

Sydney Football Stadium ONMP

Submitted to the Department of Planning, Industry and Environment
under SSD 9835 Condition D48, April 2024

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Document Control		
Date	Agency	Revision Number
December 2021	Prepared and checked by Arup	Draft V1
February 2022	Reviewed by Savills and Venues NSW	Draft V2
April 2022	Prepared and checked by Arup	Draft V3
April 2022	Reviewed by Savills and Venues NSW	Draft V4
June 2022	Prepared and checked by Arup	Draft V5
July 2022	Reviewed by DPE, prepared and checked by Arup and Venues NSW	Draft V6
July 2022	Respond to DPE Request for Information	Draft V7
August 2022	Issued as final for DPE approval	Final V8
October 2022	Respond to DPE's 20220819 Operational Noise Management Plan DPE APPROVAL	Draft V9
November 2022	Respond to DPE's 20221115 comments	Final V10
October 2023	Respond to DPE's 20230710 comments	Final V11
October 2023	Respond to DPE's 20231025 comments	V12
February 2024	Update as per Mod 8	V13
March 2024	Update as per DPE's 20240313 comments	V14

1. Introduction

This Operational Noise Management Plan (ONMP) has been prepared to support the future operations of the Sydney Football Stadium (SFS). The ONMP has been developed to meet the statutory requirements of State Significant Development (SSD) 9835 relating to the Sydney Football Stadium Redevelopment.

To date, SSD 9835 has been modified on eight previous occasions as summarised in Table 1.

Table 1: Modifications to SSD 9835

Modification	Approved	Description
Modification 1	3 April 2020	Amend Conditions B14 and B15 to enable the condition to be satisfied in accordance with the principles and framework prescribed by the <i>Contaminated Land Management Act 1997</i> .
Modification 2	14 December 2020	Reinstate fitness facilities that were previously available within the former SFS.
Modification 3	7 December 2020	Alter the approved mezzanine slabs at the eastern and western stands and relocate the approved administration facilities. design amendments to the south western glazed façade. inclusion of an additional stadium signage condition.
Modification 4	22 April 2021	Relocate the photovoltaic (PV) cells from the stadium's roof to Level 5 (above the eastern and western plant rooms) and a reduction in the amount of kilowatts peak (kWp) generated.
Modification 5	8 June 2021	Minor modification to correct plan revisions and dates.
Modification 6	29 September 2021	Fit-out, use and operation of the eastern mezzanine of the stadium for the purpose of a dedicated training and administration facility for the Sydney Roosters NRL football club, known as the Sydney Roosters Centre of Excellence.
Modification 7	18 July 2022	Design, construction and operation of the Precinct Village and Car Park development to align with the conditions and commitment established within SSD 9835, particularly relating to delivering a LEED Gold rated sustainable precinct, and will include: up to a maximum of 1,500 space multi-level car park below the proposed ground level reconfiguration of the currently approved drop off requirements for the elderly and mobility impaired.

Modification	Approved	Description
		• free flow level pedestrian access to and from the SFS concourse from Driver Ave and Moore Park Road • electric car charging provision. • a versatile and community public domain, comprising: ○ provision for 4 x north-south orientated tennis courts on non-event days with the potential to become an event platform on event days; ○ children's playground; ○ 1,500m cafe / retail / restaurants with associated amenities in a single storey pavilion (6 metre) low level; ○ customer service office and ticket window; and ○ vertical transport provisions • utilities provision augmentation. • inclusion of an additional condition of consent requiring the use of the northern portion of EP2 (Upper Kippax) to cease immediately and for the southern portion of EP2 (Lower Kippax) to cease prior to the commencement of operation of Stage 2 of the Precinct Village and Car Park
Modification 8	15 December 2023	Modifications to the concert operational parameters including increasing concert cap from six per year to 20 per year, increase concert length from five hours to 10 hours (twice a year), alterations to rehearsal and sound test finish times from 7pm to 10pm and a curfew exemption for the Mardi Gras after-party.

1.1 SSD 9835 Noise and Vibration Assessment

A noise and vibration impact assessment was prepared for the SSD 9835 (DA - Noise and Vibration Impact Assessment, Arup, 2019), which identified potentially worst affected noise sensitive receivers and noise limits.

Condition D48 (c)(v) of SSD 9835 requires noise limits for sporting events, concerts and outdoor events with sound amplification to be consistent with the SSD, including the established Noise Catchment Areas (NCAs) and sensitive noise receivers.

Condition E2 of SSD 9835 provides non-event noise limits which apply to receivers identified in the SSD.

Noise limits apply to all receivers in accordance with SSD 9835, not just representative assessment locations.

Representative receivers are shown in Figure 1.

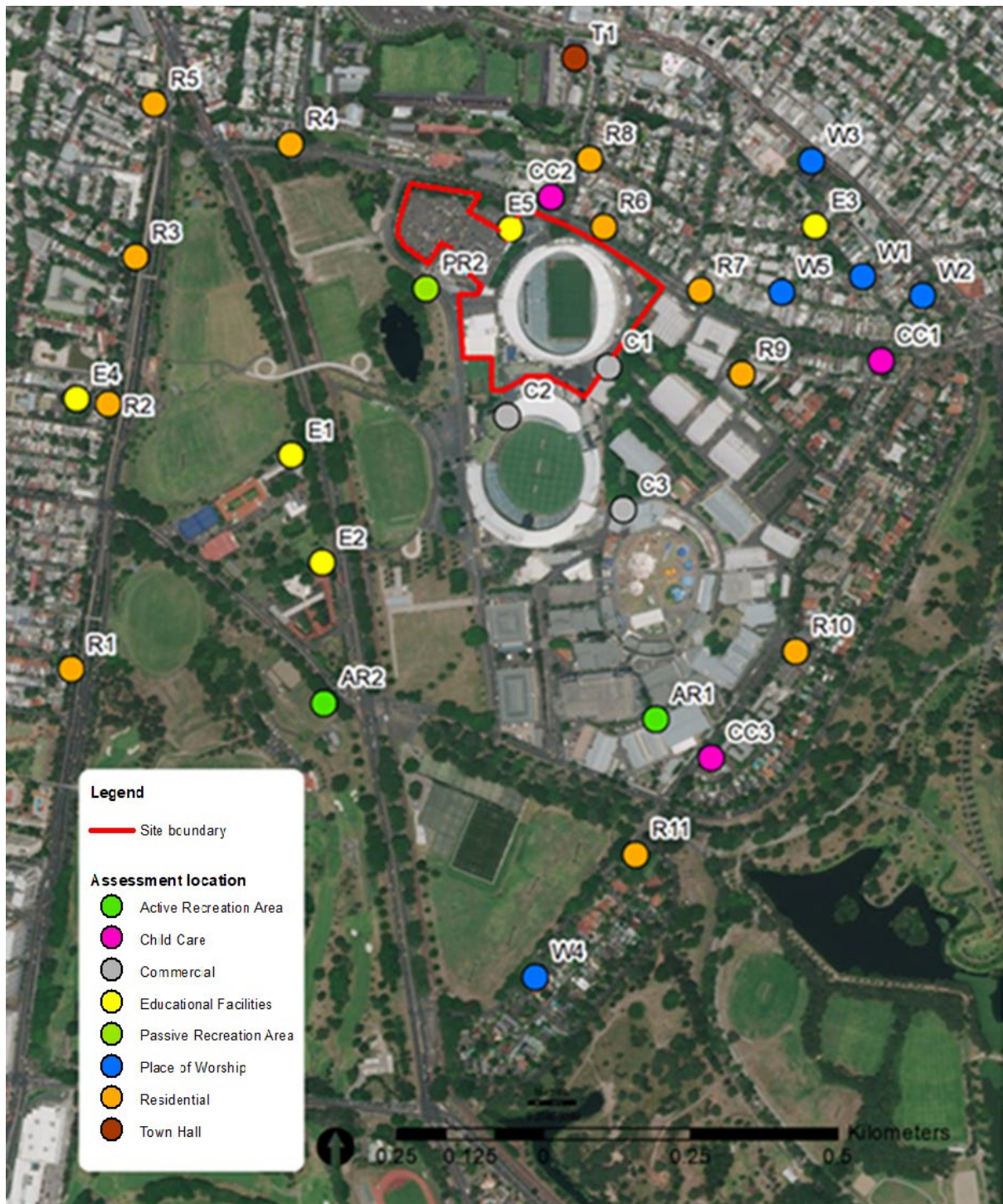


Figure 1: Site location, noise sensitive receivers

A list of representative residential noise sensitive receivers within the study area is presented in **Table 2**.

Table 2: Reasonably most-affected residential receivers

Receiver ID	Address	No. of floors
R1	749 South Dowling Street, Redfern	2
R2	635 South Dowling Street, Surry Hills	3
R3	553 South Dowling Street, Surry Hills	3
R4	111 Greens Rd, Paddington	2
R5	479 South Dowling Street, Surry Hills	3
R6	252 Moore Park Road, Paddington	2
R7	314 Moore Park Road, Paddington	2
R8	45 Oatley Road, Paddington	2
R9	5 Poate Road, Paddington	2
R10	107 Cook Road, Centennial Park	2
R11	2 Martin Road, Moore Park	3

A list of all non-residential noise sensitive receivers within the study area is presented in **Table 3**.

Table 3: Non-residential receivers

Receiver ID	Name	Address	No. of floors
Active Recreation Area			
AR1	Centennial Parklands Equestrian Centre	114-120 Lang Road, Moore Park	2
AR2	Moore Park Golf Course	Cleveland Street, Moore Park	0
Commercial			
C1	Fox Studios	38 Driver Avenue, Moore Park	2
C2	Sydney Cricket Ground	Driver Avenue, Moore Park	3
C3	Entertainment Quarter	122 Lang Road, Moore Park	3
C4	University of Technology Sydney Rugby Australia and NRL building	Moore Park Road and Driver Avenue, Moore Park	5
Child Care			
CC1	Gumnut Gardens Early Learning and Long Day Care Ce	61 Moore Park Road, Centennial Park	1

Receiver ID	Name	Address	No. of floors
CC2	Kira Child Care Centre	230 Moore Park Road, Paddington	1
CC3	Bambini's Child Care Centre	157/159 Cook Road, Centennial Park	2
Educational Facilities			
E1	Sydney Boys High School	556 Cleveland Street, Moore Park	3
E2	Sydney Girls High School	Corner of Anzac Parade and Cleveland Street, Surry Hills	2
E3	Paddington Public School	399-435 Oxford Street, Paddington	2
E4	Bourke Street Public School	590 Bourke Street, Surry Hills	2
E5	University of Technology Sydney Rugby Australia and NRL building	Moore Park Road and Driver Avenue, Moore Park	5
Passive Recreation Area			
PR2	Moore Park	Moore Park	0
Town Hall			
T1	Paddington Town Hall	249 Oxford Street, Paddington	2
Place of Worship			
W1	St Francis of Assisi Catholic Church	64 Gordon Street, Paddington	3
W2	St Mattias Anglican Church	471-475 Oxford Street, Paddington	2
W3	Paddington Uniting Church	395 Oxford Street, Paddington	2
W4	St. Vladimir's Russian Orthodox Church	31 Robertson Rd, Centennial Park	2
W5	Kingdom Hall of Jehovah's Witnesses	20 Leinster St, Paddington	2

Receivers are grouped into Noise Catchment Areas shown in Figure 2.



Figure 2: Noise Catchment Areas

1.2 Purpose and Objectives of this ONMP

This ONMP has been prepared to respond to the requirements of Condition D48.

The purpose of this ONMP is to provide measures to manage noise emissions from Events (see section 2.5 Definitions) at the SFS in accordance with SSD 9835; activities held at the SFS which fall outside this definition are 'deemed to comply' with noise limits.

The primary objective of this ONMP is to strike an appropriate balance between controlling Event noise impacts on the community and ensuring viable operation of the SFS as an Event venue in line with the NSW Government's expectations for the stadium within the Moore Park Sports and Entertainment Precinct.

The ONMP has been updated to address the requirements that form the basis of the Planning Secretary delegate's approval of the ONMP, issued 19 August 2022.

1.3 ONMP Structure

This ONMP is structured as follows:

- Part 1 - Introduction
- Part 2 - ONMP Approval Requirements
- Part 3 - Developing the Operational Noise Management Plan
- Part 4 - Preventative management
- Part 5 - Responsive management
- Part 6 - Review mechanism
- Part 7 - Record of consultation
- Part 8 - Record of calibration and limiter settings

2. ONMP Approval Requirements

As required under Condition D48, an ONMP must be prepared by a Suitably Qualified Acoustic Consultant as defined in Table 7 in consultation with the Environment Protection Authority (EPA), the Department of Planning and Environment, and Venues NSW (the former SCSGT as referred to Condition D48).

2.1 SSD 9835 Noise Management Conditions

Table 4 reproduces Condition D48 and identifies where each component of the condition is addressed throughout this ONMP.

Table 4: SSD 9835 Condition D48 ONMP requirements

Consent Condition	Addressed in Section of this ONMP
D48. An Operational Noise Management Plan (ONMP) must be prepared prior to the commencement of operation of the stadium and updated and approved prior to holding greater than six concerts within a calendar year. The plan must:	
(a) be prepared by a suitably qualified and experienced acoustic expert in consultation with the EPA, the Department and the SCSGT;	Section 3.1 - Author's Qualifications, Table 7: Definitions and Section 7 - Record of consultation
(b) be submitted to the Planning Secretary for approval, at least 3 months prior to commencement of operation of the stadium and be supported by evidence of required consultation in D48(a);	Section 2.2 - Planning Secretary approval
(c) include (but not limited to) the following details that are (where relevant) consistent with the draft Noise Management Plan in the Stage 2 SSDA - Noise and Vibration Assessment prepared by ARUP dated 30 August 2019;	Incorporated throughout
(i) hours of operation, number and type of events;	Section 4.2 - Time limits
(ii) details of sound-check timings associated with an event;	Section 4.2 - Time limits
(iii) identification and location of relevant sensitive receivers;	Section 1.1 - SSD 9835 Noise and Vibration Assessment
(iv) definition of the events that will be deemed-to-comply and those for which an Event Acoustic Report would be required;	Section 2.5 - Definitions
(v) noise limits for sporting events, concerts and outdoor events with sound amplification that are consistent with the Stage 2 SSDA - Noise and Vibration Assessment prepared by ARUP dated 30 August 2019 and as specified in condition E2A;	Section 4.3 - Event noise limits
(vi) noise limits and restrictions on use of the public domain areas within the site post completion of an event;	Section 4.4 - Non-event noise limits

Consent Condition	Addressed in Section of this ONMP
	Section 4.8.3 - Mobile speaker systems
(vii) noise limits for post event activities within the stadium, such as clean-up, resurfacing playfield within the stadium, maintenance of the playfield, use of power-equipment and other functions;	Section 4.3 - Event noise limits
(viii) a definition of non-compliance and a breach of conditions;	Section 4.3.1 - Definition of non-compliance
(ix) a chain of responsibility for management of noise in relation to the stadium activities and nomination of responsible persons and contact details;	Section 4.7 - Chain of responsibility
(x) a protocol for notification of events to residential and other sensitive receivers at least 5 days prior to an event and the relevant regulatory authorities;	Section 4.5.2 - Concert
(xi) definition of a trial period during which the noise limits and noise monitoring system are to be validated. This must be of a duration to enable a sufficient number of different types of events to establish robust relationships between intermediate monitoring locations and receiver locations;	Section 2.5 - Definitions
(xii) A requirement for review of the noise limits and monitoring locations must be included at the completion of the trial period;	Section 5.2.2 - Trial period
(xiii) measures to minimise impacts of sound checks, rehearsals, 'bump-in' and 'bump-out' activities, amplified sound from events, goods delivery, post event clean-up activities, amplified sound within and outside of the stadium, and waste collection services (including the noise impact of associated vehicular movements particularly any such movements occurring during the 'night period' or likely to activate reversing alarms), and stadium precinct grounds maintenance;	Section 4.3 - Event noise limits Section 4.2 - Time limits Section 4.6 - Permanent Noise Monitoring System (PNMS) Section 4.9 - Deliveries, maintenance and clean up
(xiv) a protocol for determining compliance with the noise limits including establishing noise limits at intermediate monitoring points for different event configurations and meteorological conditions;	Section 4.6.3 - Monitoring system transfer functions
(xv) a procedure for management actions and responsibilities to avoid non-compliances and to respond to non-compliances, in the event of detected exceedance of noise limits;	Section 4.6.7 - Exceedances of Event noise limits
(xvi) a complaints handling procedure, including operation of a telephone complaints line and action protocol;	Section 5.1 - Complaint handling
(xvii) a procedure and guidance on the frequency, time of occurrence and duration of pyrotechnic displays (if any), including a community notification strategy;	Section 4.5.3 - Pyrotechnics

Consent Condition	Addressed in Section of this ONMP
(xviii) the location of intermediate noise monitoring points and the applicable noise levels to demonstrate compliance with project noise requirements at sensitive receiver locations in accordance with condition E2A;	Section 4.6.2 - Permanent monitor locations
(xix) the acoustic specifications, technical performance criteria, calibration regime and data storage for a noise monitoring system which includes the use of intermediate noise monitoring points;	Section 4.6.6 - Monitoring of noise levels during an Event
(xx) a protocol for validating the performance of the noise monitoring system to demonstrate that a reliable and repeatable measure of noise at receiver locations can be obtained through measurement at the intermediate noise monitoring locations. The protocol must include reporting of the empirical and theoretical measurements / calculations used to determine the intermediate noise levels to the Department;	Section 4.6.3 Monitoring system transfer functions
(xxi) a protocol for reporting the results of noise monitoring for events; and	Section 5.2 - Reporting requirements
(xxii) a mechanism for periodic review of the plan, to be in consultation with the Department; and	Section 6 - Review mechanism
(xxiii) a method of continuous improvements to the ONMP and protocols, to ensure various music genres from the current and future events held at the stadium (both known and new events that cannot be considered in this instance) meet the noise objectives.	Section 6 - Review mechanism

Note: This requirements in condition D48(c) may need to be amended by the Planning Secretary, if required, during the approval of the ONMP.

Pursuant to Conditions E5 to E11 of SSD 9835, operation noise management measures are required to be implemented. Table 5 reproduces Conditions E5 - E11 and identifies where each condition is addressed throughout this ONMP.

Table 5: SSD 9835 Condition E5 - E11 Operation Noise Management requirements

Consent Condition	Addressed in Section of this ONMP
Operation Noise Management	
E5. The project must at all times comply with the approved ONMP required under condition D48 of this consent.	Application of this ONMP
E6. The noise monitoring system as required by condition D45 must be installed and be operative for all events at the stadium, except the deemed-to-comply events (as defined in the ONMP), so that real time data for noise measurement and noise monitoring are available at any point in time for measuring noise generation during events.	Section 2.5 - Definitions and Section 4.6.4 - Storage of measurement data
E7. The Applicant must conduct regular monitoring of the noise generated by the stadium during the nominated and agreed trial period in the ONMP. Data regarding noise generated by a	Section 4.6.3 - Monitoring system transfer functions

Consent Condition	Addressed in Section of this ONMP
sufficient number of different types of events must be collected during this period to establish robust relationships between the L_{eq5min} and L_{Fmax} , and the relationship between intermediate monitoring locations and receiver locations.	
E8. At the completion of the trial period as approved in the ONMP required in condition D48, the Applicant must produce a report to the satisfaction of the Planning Secretary, which includes a detailed review of the noise limits and monitoring locations to demonstrate that the noise generated by the various types of events at the stadium comply with the intent of the noise limits established in Stage 2 SSDA – Noise and Vibration Assessment prepared by ARUP dated 30 August 2019 and which was to ensure that noise impacts will be no greater than those experienced under the statutory Notice of Preventive Action 1003904 (as at the date of the development application).	Section 5.2.2 - At completion of Trial period
E9. In addition to the requirement of condition E8, real time noise measurement data from the first three music concerts must be provided to EPA and the Planning Secretary. The data should be obtained at the identified noise compliance points (including intermediate compliance points) as identified in the Stage 2 SSDA – Noise and Vibration Assessment prepared by ARUP dated 30 August 2019 and be supported by analysis to demonstrate: (a) how, over the first three concerts, the Applicant or operator of the stadium undertook a range of measurements at selected receiver locations and intermediate sites to validate propagation predictions and allow comparisons of stadium levels to noise objectives established for the stadium in the Stage 2 SSDA – Noise and Vibration Assessment prepared by ARUP dated 30 August 2019; (b) how the results of these tests have been used / will be used to inform the setting of noise level triggers for the stadium microphones to ensure compliance with the noise objectives established for the stadium; (c) that the equivalent noise levels at the sensitive receivers as identified in the Stage 2 SSDA – Noise and Vibration Assessment prepared by ARUP dated 30 August 2019 are achieved at all times.	Section 5.2.1 - Following each of the first three Concert events
E10. The Applicant must submit a report with the noise measurement data and supporting analysis to EPA and the Planning Secretary within two weeks of the completion of each of the first three music concerts or any other event using amplified music to: (a) obtain written advice and comments from EPA and the Planning Secretary regarding compliance with condition E9 and validation of the ONMP after each event; and (b) obtain written advice from EPA and the Planning Secretary regarding any additional management measures and or refinement of the ONMP required having regard to compliance with condition E9.	Section 5.2.1 - Following each of the first three Concert events

Consent Condition	Addressed in Section of this ONMP
E11. If non-compliance is reported, the written advice from EPA and the Department must be obtained and appropriate actions undertaken including (but not limited to) refinement of the ONMP, prior to the commencement of the next music event at the stadium, following the event where the noise measurements were undertaken, and data was submitted.	Section 5.2.3 - Upon a non-compliance

2.2 Planning Secretary approval

The ONMP must be submitted to the Planning Secretary for approval, at least 3 months prior to the commencement of the operation of the new stadium.

The stadium is proposed to commence operation in Q3 2022. This ONMP was initially submitted to the Planning Secretary in June 2022, more than 3 months prior to the stadium's commencement.

The Planning Secretary's delegate approved the ONMP on 19 August 2022, subject to requirements. Table 6 reproduces the conditions in the Planning Secretary's approval and identifies where each condition is addressed throughout this ONMP.

Table 6: SSD 9835 Planning Secretary delegate's approval conditions (August 2022)

Consent Condition	Addressed in Section of this ONMP
Revise the ONMP to require the permanent noise monitoring system (PNMS) to be operative for all events at the stadium, including sporting events, so that real time data for noise measurement and noise monitoring are available at any point in time for measuring noise generation during events. The Department notes that the word 'event' in the consent is defined as "A planned public or social occasion" which includes sporting events. The revision must include the discussion of sporting events where relevant to noise monitoring of events.	Sections 4.6 and 4.6.3
Revise the ONMP to describe the exclusion rules for invalid noise data. The rules must ensure that the exclusion of L_{Aeq} measurements are based on average wind speeds, and discusses the procedures for determining the average wind speed above which, noise measurements may be excluded so that data is obtained under the highest wind speed practicable. <i>Note: Condition D45 and D47 provide that the PNMS must ensure high performance windshields are selected to enable effective monitoring at wind speeds significantly above 5m/second, so that reliable noise levels are measured under the highest wind speed practicable based on best available technology.</i>	Section 4.6.6
Revise section 4.6.4 and/or other relevant section of the ONMP to include details of the PNMS and parameters to be stored, such as: a. Noise monitoring equipment details; b. Weather Station details; c. Wind speed and rain data; and	Section 4.6.4.

Consent Condition	Addressed in Section of this ONMP
d. Data storage, including LAeq(5min) and 63 Hz data, instantaneous data during events and any other data needed to exclude the influence of crowd noise.	
Revise section 5.2.2 of the ONMP to include the following additional details of what must be included in the trial report: a. Summary of all noise monitoring results over the trial period; and b. Review of data for a sufficient number of different types of events including, but not limited to: Concert events, League events, state or finals events, and any other sporting event.	Section 5.2.2
Submit a revised ONMP that incorporates the amendments required by points 1 to 4 above to the Secretary for approval prior to the first sporting event occurring at the SFS.	This version of the ONMP

2.3 Land to Which this ONMP Applies

This ONMP applies to the SFS Site, which is located at 40-44 Driver Avenue, Moore Park within the City of Sydney Local Government Area (LGA), and is legally described as Lot 11, Part Lot 10 and Part Lot 12 in DP 1255013.

The Site is located on the eastern edge of the city, approximately 3km from the Sydney CBD, and forms part of a larger entertainment and recreation precinct shared with Centennial and Moore Parks, Fox Studios, and the Entertainment Quarter. It is located in the northern corner of the precinct and is bounded by Moore Park Road to the north, Paddington Lane to the east, the existing Sydney Cricket Ground stadium to the south and Driver Avenue to the west. The site is located immediately to the south of the suburb of Paddington, with the suburbs of Centennial Park to the east and Surry Hills to the west.

The site is connected to Sydney's transport network through existing bus routes and benefits from a dedicated stop on the recently completed Sydney CBD and South East Light Rail.



Figure 3: SFS Site Location

2.4 Supporting documents

This ONMP has been informed by a number of key documents prepared for the SFS Redevelopment and Moore Park Precinct as summarised below:

- Stage 2 SSD DA – Noise and Vibration Impact Assessment, Arup, 2019;
- Stadium Fitness Facilities – Noise and Vibration Impact Assessment, Arup, 2020;
- Social Impact Monitoring Program, Urbis 2021
- Sydney Football Stadium Event Management Plan, Venues NSW, 2022
- Precinct Village and Car Park – Noise and Vibration Impact Assessment, Arup, 2021; and
- Notice of Preventative Action 1003904, NSW EPA, 2017.

This ONMP is not reliant on, or bound by, any other operational management plan. It should however be read in conjunction with the other operational management plans.

2.5 Definitions

Definitions used throughout this ONMP are outlined in Table 7.

Table 7: Definitions

Term	Definition
Suitably Qualified Acoustic Consultants	An acoustic consultant who is a member of one or more of the following organisations: • Association of Australian Acoustical Consultants;

Term	Definition
	• Australian Acoustical Society or • Institution of Engineers Australia.
Event	A planned public or social occasion carried out within the SFS which involves 200 or more patrons.
Sporting Event	Sport entertainment carried on outdoors where sound amplification equipment is used as part of the activity.
Concert Event	A specifically ticketed musical entertainment undertaken outdoors within the stadium structure with sound amplification equipment used as part of the activity.
Mardi Gras after-party	An official annual concert event that occurs immediately following the official Sydney Mardi Gras Parade.
Rehearsal / Sound check	The use of sound amplification equipment, other than the in-house PA, in preparation for an Event.
Deemed to Comply activity	An activity within the SFS which involves less than 200 patrons.
Event Representative(s)	A person nominated by Venues NSW management who is appointed the responsibility and authority to exercise control of noise emissions from the SFS. The Event Representative will liaise with the user and all relevant stakeholders.
Receivers	Noise sensitive receivers which are defined as residences, classrooms in educational institutions, hospital wards, places of worship, active and passive recreation areas, child care centres and community centres such as town halls. Receivers have been identified and approved under SSD 9825 and are reproduced at Section 1.1.2 of this ONMP.
Trial period	The first twenty four months following the commencement of operations at the SFS.
Calendar year	The period of 12 months from 1 January to 31 December

3. Developing the Operational Noise Management Plan

3.1 Author's Qualifications

This ONMP has been prepared by Mathew Simon of Arup, a suitably qualified acoustic engineer and a member of the Association of Australian Acoustical Consultants and the Australian Acoustical Society (Member ID M1238).

3.2 Stakeholder consultation

The ONMP has been developed over a period of more than 12 months and is the culmination of an extensive process of technical studies and investigations, and stakeholder consultation.

The views and responses of organisations and community members were received through a variety of channels at critical stages in the development of the ONMP. Consultation with the community began in 2017 with the public exhibition of the Stage 1 Concept Application (SSD 9249) and subsequent public exhibition of the Stage 2 SSD (SSD 9835). Over the course of 2021 and 2022, Venues NSW and its consultant team engaged with organisations and community members via a series of meetings, workshops and other engagement activities. The feedback received during these activities was used to inform the development of the ONMP.

The stakeholder consultation requirements prescribed by Condition D48 in relation to this ONMP, including their roles and responsibilities, is detailed in Table 7. Evidence of consultation outcomes is provided in Appendix A.

Table 8: Summary of stakeholder consultation process

Stakeholder	Description			
	Preparation	Consultation	Endorsement	Information*
Infrastructure NSW	✓			
Venues NSW (formerly SCSGT)	✓	✓		
NSW Environment Protection Authority		✓		
Department of Planning and Environment		✓	✓	
University of Technology, Sydney		✓		
Fox Studios		✓		
Kirra Child Care Centre		✓		
Adjoining landowners/occupiers		✓		

* Following endorsement by Planning Secretary

3.3 Continuing engagement and opportunities to participate

The engagement process has been, and will continue to be, a core part of the ONMP's implementation. All stakeholders will be kept informed of the progress of the ONMP and there will be opportunities to participate in future stages of planning and to comment on aspects of implementation, as appropriate.

3.4 Scope and methodology

The scope of the ONMP was determined by the (then) Department of Planning, Industry and Environment (DPIE) in imposing Condition D48.

This ONMP has been developed based on recommendations outlined in the Stage 2 SSD DA - Noise and Vibration Assessment (Arup, 2019). Mitigation measures have been further developed following planning approval in consultation with Infrastructure NSW in relation to the Permanent Noise Monitoring System and permanent weather station, and Venues NSW in relation to operational matters.

4. Preventative management

4.1 Number of concert events

In accordance with Condition A8 of SSD 9835, a maximum of 20 Concert Events (including the Mardi Gras after-party) per calendar year are permitted within the stadium structure.

4.2 Time limits

Time limits of Sporting, Concert and Other Events are provided in Table 9.

Table 9: Activity time limits

Event Activity type	Time limits		
	Not to commence before	Not to finish after	Duration
Event			
Sporting Events	8:00 AM	11:00 PM	-
Concert Events (excluding the Mardi Gras after-party)	10:00 AM	11:00 PM	Maximum 5 hours duration ¹ With a maximum of two of the 20 concert events per calendar year allowed to run for up to 10 hours during concert operational hours of 10am and 11pm
Concert Rehearsals	10:00 AM	10:00 PM (after 7pm only in exceptional circumstances)	Kept to absolute minimum
Concert Sound Tests / Checks:	10:00 AM	10:00 PM (after 7pm only in exceptional circumstances)	Kept to absolute minimum
Other outdoor event with sound amplification – days preceding working days	10:00 AM	8:00 PM	-
Other outdoor event with sound amplification – days not preceding working days	10:00 AM	10:30 PM	-
Non-Event			
Organised temporary activities on event days in public domain areas at the site	8:00 AM	11:00 PM	-

Event Activity type	Time limits		
	Not to commence before	Not to finish after	Duration
Mardi Gras after-party	Commencing after the official Mardi Gras parade	7:00 AM the following day	
All organised activities within the stadium and / or the public domain areas within the site, that could be potentially audible at nearby residential receptors (excluding the Mardi Gras after-party).	8:00 AM	11:30 PM	-
Stadium Members Facilities			
The operation of the Stadium Members Facilities	5:30 AM and 11:30 PM Monday to Friday; 6:00 AM and 11:30 PM on Saturdays; and 7:00 AM and 11:00 PM on Sundays.		
Activities within the Public Domain			
Outlined in Table 6 of the Sydney Football Stadium Event Management Plan, Venues NSW, 2022			
1. Refers to Concert performance only, not including bump in and bump out which will not include amplified sound.			

4.3 Event noise limits

Event noise limits are presented in Table 10.

Table 10: Event noise limits

Receivers	Amplified sounds limit ¹ , L _{eq(5min)}	
	dB(A)	1/1 octave, 63Hz dB(Z)
Concert Event	70	90
Sporting / Other Event	60	-
1. Applies at property boundary of all residences, 1.5m above occupied floors.		

A review of Event noise limits shall be conducted at the completion of the Trial Period. Initial Concerts indicate these limits are not equivalent to L_{max} criteria outlined in the EPA Prevention Notice which is currently in effect.

These noise limits apply to wind speeds up to 18 m/s, above which wind generated noise on the microphone limits measurement accuracy. During periods of wind greater than 18 m/s, Venues NSW must continue to take all reasonable and feasible actions to minimise noise, which will include:

- adjusting the in-house sound system to limit the noise to settings established during the trial period; and
- maintaining Permanent Noise Monitoring System (PNMS) noise limits for Concert Events for intermittent periods where wind of less than 18m/s are recorded.

4.3.1 Definition of non-compliance

As a single exceedance of the Event noise limits does not directly translate to an unacceptable disturbance to the community, a single exceedance does not constitute a strict non-compliance with the consent.

An exceedance of the noise limits ($L_{Aeq(5min)}$ or $L_{Zeq(5min)}$ 63 Hz) during an Event will not be taken to be a breach of Project Approval conditions unless they satisfy the conditions outlined in Table 11.

Table 11: Breach of Project Approval conditions

Exceedance of limits	No. of consecutive exceedances in one Event	No. of separate occasions within the Event
Up to 2 dB	1	8
	2	3
	3	1
Up to 5 dB	1	4

4.4 Non-event noise limits

Non event noise limits have been established in accordance with NSW EPA's Noise Policy for Industry which are based on periods of the day.

Non-event noise includes all noise generated by the SFS and the stadium members facilities, excluding patron / crowd and music noise. Where activities in the Public Domain occur outside of Event time limits, such as extending after the duration of an Event, Non-event noise limits apply. In accordance with Condition E2 of SSDA 9835, Non-event noise generated at the premises must not exceed the noise limits at the times and locations in Table 12. Noise Catchment Areas are presented in Figure 2.

All post-event activities must comply with the non-event noise limits.

Table 12: Non-event noise limits

Noise Catchment Area	Day, $L_{Aeq}(15min)$	Evening, $L_{Aeq}(15min)$	Night, $L_{Aeq}(15min)$	Night, L_{Amax}
NCA 1	58	56	55	70
NCA 2	58	53	51	66
NCA 3	57	54	52	64
NCA 4	48	46	43	56
NCA 5	44	41	38	50
NCA 6	52	45	38	60
Notes: - Day: the period from 7 am to 6 pm Monday to Saturday; or 8 am to 6 pm on Sundays and Public Holidays; - Evening: the period from 6 pm to 10 pm; and - Night: the remaining period.				

The non-event operational noise must comply with the noise limits when the measurement is undertaken utilising the following criteria:

- the relevant noise monitoring equipment must be located at the reasonably most affected external point at the location, but no closer than 3 m to a vertical reflecting surface and between 1.2 to 1.5m above ground level for single storey residences and at a height between 1.2 to 1.5m above the finished floor level for multi-storey residences;
- noise measurements must not be undertaken where rain or wind speed at microphone level will affect the acquisition of valid measurements; and
- the modifying factor corrections in Table C1 in Fact Sheet C of the Noise Policy for Industry (EPA, 2017) may be applied, if appropriate, to the noise measurements by the noise monitoring equipment.

4.5 Notification

4.5.1 Sporting or other non-concert Events

Once a sporting event has been confirmed and scheduled at the venue by the Sporting Codes, notification of the event is updated on the Venues NSW website to provide event details including:

- date of the event;
- details of the participating teams as applicable;
- gate opening times (members and public); this is the earliest time that patrons will be allowed to enter the venue; and
- starting time for the match or main activity.

The website will be updated at least 5 to 14 days prior to any scheduled sporting or non-concert event.

Following the commencement of SFS operations, the community will be able to subscribe to the VNSW website and receive updates of new events being held at the SFS.

Similar information is also uploaded on each of the codes and club websites. Club and Stadium Fitness Facilities Members will also be notified of newly confirmed events.

Forecast sporting event schedules will continue to be provided to Moore Park Event Operations Group (MEOG)¹ and TfNSW as a forward projection of potential events to be held 6 to 12 months into the future. This enables coordination and planning across all precinct wide events. Once the sporting event is confirmed all stakeholders are notified including MEOG, TfNSW, TransDev, City Rail, NSW Police, Playbill, GSP, etc. Stakeholders will be provided details of the forecast crowd including event specific details. In addition, TfNSW issue transportation specific notifications via VMS signage across the road network to advise road users of upcoming events. This notification typically occurs 2 - 3 days ahead of events.

4.5.2 Concert Events

Once a concert has been confirmed and scheduled at the venue by the event Promoters, notification of the event is updated on the Venues NSW website to provide event details including:

- date of the event;
- details of the performing artist;
- gate opening times; this is the earliest time that patrons will be allowed to enter the venue;
- start time for opening act; and
- anticipated start time and finish time for main act.

Once the SFS is operational, the community will be able to subscribe to the VNSW website and receive updates of new events being held at the SFS.

Concerts are typically confirmed 6 to 8 months ahead of the scheduled event. Once the concert event is confirmed all stakeholders are notified including EPA, MEOG, TfNSW, TransDev, City Rail, NSW Police, Playbill, GSP, etc. Stakeholders are provided details of the forecast crowd including event specific details. In addition, TfNSW issue transportation specific notifications via VMS signage across the road network to advise road users of upcoming events. This notification typically occurs 2 - 3 days ahead of events.

¹ The Moore Park Event Operations Group (MEOG) develops operational plans to ensure the delivery of safe and successful events in the Moore Park sporting and entertainment Precinct and provides a forum for member agencies to work with event organisers on the effective traffic and parking operations in the precinct and its surrounds. MEOG is chaired and coordinated by Customer Journey Planning (CJP) Major Events. MEOG member agencies include Greater Sydney Parklands, Transport for NSW, NSW Police, Venues NSW, the City of Sydney, the NSW Taxi Council, the Bus and Coach Association, the Entertainment Quarter and Playbill Venues. The MEOG framework ensures that the multiple events occurring throughout the precinct are coordinated across all relevant stakeholders.

5 to 14 days prior to any scheduled concert event, notification of upcoming concerts will be distributed by a letterbox drop to noise sensitive receivers within the notification resident boundary outlined in the approved Operational Noise Management Plan (Figure 4). This will include sensitive receivers as nominated in the development consent, being UTS, Disney Studios and Kirra Child Care Centre. The letter box drop will provide details of the event including:

- times of the concert rehearsal;
- duration of the concert rehearsal;
- times of planned sound tests/checks;
- duration of sound tests/checks;
- time of Concert including start time of opening act and main act, and any planned pyrotechnic displays, specifically including the details listed in Section 4.5.3 below in respect of any proposed aerial shells and other high noise impact pyrotechnics;
- duration of concert, description of concert and expected crowd attendance; and
- details of the contact person & website for feedback or complaints.



Figure 4: Notification boundary

4.5.3 Pyrotechnics

Requirements for Pyrotechnics displays at the SFS are provided in the following documents.

- Event Planning Pyrotechnics & Chief Warden Checklist (Venues NSW, 2021)
- Venues NSW Pyrotechnics & Special Effects Policy Recommendations (Foti International Fireworks, 2022) – outlines:

- minimum requirements for pyrotechnics and special effects contractors
- permitted areas for use for various aerial shells, ground fireworks, indoor and close proximity fireworks / pyrotechnics, and non-pyrotechnic special effects.
- the Pyrotechnics Policy (Venues NSW, 2021) - states:

Venues NSW does not authorise the use of pyrotechnics which will contradict any part of the act (NSW Protection of Environment Operations Act 1997) or regulation (POEO (Noise Control) Regulation 2008).

All efforts must be made to reduce the amount of noise caused by pyrotechnic displays. Venues NSW stadiums are surrounded by stakeholders who are significantly affected by noise. Pyrotechnics which produce loud noise also pose the risk of inciting crowd panic as loud explosions without warning may simulate gunfire or an explosion of hostile intent. Such issues should be considered when planning a pyrotechnic display and patrons should be given notice via Public Address (PA), Video Screens, IPTV and signage to inform them that pyrotechnics will be used. As a result, pyrotechnics which result in loud and sudden explosions should be avoided.

In the event where a pyrotechnics display is expected to have the potential to impact on surrounding stakeholders due to noise, the respective stakeholders must be notified in writing of the intention to undertake a display which may result in an impact to stakeholder/s. Contact should be made with the relevant representative/s of the stakeholder organisation with such notice as to allow the stakeholder to undertake an assessment of the impact this may pose to their own conditions and operations.

If aerial shells and other high noise impact pyrotechnics are used, the venue hirer, provider and/or the Venues NSW will notify local residents:

- by means of letterbox drop at least 21 days from the date of the display:
- letters will note the date, specific start and finish times of the display/s and details of the pyrotechnics used;
- letters will provide clear details of how to contact Venues NSW should residents have any questions or wish to make a complaint before, during or following the display; and
- letters will also provide details on the Venues NSW information hotline, email address and website where noise management information can be found, including access to a copy of the ONMP (as detailed in Section 5.1).

In addition to notification of pyrotechnics displays outlined in Section 4.5.2, the pyrotechnics provider shall submit a Risk Management Plan addressing noise impacts of pyrotechnic displays on local residents and wildlife shall be provided to Venues NSW, including:

- Transport to,
- bump in and bump out,
- setup,
- circuit testing,
- sleeping,

- firing,
- pack-up; and
- transport from the venue.

Aerial shells and other high noise impact pyrotechnics are not permitted to be used in any display at the SFS.

The Event Management Plan prepared pursuant to Condition D28 also includes details on the use of pyrotechnics and should be referred to,

4.6 Permanent Noise Monitoring System (PNMS)

A noise monitoring system comprising permanent on-site noise monitors has been installed to manage Event noise emissions from the SFS. The Permanent Noise Monitoring System (PNMS) will continuously monitor noise levels during Events which is comprised of the main event, as well as sound checks and rehearsals associated with Concert Events. A feedback of real-time noise monitoring data into the event operations control room shall be provided to allow both real-time management of noise emissions as well as facilitate timely response to measured exceedances of noise limits. The live read out shall be made available to front-of-house sound engineers managing the sound system.

4.6.1 Events to be monitored

Events which shall be monitored using the PNMS include:

- all concert events, including the Mardi Gras after-party;
- all sporting events;
- all double-header concert events, sporting events or combination sporting/concert events; and
- all events that involve activities extending beyond one day

4.6.2 Permanent monitor locations

Two permanent noise monitors have been installed around the perimeter of the stadium bowl. Noise monitor locations are presented in Figure 5 and Figure 6.

While the installation of two permanent noise monitors has been approved by the Planning Secretary's delegate pursuant to Conditions D45, D46 and D47 of SSD 9835, an assessment of the noise monitoring locations at the end of the Trial Period, pursuant to Condition E8 of the consent is required to be undertaken at the conclusion of the Trail Period, to confirm that the number and suitability of microphone locations are appropriate.

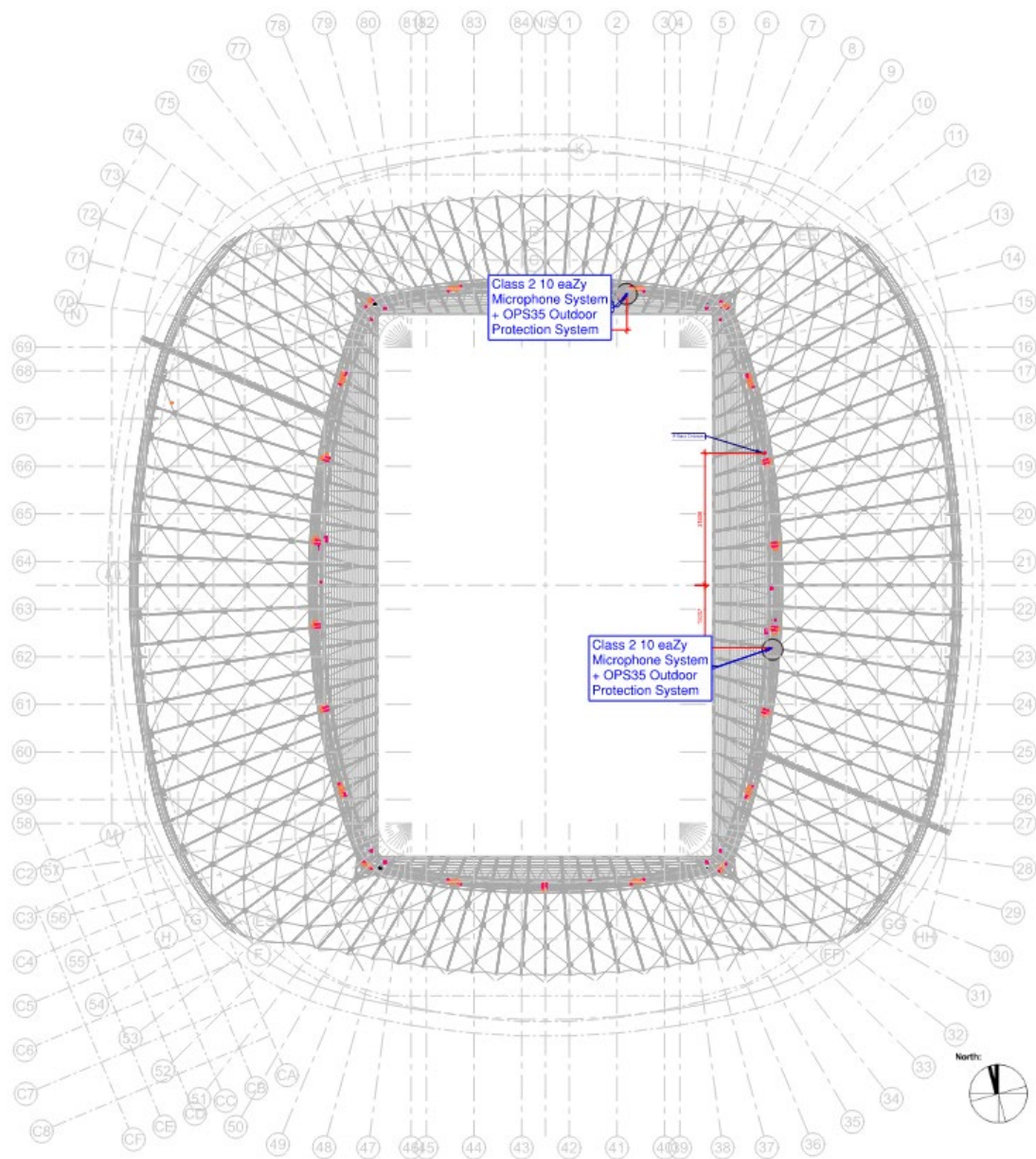


Figure 5: Noise monitor locations - plan view

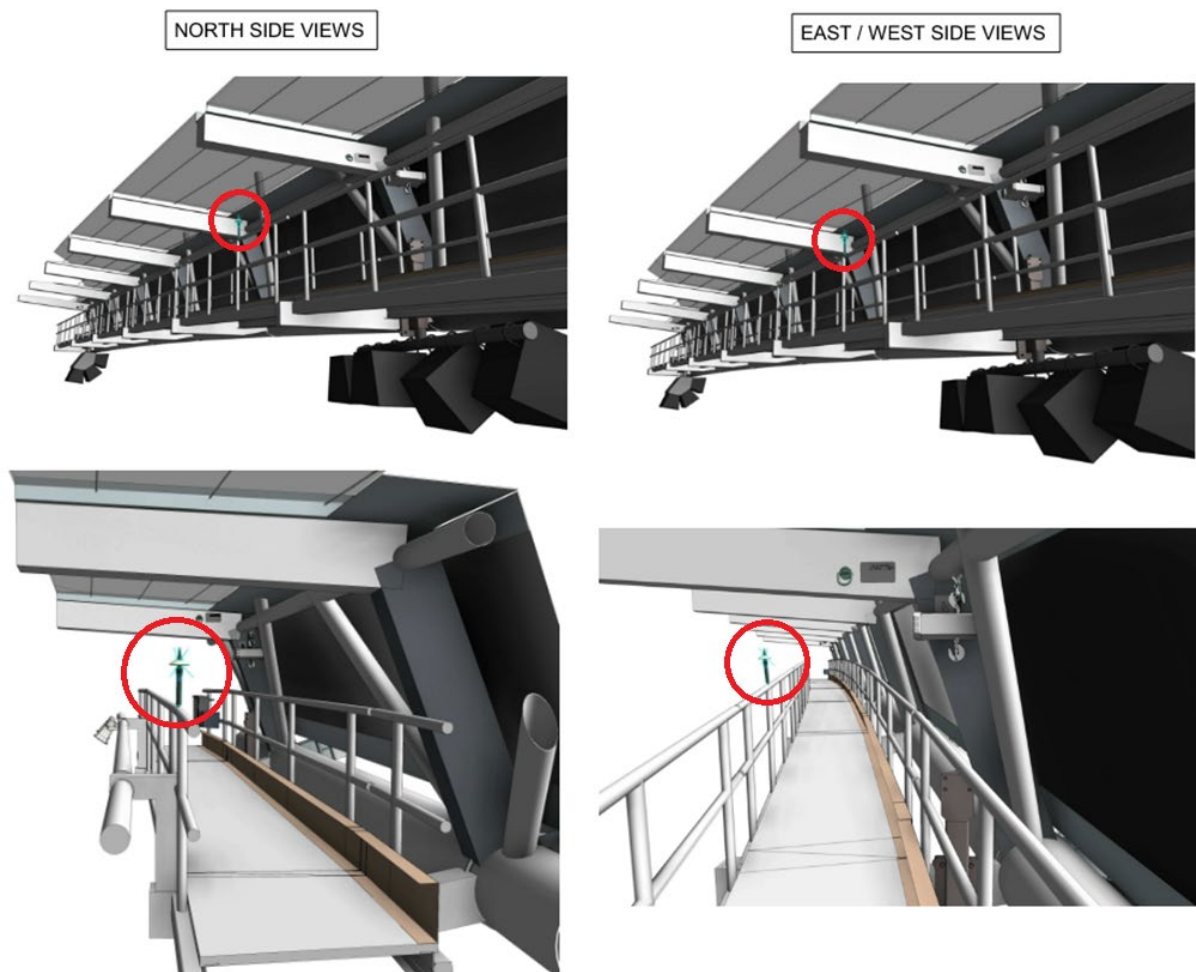


Figure 6: Noise monitor locations - detailed view

4.6.3 Monitoring system transfer functions

The PNMS shall be used to determine noise levels at corresponding worst affected receivers. These levels shall be used to assess compliance with noise limits outlined in Table 10.

Differences between noise levels at receivers and at corresponding permanent noise monitors (e.g. 252 Moore Park Road and northern noise monitor) are termed transfer functions. Transfer functions will vary based on each Event's sound system layout, as discussed in Section 4.8.2. Transfer functions shall be a 1/1 octave bands spectrum rather than a single broadband value.

Transfer functions shall be determined prior to the Event commencing and during preparatory activities, such as during sound checks. The procedure for establishing transfer functions through attended measurements would be as follows:

- Attended measurements shall be conducted at the potentially worst affected residential receivers, identified as 252 Moore Park Road and 5 Poate Street for typical north speaker facing south configuration (see Section 4.8.2).
- Pink noise (noise having equal energy per octave) shall be played through the Concert Sound System at a level at least 10dB above the background $L_{A90(5min)}$ noise level at the receivers such that the signal is clearly audible. The L_{A90} parameter shall be used to

determine the Sound System contribution. The level difference between the northern microphone and 252 Moore Park Road, and between the eastern microphone and 5 Poate Road, shall be used to derive the Transfer Functions, where the typical north speaker facing south configuration is implemented. Measurements shall only be made during the periods when sound checks are allowed.

- The difference between the octave band noise levels at the receivers and the corresponding permanent monitoring location, defined as the transfer function, shall be used to determine the Representative noise limits.
- The transfer function shall be subtracted from the monitoring system noise levels to determine corresponding noise levels at receivers.

Throughout the 'Trial Period' as defined in Table 7, attended measurements shall be conducted to establish transfer functions. The need for attended measurements to establish transfer functions following the Trial Period shall be subsequently reviewed by DPE following the issue of the Trial Period report, outlined in Section 5.2.2. Should Event speaker configurations be proposed for which an appropriate transfer function has not been established (eg. north facing speakers), additional attended measurements shall be conducted to establish transfer function.

In addition to establishing transfer functions during Concert Event sound checks, attended noise monitoring shall be conducted during Concert Events throughout the Trial Period. The data collected during this period can be used to determine whether transfer functions are significantly different between sound system configurations, and the need for on-going attended monitoring shall be reviewed after this period.

At the anticipated worst affected receivers along Moore Park Road, which are in the order of 50 metres from the SFS, meteorological conditions are not predicted to have a significant impact, therefore have not been further considered.

4.6.4 Storage of measurement data

Pursuant to Condition E6 and the Planning Secretary's approval of the ONMP, the noise monitoring system must be installed and be operative for all Events at the stadium so that real time data for noise measurement and noise monitoring are available at any point in time for the management of noise generation.

Details of the PNMS and parameters to be stored, including

- a. Noise monitoring equipment details;
- b. Weather Station details;
- c. Wind speed and rain data; and
- d. Data storage, including $L_{Aeq(5min)}$ and 63 Hz data, instantaneous data during events and any other notable events which may have influenced measured noise levels.

Data shall be stored on a SFS server such that it can be accessed at any time by the Event Representative.

4.6.5 On-going monitoring system calibration and weather condition check

An Event Representative (as defined in Table 7), will be provided training by a Suitably Qualified Acoustic Consultant, as defined in Table 7. Before and after the use of the PNMS the Event Representative will:

- Perform a calibration check on the monitoring system
- Perform a basic field check of the PWS to confirm wind speeds appear reasonable before each Event; and
- Ensure the PWS is calibrated in accordance with the requirements of AS 3580.14:2014

No attended measurements are permitted to be conducted by Venue management, and must be conducted by a Suitably Qualified Acoustic Consultant.

Calibration training will include operating the calibrator, attaching it to the monitor and undertaking calibration using the monitor. In accordance with AS1055-1, in all cases, the operating instructions for the instrument shall be followed carefully. If the instrumentation system registers a discrepancy equal to or greater than 1 dB between consecutive checks, any measurements in the interval between the two checks shall be considered invalid.

In the case a drift of 1 dB or greater is registered, a Suitably Qualified Acoustic Consultant shall be engaged to address the issue.

Annual calibration of the noise monitoring system is required to maintain accuracy of the system. Annual calibration shall be undertaken by a Suitably Qualified Acoustic Consultant, as defined in Section 2.5.

Annual calibration shall be recorded in Section 8.

Full details of the approved PNMS are provided in Appendix 9.

4.6.6 Monitoring of noise levels during an Event

Real-time feedback provided on the monitoring system displays shall be used by the sound desk operator to adjust sound system noise levels and maintain compliance with noise limits in Table 10, to be overseen by an Event Representative. Staff responsibilities are outlined in 4.7.

It should be noted a single exceedance of the noise limits does not constitute a strict non-compliance with the consent, with details provided in 4.3.1.

The PNMS incorporates GRAS AM0089 windshields to enable effective monitoring at wind speeds up to 18m/s.

The average wind speed shall be calculated as the arithmetic mean of the recorded wind speed data over 5 minutes. $L_{Aeq(5min)}$ noise levels recorded during periods where average wind speeds exceed 18 m/s shall be excluded from noise monitoring data. This speed corresponds to a wind induced noise level of 74dBA and ~77dBZ(63Hz, 1/1oct) in accordance with the GRAS AM0089 datasheet, attached in Section9, which is anticipated to be at least 10dB below the representative noise limits of the PNMS, therefore will not contribute to measured Event noise contributions. These limits and corresponding wind speed limit shall be reviewed at the end of the Trial Period.

During periods of wind greater than 18m/s, Venues NSW must continue to take all reasonable and feasible actions to minimise noise in accordance with this Plan, and any other measures deemed reasonable by the Event Representative in the context of the particular situation.

4.6.7 Exceedances of Event noise limits

Should an exceedance of Event noise limits be measured, the Venues NSW Event Representative(s) shall immediately inform the Event operator of the magnitude of the exceedance, and the Event operator shall reduce the settings of the sound amplification system such that the likelihood of a subsequent exceedance is minimised.

The amount of adjustment may depend on the scale of exceedance or the nature of the exceedance event (e.g., a single musical crescendo resulting in an exceedance may not warrant a reduction in settings).

The responsibilities of each party are outlined in Section 4.7.

4.6.8 Non-compliance

If exceedances of noise limits result in a non-compliance, as defined in Section 4.3.1, the Planning Secretary must be notified in writing, as detailed in Section 5.2.3.

4.7 Chain of responsibility

4.7.1 Venues NSW Event Representative

Venues NSW retains ultimate control of the noise emissions from the SFSR, including those caused by any sound amplification equipment operated outdoors.

An Event Representative(s), as defined in Table 7, shall be appointed by Venues NSW for each event at the SFS, with the responsibility and appointed authority to exercise control of noise emissions from the SFS.

The Event Representative(s) shall:

- be provided with and be familiar with the requirements of this ONMP;
- be responsible for the implementation of the requirements of this ONMP;
- be provided with the necessary resources and authority to implement the requirements of this ONMP, including the authority to require the sound desk operator to reduce noise levels;
- be available throughout the event to receive complaints regarding event noise;
- be available throughout the event to provide event noise information via the Hot Line; and
- ensure prompt response and / or implementation of mitigation measures.

4.7.2 Event operator

Event operators, including sound engineers, and their subcontractors shall operate under the responsibility of Venues NSW, namely the Event Representative.

The Event Operator and staff shall:

- be provided with and be familiar with the requirements of this ONMP;
- be responsible for enacting the direction of the Event Representative and Venues NSW;
- be provided with the necessary resources and authority to implement the requirements of this ONMP;
- be available throughout the event to receive direction from the Event Representative and Venues NSW and be contractually required to act on those directions;
- be available throughout the event to provide event noise information to the Event Representative and Venues NSW; and
- ensure prompt response and / or implementation of mitigation measures as directed.

4.7.3 Venues NSW Operations Representative

A representative from Venues NSW's Operations team shall be responsible for the implementation of noise management measures outside of Event times, including the management of noise from grounds maintenance and deliveries waste collection outlined in Section 4.9.

4.8 Setup of sound amplification systems

4.8.1 In-House PA

During commissioning of the In-House PA system, the PA system noise level which corresponds with the amplified sound noise limits during sports or other events of $60\text{dB}L_{\text{Aeq}(5\text{min})}$ at surrounding residences shall be determined and a system noise limiter shall be applied at this level to ensure compliance is maintained. This may be undertaken using the attended monitoring method outlined in 4.6.3.

Limiter settings shall be reviewed annually by a Suitably Qualified Acoustic Consultant utilising the same attended monitoring method to account for drift. Results of the limiter setting review shall be recorded in Section 8.

Calibration of the noise limiter will be based on an $L_{\text{Aeq}(\text{period})}$ of a typical vocal announcement and musical recording of equivalent length, assuming the PA system may be used for 5 minutes consistently.

4.8.2 Concert Sound Systems

Sound systems for Concert Events will be provided by the Event Organisers. Concert speakers are likely to be arranged in one of three configurations:

1. Typical configuration: speakers are located at the north facing south, away from the nearest most potentially affected receivers along Moore Park Road.
2. Non-typical configuration A: Speakers located at the centre.
3. Non-typical configuration B: Speakers located at the south of the stadium.

Predicted differences in noise impacts to surrounding receivers between these scenarios are presented in Table 13.

Table 13: Noise emission comparison for varying Concert speaker configurations

Speaker configuration		Indicative noise emission comparison at worst affected receiver	
Name	Description	L _{Aeq,5minute}	L _{Zeq,5minute} 63 Hz
North	Speakers located northern end facing south	Lowest noise configuration	Lowest noise configuration
Centre	Centre: Speakers located centre facing outwards	15 dB higher than North configuration	10 dB higher than North configuration
South	South: Speakers located at southern end facing north	20 dB higher than North configuration	15 dB higher than North configuration

For the non-typical speaker configuration where speakers are located in the centre of the stadium facing outwards, significantly higher noise levels at the worst affected receivers are anticipated. These configurations should therefore be avoided where Concert Event noise levels are anticipated to be an issue. Notwithstanding, it may be possible to operate with non-typical speaker configurations while complying with Concert Event noise limits provided transfer functions are established using the procedure outlined in 4.6.3.

4.8.3 Mobile speaker systems

The use of mobile speaker systems, such as in the Precinct Village or Fitness Facilities outdoor areas, must meet amplified sound noise limits as outlined in Section 4.3 or Section 4.4 for an Event or Non-Event period respectively.

Compliance with the more conservative non-event noise criteria outlined in Section 4.4 may be demonstrated by meeting the compliant conditions outlined in Table 14.

Table 14: Compliant conditions for mobile speaker systems

Activity	Number of speakers outside stadium bowl	Noise limit of each speaker at 5 m with Pink Noise signal at operating volume	
		Distance of any speaker to nearest residence	
		100 m	200 m
Sports Event - during an event	1 to 5	79 dB(A)	85 dB(A)
	6 to 10	76 dB(A)	82 dB(A)
	11 to 20	73 dB(A)	79 dB(A)
Concert Event - during an event	1 to 5	84 dB(A)	90 dB(A)
	6 to 10	81 dB(A)	82 dB(A)
	11 to 20	78 dB(A)	79 dB(A)
Non-event - 8am to 10 pm	1 to 5	69dB(A)	75dB(A)
	6 to 10	66 dB(A)	72 dB(A)

Activity	Number of speakers outside stadium bowl	Noise limit of each speaker at 5 m with Pink Noise signal at operating volume	
		Distance of any speaker to nearest residence	
		100 m	200 m
	11 to 20	63 dB(A)	69 dB(A)
Non-event - between 10pm and 8am - No mobile speakers to be used			

Consent for any stand-alone events on non-event days that are not captured by Conditions A17 and the Event Management Plan will be subject of a separate future approval.

4.9 Deliveries, maintenance and clean up

Maintenance work on the SFS precinct including playing field and internal stadium are limited to times outlined in Table 9. All works undertaken outside of these hours would be subject to the non-event operational noise limits in Section 4.4.

Loading dock and waste management procedures are outlined in the Loading Dock Management Plan (Venues NSW, July 2022) and Waste Management Plan (TTW, June 2022) respectively.

Where possible, bump-in and bump-out activities shall be restricted to the SFS basement loading dock where loading activity noise will be contained.

The following noise control measures shall also be implemented:

- traffic control around the stadium perimeter (limiting associated idling/ horn noise);
- position bin service area/loading bay away from entrances to shops or residential premises (limiting associated bin servicing/loading bay noise);
- minimising set-up and pack-down duration by scheduling contractors and activities; and
- contractor management for the minimisation of set-up and pack-down noise emissions.

A representative from Venues NSW's Operations team shall be responsible for the implementation of noise management measures outside of Event times, as specified in Section 4.7.3.

5. Responsive management

5.1 Complaint handling

Complaints during an event including the Mardi Gras after-party will be managed as per the Sydney Football Stadium Event Management Plan (Venues NSW, 2022). Complaints during an event will be collected via email, phone or through the Venues NSW app/website, each of which is detailed below:

- Complaints line: 02 9360 6601
- Email address: reception@venuesnsw.com
- Website: www.venuesnsw.com

The above details will also be provided within any notification letters distributed to adjoining properties as part of the notification processes described in Section 4.5 of this ONMP.

In the event a noise complaint is made, the following steps shall be undertaken:

1. Complaint details will be recorded in a complaint register, to be maintained by Venues NSW. Details will include:
 - Name of staff receiving complaint;
 - Date and time of complaint and corresponding event;
 - Name, address and telephone number of complainant (if available);
 - Nature of complaint;
 - Wind speed and direction; and
 - Response action taken to date.
2. The Venues NSW Representative should immediately notify the venue operations centre. Following the end of the current 5-minute noise measurement period, should an exceedance of noise limits occur, noise levels shall be reduced by the amount of the exceedance.

If no exceedance is noted, current noise levels shall be recorded in the complaint register.

The record of complaints will be held by Venues NSW as the SFS operator for at least five (5) years after the complaint was made.

5.2 Reporting requirements

Reporting requirements following Concert Events are outlined below.

5.2.1 Following each of the first three Concert events

Real time noise measurement data from the first three Concert Events, as defined in Table 7, must be provided to the Planning Secretary. The data shall be obtained at the identified permanent noise monitoring locations, to demonstrate:

- a. how measurements were conducted to determine transfer functions;
- b. how the results have been used / will be used to ensure compliance with the noise objectives established for the stadium; and
- c. that the equivalent noise limits at the sensitive receivers are achieved at all times.

Venues NSW must submit a report with the noise measurement data and supporting analysis to the Planning Secretary within two weeks of the completion of each of the first three Concert Events using amplified music to:

- a. obtain written advice and comments from the Planning Secretary regarding compliance with the ONMP after each of the three Events; and
- b. obtain written advice from the Planning Secretary regarding any additional management measures and or refinement of the ONMP required after each of the three Events. Such advice can be obtained for each individual Concert Event or cumulatively.

If non-compliance is reported during these Concert Events, the written advice from the Planning Secretary must be obtained and appropriate actions undertaken including (but not limited to) refinement of the ONMP, prior to the commencement of the next music event at the stadium, following the Event where the noise measurements were undertaken, and data was submitted.

5.2.2 At completion of Trial period

At the completion of the Trial Period as defined in Section 2.5, Venues NSW must produce a report to the satisfaction of the Planning Secretary, which includes a detailed review of the noise limits and monitoring locations to demonstrate that the noise generated by the various types of Events at the stadium comply with the intent of the noise limits established in Stage 2 SSD DA - Noise and Vibration Assessment (Arup, 2019) and which was to ensure that noise impacts will be no greater than those experienced under the statutory Notice of Preventive Action 1003904.

Included in the report must be:

- Summary of all noise monitoring over the Trial Period; Description of musical genre of each concert;
- Details of the exclusion of any data from wind, rain or crowd noise;
- Details of any exceedances and breeches of the noise limits;
- Review of the noise limits and complaints;
- Review of the relationship between $L_{Aeq(5min)}$ and L_{Amax} for Concert Event noise.
- Confirmation that the Concert noise impacts will be no greater than those experienced under the statutory Notice of Preventive Action 1003904 including a report to address condition E8.
- Review of the wind speed limit to ensure wind induced noise does not significantly contribute to measured Event noise contributions, with reference to the wind shield datasheet in Section 9;

- Review of PNMS to confirm that the number and suitability of microphone locations are appropriate; and
- Review of data for a sufficient number of different types of events including, but not limited to:
 - Concert Events
 - National Rugby League Sport Events;
 - State or Final Sport Events; and
 - any other Sporting Event.

Pursuant to Condition D8 of SSD 9835 and the Planning Secretary delegate's approval of the permanent noise monitoring system approved to satisfy Condition D45, the Post Trial Completion Report will assess the performance and suitability of the noise monitoring locations at the end of the Trial Period and determine whether the approved and installed number of monitors (2) and suitability of microphone locations is appropriate or requires revision.

Written advice and comments from the Planning Secretary shall be obtained along with any additional management measures and or refinement of the ONMP, having regard to compliance with Condition E9.

5.2.3 Upon a non-compliance

Within seven days of a non-compliance, defined in 4.3.1, the Planning Secretary must be notified in writing to compliance@planning.nsw.gov.au.

The notification must identify:

- the development and application number
- the Event, date and times in which the non-compliance occurred
- the number and magnitude of exceedances of noise limits which define the Event as non-compliant as outlined in 4.3.1
- the nature of activities taking place during the non-compliance
- the mitigation measures employed during the Event to reduce noise emissions
- details of any complaints which were registered during the Event as outlined in Section 5.1
- Proposed measures to prevent further non-compliances at future Events.

If a non-compliance is reported, the written advice from the Department must be obtained and appropriate actions undertaken including (but not limited to) refinement of the ONMP, prior to the commencement of the next music event at the stadium, following the event where the noise measurements were undertaken, and data was submitted.

5.2.4 Following an Event during Trial Period or two years from Precinct Village opening

For the following event scenarios:

- All concert events, including the Mardi Gras after-party

- all sporting events;
- all double-header concert events, sporting events or combination sporting/concert events; and
- all events that involve activities extending beyond one day.

Venues must monitor the above event scenarios.

For Concert events, Venues must prepare a table of compliance against the requirements of this ONMP, for a minimum of two years from the commencement of operation of the stadium until a further two years after the commencement of full operation of the Precinct Village and multi-level carpark (unless otherwise agreed by the Planning Secretary).

The table of compliance shall include:

- times of sound checks, rehearsals and concert
- the transfer function which was applied;
- how the transfer function was used to ensure compliance with the noise objectives established for the stadium;
- resulting concert noise levels at the sensitive receivers;
- any exceedances of noise limits
- whether exceedances constitute a non-compliance in accordance with Section 4.3.1.

6. Review mechanism

Venues NSW will implement an annual program of review for the ONMP to assess its effectiveness in achieving key noise objectives.

This ONMP shall be reviewed annually at the end of the Twelve-Month Event Period. The review shall be conducted in consultation with a Suitably Qualified Acoustic Consultant, and the DPE.

Recommendations from the Department made to Venues NSW for changes to be made to the ONMP will be appropriately considered and addressed where feasible.

In conducting the ONMP review program the following steps will be undertaken:

- review of both the Concert and Non-concert Event noise limits with consideration to complaints received over the Trial period.
- review any existing 'Opportunities for Improvement' identified during the previous annual review;
- review the wind speed limit to ensure wind induced noise does not significantly contribute to measured Event noise contributions.
- assessment of compliance with noise and time limits through review and analysis of noise monitoring data;
- review of the complaints register, as well as any complaints made to the EPA or City of Sydney Council regarding Event noise to identify common causes or locations of complaints;

- an evaluation of the complaints register will be undertaken in conjunction with the assessment of compliance with noise and time limits to correlate complaints with limit exceedances;
- recommend 'Opportunities for Improvement' for the following Twelve-Month Event Period which have been identified as a result of the review process; and
- consider the outcomes of the review and incorporated relevant improvements into the ONMP revision in consultation with an Suitably Qualified Acoustic Consultants.

7. Record of consultation

7.1 EPA

Documentation has been provided to the EPA for the purpose of consultation. VNSW has received correspondence from the EPA (appended to this document), advising that “the draft ONMP has been submitted to the EPA in accordance with Condition D48 of SSD 9835 which states, “The plan must: be prepared by a suitably qualified and experienced acoustic expert in consultation with the EPA, the Department and SCSGT.” The EPA is the Appropriate Regulatory Authority (ARA) for outdoor entertainment activities under the Protection of the Environment Operations (General) Regulation 2021 and must maintain a regulatory arm’s length from commenting on post-approval management plans required by conditions of the SSD 9835. The EPA has no comments to provide on the draft ONMP, and no follow-up consultation is required”.

7.2 SCSGT

Venues NSW was established on 1 December 2020 following amendments to the Act to consolidate the responsibilities and operations of the former Venues NSW and the Sydney Cricket and Sports Ground Trust (SCSGT). The Sydney Cricket and Sports Ground Trust (SCSGT) is now known as Venues NSW. The ONMP has been prepared by Arup, however the plan is a Venues NSW issued document, endorsed and coordinated by Venues NSW.

7.3 The Department

This ONMP has been issued to the Department of Planning and Environment who have provided review comments (SSD-9835 - D48 Draft ONMP - DPE Consultation Table, DPE 2022).

These comments have been addressed and amendments incorporated into this ONMP (Draft V6) as required.

This ONMP has been revised to address further comments from the Department outlined in a letter from Dominic Crinnion to Julie Shires on 10 July 2023 (Sydney Football Stadium Redevelopment (SSD-9835) Event Noise Monitoring Reports (Elton John and Bruno Mars), Conditions E9 and E10).

7.4 Consultation Schedule

The following schedule reproduces all feedback received during the preparation of the Operational Noise Management Plan and how that feedback has been addressed. It should be noted that during the drafting process section numbering and referencing changed and accordingly may differ between the *Feedback Provided* and the *Response* columns. The *Section Reference* column refers to the numbering as per this version of the Operational Noise Management Plan. Where feedback has been considered and not triggered a revision to the Operational Noise Management Plan, an ‘n/a’ has been inserted in the Section Reference column.

Feedback Provided	Response	Section Reference
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EPA		
I note that the draft ONMP has been submitted to the EPA in accordance with Condition D48 of SSD 9835 which states, "The plan must: be prepared by a suitably qualified and experienced acoustic expert in consultation with the EPA, the Department and SCSGT."	Noted.	N/A
The EPA is the Appropriate Regulatory Authority (ARA) for outdoor entertainment activities under the Protection of the Environment Operations (General) Regulation 2021 and must maintain a regulatory arm's length from commenting on post-approval management plans required by conditions of the SSD 9835. The EPA has no comments to provide on the draft ONMP, and no follow-up consultation is required.	Noted.	N/A
The EPA notes that several aspects of the ONMP are inconsistent with the requirements set out in the Prevention Notice that covers this venue.	Comments provided by the DPE have been addressed to bring the ONMP into alignment with requirements in the Prevention Notice.	N/A
DPE - Feedback received 22 July 2022		
A draft version of the ONMP was provided to the Department for the purposes of consultation on 4 June 2022 as required by condition D48(a) - see comments below. The feedback provided in this consultation table does not preclude the Department from requesting further information once the Department is in receipt of the final version of the ONMP.	Noted	N/A
Please ensure that consultation with the EPA, the Department, and the SCSGT has been carried out and documented in accordance with the requirements of condition A24, and that evidence of	EPA: Documentation has been provided to the EPA for the purpose of consultation. VNSW received correspondence from the EPA advising that " the draft ONMP has been submitted to the	This table

compliance with A24 is appended to the final ONMP.	EPA in accordance with Condition D48 of SSD 9835 which states, "The plan must: be prepared by a suitably qualified and experienced acoustic expert in consultation with the EPA, the Department and SCSGT." The EPA is the Appropriate Regulatory Authority (ARA) for outdoor entertainment activities under the Protection of the Environment Operations (General) Regulation 2021 and must maintain a regulatory arm's length from commenting on post-approval management plans required by conditions of the SSD 9835. The EPA has no comments to provide on the draft ONMP, and no follow-up consultation is required" Details of this Consultation will be referenced in the plan. SCSGT: Venues NSW was established on 1 December 2020 following amendments to the Act to consolidate the responsibilities and operations of the former Venues NSW and the Sydney Cricket and Sports Ground Trust (SCSGT). The Sydney Cricket and Sports Ground Trust (SCSGT) is now known as Venues NSW. The ONMP has been prepared by Mat Simon of Arup, however the plan is a Venues NSW issued document, endorsed and coordinated by Venues NSW. No further validate should be required on this basis. The Department: Details of the Consultation (the subject of this document) will be listed as part of the plan.	
Table 8 of the ONMP states that the duration of concert events (rehearsals & sound tests) will be "Kept to absolute minimum". This is vague. How will timing be minimised in practice?	In practice, promoters do not hold lengthy rehearsals or sound tests as it is a costly exercise given the artist is in attendance. The statement "kept to absolute	Table 9: Activity time limits

	minimum" is accurate for what happens in practice.	
Recommend adding a note to s1.2 of the ONMP that all receivers are relevant, and require compliance with the noise limits (not just representative receivers).	ONMP was v4 updated accordingly.	Section 1.1
Table 9 adopts a noise limit for "sporting/other events" as an LAeq(5min) 60 dBA level which was derived from the EIS. It is noted that this is significantly less stringent than the L_Amax 60 dBA level in the EPAs Notice of Preventive Action 1003904, but is supported with justification in the 30 Aug 2019 Noise & Vibration Impact Assessment (NVIA) (s5.3.2.1). This condition requires the ONMP to have noise limits consistent with the EIS, which is what has been included in the ONMP. However, condition E8 requires that at the end of the trial period, the Applicant must produce a report for various types of events to ensure that noise impacts will be no greater than those experienced under the statutory Notice of Preventive Action 1003904. The "sporting/other event" noise limit would also need to be reviewed based on the outcome of the report required as part of condition E8 after the trial period. Additional comments regarding the above is provided further in the relevant sections below.	There exists ambiguity in the conditions, in that the sporting noise limits are prescribed as LAeq(5min) 60 dBA in accordance with the EIS and as per condition D48, however Condition E8 refers to the Notice. The intent of this Condition is understood to ensure a robust L_Amax to LAeq conversion is developed for Concert Events only. During the preparation of the State Significant Development application, extensive studies and consultations were undertaken into establishing appropriate Concert and Non-concert event limits, with a report outlining and justifying the amended limits prepared for both DPE and EPA (AC06 v1 SFSR Alternative noise management framework, Arup, March 2019). This was followed by a face to face meeting with DPE and EPA, and receipt of an email from DPE to INSW (Sydney Football Stadium Stage 2 - alternative noise management framework, 16 April 2019) outlining key issues required to be addressed in relation to the alternative noise management framework. It addresses verification of Leq noise limits as equivalent to L_Amax noise limits, but states the verification during the trial period is "required to validate if the -10dB correction in the ARUP report, used to derive the recommended LAeq noise	Table 10: Event noise limits

	criteria of 70 dB LAeq,5-min is equivalent to, or better than the LAmax 80 dB(A) criteria in the Prevention Notice." This does not refer to the 60dB LAmax level for sporting events, and is understood to have been omitted intentionally as the 60dBA LAmax level had been rationalised as inappropriate and impractical, and would be replaced with the 60dB LAeq limit. The absence of issues raised with the proposed 60dBA LAeq limit or the extensive justification presented during the meeting or subsequent report, indicates the 60dB LAeq criteria was accepted as the revised non-event noise limit, and this was considered a consensus across all parties when the Consent Conditions were prepared. Notwithstanding, clarification of Condition E8 would be beneficial to reflect this intent.	
Section 4.3 of the ONMP states that noise limits only apply for wind speeds up to 5 m/s. The PNMS is designed based on best available technology to capture noise under the highest wind speed practicable and is not limited to 5 m/s. Condition D47 was included in the consent (post the EIS Draft ONMP which referred to 5 m/s) which requires that "reliable noise levels can be measured under the highest wind speed practicable" from the PNMS. The PNMS is proposed to be fitted with a GRAS high performance wind shield. The GRAS data sheet is attached for reference. The Noise Policy for Industry states, "Exceptions to this rule (i.e > 5m/s) are allowed provided the proponent is able to show that the wind-induced noise	It is a widely accepted point of view that the measurements under rain conditions are not generally valid. Rain raises the level of general noise in the ambient, which is impossible to overcome. The windshield has been created and provided to provide protection to the 5m/s wind speed, as is generally accepted. To be able to include that the measurements can be used at wind speeds above 5m/s the operator will need to compare data between weather events and periods of no wind to establish whether the wind shield provides greater protection than to what it was designed and created. This is not something that can be established pre operation as neither the consultant, installer nor the manufacturer can guarantee	Section 4.3

on the microphone, and sound levels due to rain, are at least 10 dB below the noise levels under investigation.” Also, the Department notes that for LAeq measurements, the period should be excluded based on an average wind speed as per the Noise Policy for Industry (EPA, 2017). Based on the addition of the high performance (low noise) wind shield, and the GRAS data sheet, the ONMP should be revised to provide maximum allowable wind speeds for each criteria (i.e 70 dBA, 90 dBZ@63Hz) based on the calculated transfer functions. It is noted that the measured noise level at the PNMS would be higher than the criteria at the receiver, and it is expected that the PNMS would function under most wind conditions.	anything outside of the original manufacture specification.	
Please clarify if the in-house PA noise limiter will be set so that the noise level does not exceed an LAeq of 60 dB or will it be adjusted considering the typical time the PA is used over a 5 minute period during a sporting event? The reason for this question is, if the PA for sporting events is only used in short bursts then the received LAeq noise level could be much higher than 60 dBA and still be compliant with the LAeq(5min) noise limit. This would increase the risk of complaints, and for short term PA events, a 5 minute criteria may not be appropriate. This should be reviewed during the trial period to ensure “the intent of the noise limits established in Stage 2 SSDA – Noise and Vibration Assessment prepared by ARUP dated 30 August 2019 and which was to ensure that noise impacts will be	The LAeq(5min) parameter was developed over the SSDA in consultation with DPE and EPA and it is not considered feasible to amend the project noise limit parameters, stipulated in Condition D48c(v) as being consistent with the SSDA. As discussed in item 5, the intent of equivalency with the Notice was to establish Concert noise LAeq limits equal to LAmix limits, rather than non-concert limits. Moreover, the LAeq parameter requires a time period by definition, an LAeq level alone is undefined.	Section 4.8.1

no greater than those experienced under the statutory Notice of Preventive Action 1003904". It may be more appropriate to adjust the in-house PA noise limit based on an LAeq level as opposed to an LAeq(5min) level.		
This requirement is not detailed in section 4.1 as indicated in the Table 4 compliance matrix.	This row of Table 4 has been amended to refer to Section 4.4 - Non-event noise limits. Section 4.4 has been clarified to include: Where activities in the Public Domain occur outside of Event time limits, such as extending after the duration of an Event, non-event noise limits apply.	Table 4: SSD 9835 Condition D48 ONMP requirements
What events do Table 10 apply to? The table and description is unclear and could do with some more explanation on how it is applied, and how it was derived. The table could be taken to read that a non-compliance would only be triggered if there were multiple significant exceedances during an event. It seems to suggest: • Four separate exceedances above 5 dBA or for 20 minutes. • A 2-5 dB exceedance could occur for up to 40 min (8x5min) plus 30 min (3 x 10 min) plus 15 min (1 x 15 min). • In total 85 minutes of an event could be 2- 5 dB above the limit and an additional 20 minutes more than 5 dB above the limit. The adoption of this definition for non-compliance, could lead to multiple and significant exceedances of the concert event noise limit. Justification for this definition should be provided. The impacts will need to be shown to be no greater than those experienced under the statutory Notice of Preventive Action	These values were developed in consultation with DPE prior to the preparation of the Draft ONMP (August 2019) and are in line with the Sydney Opera House noise management protocols. Justification for more than a single exceedance being considered a non-compliance is to establish a degree of noise management in line with the previous noise management procedure for Allianz Stadium, where noise levels attributed to concert noise were based on periodic attended monitoring and were largely dependent on the particular time and location of the measurement, the influence of extraneous noise (eg. road traffic) and operator discretion on the level of contribution of concert noise to measured levels. Exceedances of noise limits outside of measurement periods would not have been recorded, but limits on practicality prevented any more concerted noise management. The introduction of the PNMS allows for continuous monitoring throughout the Concert duration,	Table 11: Breach of Project Approval conditions

1003904 at the end of the trial period.	which provides a higher degree of control, but with this comes more scrutiny of noise emissions at any time during a Concert. Some leniency is considered necessary to equate the level of stringency of the new management system with the previous. Moreover, exceedances would only register at the end of a 5 minute measurement period, and sound system noise levels would be reduced retroactively, hence some periods of exceedance are necessary as part of a functioning active management system.	
The ONMP defines the trial period as 3 concert events. In the NVIA draft ONMP, the term 'Trial Period' is defined to extend over the first two "Twelve Month Event Periods". There is a significant disparity between what is proposed in the EIS and the submitted draft ONMP with regards to the trial period definition. Recommend revising the ONMP to align with that definition.	The ONMP has been revised with the Trial Period to extend over the first 12 months, providing additional time to assess validity of transfer functions over a number of Concerts and similar events. The robustness of the transfer functions and the need for additional attended measurements to establish transfer functions "shall be subsequently reviewed by DPE following the issue of the Trial Period report" as outlined in Section 4.6.2.	Table 7: Definitions
This condition requires the use of the PNMS during "different types of events" throughout the trial period, not just for concerts as proposed in s4.3 & s4.6 of the ONMP. Correspondence email from DPE (email dated 16/4/19 to Tom Kennedy attached) states that the alternative noise management methodology is based on a number of assumptions which must be validated based on actual events once the new stadium is operational, hence the requirement to monitor a sufficient number of different events. Recommend revising the ONMP to	The definition of a Concert Event is: An Event which incorporates the use of sound amplification equipment other than the SFS in-house PA system. This includes not only performances but also associated activities such as rehearsals and sound checks. Events other than Concert Events, by definition, must not use sound amplification other than the in-house PA. For these events (Non-concert Events), the electronic noise limiter will ensure compliance with the non-event noise limits.	Table 7: Definitions

require the use of the PNMS during different types of events throughout the trial period.	Since noise limits only apply to amplified sound, the application of the PNMS to 'Concert Events', and noise limiters to the in-house PA, are considered by definition to cover all events to which noise limits apply. To clarify the ONMP, the definition of a Concert Event has been amended to say: An Event which incorporates the use of sound amplification equipment other than the SFS in-house PA system. This includes not only performances but any different type of event which may also include associated activities such as rehearsals and sound checks.	
Recommend revising s4.6.2 to include a requirement for transfer functions to be established outside of the trial period for any concert configurations that don't have an established transfer function.	ONMP v4 was updated accordingly.	Section 4.6.3
It is noted that s5.2.2 addresses this condition. However, s4.3 specifically talks to noise limits. Recommend revising s4.3 to include a reference to condition E8 which requires a review of the noise limits at the completion of the trial period.	ONMP v4 was updated accordingly to refer to revising noise limits.	
Limited details have been provided in s4.9, and only some sources of noise are addressed. It is unclear how the control measures will be implemented, and who is responsible.	Reference to noise and time limits and the PNMS for management of amplified sound was included in ONMP v4. Additional items for the management of noise from deliveries, waste management and grounds maintenance have been included, with reference to the Loading Dock Management Plan and Waste Management Plan, as well as an additional requirement for a Venues NSW Operations representative to be responsible	Section 4.9

	for non-event noise management measures.	
This has not been provided in sufficient detail to address this condition.	Section 4.5.3 - Pyrotechnics has been amended to include reference to: • Event Planning Pyrotechnics & Chief Warden Checklist (Venues NSW, 2021) • Venues NSW Pyrotechnics & Special Effects Policy Recommendations (Foti International Fireworks, 2022) • Pyrotechnics Policy (Venues NSW, 2021) and sections added from each relevant to noise management.	Section 4.5.3
S4.6.4 states, "The Event Representative will be permitted to only calibrate the monitoring system, as required before and after a Concert Event". Recommend changing the wording to, "The Event Representative will perform a calibration check on the monitoring system before and after the use of the PNMS".	ONMP v4 was updated accordingly.	Section 4.6.5
S5.2.1 is not consistent with condition E10 which includes reference to, "any other event using amplified music". Recommend revising s5.2.1 to align with condition E10.	ONMP v4 was updated to read: <i>Real time noise measurement data from the first Concert Events, as defined in Table 7, must be provided to the EPA and the Planning Secretary.</i> <i>By definition, this includes any event which incorporates amplified music other than the in-house PA.</i>	Section 5.2.1
The review mechanism should include: • Review of both the concert and sporting/other event noise limits with consideration to complaints received over the trial period.	Following on from 5 c(v) above, ONMP v4 updated to say: • review of both the Concert and Non-concert Event noise limits with consideration to complaints received over the Trial period.	Section 6

Review of the relationship between LAeq(5min) and LAmaz for event noise. Confirmation that the noise impacts will be no greater than those experienced under the statutory Notice of Preventive Action 1003904 including a report to address condition E8.	- review of the relationship between LAeq(5min) and LAmaz for Concert Event noise. - confirmation that the Concert noise impacts will be no greater than those experienced under the statutory Notice of Preventive Action 1003904 including a report to address condition E8.	
Condition E6 requires that "The noise monitoring system as required by condition D45 must be installed and be operative for all events at the stadium, except the deemed-to-comply events". In the context of E6, the Department has considered the following: - Event is defined in the NVIA draft ONMP as, "An entertainment activity carried out outdoors which incorporates the use of sound amplification equipment.". There is a separate definition for concerts. However, the consent defines event as a planned public or social occasion. The definition provided in the consent prevails. - Appendix F of the NVIA states, "Under the proposed method, noise monitors will be installed within the stadium. The monitor will provide a continuous read out to staff operating the mixing desk (for concerts) or PA system (for sporting events)." This was also considered in the Department's assessment report. - Section 3.6.1 of the NVIA draft ONMP indicates that the noise	The draft ONMP was prepared as an indication of the management framework which would be developed throughout the detailed design of the stadium and development of the PNMS. Further understanding of the capabilities and limitations of the PNMS have informed the use of the PNMS. The need to monitor the in-house PA system using the PNMS is considered necessary with the more reliable, less onerous method of implementing a noise limiter on the PA system. This was always considered the intent of the PNMS from inception through to design. The use of the PNMS to monitor in-house PA noise levels throughout each sporting event is not considered reasonable because: - A significant proportion of noise measured by the PNMS during sporting matches would be from the crowd, to which noise limits do not apply. Delineating crowd noise from PA noise is impractical, so measurements would not be considered useful in assessing against noise limits. This is not the case for Concert Events where sound system noise will be dominant. - No noise monitoring was previously conducted during sporting matches at Allianz	Section 4.8.1

monitoring system would be used for concerts, and s3.6 of the same plan provides that the PNMS will be installed to manage noise emissions from the SFS generally. These statements do not preclude sporting events. Based on above points, and as E6 currently stands, the PNMS is to be used for all events at the stadium, except deemed-to-comply events. Therefore, the system will need to be used for sporting events. Section 4.6 of the ONMP states, "The PNMS is not suitable for use with the in-house PA due to the proximity of the monitors to the in-house speakers." The PNMS does appear close to the in-house system (though noting the speakers are directional and could be directed away). The PNMS could still be used to confirm the noise limiter is operating correctly for sporting events. This data would also be used for evaluation purposes at the end of the trial period. Therefore, please revise the ONMP to require the use of the PNMS to monitor noise emissions from all events at the stadium.	Stadium. The introduction of the PNMS was intended to replace the previously conducted attended monitoring during Concert Events. • The use of the PNMS in addition to the noise limiter to control in-house PA outputs is considered redundant. Using the PNMS as a 'back up' check in case the noise limiter fails is considered an impractical cost for the very unlikely scenario of a limiter failure, and would be difficult to detect during a match in any case due to the influence of crowd noise. • The requirement to conduct calibration checks before and after each Event, in addition to data storage and weather checks required for use, and development of a transfer function for the in-house PA, with no practical purpose for the measured data, is not considered reasonable. The in-house PA noise limiter will require calibration at the nearest residents and the limiter will be constantly operational throughout its lifetime, which alone is considered a reliable means of controlling amplified noise output.	
S4.6.1 should include justification why two PNMS is sufficient (as opposed to the NVIA draft ONMP which proposes 4). Therefore, the proposed 2 monitoring locations is inconsistent with the NVIA draft ONMP. The Department may recommend revising the ONMP to require 4 monitoring locations if no strong justification is provided in the ONMP.	While preparing the system and in the context of the site, it was identified that the limiting factor in terms of noise levels was the northern and eastern site, which are covered by the two proposed monitors. The sites that could be affected on the southern side are at a far greater distance and therefore, when calibrated, these monitors would never be used as limiters.	Section 4.6.2

	The northern and eastern monitors would trigger at far lower levels. Two monitors simplify equipment installation and maintenance as well as compliance.	
The conditions of consent require the trial period to: • Conduct regular monitoring of the noise generated by the stadium (E7); • Establish robust relationships between the Leq5min and LFmax and intermediate monitoring locations (E7); • Obtain data to undertake a detailed review of the noise limits and monitoring locations to demonstrate that the noise generated by the various types of events at the stadium comply with the intent of the noise limits established in the Approvals (E8); and • Validate noise limits and noise monitoring system (D48 (xi)). Correspondence email from DPE (email dated 16/4/19 to Tom Kennedy attached) states that the alternative noise management methodology is based on a number of assumptions which must be validated based on actual events once the new stadium is operational, hence the requirement to monitor a sufficient number of different types of events. The trial period should include monitoring of sporting events to confirm the in-house PA system is operating correctly, the receivers are compliant, and data is obtained for analysis at the end of the trial period as required by E8. Recommend revising the ONMP to	As per comment provided above.	Section 5.2.2

require a sufficient number of attended monitoring events during the trial period for a range of sporting events including, but not limited to, a Big Bash League event, state or finals events, and the like. It is noted that the ONMP defines the trial period as 3 concert events. However, in the NVIA draft ONMP, "Trial Period" is defined to extend over the first two "Twelve Month Event Periods". The trial period should be sufficient to evaluate all the requirements of the trial period.		
An update to the ONMP will be required in accordance with condition E10(b). In regard to the content of the noise reports, you are required to comply with the Direction below. As nominee of the Planning Secretary, I direct VNSW to carry out the following pursuant to condition A3(a) of SSD-9835: 1. prepare one additional noise report in accordance with condition E9 and the Planning Secretary's written advice included in Attachment 1 and 2 of this letter, for the next concert scheduled for the stadium; 2. submit the additional noise report required under item 1 above, to the Planning Secretary in accordance with condition E10; and 3. update the ONMP in accordance with conclusions 2 and 3b of Attachment 2 of this letter prior to the next concert event occurring at the stadium.	Relevant to this ONMP, item 3 refers to conclusions 2 and 3b of Attachment 2 of the letter (Sydney Football Stadium Redevelopment (SSD-9835) Event Noise Monitoring Reports (Elton John and Bruno Mars), Conditions E9 and E10, 10 July 2023) Conclusion 2 <i>Transfer functions must be established for both the eastern and northern PNMS microphone as they relate to 5 Poate St and 252 Moore Park Rd respectively in future. To effect this, the ONMP must be updated to require transfer functions being established between the northern microphone and 252 Moore Park Rd, and between the eastern microphone and 5 Poate St, where the typical north speaker facing south configuration is adopted. Also, summary tables of the attended noise measurements, and PNMS corrected data for 5 Poate St must be included in the additional noise report required under the Planning Secretary's Direction.</i> Conclusion 3b	Section 4.6.3

	<i>VNSW must establish transfer functions between the eastern PNMS microphone and 5 Poate St in future. To effect this, the ONMP must be updated to require transfer functions being established between the northern microphone and 252 Moore Park Rd, and between the eastern microphone and 5 Poate St, where the typical north speaker facing south configuration is adopted.</i>	
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8. Record of calibration and limiter settings

Noise monitoring system calibration				
Date	Event	Calibration before	Calibration after	Calibration drift

In-house speaker limiter setting			
Date	Receiver location	Measured noise level	Limiter gain setting
04/08/23	5 Poate Rd	60dBA	+10dB
04/08/23	252 Moore Park Rd	60dBA	+0dB - recommended limit

9. Approved PNMS and Wind Screen Details