HERRING STORER ACOUSTICS

RESIDENTIAL DEVELOPMENT
LANCASTER ROAD, NORTH McKAIL

LOTS 526, 507 AND 300

ENVIRONMENTAL NOISE ASSESSMENT

FEBRUARY 2024

OUR REFERENCE: 32194-3-24035

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ENVIRONMENTAL NOISE ASSESSMENT

McKAIL ROAD, LANCASTER

Job No: 24035

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FOR

VEGATE PTY LTD

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APPENDICIES

1.0 INTRODUCTION

Herring Storer Acoustics was commissioned by Acumen on behalf of Vegate Pty Ltd to carry out a noise impact assessment for a proposed residential development located at Lots 526, 507 and 300 Lancaster Road, North McKail (see Figure A1 and A2 in Appendix A for Study Area). The site is adjacent to the Albany Speedway.

The site falls within the City of Albany's "Speedway Noise Buffer Area Policy". It has been recommended by the *Environmental Protection Authority* that an acoustic assessment be completed, with regards to noise emissions from the speedway at the residential development. Appendix C provides a copy of the "Speedway Noise Buffer Area Policy".

The objective of this study was to detail a suitable combination of buffer distance and mandatory acoustic insulation/quiet house design parameters.

The proposed residential area of concern is located on the west and southern quadrants from the speedway and includes the following lots:

- Lots 300, 507, 526 and 1918 Lancaster Road.

This acoustic assessment has been provided in support of the ODP application.

The concept plan is shown below in figure 1.1, and in Appendix A.

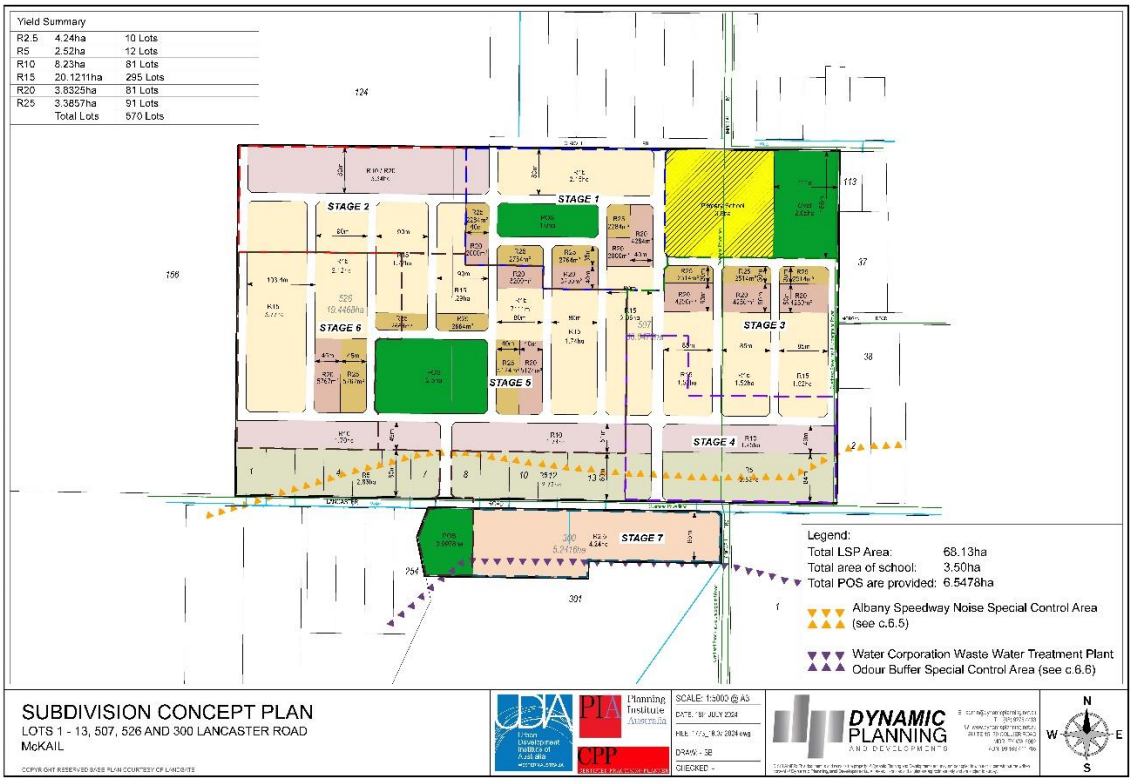


FIGURE 1.1 – CONCEPT LAYOUT PLAN

2.0 SUMMARY

From the City of Albany's "Speedway Noise Buffer Area Policy" the internal acoustic criteria are:

- Common areas 55 dB(A)
- Living areas 45 dB(A)
- Sleeping areas 40 dB(A)

We note that the above noise levels are "maximum" L_{Aeq} recorded over a short period of time during a race.

Based on the criteria there are a number of combinations of buffer distances and quiet house requirements that can be used. These being:

1 A buffer zone of 700 metres with no "Quiet House design" requirements.

2 A buffer zone of 400-500 metres with "Quiet House design" which allows bedrooms to face the speedway; and

3 A buffer zone of 200-300 metres with "Quiet House design' with bedrooms on the side of the house opposite the speedway, but with living areas facing the speedway.

Noise contours from the speedway emissions show that the development lots as per this assessment have a maximum noise level ranging from 64 to 67 dB(A) at the boundaries facing the speedway.

Two buffer zones particular to each lot, have been identified and are shown in Appendix B, Figure B1. The buffer zones have been classified into two areas, A1 and A2. Design guidelines for each zone have been developed and are detailed in section 5.

The noise amelioration is only required to the first row of residences and the first floor of the second row, as these houses provide an adequate barrier between the speedway and the other residences.

Given the number of speedway events held each year, the use of double glazing is not a recommendation of the mandatory acoustic guidelines. However, it is recommended that the single glazing be installed such that it can be upgraded to a double glazed window system if desired by the occupant. This can be achieved by either:

- Installing the windows slightly forward in the reveal to allow a secondary sliding window to be installed, or

- Selecting frames that allow for the installation of a second operable window to be installed, such as a Capral window frame or equivalent.

Alternatively, it is understood that 6.5mm laminated glass (VLAM Hush) can achieve the same noise reduction as 10.38mm laminate glass. The use of this 6.5mm laminated glass allows the installation of standard window frames and the option to upgrade the glass.

3.0 CRITERIA

The City of Albany's "Speedway Noise Buffer Area Policy" cites the following internal noise levels as the acoustic criteria:

- Common areas 55 dB(A)
- Living areas 45 dB(A)
- Sleeping areas 40 dB(A)

We note that the above noise levels are "maximum" L_{Aeq} recorded over a short period of time during a race.

A copy of the "Speedway Noise Buffer Area Policy" is attached in Appendix C.

4.0 ACOUSTIC ASSESSMENT

From previous measurements and observations on site, as noted by the DWER, noise received at a location is dominated by noise emissions from one vehicle and not the accumulative effect of all vehicles racing. Therefore, the noise model was modified to reflect this noise propagation, by running various scenarios using a single car located at various locations around the track, then combining the results to provide a 'maximum' contour.

From file data, it was determined that the sound power level of a single Late Model V8 car at maximum engine speed was 129 dB(A), which can be compared to a sound power level of a single Sprint Car at maximum engine speed was 132 dB(A). This sound power level correlates to that stated by the DWER. The resultant contours relate to the noise emissions from Sprint Cars.

Using the sprint car noise levels, modelling was carried out with the environmental noise modelling computer program SoundPlan. SoundPlan uses the theoretical sound power levels determined from measured sound pressure levels to calculate the noise level received at a specific location.

The calculations used the following input data:

a) Ground contours;

b) Sound power levels of 132 dB(A) per car with 10 vehicles in a race.

Weather conditions for the modelling were as stipulated within the Environmental Protection Authority's "*Draft Guidance for Assessment of Environmental Factors No. 8 – Environmental Noise"* for the day and night periods were as listed in Table 1.

TABLE 1 – WEATHER CONDITIONS

Condition	Day Period
Temperature	15 °C
Relative Humidity	50%
Pasquil Stability Class	F
Wind Speed	3m/s*

* From sources, towards receivers.

Appendix B, Figure 1 shows the resultant noise contour plot.

Additionally, single point receiver noise levels were calculated for each boundary location (facing speedway) for the residential lots. Noise level results are shown in Table 2.

TABLE 2 – NOISE LEVELS AT BOUNDARY LOCATION – RESIDENTIAL LOTS

Residential Lot	Exterior Noise Level
Lot 300 Lancaster Road	56
Lot 507 Lancaster Road	67
Lot 526 Lancaster Road	66

Additional to the single point receivers and contour plot, noise reduction calculations were carried out to determine the noise reduction that is achieved by various glazing thickness. This reduction was then used to determine the maximum external noise level allowable to still comply with the internal criteria. Calculations were carried out for the following glazing thickness:

- 4mm float glass;
- 6mm float glass;
- 6.38mm laminated glass;
- 6.5mm laminated glass; and
- 10.38mm laminated glass.

The noise reductions achieved by the above glazing and the corresponding maximum external noise level to achieve compliance with the acoustic criteria is listed in Table 3.

TABLE 3 – MAXIMUM EXTERNAL NOISE LEVELS

Glazing	Noise Reduction	Maximum External Noise Level (dB(A))		
		Common	Living	Bedrooms
4mm float glass	20	75	65	60
6mm float glass	23	78	68	63
6.38mm laminated glass	26	81	71	66
6.5mm laminated glass	28	83	73	68
10.38mm laminated glass	28	83	73	68

5.0 DESIGN GUIDELINES

Noise contours at the boundary location (facing speedway) for any of the proposed residential development lots (with the exception of lot 300) range from 64 to 67 dB(A). Based on these noise levels, design guidelines have been detailed below. Dependent on the location of residential housing these guidelines are for the first row of housing, and housing first floor of the second row, facing the speedway. Noise levels after this will be reduced both from the barrier effect and distance attenuation.

Note: Lot 300 is 1000 metres from the speedway, therefore it is outside any buffer zone and it requires no noise amelioration in the design.

5.1 AREA A1 - (NOISE CONTOUR LINE 67 dB(A))

For the scenario with bedroom and/or common areas facing the Speedway, the required buffer zones using 6.38mm or 10.38mm laminated glass are the 66 and 68 dB(A) noise contours, respectively, as shown on the contour plot attached in Appendix B.

Incorporated with the above buffer zone, the following recommendations are provided:

- Where possible, residences are orientated such that garages are located on the side facing the Speedway;
- Front doors facing the speedway, entrance lobbies are incorporated in the design, such that they provide a buffer space between the entrance and the remainder of the residence;
- Double brick or concrete construction;
- Casement windows (with winders) in timber or commercial steel frames and compressible seals;
- Using the 68 dB(A) contour as the buffer zone, glazing to be either 10.38mm or 6.5mm (VLAM Hush) laminated glass to bedrooms facing or exposed to the Speedway;
- Using the 66 dB(A) contour as the buffer zone, glazing to be 6.38mm laminated glass to bedrooms facing or exposed to the Speedway;
- Cantilevered sliding doors to facing or exposed to the speedway are acceptable, provided they had interlocking meeting stiles such as for the Capral 889. Double sliding doors with meeting stiles that butt together are not allowed;
- Eaves to be enclosed using 9mm thick compressed cement sheeting or equivalent;
- Roofs are to be colourbond with minimum 50mm anticon, with ceilings on the top floor to be minimum 2 layer 13mm thick plasterboard to bedrooms and walk in robes, and 1 layer 13mm thick plasterboard to all other spaces, and R3 insulation laid over the top; and
- Recessed light fittings in bedroom ceilings to the top storey are to be acoustically rated.

All dwellings required to comply with the “Quiet House” design guidelines must submit an Acoustic Report by a qualified Acoustic Engineer stating that the design and construction of the dwellings adequately attenuates noise emissions from the Speedway.

Alternative constructions are acceptable providing that they comply with the Quiet House Guidelines and are supported by an Acoustic Report by a qualified Acoustic Engineer stating that the design and construction of the dwellings adequately attenuates noise emissions from the Speedway provided it achieves compliance with the City of Albany’s “Speedway Noise Buffer Area policy”.

Notification of speedway noise levels and the “Quiet House” design guideline will be placed on the Certificate of Title for the specific lots.

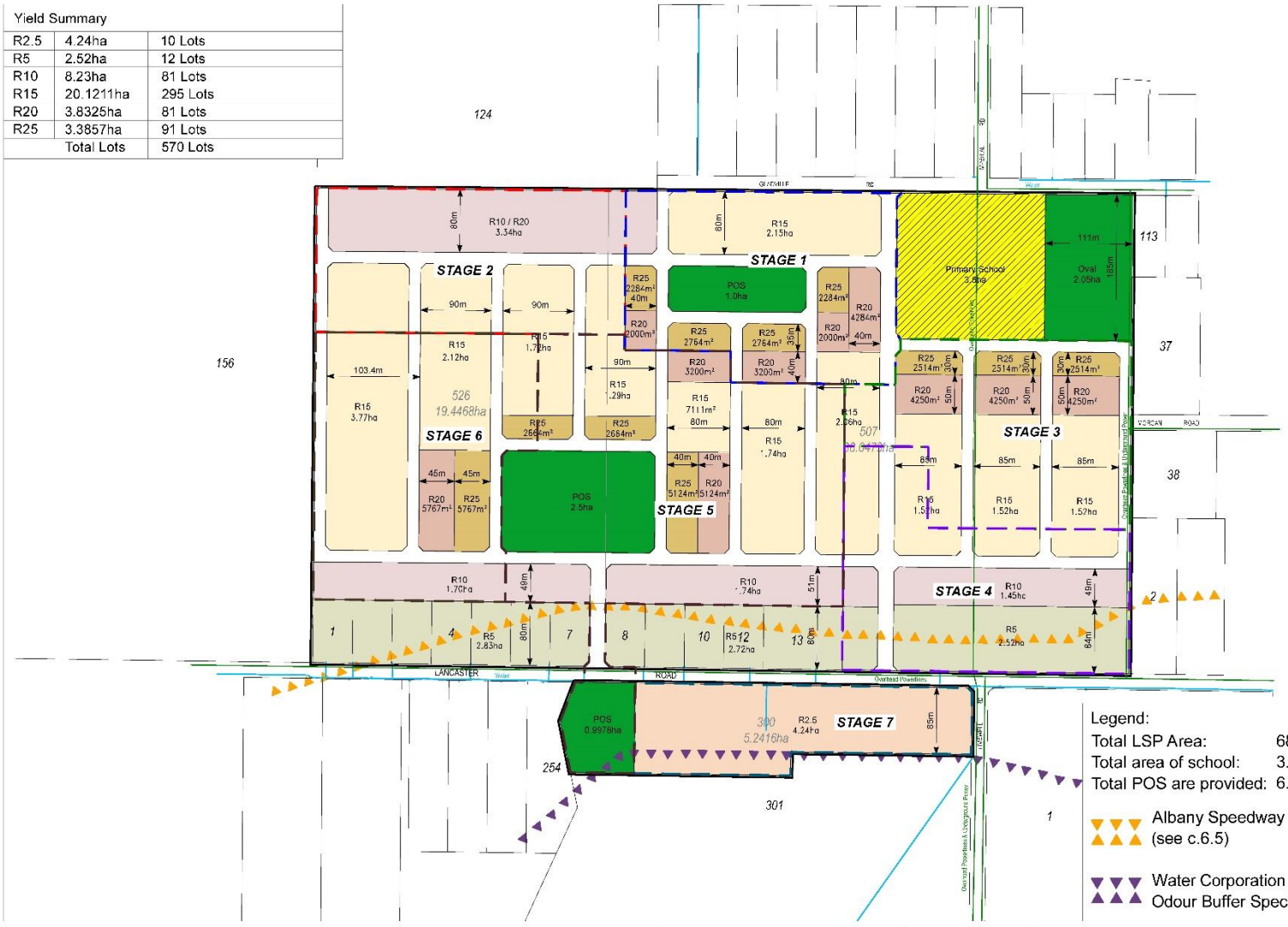
5.2 AREA A2 - (NOISE CONTOUR LINE 66 DB(A))

- Residences to be located on southern portion of lot.
- Where possible, bedrooms are located on the opposite side of the dwelling away from the Speedway
- Laundry and Bathrooms are preferably located on the same side as the Speedway.
- Double brick or concrete construction.
- Casement windows (with winders) in timber or commercial steel frames and compressible seals.
- For bedrooms facing or exposed to the speedway, glazing to be minimum 6.38mm thick laminated glass.
- Roofs are to be colourbond with minimum 50mm anticon, with ceilings on the top floor to be minimum 1 layer 13mm thick plasterboard to bedrooms and walk in robes.
- Installing the windows slightly forward in the reveal to allow a secondary sliding window to be installed or select frames that allow for the installation of a second operable window to be installed within the frame, such as a Capral window frame or equivalent.

APPENDIX A

RESIDENT LOCATION

Yield Summary		
R2.5	4.24ha	10 Lots
R5	2.52ha	12 Lots
R10	8.23ha	81 Lots
R15	20.1211ha	295 Lots
R20	3.8325ha	81 Lots
R25	3.3857ha	91 Lots
	Total Lots	570 Lots



SUBDIVISION CONCEPT PLAN

LOTS 1 - 13, 507, 526 AND 300 LANCASTER ROAD
McKAIL

SCALE: 1:5000 @ A3
DATE: 18th JULY 2024
FILE: 1773 18.07.2024.dwg
DRAW: - SB
CHECKED: -

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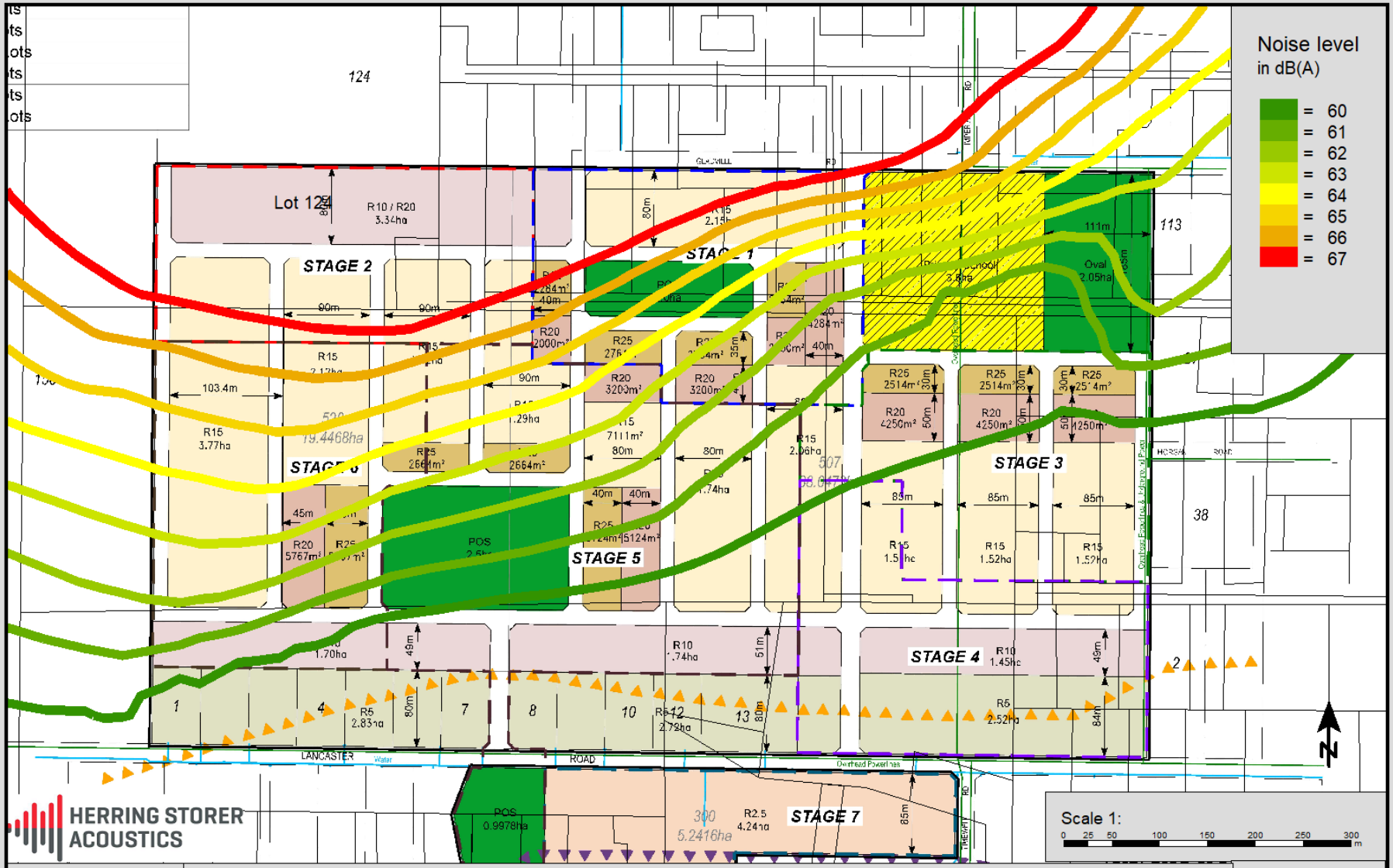
APPENDIX B

NOISE CONTOUR PLOT



Herring Storer Acoustics
Job No : 24035
Date : 24 September 2024

NOISE CONTOURS FROM SPEEDWAY
SPRINT CARS
ALL WINDS SCENARIO

Figure 1
Appendix B
File #611

APPENDIX C

CITY of ALBANY
"SPEEDWAY NOISE BUFFER AREA POLICY"

CITY OF ALBANY
SPEEDWAY NOISE BUFFER AREA POLICY

OBJECTIVE

The objectives of the policy are to:

- allow for the ongoing operations of the speedway at Atwell Park and encourage the operators to incorporate additional noise attenuation measures to reduce noise impacts into adjoining residential developments.
- acknowledge and recognise existing approved residential developments within the buffer area.
- ensure that new developments incorporate measures to advise purchasers within the buffer area of the speedway operations and noise generated during their events.

POLICIES

1.1 For existing dwellings, additions/alterations to an existing dwelling or the replacement of an existing dwelling, noise attenuation measures are not mandatory within the buffer area (Map No. 1). Whilst it is expected that those premises will experience noise levels in excess of the provisions contained in the *Environmental Protection (Noise) Regulations 1997* from periodic speedway activity, Council will not seek to modify the 'as existing' conditions.

1.2 Residents are encouraged to consider the following information and methods of noise attenuation in planning the construction of new residences within the buffer area:

- the AS/NZS 2107:2000 Standard 'Acoustics – Recommended design sound levels and reverberation times for building interiors' recommends the following maximum internal noise levels (L_{Aeq}):
  - common areas 55dB(A)
  - living areas 45dB(A)
  - sleeping areas 40dB(A)
- the following techniques known as 'quiet house' design and construction methods/materials should be considered to achieve practical reduction in internal noise levels in new residences:
  - locating habitable rooms such as bedrooms on the opposite side of dwelling to speedway.
  - locating non-habitable rooms such as laundries/bathrooms on same side of dwelling as speedway.
  - protect main entrance from speedway noise.
  - insulation of the dwelling including enclosed eaves, insulate roof spaces or double brick construction.
- the erection of internal property fences between the speedway and dwelling so that it that forms a continuous and solid barrier (recommended density is a minimum of 10kg/m^2).

1.3 Upon the transfer of land within the buffer area, a notation shall be provided on the zoning certificate issued by the City advising of the relationship of the land to the speedway and of this Policy.

ADDITIONAL INFORMATION

1. *For the purpose of this Policy, an existing dwelling is defined as a dwelling either constructed, under construction or approved for construction at the time of adoption of this Policy*

2. *The information used to formulate this Policy was prepared by Herring Storer Acoustics (Acoustic Consultants).*

3. *The Herring Storer Acoustics report for the speedway contains some recommendations on future works at the speedway including the construction of barrier fencing that would reduce the impact of noise from the speedway and hence buffer zone required. The report recommends that upon completion of these works, additional modelling will need to be undertaken to redefine the buffer zone boundary shown in this Policy. The City has agreed to consider ways of assisting the speedway club to undertake these modifications.*

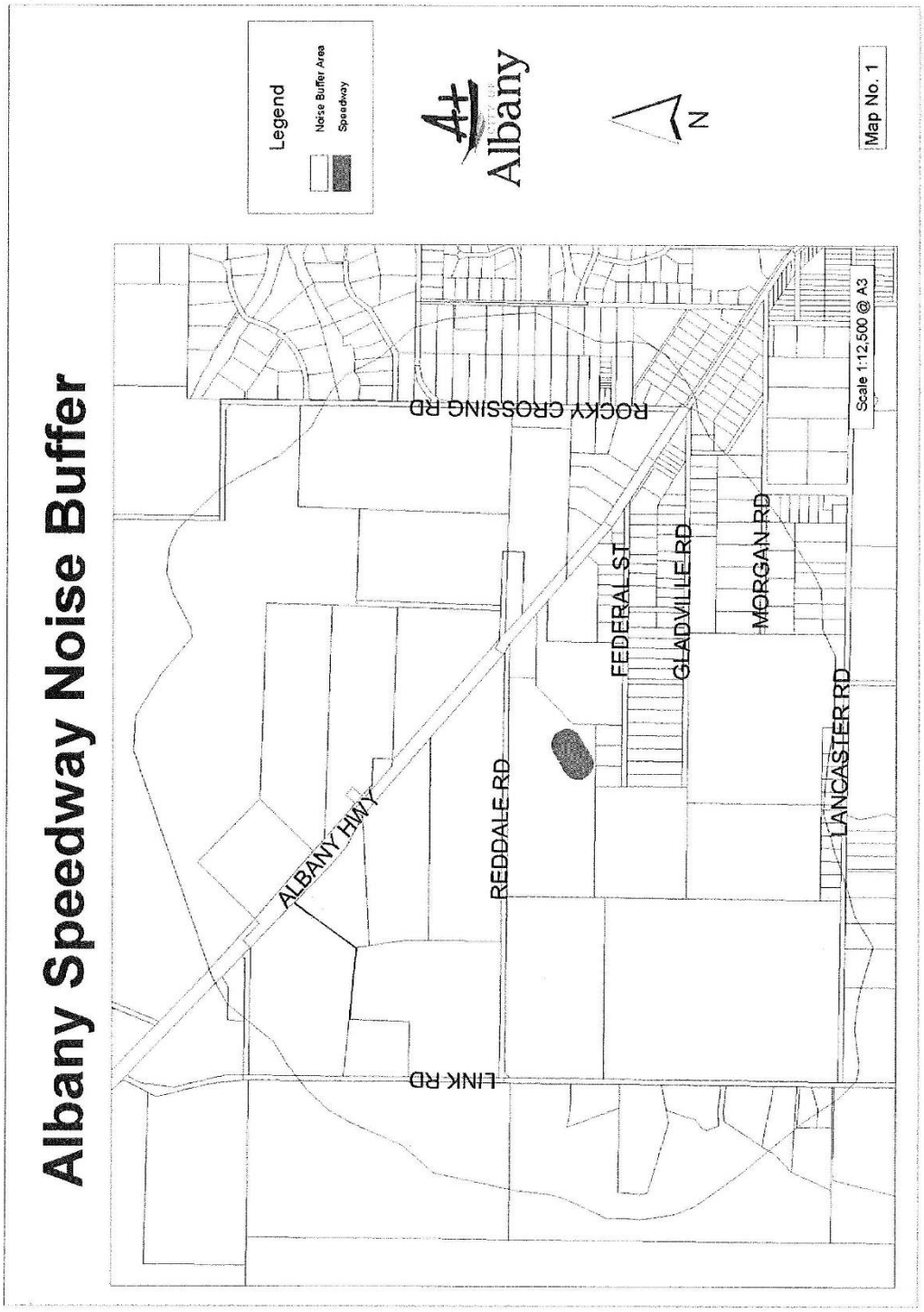
4. *For information purposes, the approximate density of some commonly used construction materials are:*

6mm compressed cement fence sheeting	*11kg/m²*
common brick	*180kg/m²*
200mm limestone blocks	*350kg/m²*
100mm concrete	*260kg/m²*

5. *Preliminary discussion with Council Officers is encouraged for any application likely to be affected by this Policy.*

Policy Status

Draft Policy Adopted for Advertising (October 2003 - Item 11.3.2 DS)
Final Policy Adopted (October 2004 – Item 11.3.3 DS)


Albany Speedway Noise Buffer
Legend
Noise Buffer Area
Speedway
Albany
N
Map No. 1
Scale 1:12,500 @ A3
ROCKY CROSSING RD
FEDERAL ST
GLADVILLE RD
MORGAN RD
LANCASTER RD
REDDALE RD
ALBANY HWY
LINK RD