

**Before the Hearings Panel
At Waimakariri District Council**

Under the Resource Management Act 1991

In the matter of the Proposed Waimakariri District Plan

Joint Witness Statement – NOISE-R16

Date: 24 October 2023

INTRODUCTION:

- 1 This Joint Witness Statement (JWS) relates to expert conferencing on noise.
- 2 The following participants were involved in this conferencing and authored this JWS:
 - (a) Stuart Camp, for Waimakariri District Council
 - (b) Dr Stephen Chiles for Waka Kotahi and KiwiRail, and
 - (c) Jon Styles for Kainga Ora.
- 3 An online meeting between the three experts was held on 11 October 2023. This JWS has resulted from that meeting.
- 4 In preparing this statement, the experts have read and understand the Code of Conduct for Expert Witnesses as included in the Environment Court of New Zealand Practice Note 2023¹.

PURPOSE AND SCOPE OF CONFERENCING:

- 5 The conferencing was focused on matters relating to noise which were identified in Minute 9, dated 4 September 2023.
- 6 The experts discussed the request contained in Minute 9, which confined the issues to “NOISE-R16 and associated ‘noise sensitive activity’ definition and matters of discretion”.

MATTERS THAT THE EXPERTS AGREE ON:

Setback vs modelled contours

- 7 We agree that there are potential benefits in some situations from using modelled noise contours when assessing and managing noise effects from road and rail. However, whilst we understand that Waka Kotahi will be able to provide contours for the State Highway network, there are no

¹ <https://www.environmentcourt.govt.nz/assets/Practice-Note-2023-.pdf>

contours available for district roads which would also be subject to NOISE-R16, nor are there any for the rail network.

8 As a result, we agree that a composite solution is acceptable, with contours used for State Highways, and fixed distances used for district roads and rail.

9 We understand that Council will ultimately produce a GIS overlay showing the area within which a noise assessment is required. This being the case, we agree that the wording of NOISE-R16 should be adjusted to remove any references to distances, and simply refer to the relevant overlay.

10 **State Highways** - we agree that computer modelled noise level contours would be appropriate once they are provided by Waka Kotahi. We agree that they should be capped so as not to exceed a 100 metre distance.

11 **Arterial Roads** - We agree that a 100 metre distance from “edge of seal” as proposed by Waka Kotahi is appropriate for district roads with speed limits above 70 km/hr. However, in some areas, there are significant roads with lower speed limits than this, and noise effects are correspondingly reduced. We agree that a distance of 50 metres is appropriate for such situations.

12 The use of a GIS based contour not only provides clarity, it also overcomes some of the differences between the experts at the time of the hearing. In particular, Mr Camp had argued for the assessment distance to be measured from property boundaries, whereas Dr Chiles preferred “edge of seal”. Once a contour is in place, the issue of where it is measured from becomes a moot point.

13 To assist with the GIS mapping, we agree that the distance from “edge of seal” to the centreline of a road is typically about 5 metres. We therefore agree that the distances discussed in 11 above could be plotted as:

(a) 105 metres for roads with a posted speed limit of greater than or equal to 70 km/hr, and

(b) 55 metres for roads with a posted speed limit of less than 70 km/hr.

All distances are to be measured from the road centreline.

14 **Rail lines** - we agree that a 100 metre assessment distance is appropriate, and for GIS mapping this should be measured from the centre of the rail line.

Inclusion of Fixed Sound Insulation Approach

15 There are two aspects to consider in relation to “fixed sound insulation”.

16 First, NOISE-R16 as notified provides a two-pronged approach. Item 1, requiring a building performance of at least 30 dB Dtr,2m,nT,w + Ctr is a fixed sound insulation requirement, whereas item 2 is a variable approach based on designing to an appropriate internal noise limit.

17 Second, Bellgrove Rangiora Ltd (submitter 408) asked that Council provide an alternative approval pathway that does not require an acoustic assessment. Mr Camp supported this submission and recommended adding a schedule of approved constructions.

18 We agree that adopting a schedule of constructions would render the first prong of the notified rule largely redundant, because the schedule would essentially be an implementation of the 30 dB requirement.

19 Mr Camp supports the fixed sound insulation approach, provided both the rule and any acceptable solutions are worded clearly and updated to reflect current building methods.

20 Mr Styles considers that the fixed sound insulation approach is workable and could be used, but prefers the internal noise limit approach for road and rail if only one option is chosen.

21 Dr Chiles remains of the view that it is preferable to use only internal noise limits and to not include the fixed sound insulation option, for the reasons given in his evidence in chief. In particular, it adds a degree of

complexity to the rule, and the use of fixed sound insulation doesn't incentivise smart layout of dwellings where non-sensitive spaces are located on the road side of the building.

22 Dr Chiles and Mr Styles agree that the inclusion of a construction schedule could have benefit in avoiding specialist assessments in some cases.

23 Mr Camp has recently reviewed several Christchurch projects where a traffic noise assessment was undertaken, and he has prepared a list of acceptable solutions as part of his work for the Waitaki District Council. Of particular note is that for a new dwelling in close proximity to a busy road in Christchurch, the acceptable solution would only require the addition of a second layer of plaster board to the ceiling of a bedroom. This would have been noticeably quicker and cheaper than having to pay for an assessment by an acoustic consultant. Mr Camp accepts that this will not always be the case, but the example shows that there is likely to be a benefit in having the acceptable solutions in some instances.

24 Although the experts have some disagreement on these issues in principle, we agree that the rule could be amended to resolve these differences. We consider that the rule can allow for the fixed sound insulation approach by applying the construction schedules, AND allowing for the internal noise limit approach as an option.

25 We agree that the wording of NOISE-R16 should be amended by deleting the 30 dB requirement in clause 1, and adding wording along the lines of the following at the end of clause 2.

“...or: 2. Be constructed using the list of approved constructions given in the Construction Schedule [insert final reference]...”

26 Mr Camp has recently produced an updated construction schedule as part of a review of the proposed Waitaki District Plan. He has obtained written approval from Waitaki District Council to allow Waimakariri District Council to use this schedule, and has attached a copy as Appendix A of this joint statement.

The advisory Ventilation Overlay proposed by KiwiRail

- 27 We are not aware of KiwiRail making a request regarding ventilation. Instead, we suspect that the panel intended to refer to a *vibration* overlay which was requested by KiwiRail.
- 28 We agree that there is merit in having an advisory vibration overlay around the rail network.
- 29 Such an overlay allays the concerns expressed by Mr Camp and Mr Styles about the risk, difficulty and expense involved in designing to achieve specific vibration criteria, whilst at the same time ensuring that any new noise sensitive activity is aware that there could be some vibration effects, without adding any specific cost to development.
- 30 Mr Camp and Dr Chiles agree that it would be appropriate to use a 100 metre distance from the centre of the rail line as the advisory vibration distance. This would be consistent with the noise distance proposed.
- 31 Mr Styles considers that the vibration alert layer should be limited to a distance of 60 metres from the centre of the rail line. He considers that vibration effects felt inside a house beyond this distance are likely to be rare.

The use of 2 dB or 3 dB as a perception threshold or trigger

- 32 We wish to note that the 2 dB used in the notified NOISE-R16 does not relate to perception of noise per se, nor does it act as a trigger. The 2 dB is intended to allow for an increase in traffic noise over time.
- 33 We agree that there is little practical difference between using 2 dB and 3 dB in terms of the required construction of a new noise sensitive activity. However, we agree that 3 dB is more commonly used for this purpose, and we agree that the rule would be better changed to reflect this.

The applicability of the rule framework in relation to designated state highways

- 34 We agree that NOISE-R16 should apply to any designated state highway. In particular, it should apply to the Woodend Bypass.

Should the rule be expanded to include all noise sensitive activities?

- 35 We agree that the current wording “new residential unit or minor residential unit” is too narrow, and that it is appropriate to apply the rule to any new noise sensitive activity.

Is the definition of noise sensitive activity appropriate?

- 36 We do not see the benefit in the exceptions added in items (a) and (c) of the definition with respect to NOISE-R16. However, it is possible that these are relevant with respect to other rules in the plan.
- 37 We agree that there are other noise sensitive activities that are not currently included in the plan definition. In particular, we agree that marae and places of worship should be added.

Is the wording of matters of discretion appropriate?

- 38 We agree that the matters given in NOISE-MD1 and NOISE-MD2 are largely planning related matters, and are more appropriately addressed by planner.
- 39 We find many of the matters listed in NOISE-MD3 problematic.
- 40 Item 1. says “...The extent to which a reduced level of acoustic insulation may be acceptable due to mitigation of adverse noise effects through other means...”. In our view, NOISE-R16 already caters for any “other means” that we can imagine. For example, if a developer constructed a large earth mound to reduce traffic noise levels, designing to achieve the required internal traffic noise level given in NOISE-R16 would result in a reduced requirement for acoustic insulation.
- 41 In a similar vein, we agree that the multi-pronged approach of NOISE-R16 renders the other clauses in NOISE-MD3 redundant.

ADDITIONAL MATTERS

42 Rail noise predictions

43 We agree that clause 4 of NOISE-R16 would be improved by allowing for an applicant/developer to carry out more detailed computer modelling of rail noise to determine the nature and extent of acoustic treatment across a development.

44 We agree that this could be achieved using wording along the lines of the following:

4. rail noise shall be deemed to be 70 dB LAeq(1h) at 12m from the edge of the track, and shall be deemed to reduce at a rate of either:

(a) 3 dB per doubling of distance up to 40m and 6 dB per doubling of distance beyond 40m; or

(b) as modelled by a Suitably Qualified and Experienced Acoustic Consultant using a recognised computer modelling method for freight trains with diesel locomotives, having regard to factors such as barrier attenuation, the location of the dwelling relative to the orientation of the track, topographical features and any intervening structures.

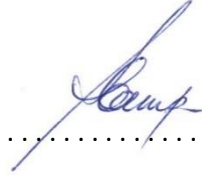
MATTERS THAT THE EXPERTS DISAGREE ON:

45 The experts disagree on the distance that the vibration alert layer should extend from the rail line. Dr Chiles and Mr Camp consider that it should be 100m and Mr Styles considers it should be 60m.

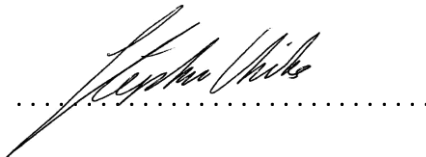
46 There are no other matters of disagreement.

Date: 24 October 2023

Signatories

A handwritten signature in blue ink, appearing to read "Stuart Camp", written over a horizontal dotted line.

**STUART CAMP – FOR WAIMAKARIRI
DISTRICT COUNCIL**

A handwritten signature in black ink, appearing to read "Stephen Chiles", written over a horizontal dotted line.

**DR STEPHEN CHILES – FOR WAKA
KOTAHI AND KIWIRAIL**

A handwritten signature in blue ink, appearing to read "Jon Styles", written over a horizontal dotted line.

JON STYLES – FOR KAINGA ORA

APPENDIX A – DRAFT CONSTRUCTION SCHEDULE

Applicability	
	<p>Construction requirements detailed in this appendix are only applicable where:</p> <ol style="list-style-type: none"> 1. The road(s) passing the building containing the noise sensitive activity has/have a posted speed limit of less than or equal to 60 km/hr, 2. The building is a single level construction, 3. The floor of the building is a reinforced concrete slab, 4. No habitable room of the building is located less than 4.5 metres from the road boundary, 5. The total area of glazing in any habitable room is no greater than 20% of the total area of external walls of that room. 6. The roof of the building is a standard timber truss design, with a pitch of not less than 15 degrees and horizontal ceiling. Ventilation of the roof space must only be via casual ventilation typical of the jointing, capping and guttering detail used in normal construction. <p>In all other situations, a design report from a suitably qualified acoustics specialist is required.</p>
Construction Options	
Exterior Walls Option 1	<p>Exterior cladding of brick, Aerated Concrete or similar, with a surface mass not less than 27 kg/m².</p> <ul style="list-style-type: none"> • Timber or steel framing of not less than 90 mm, with studs at 600 mm centres. A ventilated cavity is not required for noise control purposes under this option but is permissible, with or without a rigid air barrier, • Fibrous insulation of minimum R2.6. This includes fibreglass, polyester and wool, but does not include polystyrene or other foam sheet insulation products, • 1 layer of 10 mm thick Standard Gib board or alternative gypsum board having a surface mass not less than 6 kg/m²,
Exterior Walls Option 2	<p>Exterior cladding of Profiled sheet steel not less than 0.4 mm thick, or profiled aluminium not less than 1.3 mm thick, or treated pine weatherboards not less than 19mm thick.</p> <ul style="list-style-type: none"> • Battens forming a ventilated cavity not less than 18mm deep, • Rigid air barrier consisting of Plywood not less than 9 mm thick or Fibre Cement not less than 4 mm thick, or alternative sheet product having a surface mass not less than 5 kg/m².

	<ul style="list-style-type: none"> • Timber or steel framing of not less than 90 mm, with studs at 600 mm centres, • Fibrous insulation of minimum R2.6. This includes fibreglass, polyester and wool, but does not include polystyrene or other foam sheet insulation products, • 2 layers of 10 mm thick Standard Gib board or alternative gypsum board, each layer having a surface mass not less than 6 kg/m²,
Exterior Walls Option 3	<p>Exterior cladding of Fibre Cement weatherboards, with a surface mass not less than 18 kg/m².</p> <ul style="list-style-type: none"> • Battens forming a ventilated cavity not less than 18 mm deep, • Rigid air barrier consisting of Plywood not less than 7 mm thick or Fibre Cement not less than 4 mm thick, or alternative sheet product having a surface mass not less than 3.8 kg/m². • Timber or steel framing of not less than 90 mm, with studs at 600 mm centres, • Fibrous insulation of minimum R2.6. This includes fibreglass, polyester and wool, but does not include polystyrene or other foam sheet insulation products, • 2 layers of 10 mm thick Standard Gib board or alternative gypsum board, each layer having a surface mass not less than 6 kg/m²,
Glazing and Exterior doors - All options	<ul style="list-style-type: none"> • Windows to consist of double glazing consisting of 2 layers of glass not less than 4 mm thick, separated by an airgap of not less than 12 mm, with full perimeter seals, • External doors to be either double glazed to the same standard as windows, or be a solid panel construction with a surface mass not less than 24 kg/m² and incorporating full perimeter seals.
Roof – All Options	<ul style="list-style-type: none"> • Profiled metal roofing not less than 0.4 mm thick, in either sheet or tile form, • Fibrous insulation of minimum R6 within the ceiling cavity. This includes fibreglass, polyester and wool, but does not include polystyrene or other foam sheet insulation products, • 2 layers of 13 mm Standard Gib board or alternative gypsum board, with each layer having a surface mass not less than 8 kg/m².