

8 November 2011

Resource Management Group
PO Box 9053
Tower Junction
Christchurch 8149

Attention: Ms Liz White

Dear Liz,

STONEBROOK SUBDIVISION, ROLLESTON - TRAFFIC NOISE

Marshall Day Acoustics has been engaged to assess traffic noise intrusion from State Highway 1 into the proposed Stonebrook subdivision, Rolleston. Several of the proposed lots, and therefore potentially future dwellings, sit within 40 metres of State Highway 1. This invokes the requirements for an acoustic assessment under Selwyn District Plan Rule 31.15 which states:

*Any dwelling, family flat, and any rooms within accessory buildings used for sleeping or living purposes shall be located no closer than 40m from the State Highway 1 carriageway. **Except that** this distance can be reduced where the dwelling, family flat and any rooms within accessory buildings used for sleeping or living purposes has been acoustically insulated or subject to mounding or other physical barriers so that traffic noise from State Highway 1 is limited to levels set out below, with all external doors and windows closed:*

Table 1: Internal Noise Limits

	Daytime (0700-2200 Hours) dBA L _{eq} (1hour)	Night-time (2200-0700 Hours) dBA L _{eq} (1hour)
Within Bedrooms	35	30
Within Living Area Rooms	40	35

The proposed Stonebrook subdivision is immediately to the south-west of the Millgate subdivision which was subject to a detailed traffic noise assessment by Marshall Day Acoustics in October 2007. (This report, Rp001 R01 2007422c, 10 October 2007, is attached for reference as Attachment A). Stonebrook and Millgate are being developed by the same company, CDL Land New Zealand Ltd.

From a traffic noise perspective, the assessment required for Stonebrook will be identical to that conducted for Millgate, however we will comment briefly of the change in traffic volumes on State Highway 1 between 2007 and the present day. The latest available data from NZTA shows that traffic flows over the last 5 years have changed by between -1% and 4% a year compared to 2006

values. Therefore in order to estimate a 10 year design noise level in 2021, we have extrapolated traffic flow based on a conservative 4% non-compounding increase per annum, starting with a 2010 flow of 10,976 vehicles per day (AADT) as the baseline. We calculate the resulting traffic 2021 volume is calculated to be 16,897 vehicles per day (AADT).

The noise control constructions used in the Millgate report are based on noise generation from a 2017 traffic volume of 14,736 vehicles per day (AADT). In noise terms, the difference in the 2017 and 2021 values is 0.6dBA which is negligible and will not alter the appropriateness of the recommendations from the Millgate report.

In order to comply with the requirements of SDC rule 31.15, a noise barrier with a minimum overall height of three metres is required and this should be constructed to connect into the existing noise barrier at Millgate. To the south, the barrier should return back from the State Highway for a minimum distance of 40 metres. The extent of the barrier is indicated in Figure 1. In addition, dwellings should be constructed in accordance with the elements and restrictions stated in Appendix B, Tables B1 & B2 of the Millgate report. For clarity, these tables are reproduced overleaf.

In summary, the noise control constructions that were developed for the Millgate subdivision in October 2007, in conjunction with a three metre high noise barrier along the road boundary, remain appropriate for the proposed Stonebrook subdivision and will ensure compliance with SDC rule 31.15.

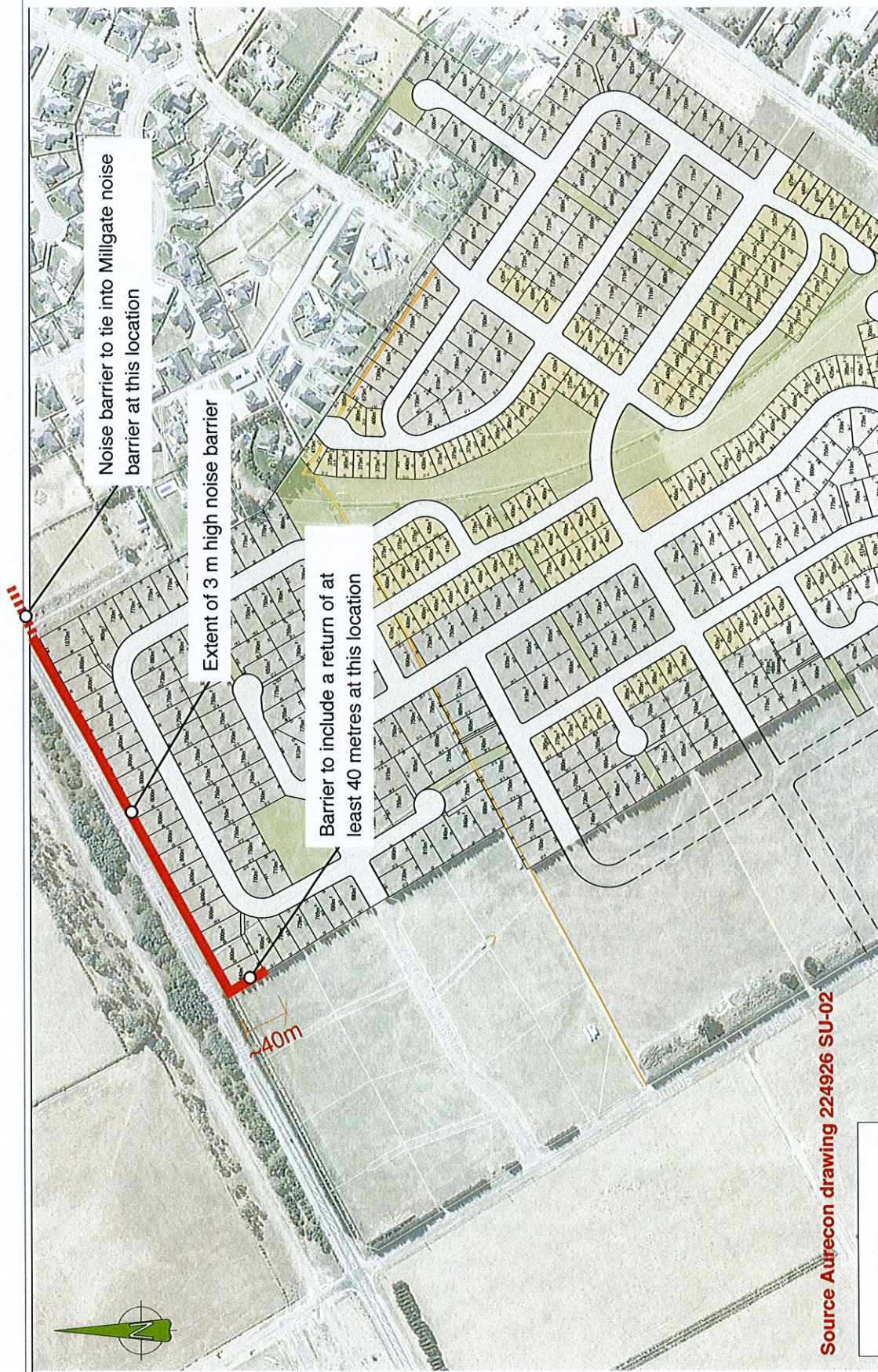
Please contact us should you have any queries.

Yours faithfully

MARSHALL DAY ACOUSTICS LTD



Jon Farren
Principal



Source Aurecon drawing 224926 SU-02

LEGEND

- ROADWAY
- LIVING 2
- MEDIUM DENSITY
- LOCAL CENTRE
- RECREATION RESERVE
- EASEMENT

PROJECT: Stonebrook, Rolleston

JOB NO: 201111a1

MARSHALL DAY
Acoustics

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TITLE: EXTENT OF 3 METRE HIGH NOISE BARRIER

DRAWN: JF

DATE: November 2011

SCALE: NTS

DRAWING REF:

Figure 1

REV:

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Table B1. Construction Elements – Non-Glazing (For 3.0 m Noise Barrier)

Area	Materials / Construction
Roof – Single Storey	0.6 mm Coloursteel or Concrete Tiles
Roof – Multi Storey	0.6mm Coloursteel or Concrete Tiles with 18mm plywood sarking beneath
Ceilings in any habitable space with the roof directly above.	<p>Minimum R1.8 thermal grade insulation (e.g. R1.8 Pink Batts, Autex Greenstuff, or approved equivalent) or such greater amount as required to meet Building Code.</p> <p>Ceiling to be lined with 2 layers of high-density plasterboard such as Gib 13mm Noiseline installed as per manufacturers requirements.</p>
Walls facing West, North or East on single story dwellings; or ground floor of multi storey dwellings	<p>Either:</p> <p>Heavyweight Construction consisting of:</p> <p>Exterior cladding to be either minimum 70 mm brick; or 150 mm concrete wall; or 190 mm poured concrete block.</p> <p>Wall cavity to be a minimum of 100 mm which is to be filled with minimum R1.8 thermal grade insulation (e.g. R1.8 Pink Batts, Autex Greenstuff, or approved equivalent) or such greater amount as required to meet Building Code.</p> <p>10mm standard plasterboard such as Gib Lining.</p> <p>Or:</p> <p>Lightweight Construction consisting of:</p> <p>Weatherboard external cladding</p> <p>Wall cavity to be a minimum of 100 mm which is to be filled with minimum R1.8 thermal grade insulation (e.g. R1.8 Pink Batts, Autex Greenstuff, or approved equivalent) or such greater amount as required to meet Building Code.</p> <p>Two layers of 10mm high-density plasterboard such as Gib Noiseline Lining</p>
Walls facing West, North or East on 2 nd level of dwellings.	<p>Heavyweight Construction consisting of: Exterior cladding to be either minimum 70 mm brick, or 150 mm concrete wall, or 190 mm poured concrete block.</p> <p>Wall cavity to be a minimum of 100 mm which is to be filled with minimum R1.8 thermal grade insulation (e.g. R1.8 Pink Batts, Autex Greenstuff, or approved equivalent) or such greater amount as required to meet Building Code.</p> <p>10mm standard plasterboard such as Gib Lining.</p>
South facing rooms and non-habitable spaces	Any standard construction techniques and elements complying with the Building Code.
External Doors (non-glazed)	<p>Must be free of gaps, well sealed and of solid core construction.</p> <p>No external doors may be located on the northern face of buildings unless specific acoustic design is performed.</p>

Table B2. Construction Elements – Glazing (For 3.0 m Noise Barrier)

Area (see notes)	Materials / Construction
North, west and east facing living room windows.	<p><u>Either:</u></p> <p>Double glazing units covering not more than 30% of the external wall area comprising 8 mm glass with a 12 mm cavity and 6 mm glass;</p>
"North" refers to elements directly facing State Highway 1.	<p><u>Or:</u></p> <p>Double glazing units covering not more than 30% of the external wall area comprising 10 mm glass with a 12 mm cavity and 4 mm glass</p> <p><u>Or:</u></p> <p>Single glazing covering not more than 30% of the external wall area comprising 9mm PMMA Laminate Glass (HUSH, Audioscreen, Soundstop or equivalent).</p>
North, west and east facing bedroom windows on ground floor.	<p><u>With Lightweight Wall Construction:</u></p> <p>Double glazing units covering not more than 30% of the external wall area comprising 10 mm glass with a 12 mm cavity and 6 mm glass;</p>
"North" refers to elements directly facing State Highway 1.	<p><u>Or:</u></p> <p>Single glazing covering not more than 30% of the external wall area comprising 11mm PMMA Laminate Glass (HUSH, Audioscreen, Soundstop or equivalent).</p> <p><u>With Heavyweight Wall Construction:</u></p> <p>Double glazing units covering not more than 30% of the external wall area comprising 8 mm glass with a 12 mm cavity and 6 mm glass;</p>
	<p><u>Or:</u></p> <p>Double glazing units covering not more than 30% of the external wall area comprising 10 mm glass with a 12 mm cavity and 4 mm glass</p> <p><u>Or:</u></p> <p>Single glazing covering not more than 30% of the external wall area comprising 9mm PMMA Laminate Glass (HUSH, Audioscreen, Soundstop or equivalent).</p>
North west and east facing bedroom windows on 2 nd level.	<p><u>Either:</u></p> <p>Double glazing units covering not more than 30% of the external wall area comprising 10 mm glass with a 12 mm cavity and 6mm laminated glass;</p>
"North" refers to elements directly facing State Highway 1.	<p><u>Or:</u></p> <p>single glazing single glazing covering not more than 30% of the external wall area comprising 11mm PMMA Laminate Glass (HUSH, Audioscreen, Soundstop or equivalent);</p>

Note1: Sliding and Bi-fold doors are not permitted on upper floors except the south facade.

Note 2: The highest point of any upper floor window is not to exceed five metres above ground level.