

Before a Board of Inquiry
Transmission Gully
Notices of Requirement and Consents

under: the Resource Management Act 1991

in the matter of: Notices of requirement for designations and resource consent applications by the NZ Transport Agency, Porirua City Council and Transpower New Zealand Limited for the Transmission Gully Proposal

between: **NZ Transport Agency**
Requiring Authority and Applicant

and: **Porirua City Council**
Local Authority and Applicant

and: **Transpower New Zealand Limited**
Applicant

Statement of rebuttal evidence of Stephen Gordon Chiles (Acoustics assessment) for the NZ Transport Agency and Porirua City Council

Dated: 20 January 2012

REFERENCE: John Hassan (john.hassan@chapmantripp.com)
Nicky McIndoe (nicky.mcindoe@chapmantripp.com)

STATEMENT OF REBUTTAL EVIDENCE OF STEPHEN GORDON CHILES FOR THE NZ TRANSPORT AGENCY AND PORIRUA CITY COUNCIL

INTRODUCTION

- 1 My full name is Stephen Gordon Chiles.
- 2 I have the qualifications and experience set out at paragraphs 2 to 5 of my statement of evidence in chief, dated 15 November 2011 (*EIC*).
- 3 I repeat the confirmation given in my *EIC* that I have read, and agree to comply with, the Code of Conduct for Expert Witnesses (Consolidated Practice Note 2011).
- 4 In this statement of rebuttal evidence, I:
 - 4.1 Respond to acoustics aspects of the evidence of:
 - (a) Kevin Gywnn, on behalf of Mana Cycle Group; and
 - (b) Michelle Grinlinton-Hancock, on behalf of Nilu and Suresh Senadeera.
 - 4.2 Report on discussions I held with the acoustics expert Bill Wood who was engaged by six submitters living on Rangatira Road.
 - 4.3 Respond to the section 42A report (*s42A report*), prepared by John Kyle.
- 5 The fact that this rebuttal statement does not respond to every matter raised in the evidence of submitter witnesses within my area of expertise should not be taken as acceptance of the matters raised. Rather, I rely on my *EIC* and this rebuttal statement to set out my opinion on what I consider to be the key acoustics matters for this hearing.
- 6 Consistent with my *EIC*, in this statement of evidence when referring collectively to the NZ Transport Agency (*the NZTA*) Project¹ and the Porirua City Council (*PCC*) Project² I will use the term "Transmission Gully Project" (and hereafter, *the TGP* or *the Project*).

¹ The 'NZTA Project' refers to the construction, operation and maintenance of the Main Alignment and the Kenepuru Link Road by the NZTA.

² The 'PCC Project' refers to the construction, operation and maintenance of the Porirua Link Roads (being the Whitby Link Road and the Waitangirua Link Road) by PCC.

SUMMARY OF EVIDENCE

- 7 With respect to mountain biking in Battle Hill Farm Forest Park and Belmont Regional Park, I agree with Mr Gywnn that in places the aural environment will become controlled by road-traffic noise. I consider however, that these areas will still have an environment compatible with mountain biking.
- 8 I have provided references to my EIC where I address issues raised by Ms Grinlinton-Hancock in relation to potential noise effects at 55 Collins Avenue. I agree with Ms Grinlinton-Hancock that timing for construction noise barriers should be documented, but consider that for Collins Avenue this should be in a site specific schedule rather than the main Construction Noise and Vibration Management Plan (CNVMP).
- 9 Mr Wood has reviewed my acoustics assessment and concluded that construction and operational noise effects at Rangatira Road will be acceptable. Mr Wood found an error in the traffic data for one scenario in my sound model, but this does not affect my assessment or recommendations for noise mitigation measures, which are based on a different scenario with correct traffic data.
- 10 I have read the comments made about noise and vibration issues in the s42A report. I have provided responses to clarify several issues raised.
- 11 The comments made in the evidence I have reviewed and the s42A report have not caused me to change the opinions I expressed in my EIC and I re-confirm the conclusions I reached in my EIC.

EVIDENCE OF SUBMITTERS

- 12 I note that no evidence has been filed by any other acoustics experts. My rebuttal evidence addresses lay comments made on acoustics matters by specialists in other areas, such as planning.
- Mana Cycle Group**
- 13 Mr Gywnn discusses noise effects on mountain bikers using the Belmont Regional Park and Battle Hill Farm Forest Park.³ I am an active mountain biker and spend a substantial portion of my evenings and weekends building mountain bike tracks, recently completing construction of the popular Hogs Back Track in the Canterbury high-country. I have a good appreciation of noise effects on mountain bikers.
- 14 Mr Gywnn notes that there will be a change in acoustics amenity for mountain bikers in both Battle Hill Farm Forest Park and Belmont

³ At paragraphs 30 to 31, and 40 respectively of his evidence.

Regional Park. I explicitly discussed acoustics amenity effects in Technical Report 12 (*TR12*) with respect to Battle Hill Farm Forest Park, but not Belmont Regional Park. While parts of Belmont Regional Park are closer to urban/suburban areas than Battle Hill Farm Forest Park, I agree with Mr Gywnn that in places there will be a similar change of amenity, with road-traffic sound becoming noticeable over the existing ambient noise.

- 15 The road-traffic sound will alter the recreational experience for mountain bikers in parts of both Battle Hill Farm Forest Park and Belmont Regional Park. However, in my opinion this remains an aural environment that is compatible with mountain biking. In paragraph 49.1 of his evidence Mr Gywnn recommends a new mountain bike track from Flightys Road to Battle Hill Farm Forest Park alongside the Project corridor. He must therefore also consider mountain biking to be appropriate in an aural environment controlled by road-traffic sound.

55 Collins Avenue

- 16 Ms Grinlinton-Hancock highlights two issues relating to potential noise effects at 55 Collins Avenue. The first⁴ relates to acoustics treatment of the buildings, which I address in paragraphs 70 and 71 of my EIC. The proposed road-traffic noise barrier achieves the performance standards in NZS 6806 and therefore acoustics treatment of individual houses is not required. The barrier in this location is required for several properties and also benefits outdoor amenity, whereas acoustics treatment of houses would not. The barrier height has been limited to 2 metres (only 1 metre in addition to the safety barrier) to reduce visual impact, and in accordance with the Urban and Landscape Design Framework, the detailed design will seek to further minimise the visual impact including through material selection. The second issue⁵ relates to construction noise barriers, which I address in paragraphs 73 and 74 of my EIC.
- 17 In paragraph 3.3 of her evidence Ms Grinlinton-Hancock suggests a condition to require the CNVMP to record how long temporary construction noise barriers will remain in place. I agree with the intent of this suggestion, but in locations such as at Collins Avenue the detailed construction methodology, equipment and any construction noise barriers required would be documented in a specific schedule for the site as required by proposed condition NZTA.12.A.c.⁶ When the main CNVMP is finalised the outline construction methodology and equipment types for Collins Avenue would be included. However, the detailed timing, specific equipment and any temporary barriers would be documented in a schedule to

⁴ At paragraphs 3.2 of her evidence.

⁵ At paragraphs 3.3 of her evidence.

⁶ Formerly NZTA.12(4).A.c.viii.

the CNVMP, as that information would not be available when the main body of the CNVMP is finalised.

RANGATIRA ROAD

- 18 Six submitters living on Rangatira Road engaged the acoustics expert Mr Wood to provide advice to them. It was indicated that he would be providing evidence. Mr Wood conducted a detailed review of my acoustics assessment as it relates to this area. I corresponded and met with Mr Wood to discuss several queries that he had, and to provide him with further details and results that he requested from my road-traffic sound modelling.
- 19 While it did not affect his review, Mr Wood found an incidental error in the traffic data I had used in my road-traffic sound modelling for the Linden area just in the existing (2009) scenario. This resulted in existing levels being predicted to be 3 dB too low. However, the existing scenario has no effect on the road-traffic noise mitigation I have recommended in any areas, as in accordance with NZS 6806 my assessment uses the do-minimum scenario as a baseline, and the traffic data in the sound model is correct for that scenario.
- 20 I understand that Mr Wood has advised his clients that he is satisfied that all aspects of my assessment for both construction and operational noise use an appropriate methodology, and that noise effects at Rangatira Road would be acceptable. Mr Wood indicated to me that he would not be preparing evidence, and we did not proceed with preparation of a joint/conferencing statement.

SECTION 42A REPORT

- 21 Mr Kyle discusses noise and vibration issues in Section 4.2.11 of the s42A report,⁷ and discusses the proposed construction noise conditions in Section 6.1.⁸ He does not make any substantive comments with respect to my assessment, but does raise a number of issues for clarification and relating to conditions.
- 22 In the second paragraph of page 46 of the s42A report Mr Kyle notes that a requirement to install the noise mitigation detailed in TR12 should be in conditions or an Outline Plan. I agree with Mr Kyle, but I consider that proposed conditions NZTA.21 to NZTA.31 do already provide a comprehensive and robust framework requiring implementation of the noise mitigation I have recommended. Specifically, conditions NZTA.22 and NZTA.23 require noise mitigation to be based on the specified lengths and specified locations in TR12, and condition NZTA.24 requires Council

⁷ At pages 43 to 47 of the s42A report.

⁸ At pages 79 to 80 of the s42A report.

approval if any of these dimensions need to be modified as a result of detailed design.

- 23 In the first paragraph of page 80 of the s42A report Mr Kyle suggests also detailing which of the operational road-traffic noise barriers will be installed early to provide protection from construction noise. The construction methodology for the noise barriers and the road itself has not been determined. It is therefore unknown at this stage whether it will be necessary or possible to install any particular noise barriers early in the construction works. I consider that this matter is appropriately addressed through condition NZTA.12.A.c.,⁹ which requires details of early implementation of road-traffic noise mitigation to be included in the CNVMP. This allows for analysis of construction noise, once the required details are available.
- 24 In the third paragraph on page 46 of the s42A report, Mr Kyle states that TR12 contains no statements as to the nature and scale of adverse effects in areas such as Battle Hill. In Section 6.1 of TR12 I do discuss the change to the acoustics environment predicted at Battle Hill. I describe how road-traffic sound heard in the main visitor area of the Battle Hill Farm Forest Park will be unobtrusive, but the experience for visitors passing through the valley (Transmission Gully) will be significantly changed. Currently this is an area where natural sounds dominate, and it will become controlled by road-traffic sound. As discussed in TR12, this basic change will occur irrespective of any noise mitigation such as low-noise road surfaces.
- 25 In the first paragraph on page 47 of the s42A report, Mr Kyle discusses road-traffic vibration predictions. He makes reference to the displacement assumed in the prediction model in TR12, being less than the initial value used. The displacement is the height of a bump or dip in the road surface causing vibration when a heavy vehicle passes over it. The value of 25 mm displacement used for initial predictions in TR12 is simply an arbitrary reference value used in the derivation of the theoretical model. It bears no relationship to any particular road, and therefore it is to be expected that the actual value applicable to Linden, or any other location, will be different.
- 26 In the second paragraph on page 47 of the s42A report Mr Kyle recommends on-going vibration monitoring for road-traffic vibration. In the previous paragraph, Mr Kyle is correct that the type of finished road surface is an important factor in managing vibration. In fact, given that ground conditions and maximum vehicle weights do not significantly change over time, the surface condition is the only variable that could cause changes in vibration levels. This

⁹ Formerly NZTA.12(4).A.c.v.

means that, provided a good surface condition is maintained, it will not be necessary to monitor vibration levels.

- 27 In Section 5.3 of TR12 I detail the established and comprehensive controls that the NZTA has in place to control road surface condition. I consider these systems to be an appropriate control for road-traffic vibration. In my opinion the magnitude and risk of potential increased vibration effects does not warrant any further designation conditions. I am not aware of any state highway designation conditions that do require operational vibration monitoring, and note that it would be a relatively expensive exercise as, unlike sound level meters, the specialist vibration equipment requires longer to set-up and is not widely used or available to hire in New Zealand.



Stephen Gordon Chiles
20 January 2012