

**IN THE MATTER OF**

the Resource Management Act 1991

**AND**

**IN THE MATTER OF**

Notices of requirement for designations under section 168 of the Act, in relation to Te Ahu a Turanga; Manawatū Tararua Highway Project

**BY**

**NEW ZEALAND TRANSPORT AGENCY**  
Requiring Authority

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**JOINT STATEMENT OF ACOUSTICS EXPERTS**

13 February 2019

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## **INTRODUCTION**

1. This joint witness statement relates to expert conferencing on the topic of acoustics.
2. This joint witness statement relates to the notices of requirement lodged by the New Zealand Transport Agency ("**Transport Agency**") for designations under section 168 of the Resource Management Act 1991 ("**RMA**"), in relation to Te Ahu a Turanga; Manawatū Tararua Highway Project (the "**Project**").
3. The expert conferencing was held on Wednesday, 13 February 2019 in Wellington.
4. Attendees at the conference were:
  - (a) Dr Stephen Chiles (Chiles Ltd) for the Transport Agency; and
  - (b) Nigel Lloyd (Acousafe) for the Manawatū District Council, Tararua District Council, and Palmerston North City Council ("**Councils**").

## **CODE OF CONDUCT**

5. This joint statement is prepared in accordance with section 4.7 of the Environment Court Practice Note 2014.
6. We confirm that we have read the Environment Court Practice Note 2014, and in particular Appendix 3 – Protocol for Expert Witness Conferencing, and agree to abide by it.
7. Dr Chiles' qualifications and experience are set out in paragraph 5 of Technical Assessment 2. Mr Lloyd's qualifications and experience are set out in Annexure A.

## **PURPOSE AND SCOPE OF CONFERENCING**

8. The purpose of conferencing was to identify, discuss, and highlight points of agreement and disagreement on operational and construction noise and vibration issues arising from the notices of requirement relating to the Project, and the submissions received in relation to them.
9. The scope of the conferencing generally has not included development of wording for designation conditions, other than in relation to application of technical standards.

## RECORD OF CONFERENCING

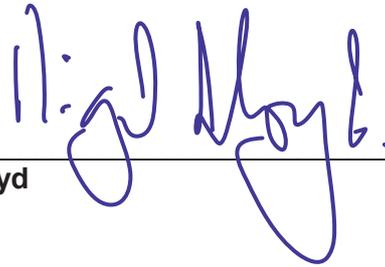
10. Annexure B sets out the issues, statements and agreed positions we have discussed. We are generally in agreement on acoustics issues and have not recorded any areas of disagreement.

Date: 13 February 2019



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**S Chiles**



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**N Lloyd**

## **ANNEXURE A**

### **Qualifications and experience of Nigel Lloyd**

1. My full name is Nigel Robert Lloyd. I hold the qualification of a degree in mechanical engineering gained at the University of Wales, University College Cardiff in 1976. I am a Member of the Acoustical Society of New Zealand and the Association of Australasian Acoustical Consultants and I have completed a 'Making Good Decisions' course.
2. I am an acoustical consultant, with 42 years of experience in noise control and acoustical consultancy.
3. I have advised Palmerston North City Council and Manawatu District Council on their District Plan noise reviews respectively.
4. I have undertaken peer reviews for the following roading proposals:
  - i. SH1 Hamilton City Bypass - 2004
  - ii. SH50A Hawkes Bay Expressway – 2006
  - iii. Hastings Northern Arterial – 2008
  - iv. Transmission Gully – 2012
  - v. Christchurch Southern Motorway Stage II - 2016
  - vi. SH3 Mt Messenger - 2018.

## ANNEXURE B

**In the matter of notices of requirement for designations under section 168 of the Resource Management Act 1991, in relation to Te Ahu a Turanga; Manawatū Tararua Highway Project.**

**Expert conferencing – Acoustics**

**Participants: Stephen Chiles (SC), Nigel Lloyd (NL)**

Issue	Statements	Agreed Position
Noise and vibration assessment methodology	<p>In Technical Assessment 2 the following primary standards have been applied:</p> <ul style="list-style-type: none"> <li>• Operational noise – NZS 6806</li> <li>• Operational vibration – NS 8176E</li> <li>• Construction noise – NZS 6803</li> <li>• Construction vibration – BS 5228-2, DIN 4150</li> </ul>	<p>Technical Assessment 2 provides an appropriate assessment of adverse operational and construction noise and vibration effects, subject to the comments set out in this table.</p>
Existing sound environment	<p>Unlike most road projects, the section of road being replaced by this Project is already closed. This has altered the current noise environment.</p>	<p>The existing sound environment is to be taken as that currently experienced by the community, as opposed to the situation prior to the closure of the Gorge road.</p>
NZS 6806 categorisation of houses near to the proposed roundabouts.	<p>NZS 6806 recommends different noise criteria depending on whether houses are near to a new or altered section of road. The criteria by new roads are more stringent.</p> <p>The main section of the Project is a new road.</p>	<p>Categorisation of the Project near the roundabouts is complicated by parts of the existing designated SH3 which do not currently carry state highway traffic volumes. As such neither the new or altered road definitions should be relied on in isolation. Development of noise mitigation near the roundabouts should be focused on achieving the best practicable option to manage sound characteristics associated with vehicles braking and accelerating.</p>

Assessment locations	<p>NZS 6806 requires assessment of noise at “Protected Premises and Facilities” which does not address future houses, car park/information areas, or farmland.</p> <p>SC – Further information will be provided in evidence in response to the submissions by the Department of Conservation and AgResearch.</p>	<p>Noise effects have not been assessed at locations where future noise sensitive development might occur. To our knowledge there are no unimplemented building consents for future houses in the vicinity of the Project.</p> <p>Noise effects at the Manawatū Gorge Scenic Reserve western car park and information area were only briefly addressed in Technical Assessment 2. Given the function of the car park area this is not a significant issue.</p> <p>Technical Assessment 2 did not explicitly assess noise effects at the Ballantrae Hill Country Research Station.</p>
Design of the road environment at roundabouts.	<p>SC – Based on discussions with Chris Bentley it is expected there will be substantial tree plantings around the two roundabouts to clearly signal the change in speed environment. Other measures may include lighting, road markings and signage.</p>	<p>Roundabouts should be at least 100 metres from houses. Increasing this distance would also provide a benefit.</p> <p>The road environment at roundabouts needs to be designed to result in vehicles braking and accelerating gradually rather than abruptly. The landscape design process needs to integrate and maximise noise mitigation.</p>
Heavy vehicle engine braking noise on the lower eastern slope	<p>Certain types of supplementary braking systems on heavy vehicles generate a loud and distinctive noise. Such engine braking will occur on the lower eastern slope due to the long steep gradient.</p>	<p>The noise of engine braking cannot be fully mitigated. If this noise causes sleep disturbance, consideration could be given to acoustic treatment and ventilation of bedrooms at 49807 State Highway 3 and 75 Hope Road.</p>
Operational road-traffic vibration	<p>Road-traffic vibration normally only causes effects at buildings adjacent to a road, unless the surface or pavement have defects.</p>	<p>There are no dwellings close enough to the new and altered roads such that operational vibration is an issue. This relies on the Transport Agency properly maintaining the roads.</p>

<p>Post-construction review</p>	<p>The assumptions made in Technical Assessment 2 need to be maintained throughout the implementation of the Project.</p>	<p>A post-construction review should be undertaken in accordance with specification NZTA P40:2014. This should include sound level measurements to verify noise modelling at: 49807 Napier Road (SH3), 49846 Napier Road (SH3), 75 Hope Road, and 1213 Fitzherbert East Road</p>
<p>Woodville bypass</p>	<p>The Project connects to the State Highway network to the west of Woodville and most traffic will pass through the town centre on Vogel Street. There are currently adverse noise effects from traffic on Vogel Street and this will be increased with the Project. There are limited ways to mitigate this issue unless traffic is rerouted away from Vogel Street.</p>	<p>A ring road around Woodville has significant potential to reduce noise through parts of the town at least. A low noise asphalt road surface is less effective at low speed and does not reduce heavy vehicle engine noise. However, a low noise road surface on Vogel Street represents the best practicable option for controlling noise in Woodville.</p>
<p>Construction noise limits</p>	<p>The long-term duration noise limits from NZS 6803 have been selected for the Project and are included in proposed designation condition 19.</p>	<p>The construction noise criteria in proposed condition 19 should be amended to remove "(15 min)" from the column heading. The criteria in proposed condition 19 are the long-term values from NZS 6803, but some of the adjoining time periods have been amalgamated. To avoid confusion these should revert to the format and time periods from NZS 6803. The wording in condition 19 should be amended to read "All construction work must be designed and conducted to ensure that, as far as practicable, construction noise does not exceed the limits in the following table. Sound levels must be measured and assessed in accordance with NZS 6803:1999 <i>Acoustics – Construction noise.</i>"</p>

<p>Construction vibration criteria</p>	<p>SC - The Category A and B criteria for construction vibration have been developed to be applied in accordance with the following:</p> <p><i>“The Category A construction vibration criteria in Table [X] must be compiled with as far as practicable. If measured or predicted vibration from construction activities exceeds the Category A criteria, a suitably qualified person must assess and manage construction vibration during those activities. If measured or predicted vibration from construction activities exceeds the Category B criteria those activities must only proceed if vibration effects on affected buildings are assessed, monitored and mitigated by a suitably qualified person.”</i></p>	<p>The proposed designation condition 20 for construction vibration criteria should be amended to specify how Category A and B criteria are applied.</p>
<p>Construction Noise and Vibration Management Plan (CNVMP)</p>	<p>Proposed designation condition 21 includes various requirements to be addressed by a CNVMP.</p>	<p>Designation condition 21 should also require:</p> <ul style="list-style-type: none"> <li>• Construction to be conducted in accordance with the CNVMP,</li> <li>• The CNVMP to establish likely construction noise emissions,</li> <li>• The CNVMP to set out alternative mitigation strategies where compliance with the noise/vibration limits may not be achieved.</li> </ul>
<p>Construction traffic</p>	<p>While there is already significant heavy traffic through Ashhurst and Woodville on a 24 hour basis, further intense heavy vehicle movements at night would aggravate existing issues.</p> <p>Background (<math>L_{A90}</math>) sound levels measured at 75 Hope Road are in the order of 30 dB <math>L_{A90}</math> at night.</p>	<p>Designation conditions should require that construction traffic be avoided through Ashhurst and Woodville at night, other than essential movements such as continuous concrete pours and over-dimension loads.</p> <p>Hope Road should not be used as an access for bulk haulage or regular heavy construction vehicles.</p>