# Newcastle 500 Acoustic Advice

Supercars Australia

## Noise Management Plan

8 September 2017

# 1. Introduction

## 1.1 Background

In November 2017, Supercars Australia is hosting the inaugural Newcastle 500 event in Newcastle. This event will be one of biggest events to be held in Newcastle, and is expected to draw 150,000 spectators during the race weekend.

The proposed race circuit will pass business and residential properties within the Newcastle CBD, potentially generating high noise levels in the area. Supercars Australia has committed to assessing potential noise levels and managing any identified impacts.

A previous study has modelled potential noise impacts against NSW Work Health Safety legislation. This report assesses the effectiveness of proposed noise mitigation measures and recommends further management measures to reduce any identified residual impacts.

## 1.2 Purpose and objectives

### 1.2.1 Purpose

This Plan assesses the effectiveness of proposed noise mitigation measures and describes how Supercars Australia proposes to manage any residual noise impacts resulting from the event's operation.

### 1.2.2 Objectives

The key objective of this Noise Management Plan (NMP) is to ensure impacts to the local community from noise are minimised. Specific objectives include:

- Identifying sensitive receivers and ensuring appropriate noise controls and procedures are implemented during the Newcastle 500 event
- Engagement of the community to understand their issues and noise management preferences
- Minimising potential adverse noise impacts to community
- Managing any predicted impacts
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3 of this Plan.

# 2. Assessment of noise impacts (with mitigation)

## 2.1 Noise management measures

### 2.1.1 Temporary noise barriers

In response to the preliminary noise levels predicted from the operation of the event, Supercars has proposed the use of temporary noise barriers at the following locations to reduce noise exposure:

- Watt Street, western side, King Street to Church Street
- Shortland Esplanade, northern side, Watt Street
- Zaara Street, western side, Shortland Esplanade to Scott Street
- Scott Street, both sides, Zaara Street to Parnell Place
- Parnell Place, western side, Scott Street to Alfred Street

The barriers will be 2m high and be positioned against the gutter (ie, as close as practical to the noise source) to maximise their screening benefit.

### 2.1.2 Rescheduling of race events

In addition to the use of acoustic barriers, Supercars has reviewed the event schedule, removing several proposed events and shortening several others. These modifications have resulted in an approximate 0.5dB reduction in $L_{Aeq\ (10\ hour)}$ noise levels during each day.

## 2.2 Predicted external noise levels (with mitigation)

The results of the modelling for external areas show noise levels may exceed the $L_{Aeq(10\ hour)}$ 84dB criterion outside buildings directly facing the race circuit, and within other public areas such as footpaths, parks, outdoor seating areas and balconies which have direct exposure to the circuit.

Buildings within this affected zone are located along the following streets:

- Watt Street
- Shortland Esplanade
- Zaara Street
- Scott Street
- Parnell Place / Nobbys Road

$L_{CPeak}$ noise criterion of 140dB may be exceeded by between 1dB and 7dB at external areas of eleven dwellings. Supercars will contact these residents directly. Internal noise levels are discussed in the following section.

$L_{Aeq}$ noise levels from Friday activities are predicted to be approximately 1dB below predicted $L_{Aeq}$ values, whereas Sunday is likely to be 0.5dB below these levels.

The noise barriers have been found to provide effective noise mitigation for properties on the ground floor of affected buildings. For ground floor receivers located behind the barriers, this mitigation has been found to reduce event noise levels by a maximum of 15dB, with an average reduction of 4dB. Reductions are highest where a direct line of sight between vehicles and the dwelling can be interrupted.

## 2.3 Predicted internal noise levels (with mitigation)

Noise levels for internal areas of affected properties have also been predicted. These calculations have shown that internal exceedances may still be experienced on the first floor of residential properties along the race circuit on Zaara Street, Scott Street and Parnell Place.

With the implementation of the identified noise control measures, event noise levels within buildings are predicted to comply with the noise exposure criterion for all ground floor areas.

Internal areas of all buildings are expected to comply with noise criterion for $L_{CPeak}$ noise levels.

$L_{Aeq(10\ hour)}$ noise levels may be exceeded by between 1dB and 4dB at internal areas of up to 31 dwellings. Supercars will contact these properties directly.

## 2.4 Noise reduction by controlling race event

The results indicate predicted event noise within all dwellings could be made to comply with the exposure criterion where the $L_{Aeq}$ noise levels can be reduced by a further 5dB(A).

**Figure 2.1** shows the reduction in noise exposure with the reduction in the number of vehicles participating in a particular event.

It is noted where the total number of vehicle pass bys per day can be reduced to 2,000, noise would be expected to reduce by 5dB. Given the busiest day (Saturday) is predicted to involve approximately 6,500 pass bys, where a resident is able to leave the race precinct for more than six of the nine hours event period, noise exposure is expected to be reduce to levels below the noise criteria for all internal areas on this day. Avoiding the main race event is likely to reduce noise levels by approximately 2dB, thereby making compliance likely at virtually all properties.

Due to the reduced schedule, noise levels on Friday and Sunday are likely to be approximately 1.7dB and 0.5dB below these levels respectively.

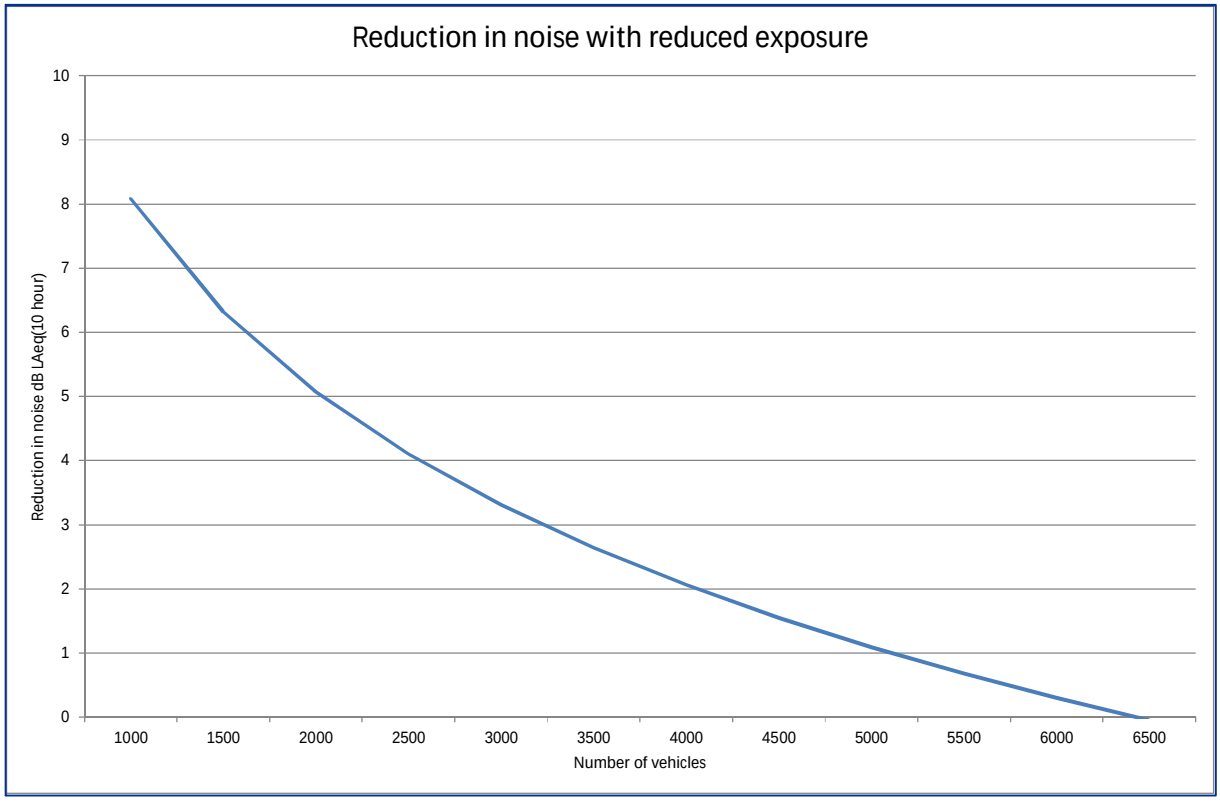


Figure 2.1 : Noise reduction with reduced exposure

## 2.5 Hearing protection

Supercars has proposed to provide hearing protection to residents located within the race precinct.

When correctly fitted all commercially available forms of hearing protection will provide a minimum of 10dB noise reduction.

Where hearing protection is used in accordance with manufacturer instructions, this will reduce noise exposure to within acceptable levels at all internal locations.

# 3. Recommended noise management measures

Noise level predictions outlined in **Section 2** show levels inside some residential and business properties may exceed $L_{Aeq}$ noise limits during the event. Noise levels at external areas may exceed $L_{Aeq}$ and $L_{CPeak}$ criteria.

A range of noise management measures are outlined in **Table 3-1**.

Table 3-1 Noise and vibration management and mitigation measures

| ID | Measure / Requirement |
|---|---|
| **Planning / Pre-event** | |
| N1 | Community notification / provision of information to all properties where interior exceedances of criteria have been predicted. Advice would be provided with the aim of reducing unwarranted complaints and discomfort during the event. The brochure would include:<br>a) Background and explanation of relevant noise criteria<br>b) Details of noise assessment and results<br>c) Recommended noise management measures, these would include:<br>1. Keep doors and windows closed<br>2. Seal cracks, doors and window frames using commercial or make shift products. Basic protection measures may include:<br>· Adhesive sealing strips for door frames and windows<br>· Temporary vent seals<br>· Under door strip seals / draught stoppers<br>· Fill cracks using commercial foam fillers or silicon<br>3. Remain in back rooms<br>4. Use hearing protection<br>5. Leave property during some or all of the race period (Optional) |
| N2 | Provision of a noise information brochure to all properties within the event precinct. This would contain similar details to those outlined above. |
| N3 | Provision of hearing protection (and training on its use) to all properties within the externally affected area |
| N4 | Provision of an information session on noise management and responsibilities for businesses within the potentially affected area |
| N5 | Provision of alternative options outside of the precinct for noise sensitive residents within the potentially affected area. These will be confirmed closer to the event. |
| N6 | Installation of 2m temporary acoustic screening at the following locations:<br>· Watt Street, western side, King Street to Church Street<br>· Shortland Esplanade, northern side, Watt Street 150m length<br>· Zaara St, western side, Shortland Esplanade to Scott Street<br>· Scott Street, both sides, Zaara Street to Parnell Place<br>· Parnell Place, western side, Scott Street to Alfred Street |

| ID | Measure / Requirement |
|---|---|
| **Race weekend** | |
| N7 | Establishment of a community complaints phone line |
| N8 | Conduct unattended noise monitoring at one internal area, one affected external area and one unaffected external area within the precinct during the race. Precise locations will be confirmed closer to the event. |
| **Review and follow up** | |
| N9 | Prepare a noise monitoring report outlining the results of event noise monitoring |
| N10 | Review complaints history, monitoring results and the effectiveness of these noise management measures |
| N11 | If required, review and update this Noise Management Plan prior to next year's proposed event |

# 4. Compliance management

## 4.1 Roles and responsibilities

Noise management during the Newcastle 500 event would be the responsibility of the Community Engagement Manager for Supercars.

## 4.2 Training

It recommended all relevant employees, contractors and utility staff working at the event will undergo site induction training which includes noise impact management issues. The induction training will address elements related to noise impact management including:

- Existence and requirements of this sub-plan
- Relevant legislation
- Location of noise sensitive areas
- Complaints reporting
- General noise management measures
- The use of hearing protection

## 4.3 Inspections and monitoring

It is recommended noise monitoring is carried out during the 2017 Newcastle 500 event at the locations identified in **Table 3-1** (at a minimum).

Monitoring will be conducted by an experienced acoustic specialist and in accordance with relevant standards and guidelines.

Where noise monitoring indicates noise exceeds the predicted noise levels, the source of excessive noise generation will be identified, and any additional feasible and reasonable measures available will be implemented to either reduce noise emissions or reduce the impacts on receivers for future events.

Acoustic instrumentation employed in the noise monitoring surveys will comply with the requirements of AS IEC 61672.1 (2004) *Electro Acoustics - Sound Level Meter Specifications*, AS1259.2-1990 *Acoustics – Sound Level Meters, Part 2: Integrating – Averaging* and carry appropriate NATA (or manufacturer) calibration certificates.

## 4.4 Non-conformances

Non-conformances will be dealt with and documented in a Noise Monitoring report prepared after the Newcastle 500 event.

## 4.5 Complaints

Noise complaints will be recorded and responded to. Information to be recorded shall include location of complainant, time/s and nature of the noise complaint, corrective action taken and other relevant details. All resident complaints will be responded to in a timely manner and any action taken recorded and reported in the post event noise report.

## 4.6 Reporting

It is recommended the results of noise monitoring, complaints and any changes to noise management measures are reported in a post-event noise assessment prepared at the completion of the Newcastle 500.

This report will capture detail including, but not limited, to:

- The locations and description of monitoring undertaken
- A tabulation of results (e.g. for noise including $L_{CPeak}$ and $L_{Aeq}$ noise levels)
- Summary of any measurements exceeding the nominated criteria, and descriptions of the time and / or vehicle type causing these exceedances
- Details of any corrective actions and their effectiveness
- Details of noise complaints during the event
- Details of any potential improvements to the noise management measures outlined in Section **2**.

# 5. Review and improvement

As the Newcastle 500 event has been proposed to be held in Newcastle for the next five years, it is important any non-conformances are identified and managed for future events.

## 5.1 Continuous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of noise management performance against the SafeWork criteria for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of noise management and performance.
- Determine the cause(s) of any non-conformances and deficiencies.
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies.
- Verify the effectiveness of the corrective and preventative actions.
- Document any changes in procedures resulting from process improvement.
- Make comparisons with objectives and targets.

## 5.2 Update and amendment

The identification of any non-conformances or improvement opportunities may result in the need to update or revise this Plan. This will occur as needed.

A copy of the updated plan and changes will be distributed to all relevant stakeholders, this would usually include:

- SuperCars Australia / Newcastle 500
- SafeWork NSW

Where relevant it may also be prudent to inform the occupants of affected properties of improvements and updates, although they would not typically be provided with the complete Noise Management Plan.