

**BEFORE THE HEARINGS PANEL  
FOR THE QUEENSTOWN LAKES PROPOSED DISTRICT PLAN**

**IN THE MATTER** of the Resource  
Management Act 1991

**AND**

**IN THE MATTER** of Stages 3 and 3b of the  
Proposed District Plan

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**REBUTTAL EVIDENCE OF STEPHEN GORDON CHILES  
ON BEHALF OF QUEENSTOWN LAKES DISTRICT COUNCIL**

**NOISE: GENERAL INDUSTRIAL ZONE AND  
RURAL VISITOR ZONE**

**12 June 2020**

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## 1. INTRODUCTION

- 1.1 My full name is Dr Stephen Gordon Chiles. I am an acoustics engineer, self-employed by my company Chiles Limited since 2012.
- 1.2 I have a Doctorate of Philosophy in Acoustics from the University of Bath, and a Bachelor of Engineering in Electroacoustics from the University of Salford, UK. I am a Chartered Professional Engineer, Fellow of the UK Institute of Acoustics and Member of the Resource Management Law Association.
- 1.3 I have been practising in acoustics since 1996, as a research officer at the University of Bath, as an acoustics specialist at the NZ Transport Agency, and as a consultant for the international firms Arup, WSP, and URS and for the specialist firms Marshall Day Acoustics and Fleming & Barron. I have been responsible for acoustics assessments and design for numerous different activities including infrastructure, industrial, commercial, recreational and residential developments. I am contracted to provide the Environmental Noise Analysis and Advice Service to the Ministry of Health and regional public health services.
- 1.4 I have worked extensively on acoustics issues in the Queenstown Lakes District over many years, primarily engaged to advise the Queenstown Lakes District Council (**QLDC**) with respect to resource consent applications, monitoring and district plan development.
- 1.5 This is the first statement of evidence I have prepared on behalf of the QLDC for Stages 3 and 3b of the Proposed District Plan (**PDP**). I previously prepared seven statements of evidence on behalf of QLDC in relation to different chapters in Stages 1 and 2 of the PDP.
- 1.6 I have now been engaged by the QLDC to prepare rebuttal evidence in response to evidence provided by Tussock Rise Limited (**3128**) (**Tussock Rise**), relating to the General Industrial Zone (**GIZ**), and by Corbridge Estate Limited Partnership (**31021**) (**Corbridge**), relating to the Rural Visitor Zone (**RVZ**).

1.7 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise except where I state that I am relying on the evidence of another person.

## 2. SCOPE

2.1 My rebuttal evidence is provided in response to the following evidence filed on behalf of two submitters:

- (a) Jeremy Trevathan for Tussock Rise (3128); and
- (b) Michael Smith for Corbridge (31021).

## 3. JEREMY TREVATHAN FOR TUSSOCK RISE (3128)

3.1 Dr Trevathan has filed evidence in relation to a submission to rezone part of the GIZ to Business Mixed Use Zone (BMUZ).

3.2 In paragraph 4.2 of his evidence Dr Trevathan states the PDP BMUZ noise limits would be no different to the noise limits that currently apply at the boundary between the Operative District Plan (ODP) Industrial A Zone sites and the Tussock Rise Industrial B Zone site. Dr Trevathan states there would be no additional restrictions if compared to the ODP. I disagree for the following reasons.

3.3 There are no noise limits in the ODP within the Industrial B Zone, or for noise generated in the Industrial B Zone received in the Industrial A Zone. In terms of noise effects in an industrial context I consider this regime to be appropriate for these zones and it is consistent with guidance in NZS 6802.<sup>1</sup> However, the ODP does not expressly exclude the Industrial B Zone as a receiving location for noise limits for activity in the Industrial A Zone. In my opinion this is probably a drafting error or oversight in the ODP, but the following comments are based on a literal interpretation of the ODP as it is written.

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1 NZS 6802:2008 Acoustics – Environmental Noise.

- 3.4** Given the absence of noise limits for industrial activity occurring within the Industrial B Zone (whether received in the Industrial A or B zones), the application of noise limits for industrial activity occurring in the Industrial A zone cannot in my view be justified on the basis of noise effects. As such, I consider that if there was a land-use resource consent application to exceed the ODP Industrial A Zone noise limits at the Industrial B Zone boundary, it would be likely to have negligible noise effects.
- 3.5** The ODP noise limits at the Industrial A / Industrial B Zone boundary would be numerically the same as the PDP noise limits at a GIZ / BMUZ boundary. However, in my opinion there is likely to be a significant difference in the implications of the noise limits in the context of a resource consent application. I understand the ODP Industrial B Zone provides for industrial activity and seeks to avoid sensitive activities, whereas the PDP BMUZ permits various noise sensitive activities and does not provide for noisier industrial activities. Therefore, under the ODP a breach of noise limits at the Industrial A / Industrial B Zone boundary is likely to be justified as there should be negligible noise effects, whereas under the PDP a breach at GIZ / BMUZ boundary is unlikely to be justified due to potential effects on sensitive activity in the BMUZ.
- 3.6** In paragraph 3.6 of his evidence Dr Trevathan states that the BMUZ sound insulation rule requires a “very high level of sound insulation”. In paragraph 4.3 he states this sound insulation would be “more than adequate to protect noise sensitive development”. I disagree for the following reasons.
- 3.7** The specified sound insulation in PDP Rule 16.5.5.2 will typically require windows of residential units to have thicker glass or more layers of glass compared to a standard residential development. While this results in an improved sound insulation performance, typical external noises such as from vehicles, equipment and people would still generally be audible inside. The required sound insulation is less than would be achieved by a concrete wall, for example.

- 3.8** In my opinion the sound insulation control is a compromise for a mixed-use zone and could not be described as “more than adequate”. While this could be an acceptable outcome for the range of activities anticipated in the BMUZ, I consider the sound insulation would not be adequate to protect sensitive activities from noise of heavier industrial activities. I understand most sensitive activities are prohibited in the GIZ, which in my opinion is an appropriate control given that sound insulation would not be adequate. Another issue is that people are only protected by sound insulation controls when inside with all doors and windows closed. Dr Trevathan has not addressed the increased likelihood that people in the BMUZ would need to keep windows closed to reduce internal noise, if exposed to noise from the GIZ.
- 3.9** In paragraph 4.7 of his evidence Dr Trevathan refers to the sound insulation requirements being adequate up to an external level of 70 dB. I disagree. I assume Dr Trevathan has based his statement on an unobtrusive sound at a steady continuous level of 70 dB outside, being reduced to approximately 30 dB inside, which is a threshold commonly referenced with respect to sleep disturbance. However, this rationale is not valid for intermittent or impulsive sounds or sounds with obtrusive characteristics such as forklifts with reversing alarms and clattering. In this context, there would still be disturbance expected inside and the sound insulation may not be adequate.
- 3.10** In paragraph 4.8 of his evidence Dr Trevathan notes that activities in the GIZ would be subject to noise limits of other zones and he sets out the residential noise limits from the PDP. I disagree with Dr Trevathan’s implication that BMUZ noise limits on adjoining sites would therefore not be a constraint. Based on my experience a noise limit at an immediately adjacent BMUZ site would still restrict common activities in the GIZ to a greater extent than limits at a more distant residential boundary. The effect of noise limits at the residential boundary may also be lessened by separation of activities arising from building restrictions in some parts of the western side of the GIZ.
- 3.11** In paragraph 4.9 of his evidence, with respect to wider rezoning of the GIZ beyond the Tussock Rise site, Dr Trevathan states that many

GIZ activities would be able to comply with BMUZ noise limits and some operators may consider the situation to be an improvement/benefit. I disagree. Complying with noise limits is likely to constrain industrial site layouts and equipment locations in the GIZ and is likely to require additional costs for acoustic treatment/attenuation, particularly for any operations after 2200h or before 0800h. I have never been involved with any industrial activity where the imposition of noise limits and additional constraints and costs would be viewed as an improvement or benefit. In my opinion, Dr Trevathan's comments that there may be mixed views on imposing noise limits on industrial activities is unrealistic. I consider that imposing noise limits at a BMUZ boundary would negatively affect industrial activity in the GIZ.

- 3.12** In addition to acting as a constraint on new industrial activity seeking to establish in the existing industrial areas, a BMUZ is likely to constrain existing industrial activity. In my experience it is common for industrial activities to install new equipment and adapt operations over time. With a BMUZ any such routine adaptations would be subject to noise limits, which represents a constraint and/or cost for those existing industrial activities.
- 3.13** In paragraph 5.5 of his evidence Dr Trevathan refers to GIZ sites already having some boundaries with other zones where noise limits apply, and therefore in his opinion imposing noise limits on all site boundaries is "unlikely to represent a meaningful additional restriction". I disagree for the following reasons.
- 3.14** Industrial sites generally do not comprise a homogenous noise source, rather there are a number of discrete noise sources in different locations around the site such as loading bays and units of mechanical and electrical plant. I have been involved in numerous industrial developments where there has been one or more sensitive boundary, such as an adjacent residential area. In those cases, I have advised on the site layouts to locate noisy activities away from the sensitive boundary. Clearly, imposition of noise limits on all boundaries represents a significant additional restriction compared to the situation with noise limits on just one boundary.

#### 4. MICHAEL SMITH FOR CORBRIDGE (31021)

- 4.1 Mr Smith has filed evidence in relation to a proposed structure plan and noise controls for land owned by Corbridge Estate that is sought to be rezoned from Rural to RVZ.
- 4.2 In paragraph 15 of his evidence Mr Smith refers to the proposed Corbridge structure plan avoiding any Activities Sensitive to Aircraft Noise (**ASAN**) from being located in the Outer Control Boundary (**OCB**) of Wanaka Airport. I agree that ASAN should not be allowed in the OCB. Under the ODP, ASAN are prohibited in the OCB. This control is appropriate to manage adverse noise effects, and in my opinion it should be maintained in any RVZ on the site.
- 4.3 In paragraph 19 and Figure 1 of his evidence Mr Smith refers to the current (2018) location of the 55 dB  $L_{dn}$  noise contour around Wanaka Airport. In my opinion that contour is not relevant for the following reasons.
- 4.4 The OCB, which is included on the ODP/PDP maps is the predicted location of the 55 dB  $L_{dn}$  noise contour for a forecast of future airport activity. This sets a permitted “noise envelope” in which the airport can operate. This allows for some growth of the airport within that envelope and also allows for inevitable changes to aircraft types over time. As well as providing a control for airport noise management, the OCB delineates where noise sensitive activities would be affected by excessive aircraft noise. In my opinion the OCB is the location where aircraft noise exposure of 55 dB  $L_{dn}$  should be assumed to occur when considering potential noise effects at the Corbridge site.
- 4.5 Wanaka Airport is required to model aircraft noise every two years to confirm ongoing compliance with the OCB. The 2018 contour referred to by Mr Smith is one such periodic compliance check. Because current activity at Wanaka Airport is less than the envelope allowed for by the OCB, the 2018 55 dB  $L_{dn}$  contour shown by Mr Smith is smaller than the OCB. However, the 2018 contour does not represent the aircraft noise exposure that is permitted and should be reasonably

expected over the Corbridge site. Therefore, while the 2018 contour is relevant as a compliance check I do not consider it relevant for considering noise effects at the Corbridge site. To potentially discount noise effects or understate noise exposure, on the basis of the 2018 contour would undermine the framework for airport noise management.

**4.6** Mr Smith has alternated between references to the OCB and the 2018 contour. In paragraph 34 of his evidence he refers to the location of accommodation and other buildings being outside the OCB. I agree it is appropriate to use the OCB to determine appropriate locations for sensitive activities in this way. However, with respect to outdoor amenity in paragraph 32 of his evidence Mr Smith refers to aircraft noise based on the 2018 contour. For the reasons set out above, in my opinion the 2018 contour is not relevant, and based on the OCB aircraft noise would be louder than 55 dB in some areas rather than less than 55 dB as stated by Mr Smith.

**4.7** In paragraph 22 of his evidence Mr Smith states that anticipated aircraft sound levels would be compatible with a recreation environment. I partly disagree. At Jacks Point, I am aware through my work in that area that some people find aircraft sound to cause considerable disturbance on the golf course. However, I am also aware of numerous other golf courses located near airports, such as the Clearwater Golf Course in Christchurch. There appears to be a wide range of responses to and disturbance from aircraft noise for people using such recreational facilities. While I consider that it is reasonable to locate recreational activities near airports, people may be disturbed, making such areas in the OCB a compromise location for those activities.



**Dr Stephen Gordon Chiles**

**12 June 2020**