

**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 Hearing Stream 13
- Queenstown Mapping
Annotations and
Rezoning Requests

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

ACOUSTICS ENGINEER

24 May 2017

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1. INTRODUCTION

- 1.1 My name is Dr Stephen Gordon Chiles.
- 1.2 I am an acoustics engineer and independent commissioner, self-employed by my company Chiles Limited.
- 1.3 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.
- 1.4 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 previously been responsible for acoustics assessments and design for numerous different activities including infrastructure, industrial, commercial, recreational and residential developments.
- 1.5 I have worked extensively on acoustics issues in the Queenstown Lakes District (**District**) over many years. This has included providing advice to the Queenstown Lakes District Council (**QLDC**) relating to noise effects from the NZone skydiving operation at Jacks Point.
- 1.6 I am convenor of the New Zealand reference group for the international committee responsible for approximately 200 "ISO" acoustics standards. I was Chair of the 2012 New Zealand acoustics standards review group; Chair for the 2010 wind farm noise standard revision; and a member for the 2008 general environmental noise standards revision.
- 1.7 This is the sixth statement of evidence I have prepared on behalf of QLDC for Stage 1 of the Proposed District Plan (**PDP**). My previous evidence was for the:

- (a) Rural Hearing (informal airports), dated 6 April 2016;¹
- (b) District Wide Hearing (noise chapter), dated 17 August 2016;²
- (c) Residential Hearing (acoustic treatment for new houses), dated 14 September 2016;³
- (d) Designations Hearing (for the QLDC as the requiring authority for Glenorchy Airstrip and the Queenstown Events Centre), dated 7 October 2016;⁴ and
- (e) Business Hearing (Town Centres and Local Shopping Centres), dated 2 November 2016.⁵

1.8 I have now been engaged by the QLDC to provide acoustics evidence on the potential noise effects of existing skydiving activity on areas proposed for residential use in an extended Homestead Bay area of the notified Jacks Point Zone.

1.9 Although this is a Council hearing, I confirm that I have read the Code of Conduct for Expert Witnesses contained in 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.

1.10 I refer to documents included in the Council's Bundle (**CB**) and Second Supplementary Bundle of Documents (**SSB**). The key documents that I have used, or referred to, in forming my view while preparing this brief of evidence are:

- (a) QLDC Operative District Plan (**ODP**);
- (b) QLDC Proposed District Plan (**PDP**), in particular Chapters 36 (Noise) [**CB25**] and 41 (Jacks Point) [**SSB92**];

1 <http://www.qldc.govt.nz/assets/Uploads/Planning/District-Plan/Hearings-Page/Hearing-Stream-2/Section-42-A-Reports/Expert-Evidence/QLDC-02-Rural-Stephen-Chiles-Evidence.pdf>

2 <http://www.qldc.govt.nz/assets/Uploads/Planning/District-Plan/Hearings-Page/Hearing-Stream-5/Section-42A-Reports-and-Council-Expert-Evidence/QLDC-05-District-Wide-Stephen-Gordon-Chiles-Evidence-.pdf>

3 <http://www.qldc.govt.nz/assets/Uploads/Planning/District-Plan/Hearings-Page/Hearing-Stream-6/Section-42A-Reports-and-Council-Expert-Evidence/Council-Expert-Evidence/QLDC-06-Residential-Stephen-Chiles-Evidence-28356410-v-1.pdf>

4 <http://www.qldc.govt.nz/assets/Uploads/Planning/District-Plan/Hearings-Page/Hearing-Stream-7/Pre-Lodged-and-Pre-Tabled-Evidence/QLDC-T07-ChilesS-Evidence.pdf>

5 <http://www.qldc.govt.nz/assets/Uploads/Planning/District-Plan/Hearings-Page/Hearing-Stream-8/Section-42A-Reports-and-Council-Expert-Evidence/Council-Expert-Evidence/QLDC-08-Business-Stephen-Chiles-Evidence.pdf>

- (c) Land use consent RM960447 for skydiving operations at Jacks Point; and
- (d) *Re Skydive Queenstown Limited* [2014] NZEnvC108, which was a direct referral where the Environment Court declined land use consent application RM120052 which sought extended skydiving operations. I am also familiar with technical reports and evidence associated with that hearing.

2. EXECUTIVE SUMMARY

2.1 The key findings from my evidence are that:

- (a) residential activity should generally be avoided in areas exposed to a sound level of more than 55 dB L_{dn} around an airport. This is particularly important for residential areas like the Jacks Point Zone that seek to provide for enhanced outdoor amenity, as this cannot be remedied retrospectively by treatment of individual houses;
- (b) there is no current acoustics modelling data available for the skydiving flights operating from the Jacks Point airstrip. However, previous sound level measurements provide an indication of the extents of a 55 dB L_{dn} sound level contour. On this basis, all existing residential areas in the ODP structure plan for the Jacks Point Zone are outside the 55 dB L_{dn} contour;
- (c) submitter #715 proposes a revised structure plan that would result in new residential areas within the Homestead Bay area of the Jacks Point Zone. Significant parts of these new residential areas would be likely to be within the 55 dB L_{dn} sound level contour for the skydiving operations. In my opinion these residential areas would be best avoided within the 55 dB L_{dn} sound level contour.

3. AIRPORT NOISE CRITERIA

- 3.1** NZS 6805⁶ provides recommendations for criteria for airport noise, and is referenced as an applicable standard in both the ODP and PDP. I consider that the noise limit from NZS 6805 of 55 dB L_{dn} at houses is generally appropriate to protect health and amenity. However, for airports with lower or sporadic movement numbers, such as the Jacks Point airstrip, I consider that additional controls on flight numbers, flight paths, operational hours and aircraft types can be appropriate. Such controls might also be appropriate to manage noise effects on other land such as the Jacks Point golf course and outdoor recreational areas.
- 3.2** In terms of noise effects, it is preferable not to establish new noise sensitive activities such as residential activity near to existing airports. Ideally, new houses would not be built within a 55 dB L_{dn} sound level contour around an existing airport. However, if alternative equivalent locations are not available, I consider houses could generally be built within a 55 dB L_{dn} contour if they are subject to appropriate acoustic treatment controls. These controls normally result in mechanical ventilation being provided so that windows can be kept closed, thus maintaining suitable internal sound levels for residential amenity.
- 3.3** I understand that in some parts of the Jacks Point Zone, including the proposed extended Homestead Bay area, which has proposed densities similar to standard Low Density Residential zones, there is a greater emphasis on providing for open space, amenity and outdoor living, compared to other residential zones. To some extent, acoustically treating houses exposed to airport noise would be incompatible with this zone, as residents would only have appropriate residential amenity when inside their houses. In my opinion, within the Jacks Point Zone, residential areas should be avoided within a 55 dB L_{dn} contour around the existing skydiving airstrip. As discussed below, all existing residential areas in the ODP structure plan for the Jacks Point Zone are currently outside the 55 dB L_{dn} contour from the skydiving operation.

6 New Zealand Standard NZS 6805:1992 Airport noise management and land use planning.

4. SKYDIVING SOUND LEVELS

- 4.1 The established skydiving operation at Jacks Point operates under land use consent RM960447. I understand there may be legal questions over the extent and nature of skydiving activity that can be undertaken under that consent, but for the purposes of my evidence I have assumed that existing skydiving operations authorised by RM960447 comprise:
- (a) an average of up to 26 flights per day by Cessna Supervan aircraft;
 - (b) idling with aircraft orientated away from the nearest existing residential areas in Jacks Point; and
 - (c) landing/arrival flight path from the south over Homestead Bay to be used whenever wind conditions allow, as shown as "Arrival path C" in **Appendix A** to my evidence.
- 4.2 There is not a 55 dB L_{dn} sound level contour for the skydiving airstrip available, which reflects the operation in accordance with the assumptions I have set out above. However, various sound level measurements were made in 2010 to 2012 in relation to application RM120052, and these can be used to estimate the general extent of a 55 dB L_{dn} contour. Those measurements were at locations outside the 55 dB L_{dn} contour in the existing (ODP) Jacks Point village, residential area and lodge site, but not in the Homestead Bay area. Therefore, while the information is sufficient to consider noise effects in the Homestead Bay area in a general manner, specific measurements in that area would be required to determine exact locations where residential activities might be appropriate.
- 4.3 For the existing residential areas in the ODP structure plan for the Jacks Point Zone, the available information is sufficient to show they are all outside a 55 dB L_{dn} contour.
- 4.4 As noted above, I have assumed the skydive operator has implemented good practice measures of orientating aircraft away from existing residential areas when idling, and use of an arrivals flight path from the south where practicable. Both of these measures increase the noise exposure and potential adverse effects at any new houses in the Homestead Bay area. I am not aware of alternative controls that would manage sound levels on both sides of the airstrip simultaneously.

4.5 Based on the previous sound level measurements to the north of the airstrip, I estimate that the 55 dB L_{dn} contour may extend in the order of 600 metres into the Homestead Bay area from the eastern threshold of the runway (nearest the State Highway). Further along the runway the contour will reduce in width and may only extend in the order of 100 to 200 metres from the western end of the runway. Potentially a narrow part of the contour will also extend to the sides of the arrivals path shown in **Appendix A** to my evidence. However, at the western end of the runway (nearest Lake Wakatipu), the estimate is less reliable as the influence of the preferred arrivals flight path and this specific terrain were not included in previous measurements.

5. SUBMISSION #715 – JARDINE FAMILY TRUST AND REMARKABLES STATION

5.1 Submitter #715 proposes to enlarge the Homestead Bay area of the Jacks Point Zone and apply a revised structure plan. The proposed structure plan shows several residential areas near to the skydiving airstrip and the preferred arrivals flight path. Residential areas appear to be in the order of 200 metres from the runway and some areas are directly under the preferred arrivals flight path. A significant part of some of these proposed residential areas is likely to be inside the 55 dB L_{dn} sound level contour, particularly at the eastern end of the airstrip where the contour is wider.

5.2 For the reasons I have set out above, I consider that new residential areas should be avoided within the 55 dB L_{dn} sound level contour from the skydiving airstrip. I have provided an indication of the extent of the contour in the Homestead Bay area in terms of approximate distances from the runway. However, further sound level measurements would be required to determine its location with adequate certainty to identify appropriate areas for future residential development. As set out above, from the information currently available it appears that significant parts of the residential areas proposed by the submitter would be within the 55 dB L_{dn} sound level contour



Dr Stephen Gordon Chiles

24 May 2017

**APPENDIX A
PREFERRED ARRIVALS FLIGHT PATH**

