, and the sound engineer was quickly informed and the levels reduced to within limits for the remainder of the performance. Generally the levels were a minimum of 5 dB below both dB(A) and dB(C) criteria during the performances. Throughout the evening, performance levels within the venue did not vary significantly, and changes to levels externally are believed to be influenced by local meteorology or speaker system anomalies. It is however noted that the system in use was of the highest quality and best suited to reduce noise spillage from the venue.

Once the sound technician was informed of the exceedance, sound levels were quickly reduced to within limits, and did not exceed the criteria again during the rehearsal.

Appendix B presents a summary of the recorded noise levels and observations during the sound check and rehearsal, with exceedances of the criteria identified as originating from amplified sources within the Allianz Stadium shown in bold.

3.2 CONCERT HOTLINE

During the One Direction concert on 7 February 2015, one noise complaint related call was received on the concert hotline established by the Sydney Cricket Ground Trust.

The complaint pertained to the duration of the amplified noise. No complaints were received during the period of loudest noise.

A register of the complaints recorded by the Sydney Cricket Ground Trust for the One Direction concert series and sound checks is attached in Appendix C.

APPENDIX A

ACOUSTIC GLOSSARY

APPENDIX A: GLOSSARY OF ACOUSTIC TERMINOLOGY

A-Weighting	A response provided by an electronic circuit which modifies sound in such a way that the resulting level is similar to that perceived by the human ear.
dB (decibel)	This is the scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and the reference pressure (0.00002 N/m ²).
dB(A)	This is a measure of the overall noise level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
dB(C)	This is a standard weighting of the audible frequencies, commonly used for the measurement of Peak Sound Pressure level.
Facade Noise Level	Refers to a sound pressure level determined at a point close to an acoustically reflective surface (in addition to the ground). Typically a distance of 1 metre is used.
Free Field	Refers to a sound pressure level determined at a point away from reflective surfaces other than the ground with no significant contribution due to sound from other reflective surfaces; generally as measured outside and away from buildings.
Hertz (Hz)	A measure of the frequency of sound. It measures the number of pressure peaks per second passing a point when a pure tone is present.
L_{Aeq} Equivalent Continuous Sound Level	This is the equivalent steady sound level in dB(A) containing the same acoustic energy as the actual fluctuating sound level over the given period. For a steady sound with small fluctuations, its value is close to the average sound pressure level.
L_{A90,T}	This is the dB(A) level exceeded 90% of the time, T.
L_{A10,T}	This is the dB(A) level exceeded 10% of the time, T.
L_{Amax}	is the maximum A-weighted sound pressure level recorded over the period stated.
L_{Cmax}	is the maximum C-weighted sound pressure level recorded over the period stated.

APPENDIX B

DETAILED MONITORING DATA (FIXED POSITIONS)



EVENT NOISE MANAGEMENT

Project Number:	4054	Date:	SAT 07/02/2015
Project Description:	One Direction		
Monitoring Location:	1 - SFS at 234 Moore Park Road, Paddington []		
Operator:	Glen Slough		
Instrument:	Bruel & Kjaer 2250L	Calibrator Model:	Pulsar Model 105
Instrument Serial:	2741104	Calibrator Serial:	62686
Instrument NATA Calibration Date:	26/09/15	Calibrator NATA Calibration Date:	30/10/15
Pre-calibration:	93.8	Post calibration:	93.7

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L_{max} dB(A)	L_{max} dB(C)	Description of Noise
16:48	81.4	84.6	One Direction Vehicle Arrived – Lots of Screaming
16:50	86.4	87.7	Screaming People, Buses and cars dominant
16:52	77.4	92.2	Buses and cars
16:54	82.2	94.4	Buses and cars, aircraft
16:56	86.6	92.8	Buses and cars
16:58	80.4	90.3	Buses and cars
17:00	79.1	86.2	Buses and cars
17:02	78.9	89.2	Buses and cars
17:04	75.0	85.9	Buses and cars
17:06	85.9	94.0	Buses and cars
17:08	83.5	89.9	Buses and cars
17:10	83.1	85.4	Buses and cars
17:12	84.1	87.3	Buses and cars
17:14	80.4	91.3	Buses and cars
17:16	84.7	89.9	Resident talking
17:18	78.1	86.8	Resident talking
17:20	86.6	95.7	Plane
17:22	77.6	92.3	Resident talking
17:24	76.7	87.2	Traffic

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
17:26	76.5	92.8	Bus
17:28	84.9	97.1	Fans/Patrons screaming
17:30	80.1	92.7	Fans/Patrons
17:32	97.3	96.8	Car Horns
17:34	83.4	84.9	Fans/Patrons Screaming
17:36	82.1	89.0	Traffic
17:38	83.7	88.0	Residents Talking
17:40	75.8	89.1	Traffic
17:42	85.5	94.7	Traffic
17:44	72.7	87.1	Traffic
17:46	84.6	90.2	Traffic
17:48	86.3	87.7	Plane
17:50	80.9	94.8	Fans/Patrons Screaming
17:52	82.0	86.9	Motorbike
17:54	82.1	91.2	Traffic
17:56	87.5	98.4	Fans/Patrons Screaming, Traffic
17:58	80.4	90.0	Local Car Playing Loud Music
18:00	73.1	90.0	Patrons Screaming
18:02	86.9	87.8	Patrons Screaming
18:04	94.7	94.1	Traffic
18:06	89.4	90.4	Traffic
18:08	87.2	97.7	Patrons Screaming
18:10	84.7	87.2	Traffic
18:12	74.6	85.9	Traffic
18:14	71.3	88.1	Traffic
18:16	79.9	89.3	Traffic
18:18	87.2	87.7	Traffic
18:20	80.2	101.4	Loud car exhaust coincident with Concert commencement "Samantha Jade". Informed FOH to reduce levels at least 1 dB(C) at 40Hz as a precaution.

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
18:22	79.4	95.5	Concert audible, levels reduced.
18:24	81.2	91.9	Traffic defining maximum levels, concert down to 87 dB(C)
18:26	76.2	94.2	Patrons Screaming
18:28	77.8	95.0	Traffic
18:30	102.8	107.6	Vehicle doing burnout
18:32	77.1	91.3	Traffic
18:34	75.3	92.5	Traffic
18:36	76.4	93.0	93 dB(C) Concert 'bass drop'
18:38	76.7	90.7	Traffic
18:40	74.9	90.7	Traffic
18:42	82.2	89.6	Buses and Trucks
18:44	77.2	95.5	Traffic
18:46	76.3	88.1	Patron screams from concert
18:48	71.5	87.4	Patron screams
18:50	85.5	99.8	Motorbike
18:52	76.1	93.0	Resident Talking
18:54	72.2	87.9	Traffic
18:56	106.1	106.3	Car, Horns
18:58	84.1	93.1	People shouting into the noise meter microphone
19:00	97.7	97.6	Patrons screaming
19:02	80.1	90.0	Localised Car Audio Music
19:04	76.5	93.8	Traffic
19:06	78.4	90.8	Patrons screaming
19:08	78.2	96.8	Concert Dominant but under criteria, informed FOH dB(A) levels within 3 dB of criteria
19:10	77.6	95.8	Traffic
19:12	84.3	96.7	Sirens
19:14	81.1	95.7	Sirens
19:16	82.7	96.4	Sirens

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
19:18	77.5	99.0	Patron screams
19:20	76.5	95.9	Concert dominant
19:22	77.9	97.1	Traffic
19:24	78.1	97.0	Concert dominant dB(C), traffic dB(A)
19:26	79.3	95.8	Concert dominant dB(C), traffic dB(A)
19:28	83.1	95.9	Concert dominant dB(C), traffic dB(A)
19:30	77.9	96.1	Concert
19:32	79.5	96.7	Concert
19:34	78.6	96.0	Concert
19:36	81.4	96.7	Car Horns
19:38	79.8	96.9	Car Horns
19:40	78.5	97.6	Truck maximum, Concert 95 dB(C)
19:42	71.0	89.1	Performance intermission, low volume pre-recorded music
19:44	73.0	85.2	Traffic
19:46 – 20:02	-	-	Data Saved – Measurement Paused
20:04	81.5	90.9	Measurement resumed, Traffic maximums
20:06	81.6	93.9	Traffic
20:08	84.4	91.6	Performance music started "McBusted"
20:10	83.3	94.9	Traffic
20:12	81.6	97.3	Concert defining dB(C), Traffic dB(A)
20:14	76.3	97.6	Concert defining dB(C), Traffic dB(A)
20:16	82.8	96.4	Concert defining dB(C), Traffic dB(A)
20:18	79.3	97.8	Traffic
20:20	74.4	94.0	Traffic
20:22	80.4	99.8	Concert defining dB(C), Traffic dB(A). Informed FOH at the criteria, and to reduce bass volume.
20:24	77.7	99.2	Traffic defining maximums
20:26	77.9	97.1	Insect noise increasing

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
20:28	77.1	98.8	Traffic
20:30	82.1	99.2	Traffic defining maximums, Concert max 98 dB(C)
20:32	84.2	96.6	Traffic
20:34	75.9	94.2	Traffic
20:36	80.1	94.4	Concert defining dB(C), Traffic dB(A).
20:38	87.4	95.6	Traffic
20:40	86.7	99.6	"One Direction" taking the stage, patron screams defining dB(A)
20:42	88.6	100.2	"One Direction" commence performance, patron screams defining dB(A), first bass note at the criteria, informed FOH.
20:44	86.6	98.0	Screams defining dB(A) – Music compliant
20:46	87.7	98.3	Screams defining dB(A) – Music compliant
20:48	81.6	97.5	Fireworks over - music compliant
20:50	84.2	95.7	Traffic
20:52	79.1	96.7	Traffic
20:54	98.5	99.5	Traffic maximum
20:56	80.8	97.7	Fireworks
20:58	84.3	96.6	Passing Pedestrians talking at noise meter microphone
21:00	85.3	97.1	Traffic
21:02	86.6	96.5	Traffic
21:04	82.2	96.4	Screaming
21:06	79.8	96.3	Traffic/ Concert compliant
21:08	80.9	96.4	Concert – Compliant
21:10	81.9	97.7	Traffic
21:12	92.8	101.7	Motorbikes
21:14	82.8	97.7	Traffic
21:16	91.9	98.0	Pedestrians
21:18	90.6	101.4	Local Car Stereo
21:20	80.2	98.6	Motorbikes

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
21:22	85.5	97.2	Concert defining dB(C), Traffic defining dB(A)
21:24	79.9	90.5	Traffic
21:26	82.4	86.3	Concert Very quiet, Traffic maximums
21:28	81.6	94.4	Traffic
21:30	80.7	95.0	Traffic
21:32	82.4	98.7	Music defining dB(C), Traffic dB(A)
21:34	78.7	100.4	Car exhaust defining dB(C)
21:36	84.0	98.8	Fireworks defining dB(A)
21:38	79.9	99.3	Traffic
21:40	81.2	97.3	Traffic
21:42	81.8	97.7	Concert for a brief second to within 3 dB(C), informed FOH. Traffic defining dB(A)
21:44	83.8	98.4	Concert for a brief second to within 3 dB(C), informed FOH. Traffic defining dB(A)
21:46	81.2	96.3	Traffic
21:48	79.5	98.7	Traffic
21:50	83.9	97.7	Screaming
21:52	86.0	96.4	Screaming
21:54	77.2	96.7	Pedestrians
21:56	78.8	97.9	Traffic
21:58	88.3	97.8	Fireworks
22:00	81.1	97.5	Concert Averaging 90-93 dB(C), occasional spikes above. Traffic defining dB(A)
22:02	87.0	99.7	Screaming
22:04	84.6	98.7	Concert generally around 70-75 dB(A), traffic defining maximums
22:06	77.9	95.4	Music from venue ceased. False end to show. Traffic defining levels.
22:08	79.1	91.2	Low level music
22:10	88.9	100.2	Traffic Picking up

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
22:12	82.2	99.0	Fireworks
22:14	78.9	101.4	Concert musical bass note spiked above dB(C) criteria 22:15. Informed FOH to reduce minimum 1 dB(C).
22:16	81.2	100.8	Concert musical bass note spiked above dB(C) criteria again. Informed FOH to reduce minimum 1 dB(C). Response from FOH indicated reduction was made at 22:16, and drop was noted in further measures.
22:18	78.8	84.9	Traffic only, music stopped
22:20	78.6	96.8	Concert dominant but compliant
22:22	90.7	97.1	Interlude before finale
22:24	87.9	100.7	Fireworks defining maximums, Music compliant
22:26	102.0	101.8	Fireworks defining maximums, Music compliant
22:28	98.8	100.4	Low Level music, maximum dB(C) from last firework.
22:30	75.4	92.9	Pedestrians dominant. All music ceased at 22:30
22:32	86.2	89.2	Pedestrians
22:34	78.9	91.6	Traffic and Pedestrians.

¹ *Bold represents exceedance in criteria as a result of amplified music*



EVENT NOISE MANAGEMENT

Project Number:	4054	Date:	SAT 07/02/2015
Project Description:	One Direction		
Monitoring Location:	2 – SFS at 10 Alexander Street, Paddington []		
Operator:	Roger Treagus		
Instrument:	Norsonic 140	Calibrator Model:	Pulsar Model 105
Instrument Serial:	1405257	Calibrator Serial:	62686
Instrument NATA Calibration Date:	1/10/16	Calibrator NATA Calibration Date:	30/10/15
Pre-calibration:	93.9	Post calibration:	93.9

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L_{max} dB(A)	L_{max} dB(C)	Description of Noise
16:58	65.5	74.6	No event noise audible. Ambient noise defining maximums
17:00	56.7	76.1	
17:02	72.9	91.6	
17:04	70.6	80.1	
17:06	66.8	80.4	
17:08	68.2	76.6	
17:10	81.6	82.2	
17:12	81.1	82.7	
17:14	61.4	77.1	
17:16	76.3	82.1	
17:18	74.1	81.1	
17:20	73.6	78.6	
17:22	83.1	83.7	
17:24	81.3	83.2	
17:26	63.7	77.2	
17:28	83.8	85.7	
17:30	84.7	86	
17:32	68.8	77.6	
17:34	79	83.6	

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
17:36	78.8	82.5	
17:38	76.5	78.3	
17:40	70.1	75.9	
17:42	72.5	84.1	
17:44	74.9	79.1	
17:46	81	82.8	
17:48	62	76.3	
17:50	69	81.6	
17:52	67.4	76.1	
17:54	66.9	77.2	
17:56	69.9	80	
17:58	74.6	92.1	
18:00	74.4	92	
18:02	77.3	80.8	
18:04	64.5	75.6	
18:06	68.2	76.9	
18:08	66.6	74.8	
18:10	73.6	78.5	
18:12	68.6	77.7	
18:14	62.3	74.9	
18:16	73.7	79.6	
18:18	70.6	81.3	No event noise audible. Ambient noise defining maximums
18:20	63.7	75.3	
18:22	67.8	76.8	
18:24	66.8	80.9	
18:26	78.5	84.7	
18:28	68.2	85.6	
18:30	65.9	86.3	
18:32	65.7	77.9	
18:18	70.6	81.3	Just audible music from venue, and crowd noise perceptible. Ambient noise defining levels and maximums
18:20	63.7	75.3	
18:22	67.8	76.8	
18:24	66.8	80.9	
18:26	78.5	84.7	
18:28	68.2	85.6	
18:30	65.9	86.3	
18:32	65.7	77.9	

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
18:34	62.5	81.3	
18:36	74.2	78.2	
18:38	68.6	72.7	
18:40	74.3	79.1	No event noise audible. Ambient noise defining maximums
18:42	65.8	75.8	
18:44	66	76.9	
18:46	78.1	87.7	
18:48	66.1	85.6	
18:50	73.7	77.8	
18:52	67.3	74.8	
18:54	76.3	79.7	
18:56	68.1	77.6	Just audible music from venue, and crowd noise perceptible. Ambient noise defining levels and maximums
18:58	69.1	80.9	
19:00	73.4	80.3	
19:02	78	83.6	
19:04	74.8	80.7	
19:06	70.9	84.6	
19:08	70.2	86.5	
19:10	63.9	78.7	
19:12	75.8	80.2	
19:14	75.8	82.8	
19:16	68.5	81.5	
19:18	64	75.2	
19:20	79.2	80.9	
19:22	75.3	81.1	
19:24	69.5	80	
19:26	65.6	80.5	
19:28	70	79.4	
19:30	72.3	79	

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
19:32	75.3	76	
19:34	64.3	75.9	
19:36	63.8	83.7	
19:38	66.2	76.5	
19:40	79.3	84.1	
19:42	-	-	Batteries changed. Meter Error, no recorded values for remainder of performance. Observational notes only. It is noted however, that measurements were noted to comply for all periods at this position..
19:44	-	-	Just audible music from venue, and crowd noise perceptible. Ambient noise defining levels and maximums
19:46	-	-	
19:48	-	-	
19:50	-	-	
19:52	-	-	
19:54	-	-	Meter Error, no recorded values for remainder of performance. Observational notes only. It is noted however, that measurements were noted to comply for all periods at this position.
19:56	-	-	Performance break, music from venue inaudible.
19:58	-	-	
20:00	-	-	
20:02	-	-	
20:04	-	-	
20:06	-	-	Music recommences, levels < 60 dBA Just audible music from venue, and crowd noise perceptible. Ambient noise defining levels and maximums
20:08	-	-	
20:10	-	-	
20:12	-	-	
20:14	-	-	
20:16	-	-	
20:18	-	-	
20:20	-	-	

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
20:22	-	-	PA generally < 60 dB(A), one maximum <65 dB(A). Ambient noise defining levels and maximums
20:24	-	-	<p style="text-align: center;">Music levels < 60 dBA</p> Just audible music from venue, and crowd noise perceptible. Ambient noise defining levels and maximums
20:26	-	-	
20:28	-	-	
20:30	-	-	
20:32	-	-	
20:34	-	-	
20:36	-	-	
20:38	-	-	
20:40	-	-	
20:42	-	-	
20:44	-	-	
20:46	-	-	
20:48	-	-	
20:50	-	-	
20:52	-	-	
20:54	-	-	Meter Error, no recorded values for remainder of performance. Observational notes only. It is noted however, that measurements were noted to comply for all periods at this position.
20:56	-	-	<p style="text-align: center;">Music recommences, levels always < 62 dBA</p> Just audible music from venue, and crowd noise perceptible. Ambient noise defining levels and maximums
20:58	-	-	
21:00	-	-	
21:02	-	-	
21:04	-	-	
21:06	-	-	
21:08	-	-	Bass temporarily increases to a maximum of 76 dB(C), then subsides. Ambient noise defining levels and maximums
21:10	-	-	

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
21:12	-	-	Music recommences, levels always < 62 dBA Just audible music from venue, and crowd noise perceptible. Ambient noise defining levels and maximums
21:14	-	-	
21:16	-	-	
21:18	-	-	
21:20	-	-	
21:22	-	-	
21:24	-	-	
21:26	-	-	
21:28	-	-	
21:30	-	-	
21:32	-	-	
21:34	-	-	
21:36	-	-	
21:38	-	-	
21:40	-	-	
21:42	-	-	
21:44	-	-	
21:46	-	-	
21:48	-	-	
21:50	-	-	
21:52	-	-	
21:54	-	-	
21:56	-	-	Meter Error, no recorded values for remainder of performance. Observational notes only. It is noted however, that measurements were noted to comply for all periods at this position.
21:58	-	-	Music levels typically 58 dB(A) and 68 dB(C) Just audible music from venue, and crowd noise perceptible. Ambient noise defining levels and maximums
22:00	-	-	
22:02	-	-	
22:04	-	-	

Weather:	Clear Skies, warm, Westerly Moderate Winds		
Time	L _{max} dB(A)	L _{max} dB(C)	Description of Noise
22:06	-	-	
22:08	-	-	
22:10	-	-	
22:12	-	-	
22:14	-	-	
22:16	-	-	
22:18	-	-	
22:20	-	-	
22:22	-	-	
22:24	-	-	
22:26	-	-	Pyrotechnics reached 82 dB(A).
22:28	-	-	Music levels typically 58 dB(A) and 68 dB(C) Just audible music from venue, and crowd noise perceptible. Ambient noise defining levels and maximums
22:30	-	-	
22:32	-	-	No amplified noise audible from venue.



APPENDIX C

SCGT COMPLAINTS REGISTER



Sydney Cricket & Sports Ground Trust
HOTLINE REGISTER

EVENT NAME: One Direction

PAGE NUMBER: 1 of 3

DATE: Friday 6th – Sunday 8th February 2015

Date	Time	Method	Complainant's Name	Complainant Details	Nature of Complaint	Action taken by the Trust
06/02/15	1658	Phone	Stuart st 2021	Going on all day and has a headache.	Concerned how much longer.	Apologised and advised allocated rehearsal until 9pm but may finish sooner. Will forward their concern.
	1839		Cook Rd, centennial park	Intermittent sound checks not good. Windows closed and dreading Sunday's heat forecast. Calling to put in formal complaint. U2 soundcheck was for 1.5hrs not intermittent.		
	2040		Regent s, south Paddington		Sound check – no. of sound checks should be specified. 8:30pm – peace required after surgery all day Furious – only two concerts advised and “intermittent” sound check was advised too but sound check since this morning before work – “sounds like rehearsal” therefore 3 concerts really.	Requested ref. No. and email to confirm complaint received



Sydney Cricket & Sports Ground Trust
HOTLINE REGISTER

EVENT NAME: One Direction

PAGE NUMBER: 2 of 3

DATE: Friday 6th – Sunday 8th February 2015

Date	Time	Method	Complainant's Name	Complainant Details	Nature of Complaint	Action taken by the Trust
07/02/15	1555		Cook Rd, centennial park	Complainant gave no contact details. Info obtained from Friday.	“absolutely intolerable” continuous noise and rehearsals occurring prior to “START” time specified to residents i.e. 6:15pm “Trust lying to residents/neighbours” Re. Noise timeframes, and will contact member of Parliament	Advised BOTH complaints and concerns would be forwarded on.
Calls Received Post Sunday 8 February						
9/02/15	11:51	Email	Correspondence received from EPA	No Supplied	The EPA has received a complaint regarding noise from loud music and announcements at the Sydney Cricket Ground on 6 February 2015. The complainant reports that the noise started at 10am and continued through and was still on-going at 11.15am. Can you please provide information on what activities were taking place at the Sydney Cricket Ground during this time.	Contacted EPA and advised that testing was due to commence at Noon however due to production issues line testing was brought forward. Post 11.15am no further noise was emitted from PA until start of the concert at 5.30pm
9/02/15	1631	Phone	Kensington		Could hear the music clearly on Sunday night. Stated Saturday could barely hear the concert but Sunday could hear the sound clearly. Advised lives in level 6 of a high rise building	Advised PA setting was the same as previous night however wind direction was different to previous night



Sydney Cricket & Sports Ground Trust
HOTLINE REGISTER

EVENT NAME: One Direction

PAGE NUMBER: 3 of 3

DATE: Friday 6th – Sunday 8th February 2015

Date	Time	Method	Complainant's Name	Complainant Details	Nature of Complaint	Action taken by the Trust
10/02/15	1254	Email	Correspondence received from EPA		EPA advised received two complaints in relation to Sunday 8 February Concert. The addresses of the complainants were Allison Road, Randwick and Cottenham Avenue, Kensington.	
11/02/15	1726	Phone	Kensington		Advised couldn't find the hotline number on Trust website. Eventually found it. Wanted to register a complaint with noise from Sunday night's concert. Said it was very loud, much louder than Saturday night. Advised that she lives in high rise building.	Explained number is on website and will follow up on prominence of this information. Also advised that PA settings were the same as previous night however advised wind direction was different to previous night.