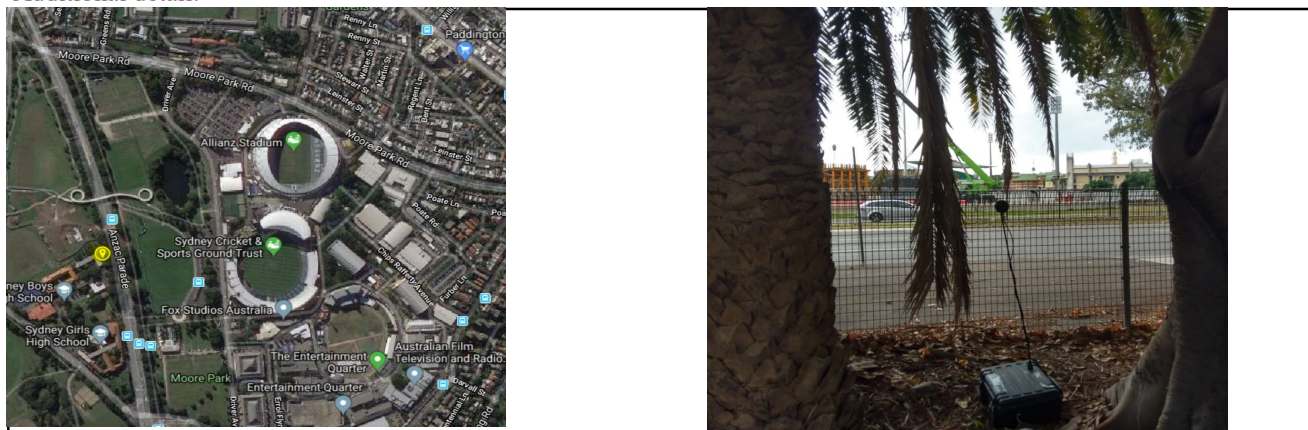


Sydney Boys High School (Free Field)

Additional detail:



Background and ambient noise monitoring results - NSW 'Industrial Noise Policy', 2000

Date	L _{A90} Background noise levels ⁴			L _{Aeq} Ambient noise levels		
	Day ¹	Evening ²	Night ³	Day ¹	Evening ²	Night ³
Wednesday-21-February-2018		55	52		70	66
Thursday-22-February-2018	60	56	52	72	70	67
Friday-23-February-2018	62	56	53	72	70	66
Saturday-24-February-2018	58	58		71	70	
Sunday-25-February-2018						
Monday-26-February-2018	59	55	53	73	70	67
Tuesday-27-February-2018	60	57	55	72	70	67
Wednesday-28-February-2018						
Representative Weekday⁵	60	56	53	72	70	66
Representative Weekend⁵	58	58	#NUM!	71	70	#DIV/0!
Representative Week⁵	60	56	53	72	70	66

Notes:

1. Day is 8:00am to 6:00pm on Sunday and 7:00am to 6:00pm at other times
2. Evening is 6:00pm to 10:00pm
3. Night is the remaining periods
4. Assessment Background Level (ABL) for individual days
5. Rating Background Level (RBL) for L_{A90} and logarithmic average for L_{Aeq}

Road / Rail noise monitoring results

Date	L _{Aeq} Noise levels		L _{Aeq} 1hr Noise levels (upper 10th percentile)	
	Day ¹	Night ²	Day	Night
Wednesday-21-February-2018	71	66	72	72
Thursday-22-February-2018	71	67	72	72
Friday-23-February-2018	71	66	72	69
Saturday-24-February-2018	71	67	71	69
Sunday-25-February-2018	74	70	78	75
Monday-26-February-2018	73	67	75	72
Tuesday-27-February-2018	71	67	72	72
Wednesday-28-February-2018	71		72	
Representative Weekday³	71	66	73	72
Representative Weekend³	73	69	75	73

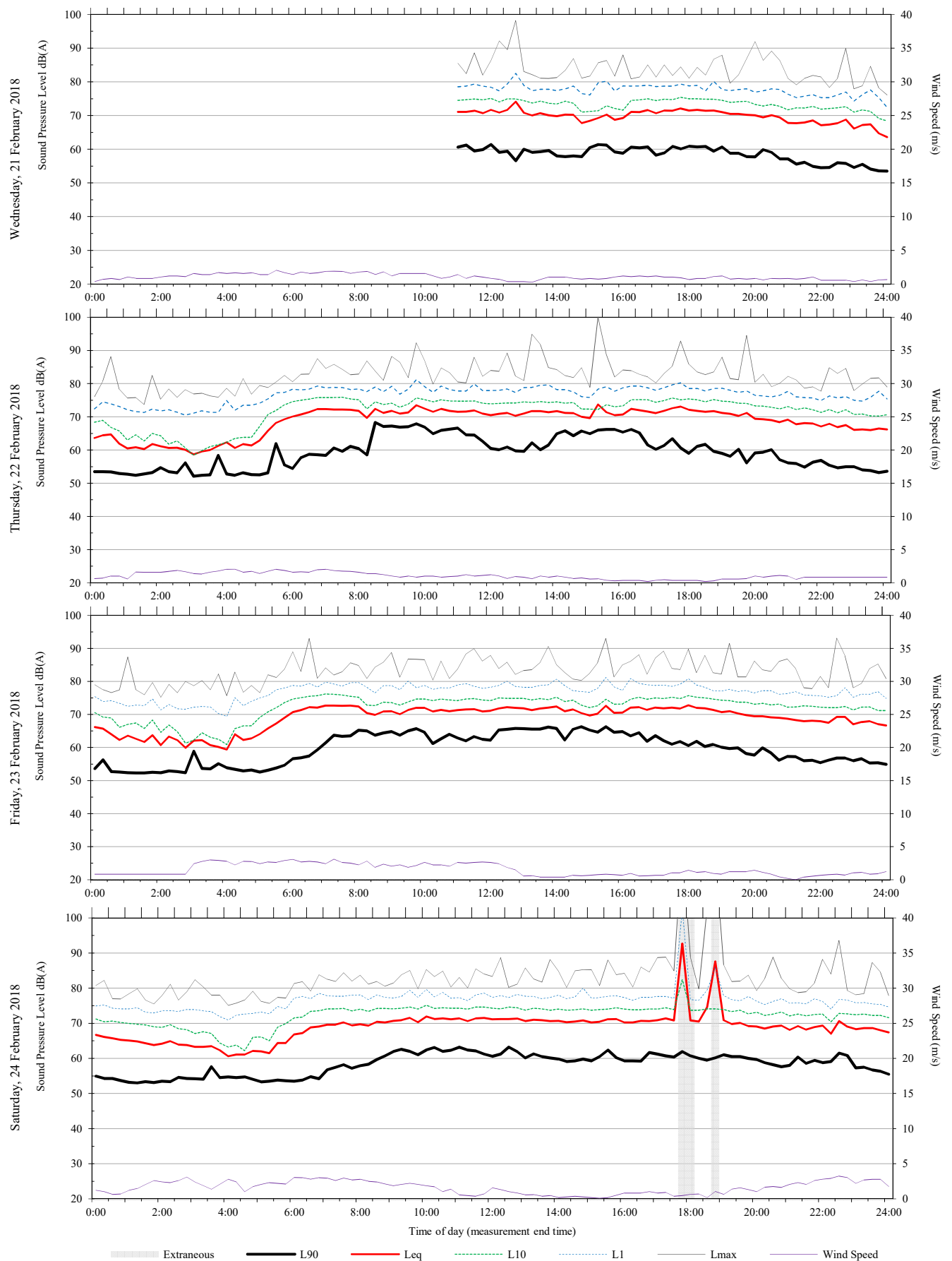
Representative Week³	72	67	74	72
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Notes:

1. Day is 7:00am to 10:00pm
2. Night is 10:00pm to 7:00am
3. Logarithmic average of daily L_{Aeq}

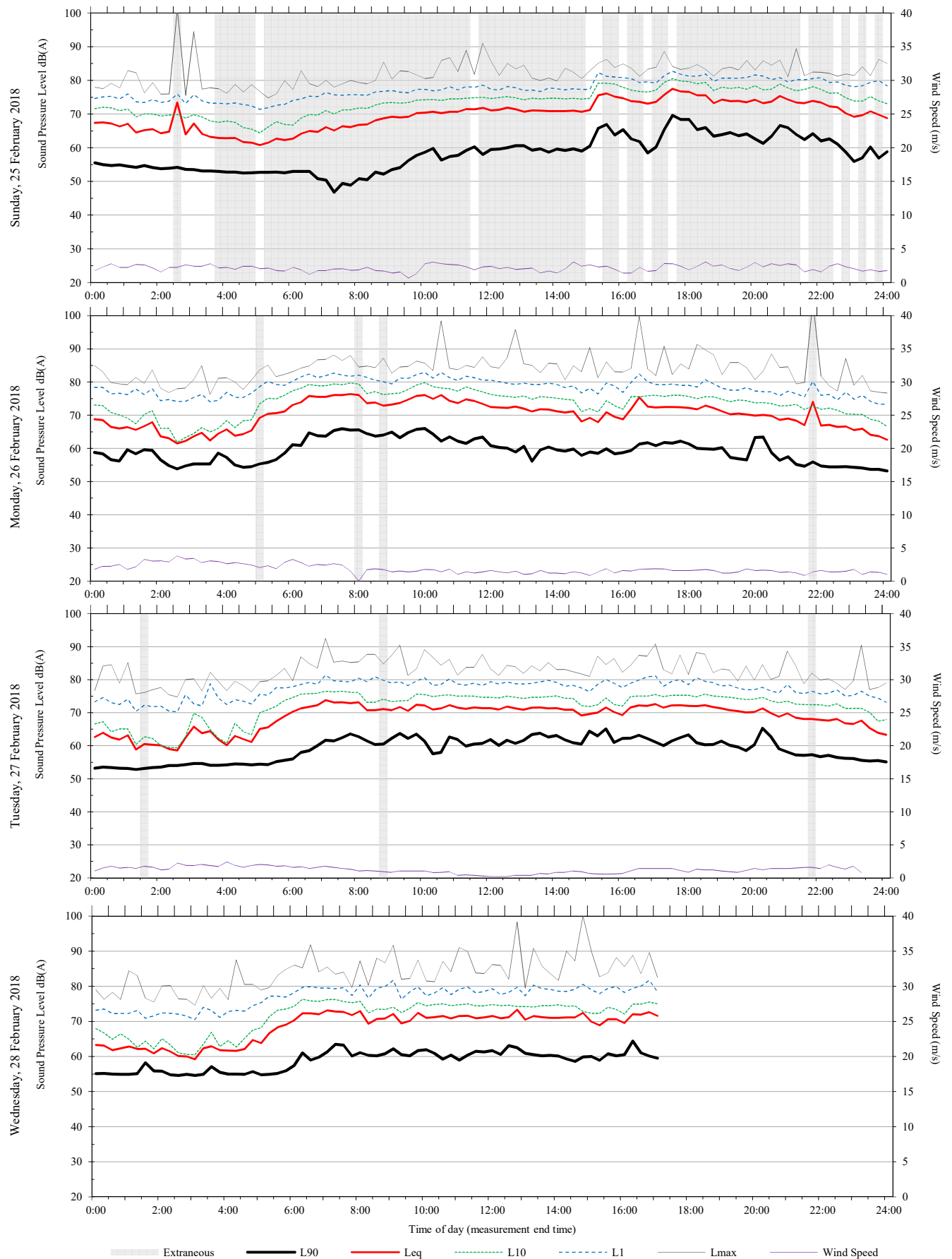
Unattended monitoring: Sydney Boys High School (Free Field)

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Unattended monitoring: Sydney Boys High School (Free Field)

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Appendix D

Noise limits for outdoor entertainment venues

D1 Noise limits for outdoor entertainment venues

D1.1 Allianz Stadium, Sydney

Noise limits on events taking place at the existing Allianz Stadium are presented in the 2017 Sydney Cricket Ground and Allianz Stadium Noise Management Plan (NMP) [13], developed in accordance with the requirements specified in the most recent Variation of Prevention Notice (1517780), dated 2 December 2013. This document outlines noise management measures, monitoring procedures and complaints handling mechanisms for sporting events, concerts and other outdoor events with sound amplification.

Existing noise limits apply to noise from sound amplification systems and concerts, and are presented in Table 38. Noise limits apply to noise from setup and break down of events as well as noise generated by the event itself.

Table 38: Existing event noise limits – sound amplification systems

Source	Descriptor	Noise limit	Conditions
Sporting events / other outdoor events with sound amplification			
Sound amplification equipment	L _{Amax}	60 dBA	Applicable under wind speeds up to 5m/s ¹
Concert events			
Concert noise, including rehearsals and sound tests	L _{Amax}	80 dBA	An exceedance of the noise level limit by a maximum of 5 dB during a single 5-minute period during the first 10 minutes of the performance of each new act will not be taken to be a breach of the limits.
	L _{Cmax}	100 dBC	

Notes:

- For wind speeds above 5 m/s, noise limits do not apply, above which, the NMP [13] states “wind generated noise on the microphone limits measurement accuracy”. In addition, extraneous noise such as trees rustling in the breeze mask noise from the Site. During periods of wind greater than 5 m/s, the SCG Trust must continue to take all reasonable and feasible actions to minimise noise.

D1.2 Western Sydney Stadium, Sydney

Environmental noise emission goals for events at residential boundaries are presented in Table 39 below.

Table 39: Environmental noise goals for events

Major sporting events	Major concert events
$L_{Aeq,15min} \leq RBL^1 + 10 \text{ dB}$	$L_{Aeq,15min} \leq RBL^1 + 15 \text{ dB}$
$L_{Ceq,15min} \leq RBL^1 + 25 \text{ dB}$	$L_{Ceq,15min} \leq RBL^1 + 30 \text{ dB}$

Notes:

1. RBL is based on event hours of 2:00 pm to 12:00 am
2. Up to a maximum of L_{Aeq} 75 dBA and L_{Ceq} 90 dBC

D1.3 Sidney Myer Music Bowl (SMMB), Melbourne

In Victoria, music noise from public premises is regulated by the EPA under the Environment Protection Act 1970, and the State Environment Protection Policy *Control of Music Noise from Public Premises* No. N-2 (SEPP N-2)¹.

The stated goal of this policy is to

... protect residents from levels of music noise that may affect the beneficial uses made of noise sensitive areas while recognising the community demand for a wide range of musical entertainment.

The policy applies specifically to music noise generated from public venues, including outdoor venues such as the SMMB. The policy provides requirements for allowable music noise levels, duration of events, and the number of events that may occur in any financial year.

The specific requirements that apply to the SMMB are as follows:

Outdoor Venues

17. *The noise limit for outdoor venues is 65 dBA when the measurement point is located outdoors and 55 dBA when located indoors.*
18. *The effective noise level for outdoor venues is the L_{Aeq} measured in dBA.*

The measurement duration is 15 minutes.

Where the level of music noise exceeds the limit, the occupier (in the specific case of the SMMB this is the Arts Centre) is required to undertake steps to reduce noise levels to the limits.

With regards to the timing and number of events the policy states;

27. Operating Times:

- (a) An operation of an outdoor venue may only take place between the hours of 12 Noon and 11pm, except where the duration of the operation is greater than five hours, in which case the operation may take place only between the hours 12 noon and 10pm.*
- (b) Notwithstanding clause (a), the Authority may allow later operations where it is satisfied that music from the premises will be inaudible within all noise sensitive areas, or where it is satisfied that the proposed operation is: a non-profit event, for charitable purposes, or is of special social significance.*

No more than six (6) concert events may be conducted in any financial year unless the EPA gives specific approvals.

¹ State Environment Protection Policy (Control of Music Noise from Public Premises) No. N-2, Victorian Government Gazette No. S43, 3 August 1989.

D1.4 Docklands Stadium, Melbourne

The noise limit is an absolute level of 65 dBA outdoors, and 55 dBA indoors for up to six (6) events per year. The standard includes a limitation on operating hours of between 12 noon–11 pm, except if the event runs for more than 5 hours, in which case it must finish by 10 pm. Additional events beyond six may be approved by the EPA subject to conditions, including that none of the primary six events were more than 3 dB above the limits (i.e. exceeded 68 dBA outdoors or 58 dBA indoors), and no more than four events were above 62 dBA outdoors and 52 dBA indoors.

A specific exclusion is provided for any noise sensitive areas from any outdoor venue in the Melbourne Docklands Area (a scheduled area), due to the presence of the Docklands Stadium (now Etihad Stadium). However, new dwellings within the scheduled area (predominantly high-rise residential developments) are required by the SEPP to provide a minimum sound insulation sufficient to achieve 45 dBL_{Aeq,15min} within habitable rooms.

D1.5 Sydney Botanic Gardens and Domain, Sydney

The Notice of Prevention 1006659 for the Royal Botanic Gardens and Sydney Domain defines the following categories of outdoor events.

- **“Category 1 Event”** means any cinematic outdoor entertainment activity involving the showing of feature films, and with a crowd capacity of greater than 200 and up to 2,000 people
- **“Category 2 Event”** means any commercial outdoor entertainment activity with a crowd capacity of greater than 2,000 people and up to 10,000 people, including any associated sound test or rehearsal
- **“Category 3 Event”** means any outdoor entertainment activity with a crowd capacity greater than 10,000 people including any associated sound test or rehearsal

Relevant criteria at the nearest residences (other than Sydney Hospital, which is a special case) are:

- Category 1: 55 dBA L_{Amax} or L_{Amax} that exceeds the L_{A90} by no more than 5 dBA
- Category 2: 55 dBA L_{Amax} or 70 dBC L_{Cmax}
- Category 3: 70 dBA L_{Amax} or 90 dBC L_{Cmax}

Special criteria (typically + 10 dB) are set for Sydney Hospital, which is located so close to the event stage that it is impractical to meet the general residential noise levels cited above.

D1.6 Sydney Opera House Forecourt, Sydney

A noise limit system was developed which applies varying noise limits depending on the Front of House location and duration of events. Limits are based on $L_{Aeq,5min}$ and $L_{Ceq,5min}$ parameters at a Front of House location.

D1.7 Walsh Bay Arts and Cultural Precinct, Sydney

The proposed criteria for the Walsh Bay Arts and Cultural Precinct during precinct wide events are presented in Table 40.

Table 40: Noise criteria for events

Activity	Early morning (0700h to 1000h)	Daytime & evening (1000 to 2200h)	Night (2200h to 2400h)
Any noise sensitive residential or commercial receiver external to the operational area of the event			
Setup / takedown	$L_{Aeq,15m} < 50$	$L_{Aeq,15m} < 55$	$L_{Aeq,15m} < 50$
Event including sound check	None allowed	$L_{Aeq,15m} < 55$ $L_{Ceq,15m} < 70$	$L_{Aeq,15m} < 50$ $L_{Ceq,15m} < 65$

D1.8 Centennial Parklands, Sydney

The following criteria were applied for a Category 3 event at Centennial Parklands.

- During the test(s), rehearsal(s) and concert(s), the sound pressure level must not exceed 65 dB L_{Amax} .
- During the test(s), rehearsal(s) and concert(s), the sound pressure level must not exceed 85 dB L_{Cmax} .

Arup were involved in monitoring events at the venue and these levels were met with the receivers approximately 85m behind the event stage.

D1.9 Barangaroo, Sydney

Notice of Determination D/2015/938 for Barangaroo includes the following noise criteria for major events:

- 65 dB $L_{Aeq,10min}$ or 75 dB $L_{Ceq,10min}$ between 10:00 am and 10:00pm
- 55 dB $L_{Aeq,10min}$ or 65 dB $L_{Ceq,10min}$ between 7:00 am and 10:00 am and between 10:00pm and midnight.

Note the A-weighted noise levels are set as “must not” exceed noise levels, while the equivalent C-weighted levels are presented “as a guide to resolving low-frequency noise issues” as a “should not” exceed noise level.

Appendix E

Venue Attendance Numbers

E1 Venue Attendance Numbers

Start Day of Week	Start Date	Account Name	Type	Description	Actual Attendance
Sat	14/01/2017	Sydney Football Club	A-League Round Match	Round 15 - Sydney FC v Western Sydney Wanderers	40,143
Thu	9/02/2017	Sydney Football Club	A-League Round Match	Round 19 - Sydney FC v Wellington Phoenix	8,380
Fri	3/03/2017	Sydney Football Club	A-League Round Match	Round 22 - Sydney FC v Melbourne Victory	13,310
Fri	10/03/2017	Sydney Football Club	A-League Round Match	Round 23 - Sydney FC v Central Coast Mariners	11,148
Sat	1/04/2017	Sydney Football Club	A-League Round Match	Round 25 - Sydney FC v Melbourne City	15,266
Sat	15/04/2017	Sydney Football Club	A-League Round Match	Round 27 - Sydney FC v Newcastle Jets	15,787
Sat	29/04/2017	Sydney Football Club	A-League Round Match	Sydney FC v Perth Glory	21,938
Sun	7/05/2017	Sydney Football Club	A-League Round Match	Sydney FC v Melbourne Victory	41,546
Fri	20/01/2017	Sydney Football Club	A-League Round Match	Round 16 - Sydney FC v Adelaide United	11,255
Fri	3/02/2017	Australian Rugby Union	International Rugby	Rugby Seven's World Series	3,425
Sat	4/02/2017	Australian Rugby Union	International Rugby	Rugby Seven's World Series	34,151
Sun	5/02/2017	Australian Rugby Union	International Rugby	Rugby Seven's World Series	32,815
Sat	18/03/2017	Waratahs Rugby	Super Rugby Round Match	Rd 4 v Brumbies	15,911
Sun	2/04/2017	Waratahs Rugby	Super Rugby Round Match	Rd 6 v Crusaders	18,227
Fri	21/04/2017	Waratahs Rugby	Super Rugby Round Match	Rd 9 v Southern Kings	10,555
Sat	6/05/2017	Waratahs Rugby	Super Rugby Round Match	Rd11 v Blues	18,381
Sun	21/05/2017	Waratahs Rugby	Super Rugby Round Match	Rd13 v Rebels	15,469
Sat	8/07/2017	Waratahs Rugby	Super Rugby Round Match	Rd16 v Jaguars	10,992
Mon	17/07/2017	Australian Rugby Union	Test Match	Wallabies v Scotland	30,721

Start Day of Week	Start Date	Account Name	Type	Description	Actual Attendance
Wed	26/04/2017	Sydney Roosters	Anzac Day NRL Match	Sydney Roosters v Dragons	40,864
Fri	28/04/2017	Sydney Roosters	NRL Round Match	Souths vs Manly	10,594
Thu	9/03/2017	Sydney Roosters	NRL Round Match	Sydney Roosters vs Canterbury	13,505
Fri	31/03/2017	Sydney Roosters	NRL Round Match	Sydney Roosters vs Manly	12,376
Sun	14/05/2017	Sydney Roosters	NRL Round Match	Sydney Roosters vs Parramatta	10,467
Fri	7/07/2017	Sydney Roosters	NRL Round Match	Sydney Roosters vs Souths	16,245
Fri	21/07/2017	Sydney Roosters	NRL Round Match	Sydney Roosters vs Newcastle	7,121
Sat	29/07/2017	Sydney Roosters	NRL Round Match	Sydney Roosters vs North Queensland	9,476
Sat	19/08/2017	Sydney Roosters	NRL Round Match	Sydney Roosters vs Wests Tigers	9,585
Sat	2/09/2017	Sydney Roosters	NRL Round Match	Sydney Roosters vs Gold Coast Titans	11,212
Sat	23/09/2017	National Rugby League Limited	NRL Final Series	Preliminary Final: Sydney Roosters v Cowboys	28,108
Sun	15/10/2017	Sydney Football Club	A-League Round Match	Round 2 - Sydney FC v Wellington Phoenix	10,293
Sat	21/10/2017	Sydney Football Club	A-League Round Match	Round 3 - Sydney FC v Western Sydney Wanderers	31,087
Fri	27/10/2017	Sydney Football Club	A-League Round Match	Round 4 - Sydney FC v Perth Glory	9,372
Sat	28/10/2017	TLA Worldwide	Test Match	Barbarians v Wallabies	14,388
Sat	4/11/2017	Rugby League World Cup 2017	Rugby League World Cup	England v Lebanon	8,914
Sat	11/11/2017	Rugby League World Cup 2017	Rugby League World Cup	Australia v Lebanon	19,232
Sat	18/11/2017	Sydney Football Club	A-League Round Match	Round 7 - Sydney FC v Newcastle Jets	10,771
Tue	21/11/2017	Football Federation of Australia	FFA Cup	FFA Cup Final- Sydney FC V Adelaide United	12,316
Sat	25/11/2017	Sydney Football Club	A-League Round Match	Round 8 - Sydney FC v Brisbane Roar	8,763
Sat	2/12/2017	Chugg Entertainment	Concert	SIA	28,562
Fri	15/12/2017	Sydney Football Club	A-League Round Match	Round 11 - Sydney FC v Melbourne City	9,861

Start Day of Week	Start Date	Account Name	Type	Description	Actual Attendance
Sat	30/12/2017	Sydney Football Club	A-League Round Match	Round 13 - Sydney FC v Perth Glory	12,266
Wed	3/01/2018	Sydney Football Club	A-League Round Match	Round 14 - Sydney FC v Newcastle Jets	16,718
Sat	20/01/2018	Sydney Football Club	A-League Round Match	Round 17 - Sydney FC v Central Coast Mariners	12,480
Fri	26/01/2018	Australian Rugby Union	International Rugby	Day 1- Sydney 7's Rugby Series	7,813
Sat	27/01/2018	Australian Rugby Union	International Rugby	Day 2- Sydney 7's Rugby Series	19,221
Sun	28/01/2018	Australian Rugby Union	International Rugby	Day 3- Sydney 7's Rugby Series	20,184
Fri	2/02/2018	Sydney Football Club	A-League Round Match	Round 19 - Sydney FC v Wellington Phoenix	9,150
				Average	16,674

Appendix F

Noise Contour Maps



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

Site

Site compound

Sound Pressure Level, L_{Aeq} , dBA



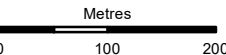
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Client
Infrastructure NSW

Job Title
**Sydney Football Stadium
Redevelopment**

Drawing Title
**Noise contours
Site establishment works**



D1	4/06/2018	MS	NB	NB
Issue	Date	By	Chkd	Appd

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Scale at A3
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Drawing Status
Draft

Coordinate System
GDA 1994 MGA Zone 56

Job No
259997-00

Drawing No
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

Site

Site compound

Sound Pressure Level, L_{Aeq} , dBA



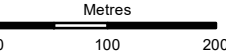
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Client
Infrastructure NSW

Job Title
**Sydney Football Stadium
Redevelopment**

Drawing Title
**Noise contours
Demolition - Ancillary buildings**



D1	4/06/2018	MS	NB	NB
Issue	Date	By	Chkd	Appd

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Coordinate System
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Job No
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Drawing No
001



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

Site

Site compound

Sound Pressure Level, L_{Aeq} , dBA



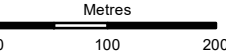
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Client
Infrastructure NSW

Job Title
Sydney Football Stadium
Redevelopment

Drawing Title
Noise contours
Demolition - Stadium



D1	4/06/2018	MS	NB	NB
Issue	Date	By	Chkd	Appd

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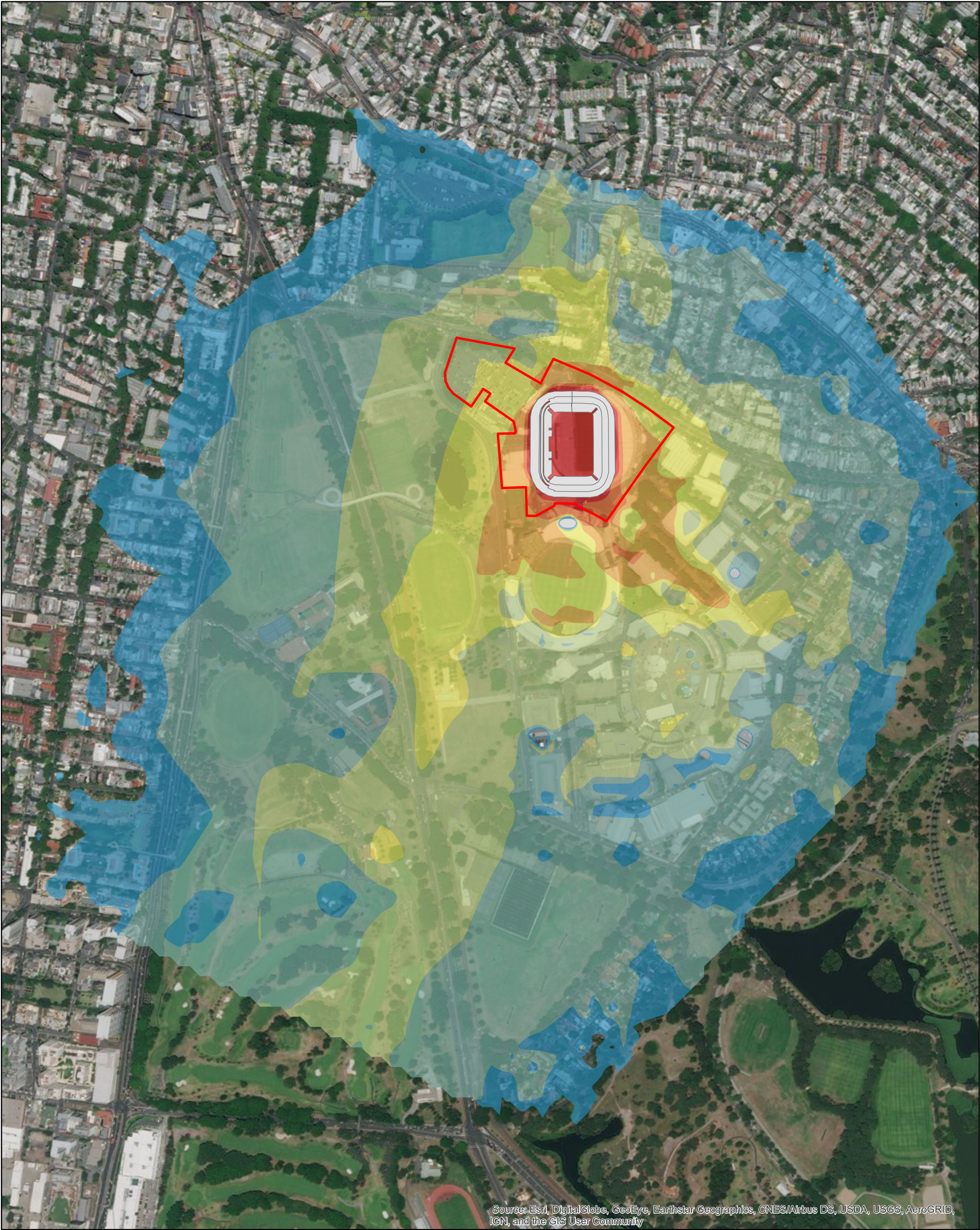
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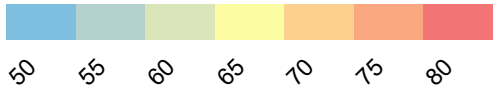


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

Site

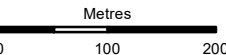
Sound Pressure Level, L_{Aeq} , dBA



Client
Infrastructure NSW

Job Title
Sydney Football Stadium
Redevelopment

Drawing Title
Noise contours - Worst weather cond.
Concert event, dBA



D1	4/06/2018	MS	NB	NB
Issue	Date	By	Chkd	Appd

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Scale at A3
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Drawing Status
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Coordinate System
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Job No
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Drawing No
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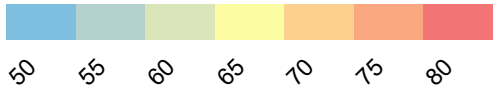


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

Site

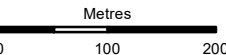
Sound Pressure Level, L_{Aeq} , dBA



Client
Infrastructure NSW

Job Title
Sydney Football Stadium
Redevelopment

Drawing Title
Noise contours - Worst weather cond.
Sporting event - 30,000 crowd, dBA



D1	4/06/2018	MS	NB	NB
Issue	Date	By	Chkd	Appd

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Drawing Status
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Coordinate System
GDA 1994 MGA Zone 56

Job No
259997-00

Drawing No
001