

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

**AND**

**IN THE MATTER OF** Hearing of Submissions and Further  
Submissions on the Proposed Timaru District  
Plan

Statement of Evidence of **WILLIAM PETER REEVE** on behalf of Horticulture New Zealand

**Dated 9 April 2025**

## Introduction

1. My full name is William Peter Reeve. I am employed as a Senior Associate Acoustic Engineer with Acoustic Engineering Services.
2. I hold a Bachelor of Engineering with Honours from the University of Auckland. I am a member of the Acoustical Society of New Zealand.
3. I have over 13 years' experience in the field of acoustic engineering consultancy and have been involved with many environmental noise assessments on behalf of applicants, submitters and as a peer reviewer for Councils. My experience includes providing advice regarding audible bird scarer device (ABSD) controls, and the interface between rural and residential activities in other Districts.
4. While this is not a hearing before the Environment Court, I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court of New Zealand Practice Note 2023 and that I have complied with it when preparing my evidence. Other than when I state I am relying on the advice of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

## Scope of Evidence

5. I have been engaged by Horticulture New Zealand to provide an opinion on proposed rule PER-3 of *NOISE-R5 Noise from bird scaring devices*. The use of ABSD would be a permitted activity subject to meeting PER-1 to PER-4. Rule PER-3 in the current form recommended by Ms White in the relevant Section 42a Report is as follows:

*Unless located at least 500m from any building housing a noise sensitive activity on an adjoining site under different ownership bird scaring devices must be oriented with the direction of fire facing away from any noise sensitive activity on any adjoining site under different ownership*

6. I have reviewed the Horticulture New Zealand submission and further submission as they relate to this rule. I have also reviewed the Section 42a report prepared by Ms

White which relies on a supporting memorandum prepared by Mr Hunt in relation to noise. In addition, I have reviewed the Operative District Plan (ODP) rules and notified PDP rules as they relate to the use of ABSD in the rural zone.

7. The controls on noise level and number of events in a period (as in PER-2), and the time of day when operation may occur (as in PER-4) are also relevant to noise effects. Such controls should be developed with the purpose of ABSD in mind (effective bird management) along with consideration of noise effects on neighbours. In this regard, I note that the full package of controls Horticulture New Zealand have requested is within the typical range seen in District Plan controls in rural zones, for example as summarised by New Zealand Kiwifruit Growers<sup>1</sup> for various districts (albeit primarily in the North Island).
8. I have been asked to focus my commentary on the noise related implications of PER-3, since it is uncommon to see a rule combining a 500-metre setback, and control on direction of fire.

### **Background to rule PER-3**

9. For an ABSD to be a permitted activity under this rule, it would need to be set back 500 metres, and oriented away from noise sensitive activities.
10. This is a further development of ODP Rural Zone limit of 5.25 (3), which notes that *“Bird scaring devices shall be located as far as is practical away from adjoining residences and they shall be aligned to point away from adjoining residences”*. The PDP rule as notified adopted a similar wording noting that: *“Bird scaring devices must be oriented with the direction of fire facing away from any noise sensitive activity on any adjoining site under different ownership”*.
11. In his response to Horticulture NZ submission points, Mr Hunt has recommended the introduction of a 500-metre setback because of the “sharpness quality” of higher sound levels received at close distances when an ABSD is oriented directly towards the

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<sup>1</sup> New Zealand Kiwifruit Growers *Audible Bird Scarer Rules* factsheet (available from [https://www.nzkgi.org.nz/wp-content/uploads/2020/09/NZKGI-Factsheet\\_FS-1.pdf](https://www.nzkgi.org.nz/wp-content/uploads/2020/09/NZKGI-Factsheet_FS-1.pdf), accessed 2/09/22)

receiver. At distances greater than 500 metres, Mr Hunt considers that the orientation of fire no longer requires control.

12. Sound emissions from ABSD are directional, and noise levels are lower when “off-axis” from the direction of fire. Measurements show that noise levels can often be in the order of 6 – 8 dB lower behind an ABSD when it fires, at a receiving distance of several hundred metres.
13. Sharpness, in an objective acoustic sense would typically be used to refer to the proportion of high and low frequencies in a sound – with a sharper sound containing a greater proportion of high frequencies. Higher frequencies are more readily attenuated with distance – for example by air and ground absorption, so sharpness will reduce with distance as Mr Hunt identifies. Higher frequencies are also reduced by screening in a similar manner.
14. By referring to sharpness, Mr Hunt could also be referring to the impulsive nature of a gas gun type source. An impulsive source is typically defined as one which has a sudden onset of the sound (for example gunfire). The impulsivity of a source also be affected in a similar way by propagation losses.
15. Meeting the noise limits outlined in PER-2 will require distance setbacks, controls on the type of device used, or screening – perhaps in combination. All of these will reduce the ‘sharpness’ of the sound from ABSD. I therefore consider that a stand-alone distance setback and limitation on the direction of fire is not necessary to control the ‘sharpness’ from this source, as the control on noise level will inherently achieve this goal.

#### **Site specific effects and mitigation**

16. There are other pathways available to growers to reduce noise levels, and by default sharpness, and therefore effects of ABSD. A permitted activity rule which requires a specific setback distance and orientation may preclude alternative methods of site-specific control that can achieve similar outcomes.
17. In some cases, the topography of the intervening land between source and receiver on a specific site will provide acoustic screening, reducing both the level and ‘sharpness’ of

the sound source. This can be quantified in a robust way with a measurement exercise, or modelling.

18. Close physical screening is another method of reducing noise from ABSD. A building, bund, or physical screen can reduce noise levels by in the order of 10 dB, where it obscures line of sight from an ABSD to the closest noise sensitive receiver. An example of how hay bales as moveable screening can be used as an ABSD control is outlined in the National Farmers Union (UK) document *Bird deterrents and bird scarers, Protecting your crop – NFU Code of Practice*. It is common for ABSD operate on a tripod and rotate with every shot – so screening could be used for orientations where the distances to noise sensitive receivers are smaller.
19. While vegetation often offers little in the way of sound attenuation, field test data<sup>2</sup> has shown that in vineyards, small but meaningful reductions can be achieved when the direction of fire is “across the row” rather than “along the row”. Similar small but meaningful reductions were also observed in plum orchards. Again this can be confirmed for a specific site with a measurement exercise.
20. Given the above, growers may be able to demonstrate that the noise limits in PER-2 can be achieved given the specific nature of their site, or with additional screening. A permitted activity control which requires a standard setback and direction of fire, regardless of the noise output of the device, or how it is screened does not reflect the ability for site specific responses to controlling noise level and the resulting effect.

#### **Other ABSD methods and variability in device level**

21. I note that there are different types of ABSD – for example methods that reproduce avian distress sounds, or hand-held launchers that fire cartridges. The structure of the rule appears to be focussed on gas guns, and these are generally the loudest and most common of the audible methods.

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<sup>2</sup> Measurement Institute for Immission, Occupational Safety and Radiation Protection: Acoustic analysis of alarm systems (translated from German) dated 26<sup>th</sup> of August 2023

22. However, it is unclear whether the rule as currently proposed intends to capture these other methods, which are often quieter, but could be impacted in the same way by a generic setback and orientation control intended for gas guns.
23. Finally, I note that even amongst devices of a similar type, there is inherent variability in the noise from ABSD – with some models known to be quieter than others. On some models of ABSD the shot volume can also be regulated leading to a 6 dB reduction in noise level at 100 metres<sup>3</sup>. This means that the selection of a specific device, in combination with allowances for screening as described above could achieve similar outcomes in terms of noise effect, to what is currently proposed by the rule. This can be achieved without a specific distance setback, and orientation control, allowing flexibility for growers.

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<sup>3</sup> Purivox Triplex V - Instruction Manual