



Eastern Creek Speedway Operational Environmental Management Plan

Appendix G: Operational Noise Management Plan

Project: **SYDNEY SPEEDWAY**

Prepared for: **Speedway Promotions Pty Ltd**
Ferrers Road
Eastern Creek NSW 2766

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Report No.: **Rp 001 r01 20210754**

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Document Control

Status:	Rev:	Comments	Date:	Author:	Reviewer:
Draft	D01	Draft 01 for coordination w OEMP	4/11/2021	M. Ottley	
Issued for consultation	-	Issued for consultation with Council	10/11/2021	M. Ottley	A. Ahmadi
Finalised issue	01	Incorporate intermediate compliance levels and details of consultation	16/11/2021	M. Ottley	A. Ahmadi

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1.0 BACKGROUND

This Operational Environmental Management Plan (OEMP) Noise Sub Plan (OEMPNSP) sets out the requirements for ongoing management of environmental noise impacts from the Sydney Speedway, located at Ferrers Road Eastern Creek.

Infrastructure approval for the new speedway was granted by the Minister for Planning and Public Spaces in December 2020 and the facility is due for opening in December 2021. A range of operational consent conditions and criteria have been established in the planning and approvals process, including relating to noise control.

This document forms part of a larger Operational Environmental Management Plan Framework, with the Noise Sub Plan sitting underneath the overarching Framework EMP. This document is to be read in conjunction with the Framework OEMP.

1.1 Project Description

The Sydney Speedway is to be located within the Blacktown Local Government Area within the Western Sydney Parklands Precinct 5: Eastern Creek Motor Sports precinct. The Speedway is within the motorsport precinct, with Sydney Dragway directly adjacent to the east and Sydney Motorsport Park to the north. Ferrers Road adjoins the Speedway to the west and south.

Beyond these areas are non-residential developments, including Austral Brickworks, Global Renewables Waste Processing Facility and Suez Eastern Creek Resource Recovery Park. Prospect Reservoir is to the east of the site, beyond Sydney Dragway.

The Speedway will include a clay-based race track for both speedway vehicles and motorcycles. Ancillary infrastructure includes grandstand and terraced seating, amenities, a pit area, workshops/garages and vehicular access from Ferrers Road.

The Speedway will generally operate to 11pm for racing during the racing season of September to May, with gates opening at 2pm.

The consent conditions do not specifically restrict operations outside of these times however for the purpose of this OEMPNSP it is assumed any track use will not start prior to 7 am Monday to Saturday or 8 am Sunday or Public Holidays and will finish no later than 11 pm September to May and 10 pm June to August.

1.2 OEMP Noise Sub Plan context

Infrastructure approval for the new speedway was granted by the Minister for Planning and Public Spaces on 23 December 2020 under State Significant Infrastructure (SSI) application SSI 10048. The approval includes reporting requirements as well as Conditions to be satisfied by the development. An Operational Environmental Management Plan is a required report under the approval, and this Noise Sub Plan forms part of the OEMP documentation.

This Noise Sub Plan has been prepared in accordance with the following documents:

- State Significant Infrastructure (SSI) approval dated 23/12/2020 under application SSI 10048, issued by the Minister for Planning and Public Spaces
- Sydney International Speedway – Environmental Impact Statement Volume 1 & 2 (the EIS) dated August 2020, including Noise and Vibration Technical Paper (NVTP) prepared by SLR dated July 2020
- Sydney International Speedway – Submissions Report (the Submissions Report) dated November 2020
- Sydney International Speedway – Amendment Report (the AR) dated November 2020

- Sydney International Speedway – Operational Hours Planning Approval Consistency Assessment SIS06 dated October 2021
- Guideline for the Preparation of Environmental Management Plans, Department of Infrastructure Planning and Natural Resources (2004)
- Compliance Reporting Post Approval Requirements, NSW Department of Planning, Industry and Environment (DPIE), May 2020
- Independent Audit Post Approval Requirements, NSW Department of Planning, Industry and Environment (DPIE), May 2020

This Noise Sub Plan is intended to be read in conjunction with the Framework OEMP for the development.

1.3 OEMP Noise Sub Plan objectives

Objectives relating to the Noise Sub Plan are to:

- Minimise noise impacts from the operation of the Speedway onto the community and environment
- Ensure compliance with the conditions of the Minister for Planning and Public Spaces approval dated 23/12/2020
- Ensure in achieving performance outcomes ‘Noise and vibration – Amenity’ and ‘Noise and vibration – Structural’ in EIS Section 25.7. This Sub Plan Primarily assists with ‘Noise and vibration – Amenity’ as ‘Noise and vibration – Structural’ has been resolved through design.

2.0 ENVIRONMENTAL MANAGEMENT

2.1 Environmental Management Structure and Responsibility

Responsibility for implementation of this Noise Sub Plan rests with the Environmental Manager at Sydney Speedway. Further details of the responsibility structure for environmental management are contained within the Framework OEMP to which this Noise Sub Plan appends.

2.2 Approval and Licencing Requirements

The relevant Minister’s Conditions of Approval and where they have been addressed are set out in Table 1.

Table 1: Minister’s Conditions of Approval summary

Condition reference	Condition Classification	Addressed
A1	General	Section 1.2
A2	General	Section 1.2
A3	General	Section 1.2
A4	General	Framework OEMP
A5	General	Framework OEMP
A6	General	Framework OEMP
A8	General	Noted
A9	General	Noted
A25	Compliance Report Requirements	Framework OEMP and Section 3.0

Condition reference	Condition Classification	Addressed
A26	Compliance Report Requirements	Framework OEMP
A27	Notification of Commencement	Framework OEMP
A29	Auditing	Framework OEMP
A30	Auditing	Framework OEMP
A31	Auditing	Framework OEMP
A32	Auditing	Framework OEMP
A33	Auditing	Framework OEMP
A34	Incident Notification, Reporting and Response	Framework OEMP
A35	Non-Compliance Notification	Framework OEMP
A36	Non-Compliance Notification	Framework OEMP
D1	Operational Environmental Management	Framework OEMP
D3	Operational Environmental Management	This Sub Plan including Section 4.5
D4	Operational Environmental Management	This Sub Plan
D5	Operational Environmental Management	Ongoing
D6	Operational Environmental Management	Ongoing
E31	Noise and Vibration	Not invoked
E32	Noise and Vibration	Section 3.2.1

2.3 Reporting

2.3.1 Operational Noise Compliance Reports

Compliance reports are required to be prepared to confirm compliance with the Minister's approval conditions. The initial compliance report is to be prepared within 12 months of commencement of operation, as required by Minister's Condition E32.

The Operational Noise Compliance Reports must include records of monitoring of operational noise to compare actual noise performance of the development against the noise performance predicted in the documents listed Minister's Condition A1.

The Report must include, but not necessarily be limited to:

- (a) noise monitoring to assess compliance with the operational noise levels predicted in the documents listed in Condition A1;
- (b) methodology, location and frequency of noise monitoring undertaken, including monitoring sites at which SSI noise levels are ascertained, with specific reference to locations indicative of impacts on receivers;
- (c) details of any complaints and enquiries received in relation to operational noise generated by the SSI between the date of commencement of operation and the date the report was prepared;
- (d) any required recalibrations of the noise model taking into consideration factors such as noise monitoring and types of race vehicles;

- (e) an assessment of the performance and effectiveness of applied noise mitigation measures together with a review and if necessary, reassessment of mitigation measures; and
- (f) identification of additional measures to those identified in the documents listed in Condition A1, that are to be implemented with the objective of meeting the criteria outlined in the Noise Guide for Local Government (EPA, 2013), when these measures would be implemented and how their effectiveness would be measured and reported to the Planning Secretary, Western Sydney Parklands Trust and Council.

The Operational Noise Compliance Report must be submitted to the Planning Secretary within 60 days of completing the operational noise monitoring and made publicly available. Any additional mitigation measures required must be implemented within 12 months of the commencement of operation.

The requirements for any ongoing compliance reports are addressed in the Framework OEMP.

2.3.2 Audit reports

The requirements for any audits are addressed in the Framework OEMP.

2.4 Environmental Training

All employees at the Speedway should undergo general environmental awareness training and training on their responsibilities under the OEMP. This training should include reference to the operational requirements at the site to ensure noise compliance as well as a reference to this Noise Sub Plan. Refer to Framework OEMP for full details on environmental training requirements.

3.0 IMPLEMENTATION

3.1 Environmental Noise Management Activities and Controls

Environmental Noise Management Activities and Controls are set out in Table 2.

Table 2: Environmental noise management controls

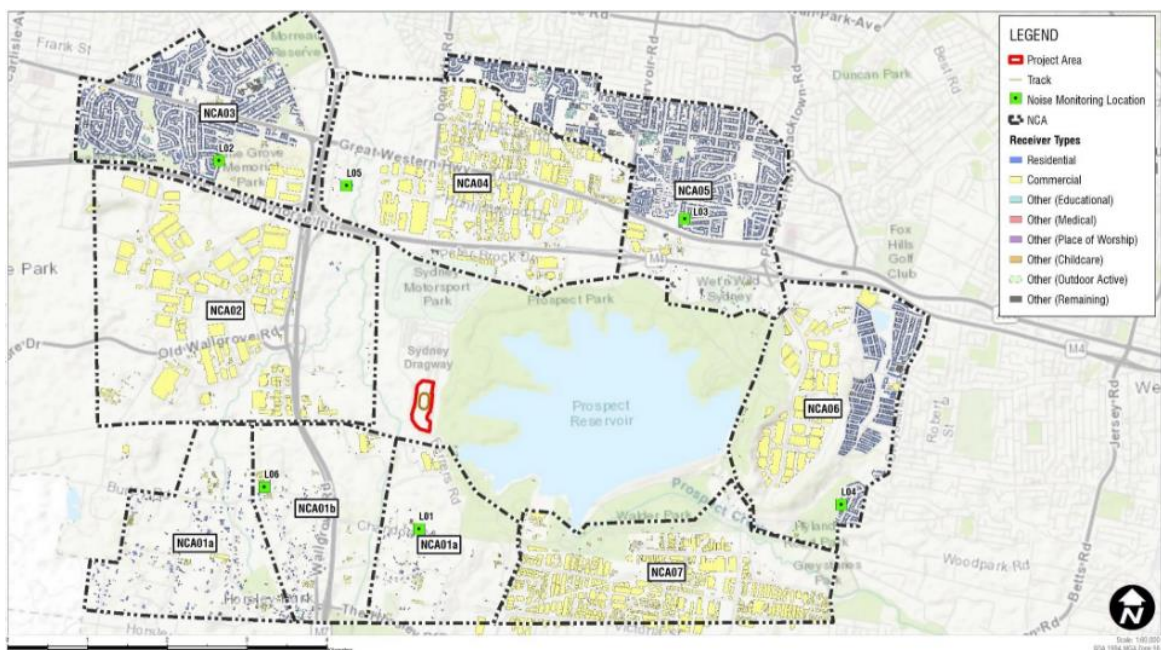
Management Control	Person responsible	Completed (initials/date)	Reference / Notes
Noise levels from each race vehicle not to exceed 95dBA at 30m	Environmental Manager		EIS NVTP Section 8.2.1; EIS Table 24.3 NV4
At-property noise treatment applied or offered to 15 residential receivers identified in EIS NVTP	Environmental Manager	Metro confirm completion of treatment program expected 9/11/2021	EIS NVTP Section 8.2.3; EIS Table 24.3 NV2
Fireworks displays require firework permit	Environmental Manager		EIS Table 24.3 NV3; Any fireworks display will required a fireworks permit and notifications under the applicable permit. Noise levels are not conditioned but times of use and notification requirements will be as per permit.

Management Control	Person responsible	Completed (initials/date)	Reference / Notes
Use of public address system to not exceed noise limits in EIS	Environmental Manager		EIS Table 24.3 NV4; Noise levels of PA system to be confirmed during commissioning measurements, see Section 3.2
Coordination of concurrent motorsport events	Environmental Manager		EIS Table 24.3 NV4; Concurrent major events limited via approvals, see Framework OEMP for details.
Establishment of complaints handling procedure	Environmental Manager		EIS Table 24.3 NV4; See Framework OEMP for details along with Section 3.3.

3.2 Environmental Control Map and Compliance Noise Levels

The noise catchment areas have been identified in the EIS NVTP and updated in the Consistency Assessment, and are set out in Figure 1.

Figure 1: Noise Catchment Area Map



Due to the relatively low levels of motorsport noise relative to the ambient environment direct measurement of speedway noise at the residential receiver areas may not be feasible. Where direct measurement of noise at a compliance location is not practical because of poor signal-to-noise ratios (that is, extraneous noise is louder than the noise under investigation), measurements at intermediate locations between the source and the receiver location, where signal-to-noise ratios are higher, are option endorsed by the EPA. In light of this, and in accordance with EPA practice, intermediate measurement locations are to be utilised for ongoing compliance testing. These

intermediate locations are nearer to the circuit and enable clearer measurement of the speedway noise.

The intermediate noise locations for compliance checks are set out in Figure 2.

Figure 2: Intermediate noise compliance locations



The intermediate noise compliance locations are described in Table 3.

Table 3: Intermediate noise compliance locations

Location	Description	Lat/Long
I1	Water NSW Gate 10, just south of motorsport precinct on Ferrers Rd	-33.823818382085214, 150.87099026448658
I2	Directly West of Speedway on Ferrers Road, 100m south of Dragway spectator gate, on west side of road.	-33.817951283527094, 150.86743613357916
I3	Sydney Motorsport Park Gate A	-33.80924595814158, 150.86638082056487
I4	Within the Speedway site, ~30m west of Dragway southern turning loop	-33.82057016570869, 150.86921141284643

A 3D noise model prepared for the EIS and Consistency Assessment by SLR was used to determine noise levels at the intermediate compliance locations which correspond to compliance levels at the NCA receivers. The levels for compliance checking are set out in Table 4. These levels correspond to Sprint Cars (i.e. the noisiest category of vehicles) under neutral weather conditions.

Table 4: Compliance check noise levels – sprint cars, neutral weather - dBA

Location	L _{Aeq} (15min)	L _{Amax}
NCA01a – 150-154 Chandos Rd, Horsley Park	51	57
NCA01b – 763-783 Wallgrove Road, Horsley Park	48	56
NCA02 – 165 Wallgrove Road, Eastern Creek ³	44	54
NCA03 ¹	39	47
NCA04 – 51 Pikes Lane, Eastern Creek	40	49
NCA05 ¹	44	50
NCA06 ¹	43	50
NCA07 ²	N/A ²	N/A ²
I1	61	68
I2	61	72
I3	53	61
I4	70	78

¹ being at the most affected receiver in the NCA as identified in the EIS NVTP

² no residential receivers identified in NCA07

³ receiver situated within the project area for the approved Lighthorse Interchange Business Hub and are currently assumed to be unoccupied

Details of expected noise levels for other vehicle categories at the intermediate noise compliance locations are set out in the memorandum dated 16 November 2021 from SLR Consulting (ref 610.18331-M14-v0.3-20211116) attached as Appendix B for reference.

3.2.1 Operational Noise Compliance Report - Initial compliance measurement survey

As noted, the transfer function between the intermediate noise compliance locations and the NCA receivers have been calculated via computer modelling. During the initial compliance measurement survey these transfer functions must be validated in the field. That is, it must be confirmed directly

that compliance with the noise levels at I1 to I4 in Table 4 will also result in compliance with the levels nominated at the relevant NCA's.

This will involve:

- Observed noise level measurement of noise levels at I1 to I4, reporting $L_{Aeq(15min)}$ and L_{Amax} (excluding ambient noise as appropriate)
- Observed noise level measurement of noise levels at the most affected areas in NCA01 to NCA06, reporting $L_{Aeq(15min)}$ and L_{Amax} . These levels will likely need to be estimated from observed and audible segments of speedway noise. Speedway noise may not be measurable at all locations but measurements should be provided for a minimum of two NCA locations. Where this is not possible further intermediate locations may need to be employed, having reference to the predictions in the EIS NVTP and Consistency Assessment.
- Concurrent measurements inside the speedway must be undertaken whilst levels are checked at receiver areas. This may be via an unattended noise logger or attended measurement. The measurement location within the speedway should confirm the sound pressure levels of vehicles in the near field, relative to the assumptions in the EIS NVTP.
- The class and number of vehicles on track in each race must be reported.
- Weather conditions are to be recorded on site during the initial survey. This data should be cross checked with the EIS NVTP meteorological assumptions to confirm the validity of the measured data.

3.2.2 Ongoing compliance measurement surveys

There is no requirement for ongoing noise compliance surveys under this Noise Sub Plan or the Minister's approval. However, if future compliance measurement surveys are required the following approach may be adopted, based on compliance measurement checks at intermediate locations:

- Observed noise level measurement of noise levels at I1 to I3, reporting $L_{Aeq(15min)}$ and L_{Amax} (excluding ambient noise as appropriate).
- This may be supplemented by measurements at Intermediate Location I4, at any supplementary intermediate locations identified in the Operational Noise Compliance Report or any NCA receiver location. The requirement for measurement at these additional locations should be identified by the qualified acoustic engineer undertaking the survey.
- Concurrent measurements inside the speedway must be undertaken whilst levels are checked at the external receivers. This may be via an unattended noise logger or attended measurement. The measurement location within the speedway should confirm the sound pressure levels of vehicles in the near field, relative to the assumptions in the EIS NVTP.
- The class and number of vehicles on track in each race must be reported.
- Weather conditions during the survey should be reported, either from on-site logging or BOM data.

3.3 Noise Complaint Register

A means for noise complaints to be registered is to be established. The contact details are documented in the Framework OEMP. A register of noise complaints should be kept and information for all complaints should include:

- Date and time of the complaint
- Means by which complaint was made
- Personal details of the complainant, or if no details were provided a note to that effect

- The nature of the complaint
- A record of the operational and meteorological conditions at the speedway at the time of the complaint
- Any actions taken in relation to the complaint, including follow-up contact
- If no action was taken by the Speedway, the reasons for this

4.0 MONITOR & REVIEW

4.1 Noise Monitoring

Any monitoring of the noise requirements for the site, beyond the initial operational compliance, will fall under monitoring requirements for the site. Full monitoring requirements are detailed in the Framework OEMP.

4.2 Noise Auditing

Any auditing of the noise requirements for the site will fall under a single environmental auditor for all sitewide operations. Full auditing requirements are detailed in the Framework OEMP.

4.3 Corrective Action

In case of non-compliance a qualified acoustic engineer must be engaged to determine the reason for non-compliance. The engineer must then identify the source of non-compliance and recommend additional measures required in order to achieve compliance with the criteria documented in Condition A1, as well as the Consistency Assessment. The Speedway operator will then need to determine when these measures would be implemented; and how their effectiveness would be measured and reported to the Planning Secretary, Western Sydney Parklands Trust and Council.

4.4 OEMP Noise Sub Plan review

This OEMP Noise Sub Plan is intended to be an active document and should be reviewed at least every three years, or in accordance with the review process outlined in the Framework OEMP.

4.5 Consultation

Details of consultation for the OEMP is outlined in the Framework OEMP. With specific regards to this Noise Sub Plan consultation with Blacktown Council is required prior to endorsement. We have been advised that in reference to Condition A6 the following consultation has been undertaken:

- a) *documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval;*
 - i. Calendar invite Friday, 29 October 2021 for discussion 3 Nov 2021
 - ii. Presentation to BCC 3 Nov
 - iii. BCC Response 16/11/21
- b) *a log of the dates of engagement or attempted engagement with the identified party and a summary of the issues raised by them;*
 - 29/10/21: invitation to discussion
 - 2/11/21: presentation to BCC
 - i. BCC noted Noise assessment was undertaken (for both the EIS and the CA) was Speedway only, not cumulative with other operators running events
 - ii. BCC noted The Speedway Lease Agreement provides a period of exclusive Speedway use for Major events, and a reciprocal period of

exclusivity for Major Dragway events – will the operators have enough dates to be successful and the precinct to be sustained?

- 11 / 11/21: report submitted to BCC for review and comment
 - 16/11/21 comments from BCC3 November
 - i. BCC advised will not be providing any comments on this OEMP or Assessment of Consistency for intended change from the approved 10pm to an 11pm finish for certain racing events.
 - ii. BCC noted that noise curfew change should be notified to residents, and that any complaints would be referred to DPIE
- c) *documentation of the follow-up with the identified party(s) where feedback has not been provided to confirm that they have none or have failed to provide feedback after repeated requests;*
- N/A
- d) *outline of the issues raised by the identified party and how they have been addressed;*
- Issue:
 - i. Assessment of Consistency for intended change from the approved 10pm to an 11pm finish for certain racing events.
 - Addressed:
 - i. CA formalises the operating hours to be one additional hour later than the project as described by the Sydney International Speedway Environmental Impact Statement (August 2020) to enable racing to occur more frequently until 11 pm.
 - ii. operating hours until 11 pm would accommodate any delays to the completion of racing, to allow the full program of racing to take place.
 - 1. Inability to accommodate race program delays would adversely impact the number of racing entrants and the experience for spectators, which may in turn impact on entrants and spectators returning for other events.
 - 2. operating hours until 11 pm would allow the operator to confidently program a racing schedule that is value for money for both competitors and spectators, encouraging continued patronage and financial sustainability of the Speedway.
 - iii. no additional receivers affected, predicted noise impacts from 10 pm - 11 pm would be within 1 dB of the predicted noise impacts up to 10 pm
 - iv. Additional operating hour might not be utilised: program allows for incidents, but operator's interests are family-friendly to conclude all racing as early as possible
- e) *a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.*
- NIL

APPENDIX A GLOSSARY OF TERMINOLOGY

dB	<p><u>Decibel</u></p> <p>The unit of sound level.</p> <p>Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of $P_r=20 \mu\text{Pa}$ i.e. $\text{dB} = 20 \times \log(P/P_r)$</p>
dBA	<p>The unit of sound level which has its frequency characteristics modified by a filter (A-weighted) so as to more closely approximate the frequency bias of the human ear.</p>
Frequency	<p>Sound can occur over a range of frequencies extending from the very low, such as the rumble of thunder, up to the very high such as the crash of cymbals. Sound is generally described over the frequency range from 63Hz to 4000Hz (4kHz). This is roughly equal to the range of frequencies on a piano.</p>
L_{A90}	<p>The noise level exceeded for 90% of the measurement period, measured in dBA. This is commonly referred to as the background noise level.</p>
L_{Aeq}	<p>The equivalent continuous sound level. This is commonly referred to as the average noise level and is measured in dBA.</p>
Ambient	<p>The ambient noise level is the noise level measured in the absence of the intrusive noise or the noise requiring control. Ambient noise levels are frequently measured to determine the situation prior to the addition of a new noise source.</p>
L_{Amax}	<p>The A-weighted maximum noise level. The highest noise level which occurs during the measurement period.</p>
SWL or L_w	<p><u>Sound Power Level</u></p> <p>A logarithmic ratio of the acoustic power output of a source relative to 10^{-12} watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.</p>

APPENDIX B SLR MEMO RE INTERMEDIATE NOISE MONITORING LOCATIONS

Memorandum



To: Carys Scholefield
From: Adam Sirianni
Date: 16 November 2021
Subject: Sydney International Speedway
Operational Noise Monitoring
Intermediate Noise Monitoring Locations

At: Jacobs
At: SLR Consulting Australia Pty Ltd
Ref: 610.18331-M14-v0.3-20211116.docx

Intermediate noise monitoring locations have been nominated by the Speedway Operator for inclusion in the Operational Noise and Vibration Management Plan (ONVMP) for the Sydney International Speedway. This memo details the predicted noise levels at these locations with the comparative noise level at the nearest sensitive receiver for race scenarios presented in the Speedway EIS.

1 Monitoring Locations

The operator nominated noise monitoring locations surrounding the Sydney International Speedway are shown below in **Table 1**.

Table 1 Intermediate Noise Monitoring Locations

Location	Description	Co-ordinates ¹	Distance to Speedway / Direction ²	Representative NCA
L01	Water NSW Gate 10, Ferrers Road, Horsley Park	-33.823818382085214, 150.87099026448658	550m / South	NCA01a
L02	Ferrers Road, Horsley Park	-33.817951283527094, 150.86743613357916	170m / West	NCA01b
L03	Sydney Motorsport Park, Access Gate A	-33.80924595814158, 150.86638082056487	1100m / North	NCA02 NCA04
L04	Sydney International Speedway Competitor Area	-33.82057016570869, 150.86921141284643	190m / South	NCA01a

Note 1: Co-ordinates provided by the Speedway Operator.

Note 2: Distance is from the centre of the raceway circuit.

2 Predicted noise levels

Predicted average (L_{Aeq}) noise levels from the speedway are presented in **Table 2** and maximum (L_{Amax}) noise levels are presented in **Table 3**. Predicted noise levels at the four nominated monitoring locations, along with the predicted levels at the most impacted receiver with the representative NCA are provided.

Table 2 Speedway Racing Categories Predicted Noise Levels (LAeq 15min) – Neutral Conditions

Location	Representative NCA	Most Impacted Receiver	Predicted Noise Level (LAeq 15min)							
			Sprintcar Race		V8 Dirt Modified Race		Wingless Sprints Race		Formula 500 Race	
			At Monitoring Location	At Most Impacted Receiver	At Monitoring Location	At Most Impacted Receiver	At Monitoring Location	At Most Impacted Receiver	At Monitoring Location	At Most Impacted Receiver
L01	NCA01a	150-154 Chandos Road, Horsley Park	61	51	58	47	54	43	51	40
L02	NCA01b	763-783 Wallgrove Road, Horsley Park	61	48	57	43	54	39	51	36
L03	NCA02 ¹	165 Wallgrove Road, Eastern Creek ¹	53	44	49	40	44	35	42	32
	NCA04	51 Pikes Lane, Eastern Creek		40		36		31		28
L04	NCA01a	150-154 Chandos Road, Horsley Park	70	51	66	47	63	43	60	40

Note 1: Receiver is situated within the project area for the approved Lighthorse Interchange Business Hub and are currently assumed to be unoccupied.

Table 3 Speedway Racing Categories Predicted Noise Levels (LAmax) – Neutral Conditions

Location	Representative NCA	Most Impacted Receiver	Predicted Noise Level (LAmax)							
			Sprintcar Race		V8 Dirt Modified Race		Wingless Sprints Race		Formula 500 Race	
			At Monitoring Location	At Most Impacted Receiver	At Monitoring Location	At Most Impacted Receiver	At Monitoring Location	At Most Impacted Receiver	At Monitoring Location	At Most Impacted Receiver
L01	NCA01a	150-154 Chandos Road, Horsley Park	68	57	64	53	56	44	54	42
L02	NCA01b	763-783 Wallgrove Road, Horsley Park	72	56	68	52	61	43	58	41
L03	NCA02 ¹	165 Wallgrove Road, Eastern Creek ¹	61	54	57	50	48	41	46	39
	NCA04	51 Pikes Lane, Eastern Creek		49		44		35		33
L04	NCA01a	150-154 Chandos Road, Horsley Park	78	57	73	53	66	44	63	42

Note 1: Receiver is situated within the project area for the approved Lighthorse Interchange Business Hub and are currently assumed to be unoccupied.

3 Conclusion

Predicted noise levels at the nominated monitoring locations have been provided. The difference in noise levels between these monitoring locations and the nearest sensitive receivers can be used to quantify noise impacts during speedway events by subtracting the difference in measured noise level at each monitoring location relative to the most impacted receiver in the relevant noise catchment area.

Checked/
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