# Frost Protection Devices in the Hurunui District

## Issues and Options Paper

June 2008

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# Introduction

This issues and options paper forms part of a review on the use of frost protection devices as part of horticulture and viticulture activities in Hurunui District; and whether the current district plan rules need amending.

The review has been initiated by the Hurunui District Council, as part of a programme to manage issues which have emerged around the use of frost protection devices in some parts of the District; and the way in which applications for installing wind machines (for frost protection) have been processed by the Council, under the current district plan rules.

The paper is designed to help the Council consult as widely with interested groups as possible, and to get feedback from people in a form which is useful for the Council in undertaking this review. Therefore, the issues and options paper is to help focus the debate. However, this information is not intended to limit people's comments, and please feel free to include any additional ideas or information in your response.

# Contents

The issues and options paper is split into three parts:

## (i) Part One - Background Information, which includes information on:

- What is meant by frost protection devices (ie defining the topic);
- What the current rules are;
- Why the review is taking place and what it covers.

## (ii) Part Two – Identifying the Issue, which includes a discussion on:

- The role of horticulture and viticulture activities in the District;
- The use and effects of mechanised frost protection devices; and
- The amenity values of rural areas in the District.

## (iii) Part Three - Options for Managing the Issue(s):

This part identifies and evaluates nine options for managing the effects of wind machines, which can be used singularly or in combinations.

# Your Feedback

Everyone is welcome to make comments on the issues and options raised in this paper, and any other relevant information. Comments should be provided to the Council, in writing. There is no official form, but comments in writing are easiest for the Council as we have a record to refer back to. If you require any assistance to write a response, please contact the Council. (Please refer to page 32 of this paper for where to send comments).

Once the Council has considered all the comments, it will decide if a review of the district plan rules should proceed and, if so, how the rules will be changed. If the rules are reviewed, this will be done by way of a plan change to the district plan. A plan change involves a formal planning process under the Resource Management Act 1991 (RMA). Any proposed plan change will be publicly notified, and there will be an opportunity for any person to make a submission and attend a hearing. The Council's decisions on any plan change can be appealed to the Environment Court.

# Part One - Background Information

## Defining the Topic

'Frost protection devices' is a term used in this paper to refer to a variety of tools and techniques which may be used to protect horticultural or viticultural crops from frost damage. It includes the use of helicopters and mechanised wind machines, whether portable or fixed. The term 'wind machines' refers to mechanised wind machines which are used for frost protection.

The issues which have sparked this discussion paper in Hurunui District relate largely to effects from mechanised wind machines used for frost protection. However, to be effective, any review of the rules for wind machines needs to consider the other techniques available for frost protection and their effects. It would be counter-productive to focus on regulating wind machines, if people then opt to use other frost protection methods which have similar or greater environmental effects and which are not controlled, eg noise from hovering helicopters (see "Helicopters" page 8 and page 18).

## Relevant Planning Rules

### *Land Uses and Noise*

Under the RMA, district councils have the function of controlling effects of land uses, noise and subdivision (sections 31(b), (d) and section 31(2)). This may be done through district plans (section 72).

In addition, there is a duty on all persons to avoid unreasonable noise, under section 16 of the RMA. This duty applies to all land uses (whether they need planning permission or not), and requires the person to adopt the 'best practicable option' to reduce the noise.

### *Helicopters*

Rules for noise from the use of helicopters are also set out in district plans. However, district councils are limited to controlling the location and operation of places where aircraft take off and land (under section 9(8) of the RMA). Under the RMA, district councils do not have any control over noise from overflying aircraft (other than take off and landing). The term 'overflying' is not defined in the RMA and there is a question whether a helicopter hovering over a vineyard for frost protection purposes is 'overflying.' The Council's legal advice is that there appears to be an assumption within both district plans and relevant Environment Court decisions relating to aircraft or helicopter noise, that any airborne aircraft is outside the jurisdiction of noise controls in district plans.

### *Irrigation*

The rules for managing water for irrigation, including for frost protection, are set out in the Proposed Natural Resources Regional Plan (PNRRP). This plan is administered by the Regional Council (Environment Canterbury), and a resource consent (planning permission) may be required to take and use water for this purpose.

## Reading Plan Rules

When an activity is referred to as a permitted activity in a district or regional plan, this means the activity does not require resource consent (planning permission) from the council, as long as it complies with the rule(s). When an activity cannot comply with those rules, this means it requires a resource consent (planning permission). It does not mean that the activity cannot be undertaken, at all. Only when an activity is described as a prohibited activity, a resource consent cannot be applied for.

When a resource consent is required, the application may be notified for other people to make submissions; and the Council may have the option to decline the application. This depends on the type of rule in the district plan and the effects of the activity which is applied for.

Therefore, when you read the options for managing frost protection devices in this paper, the options (except Option H) are based around establishing rules by which the use of wind machines may be a permitted activity, with an option for activities which cannot comply with the rules to apply for a resource consent. The Council would retain the option to notify a resource consent application and to decline a resource consent where effects cannot be adequately managed.

### *Existing Activities*

The other thing to remember is that any new rules for wind machines in the district plan may not apply to existing activities. Section 10 of the RMA has provisions for when existing activities do not have to comply with new district plan rules. Any new district plan rules would apply to these activities should their effects change or increase, eg by adding more wind machines or putting them closer to adjoining properties.

## Current Rules for Frost Protection in the Hurunui District

Under the Hurunui District Plan, the following rules apply to frost protection devices:

(i) Specific Rules:

- There are no specific rules relating to frost protection devices.
- There are no specific rules relating to the growing of frost sensitive crops.

(ii) General Rules:

- If a structure is more than 10 metres in height, it requires a resource consent (planning permission – Rule A 1.2.7)
- There are maximum noise limits for permitted activities (Rule A1.2.9), including noise from airports and heliports (A1.2.9(d)). There is an exemption from the noise rules for "Normal agricultural practices undertaken for a limited duration, such as harvesting" (Rule A1.2.9(i), p.006). Rule A1.2.9(d) also contains a note which reads: "Exemptions under Rule A1.2.9(i) include transient rural aviation activities." The term 'transient rural aviation activities' is not defined.
- The minimum sized allotment which is able to have a dwelling erected on it as a permitted activity is 5 ha in the rural area (excluding Areas of Special Environmental Concern) and the minimum lot size for a complying subdivision is 5 ha (rules A3.2.5 and A1.2.5).

## Why is the Review is Taking Place?

The rules in the Hurunui District Plan and the way resource consents have been processed for wind machines which do not comply with the rules, have come under scrutiny. A recent resource consent application for 53 wind machines for frost protection on a vineyard was processed without notification of adjoining property owners. Some of those owners have complained to the Council about effects from noise and air movement or vibration, when the wind machines are operating. Complaints have also been received from nearby residents about the noise from wind machines operating on other properties in the District. The Council now requires written approval or notification of adjoining property owners when processing applications for wind machines. This practice has been questioned by some applicants, given the current district plan rules.

The Council had an assessment of the need to control noise from wind machines undertaken by Marshall Day Acoustics in January 2006. That report states that "wind machines in New Zealand are relatively noisy" and that "all wind machines we have heard have special audible characteristics such as blade slap which makes the noise subjectively more annoying" (Marshall Day Acoustics Ltd, 2006, p.2). The report then acknowledges the vital role wind machines perform and the relatively low frequency of their use, which the report suggests may justify "allowing a slightly higher noise level than for equipment which operates more regularly" (Ibid, p.2). The report recommends that wind machines should not be excluded from the noise rules in the district plan as a 'normal agricultural practice' (Ibid, p.3) and includes recommendations for noise levels and other rules. These recommendations are included in the options in Part Three of this paper.

## What the Review Covers

This review covers the following issues:

i. What rules, if any, are required in the district plan for managing the effects of mechanised wind machines for frost protection;

ii. Whether and how effects from other frost protection devices can and should be managed;

iii. Whether the Council needs to review separation distances between activities in the rural area, or the role of the rural area and the amenity values people should expect.

# Part Two – The Issue(s)

## Horticulture and Viticulture Activities in the Hurunui District

Horticulture and viticulture activities are an important and growing part of Hurunui District's economy and community. The Council's valuations database shows that the number of properties classified as being in horticulture or viticulture uses has increased in the District by 162.3% from 2002 to this year. This is part of a regional and national trend towards growth in the number of wineries, land area in vineyards and grape tonnage produced in Canterbury and nationally, over the last 10 years[1] (www.nzwine.com/stats/2008). Winegrowers.com/stats/2008).

Much of this growth is centred around vineyards in the Waipara Valley Region which has around 80 vineyards and over 1200 hectares of plantings (www.waiparawine.co.nz/home/2008). The Hurunui District Plan identifies a Waipara Wine Growing Area in Appendix E4, acknowledging the prevalence of the activity in that area[2]. However, viticulture and horticulture activities are occurring in other parts of the District as well, eg Amberley, Pyramid Valley and Cheviot. These activities contribute to Hurunui District's economy through both primary production and tourism. The Waipara Valley is part of the Alpine Pacific Triangle and the annual Waipara Wine and Food Festival is a showcase regional event.

*Please feel free to comment about the role of horticulture and viticulture activities in Hurunui District.*

[1] The NZ Agricultural Production Statistics for June 2007 show an increase in the total area planted in grapes of 71% since 2002, with Canterbury increasing 125% from 750 ha to 1,680 ha.

2 There are no specific policies or rules relating to the Waipara Winegrowing Area.

## Use of Frost Protection Devices and Their Effects

The geographical and climatic conditions which make parts of the Hurunui District desirable for horticulture and viticulture, may also contribute to one of the challenges for these activities – protecting the crops from frost damage. Frost can affect the budding and therefore fruiting potential of a variety of crops, and with perennial crops can affect tree/vine development into future seasons. The likelihood and extent of any frost damage and the need for frost protection depend on a variety of factors: eg the crop and cultivar grown; the age and stage of development of the plants; the duration of freezing temperatures; plant conditions, such as the presence of surface ice or ice nucleating bacteria, and the micro-climate on the site.

The use of frost protection devices is not a new practice. Trought et al (1999, p.27) record Roman grape growers burning old vines and prunings to protect vines from frost over 2000 years ago. Many types of frost protection devices have been developed and the type of frost protection device used depends on a variety of factors: eg type of frost (advection or inversion frost and the height of any inversion layer); condition of the crop (is it already damaged or diseased); the frost protection devices available; and what is economic or affordable. It is interesting to observe vineyards and orchards in close proximity to one another within the District, using different methods of frost protection.

The Council's does not believe its role is to determine the types of frost protection devices people may or may not use. This is an individual decision for each landowner. The Council's role is to manage any effects which may arise from the use of frost protection devices, where those effects are causing or have the potential to cause resource management issues in the District.

Currently, the resource management issue which is emerging is noise and air movement or vibration effects on surrounding properties from the use of mechanised frost protection devices (wind machines and helicopters). The visual effects of wind machines do not appear to have been raised as a concern

to date, though this may depend on where they are located.

The Council has received information about these effects from three sources:

- Direct complaints to the Council about noise and air vibration from wind machines operating on specific properties around the District;
- Anecdotal comments from residents in the Amberley-Waipara area about 'hearing the hum' of wind machines and 'not wanting any increase.'
- The Council's Residents' Survey 2008, which showed 11% of respondents were concerned about noise from frost protection devices, up from 4% of respondents in 2007[3] . This increase may be due to increased effects, or may simply reflect a greater awareness of the issue due to recent publicity.

*Please feel free to comment on issues with the use of frost protection devices.*

## Activities in the Rural Area and Amenity Values

The use of frost protection devices which make noise or cause air vibration is not, in itself, an issue. It becomes an issue when it affects other people and their activities. These effects can occur in two ways:

(i) The effects are such that they disturb other people's sleep or other activities; or

(ii) The effects are regarded by other people as inappropriate in a quiet, rural setting and detracting from the amenity of the area (even if it does not disturb sleep).

The first type of effect is relatively easy to address. There are recommended levels for noise both at the notional boundary of and within dwellings, which can be applied. While these levels may not be perfect (depending on the type of noise and the person's sensitivity to noise), they provide some guidance on acceptable or reasonable noise levels. The use of noise standards is discussed in Part Three, Option D of this paper.

The second type of effect is harder to quantify and manage. It depends on people's perceptions of what a rural area is (or should be) and the reasons why they reside there. Eg a person who has moved to the country for a peaceful, quiet alternative to urban or city living may be less tolerant of night-time noise than a person who regards the rural area as an area of primary production or

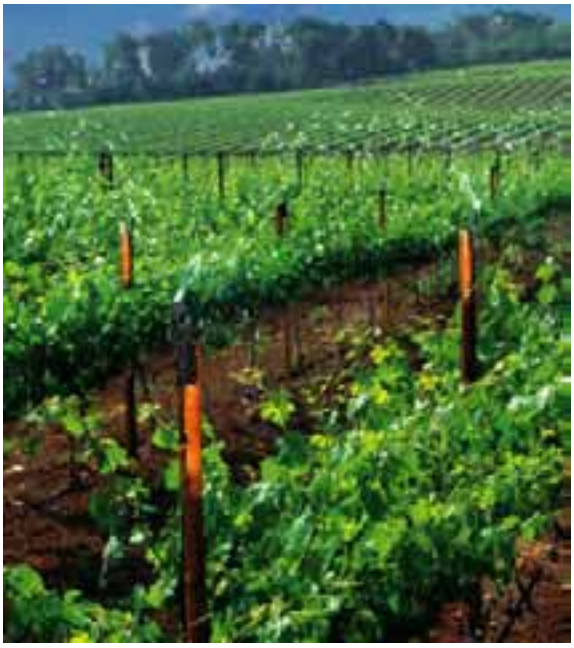
[3] Both the 2007 and 2008 Hurunui District Council Resident's Surveys were random telephone surveys asking questions relating to issues in the district and council performance. Each survey had 500 respondents and an error margin of <5%

rural industry. Therefore, this type of effect will vary both between areas and among people within an area.

Issues arising from the effects of different activities in the rural area can be exacerbated two ways:

i. By the physical distance between activities; and

ii. The message the Council sends out about the role of the rural area in its district plan, including how it manages residential/rural lifestyle development, in the rural area.



*In the latter part of this year the Council is looking to review how it manages subdivision and residential development in the rural area. You are welcome to use this opportunity to comment on this broader issue.*

# Part Three – Options for Managing Issues with Frost Protection Devices

## Introduction

This part of the issues and options paper looks at options or methods for managing effects of wind machines. The paper describes and evaluates nine options. The options have been developed having reviewed: relevant legislation for district councils to control noise; methods used in other district plans in New Zealand and guidelines developed in Victoria and South Australia; recent Environment Court decisions; and the recommendations of Marshall Day Acoustics Ltd (2006). The list is not exhaustive, and the Council would like your feedback not only on the options listed, but any other ideas you may have.

## Summary of Options

A summary of the options is included in Table One below. An explanation and evaluation of each option is included in the following pages. When reading the options, please remember, none of the options prohibit the use of wind machines. The most stringent option is Option H, which requires a resource consent (planning permission) for any wind machine. The other options suggest rules by which wind machines may be used 'as of right' (a permitted activity). If the rules are not met, a resource consent (planning permission) is needed. The use of helicopters is discussed on page 18.

*Table One - Summary of Options for Managing Issues with Frost Protection Devices*

| Option | Description | Preferences | |
|---|---|---|---|
| A | Retain the Status Quo – no change to the existing district plan rules | | |
| B | Use Industry Code of Practice | | |
| C | Rely on Section 16 of RMA | | |
| D | Introduce noise rules for wind machines<br>- Apply noise standard at vineyard boundary<br>- Apply noise standard at notional boundary of nearest dwelling | | |
| E | Introduce separation distances between wind machines and dwellings<br>- Apply setback from vineyard boundary<br>- Apply setback from nearest dwelling on another property | | |
| F | Control type of wind machines which may be used.<br>- Model of wind machine<br>- Frequency of use | | |
| G | Require all wind machines to get a resource consent (planning permission) | | |
| H | Greater control over the use of land in the rural area for residential or rural lifestyle blocks | | |
| I | Require additional noise insulation in dwellings | | |

## Other Matters to be Considered with Options

### *Height Restrictions – Rule A1.2.7(a)*

Irrespective of the options suggested in this paper, any wind machine or other frost protection structure which is 10 metres or greater in height will require a resource consent (for a discretionary activity) under Rule A1.2.7(a) of the district plan. This rule 'catches' many wind machines because when the blades rotate to a vertical position the structure is over 10 metres in height. If the Council wishes to introduce rules by which wind machines may be installed as a permitted activity, this rule will need to be reviewed as well. A possible approach may be to apply the 10 metre rule to the pole or mast of the wind machine but exempt the blades.

### *Prohibited Activities*

One option which has not been identified and evaluated is the option of disallowing the use of wind machines in the District. This could be done by either making the activity prohibited (no resource consent can be applied for) or a non-complying activity (a resource consent can be applied for but is usually only granted in very limited circumstances). The Council's current belief is that such an approach is not appropriate in the rural area. The Council believes its rural area is the appropriate place for horticulture and viticulture activities to occur and that the effects of using wind machines can be adequately managed in most cases.

### *Helicopters*

Prohibiting the use of wind machines for frost protection may also be self-defeating, if it encourages people to use helicopters instead. As discussed on page 8, the ability of the Council to control noise from helicopters used for frost protection may be very limited. The Council understands that in many cases growers may prefer to use wind machines because there is greater certainty over their availability and the long term costs may be less. However, the Council wants to avoid the situation whereby using wind machines for frost protection becomes so difficult, that it becomes attractive to use helicopters instead, which may have greater effects on surrounding properties.

*You are welcome to comment on the option of prohibiting wind machines and the use of helicopters as part of this process.*

## Option A - Retain the Status Quo

### *Explanation*

Option A is to retain the existing district plan provisions for frost protection devices. (as described in Part One). Assuming that mechanised frost protection devices fall within the exemption from noise rules under Rule A 1.2.9(i) of the district plan, this option would mean that any structure used for frost protection which is over 10 metres in height would require a resource consent, but any structure less than 10 metres in height would not.

If the exemption under Rule A1.2.9(i) does not apply to frost protection, then wind machines will also be subject to the noise rules in the district plan. The noise rules will not apply to the use of helicopters, except sites on which the helicopters are landing or taking off (assuming that frost protection is not a 'transient rural aviation activity').

The minimum allotment size for subdividing land and erecting a dwelling in the rural area as complying activities, remains 5 hectares. Therefore a mix of rural lifestyle and other land uses can continue to establish in close proximity, in rural areas.

### *Evaluation*

Option A has the following disadvantages:

- It is debatable whether the noise rules in the district plan apply to frost protection devices.
- If the noise rules do not apply, it is unfair and ineffective if wind machines over 10 metres in height require a resource consent (planning permission), but shorter structures or other methods which may have similar or greater effects, do not.
- There is a potential for current issues between residential and frost protection or other noise sensitive activities to increase, as both types of activities can continue to occur in the rural area with little management.

The main advantage of Option A is that it does not require any council expenditure to review the district plan provisions. However, this is a false saving, if ratepayers money has to be spent on trying to resolve issues between neighbours once frost protection devices are used.

## Option B – Use Industry Codes of Practice

### *Explanation*

New Zealand Winegrowers has published a *Wind Machine Code of Practice 2008*, which includes guidelines for winegrowers on the operation of wind machines to maximise their effectiveness and to minimise the effects of noise and disturbance on neighbouring properties. The Civil Aviation Authority has a publication *Consider Thy Neighbour – Helicopter Frost Protection* which includes suggestions to reduce noise complaints from neighbours and to improve operational safety.

### *Evaluation*

Both these documents provide useful information for growers on the conditions under which wind machines and helicopters should be used for frost protection. They emphasise using these techniques only when necessary and when they can be effective, which is helpful in reducing the potential frequency of their use.

However, on their own, these documents are not effective methods for dealing with issues from the use of mechanised frost protection devices, for the following reasons:

- The guidelines are voluntary.
- The documents are targeted towards 'best practice' when undertaking frost protection to minimise effects. They do not (and are not intended to) identify and manage situations were effects from frost protection devices may not be acceptable.
- The documents defer to district plan rules for noise control.

## Option C – Use of Section 16 of RMA

### *Explanation*

Section 16 of the RMA imposes a duty on every person to avoid unreasonable noise, even if the activity they are undertaking is lawful (ie has planning permission or complies with district plan rules). The Act requires people to take the 'best practicable option' to ensure their noise does not exceed a reasonable level. It states:

> *"(1) Every occupier of land (including any premises and any coastal marine area), and every person carrying out an activity in, on, or under a water body or the coastal marine area, shall adopt the best practicable option to ensure that the emission of noise from that land or water does not exceed a reasonable level."*

The provisions in section 16 of the RMA are what the Council is currently relying on to deal with noise issues arising from wind machines which have been lawfully established in the district.

Some district plans include rules for managing noise from wind machines which are based on "best practicable option to avoid unreasonable noise," eg Napier City District Plan and Hastings District Plan.

### *Evaluation*

Section 16 of the RMA is a useful 'tool' to deal with unforeseen problems or 'one off' activities. It is not the best option for controlling noise from activities generally, for the following reasons:

- It is retrospective, dealing with a problem once it is established, rather than avoiding the problem in the first instance.
- It requires the establishment of what is 'an unreasonable level of noise' for an activity in each circumstance, which can become an issue in itself.
- It requires the determination of what is the 'best practicable option' to reduce the noise in each circumstance.
- For the above reasons, it is uncertain and potentially expensive and adversarial for all parties.

These same issues apply to rules in district plans which are based around the use of the 'best practicable option to avoid creating an unreasonable level of noise.'

## Option D – Use of Noise Standards

### *Explanation*

Most district plans in New Zealand, including the Hurunui District Plan, have rules for maximum noise limits for activities, as permitted activities. Some district plans apply the general noise rules to all activities, including wind machines for frost protection. Other plans have noise rules especially for wind machines or 'frost fans.'

Specific noise levels for wind machines vary in the Council's review sample of district plans from 55dBA$L_{10}$ to 65 dBA $L_{10}$, with one plan having no noise level (Wairarapa)[4] How these noise levels are measured and applied also varies: some are measured within a specified distance of the wind machine, while others are at the notional boundary of a dwelling or at the edge of a Residential Zone. Most of the specific wind machine or 'frost fan' rules also include separation distances from dwellings or Residential zones, and other rules controlling the use of the machines, eg minimum air temperature or maximum number of times when the machines may be used. Therefore, it is very important not to compare noise rules between district plans in isolation. The rules must also be considered in the context of policies and rules for activities and amenity values in rural areas including rules for subdivision and residential density.

The Marshall Day Report (Marshall Day Acoustics Ltd, 2006, p.8) recommends the use of noise rules which are tailored specifically for wind machines, for the following reasons:

i. The noise from wind machines can be significant enough to warrant controls; and
ii. The noise limit also needs to be adjusted (by a 5dBA penalty) to deal with the 'special audible characteristics of wind machine noise' (ie the blade slap) (Ibid, p.6); but
iii. Due to the infrequency of the use, the noise rules may be slightly higher than those for more regular activities.

Therefore, the report recommends that any noise rules for wind machines include a rule over the frequency of their use (Ibid, p.9). Controls over the frequency of use are evaluated in Option F.

The Marshall Day Report (2006) recommends a noise limit of either 50 dBA $L_{10}$ or 55dBA $L_{10}$ for a permitted activity (no resource consent required) measured at the notional boundary of any dwelling, with controls on the frequency of the use of wind machines for frost protection (Marshall Day Acoustics Ltd, 2006, p.7). The report also recommends that the noise rules need to apply to cumulative effects of multiple wind machines (Ibid, p.8).

### *Evaluation*

The use of a specific noise rules for frost protection devices as a permitted activity, is one of the Council's preferred options, at this stage. Landowners who cannot comply with the rules would have the option to apply

[4] The district plans cited for this study include Napier City; Hastings District; Western Bay of Plenty District; Central Otago District (Proposed); Wairau/Awatere (Marlborough Combined); and Wairarapa District.

for a resource consent, which would be notified to surrounding landowners who may be affected. The advantages of this option include:

- The rules deal directly with the effects;
- The rules do not need to change with technology;
- Where activities cannot comply with the noise rules, there is still the option to consider each proposal on its merits through the resource consent process; and
- Using noise standards may encourage the continued development of quieter technology.

This disadvantages with using noise rules on their own include:

- Dealing with wind machines which, once installed, do not comply with the noise standards. At that stage the Council has to address the issue by enforcement (ie fixing the problem) rather than preventing a problem in the first instance.
- Managing potential effects on dwellings which may establish closer to the wind machines after they are installed.
- Marrying the noise rule with rules for the frequency of using wind machines has some disadvantages (see Option F).
- If noise from hovering helicopters for frost protection is not managed through district plans, vineyards which cannot comply with the noise limits for wind machines may choose to use helicopters with potentially greater noise effects, rather than applying for a resource consent.

### *Applying the Noise Rules*

The second matter is whether to apply the noise standards for a permitted activity at the boundary of the vineyard/orchard property or at the notional boundary of the nearest dwelling on an adjoining property.

If the noise limits are applied at the boundary of the vineyard/orchard then much of the noise effects of the wind machines are internalised on the property, and do not affect other people's land. However, it may mean that smaller vineyards/orchards cannot comply with the rules for permitted activities. Larger vineyards/orchards will have to choose to either have areas around their boundary which are not covered by wind machines or obtain a resource consent.

If the noise limits are applied at the notional boundary of the nearest dwelling (on another property), the noise limits will be easier for smaller vineyards to comply with and will enable larger vineyards/orchards to protect crops closer to their boundaries. However, it also means that the activity will affect other people's property, including possibly restricting where they can erect a dwelling or subdivide their land.

## Option E – Use of Separation Distances

### *Explanation*

Option E involves using minimum separation distances between wind machines and dwellings on adjoining properties (as permitted activities). A resource consent can be applied for, to reduce the separation distance.

Several district plans use separation distances between wind machines and dwellings in the rural area, and/or Residential or Urban zones. The distances vary between district plans. For example, Central Otago (Proposed) is 300m from a Residential Zone and 100m from the notional boundary of any dwelling in the Rural Zone, Wairau/Awatere is 500m and 100m, respectively.

As with noise standards, it is important not to compare district plan rules in isolation, as the separation rules often work in combination with noise standards and other rules.

The Marshall Day Report (Marshall Day Acoustics Ltd, 2006, p.7) suggests that a recommended 55dBA $L_{10}$ noise limit (see paragraph 3.6.5) would require a separation distance of 300m to the notional boundary of a dwelling for most wind machines and 400m for some models. The report states 'we do not believe there is any physical constraint on producing quieter frost fans (sic) which could then locate closer to houses than the 300-400m suggested above, whilst still achieving the 55dBA$L_{10}$ noise limit' (Ibid, p.7).

### *Evaluation*

The use of a minimum separation distance between wind machines and dwellings on other properties as a rule for a permitted activity (no resource consent needed) is one of the Council's preferred options at this stage, possibly combined with a noise rule (Option D). A resource consent could be obtained to reduce the separation distance, where adjoining properties would not be adversely affected. The reasons the Council supports this option are:

- Like noise rules (Option D) the rules are based on managing effects (this time by separation) not trying to control the method of frost protection.
- Unlike noise rules, it is absolutely certain at the time the wind machine is installed whether the separation distances will be complied with, so it is preventing a problem from occurring.
- The rules are easy and certain for permitted activities.
- The option still exists to apply for a resource consent to breech the separation distance.

The main disadvantage with separation distances is that it makes it harder for smaller vineyards and orchards to comply with the permitted activity rules. As with Option D, there is a possibility that growers who cannot comply with the separation distances may choose to use helicopters instead of applying for a resource consent for a wind machine, with possibly greater effects on surrounding properties.

### *Applying the Separation Rules*

As with noise rules (Option D), a separation distance between wind machines and dwellings can be measured as a setback from the vineyard/orchard boundary, or as a distance from the wind machine to the notional boundary of the nearest dwelling on another property. The same advantages and disadvantages apply to these options, as apply to noise rules, as outlined in Option D.

## Option F - Controls Over The Use Of Frost Protection Devices

### *Explanation*

Option F involves the use of rules which control the way wind machines are used. For example:

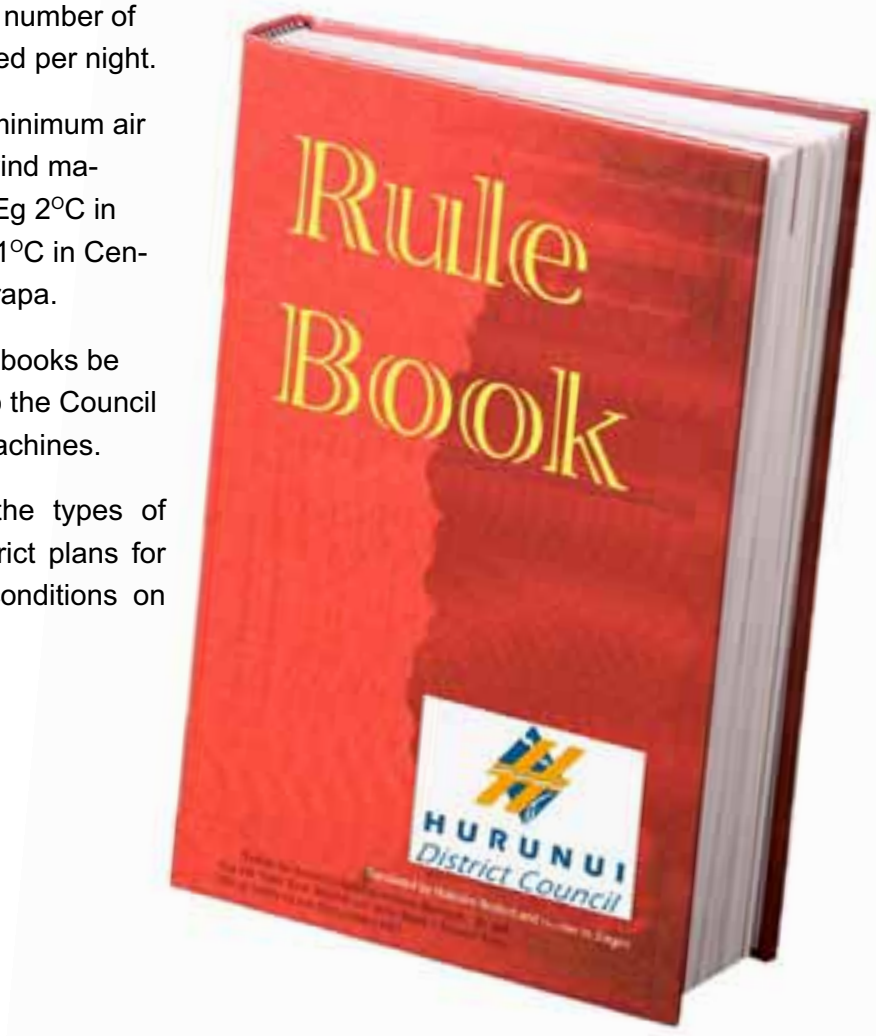
- Rules that control the model of wind machine that may be used for frost protection, eg a four blade rotor.
- Rules that control the maximum number of nights on which wind machines can be used in a season, or the maximum number of hours they can be used per night.
- Rules that specify a minimum air temperature before wind machines can be used. Eg 2$^{O}$C in Wairau/Awatere and 1$^{O}$C in Central Otago and Wairarapa.
- Rules that require logbooks be kept and submitted to the Council on the use of wind machines.

These are all examples of the types of rules that are included in district plans for permitted activities (and as conditions on resource consents).

### *Evaluation*

These types of rules are less favoured by the Council at this stage than options D or E, for the following reasons:

- They control the activity rather than the effects, so they are less flexible for growers, and less certain for adjoining property owners that effects will be adequately and consistency managed, than options D or E.



- Rules controlling the types of wind machines may become outdated, and may not encourage new, quieter technology to be developed to the same extent as rules which manage effects, eg noise limits.
- Rules that control the frequency by which wind machines are used may not be very effective. In a case Stevenson v Rodney DC A107/03 the Environment Court commented (in obiter) about a condition on a resource consent restricting frost protection to 6 nights in the months September to November, noting that the consent holder "was quite frank in his evidence in agreeing that if he faced the prospect of losing this years crop on the seventh night, he would use his fans and face any consequences later."
- Rules that stipulate a minimum air temperature before frost protection can be undertaken are unlikely to be suitable for all crops. Ambient air temperature may also vary across a vineyard or orchard, so any rule needs to be specific about how it is measured. The NZ Winegrowers Wind Machine Code of Practice (2008, p.2) notes that 1$^{O}$C air temperature may not result in a frost, and that each frost event should be assessed to avoid unnecessary use of wind machines.
- There are issues with requiring the keeping and submission of logbooks recording the use of wind machines, as rules for a permitted activity. Its value is also questionable, unless it is part of a monitoring and review condition on a resource consent.

Having noted these disadvantages, the Council is also aware that part of the Marshall Day Report recommendations (Marshall Day Acoustics Ltd, 2006, p.9) included limiting the frequency of use. Of the types of rules discussed in Option F, a rule setting a minimum air temperature for the use of wind machines as a permitted activity, may pose the fewest difficulties. Crops which require frost protection at higher air temperatures would need to be considered through a resource consent application.

## Option G – Require Resource Consent for All Wind Machines

### *Explanation*

Option G requires the use of any wind machine to obtain a resource consent, with the Council retaining the right to notify (or require the written approval of) affected parties; and the right to decline an application if the effects cannot be adequately managed. This would be the main alternative option to having rules by which the use of wind machines is a permitted activity.

### *Evaluation*

#### *Option G has the following advantages:*

- Every proposal to use wind machines is considered case-by-case, with conditions suited to the particular site, operation and effects.
- There is no argument that activities should 'have to comply with the permitted activity rules or not be allowed' which can happen with permitted activity rules.
- All effects on adjoining properties can be considered.
- Resource consent conditions can be reviewed if the activity is having unanticipated effects.
- All wind machines are recorded in the consent database, which makes it easier to identify viticulture and horticulture properties which may be affected by reverse sensitivity effects from other proposals, eg subdivisions around them.

#### *Option G has the following disadvantages:*

- It is less certain for both applicants and affected parties as to what will be allowed than rules for permitted activities.
- The compliance costs are higher for applicants who would otherwise have been able to comply with permitted activity rules.
- Requiring a resource consent in all cases may not be the most appropriate method under the RMA (section 32(3)) if it is possible to write satisfactory rules by which the activity can be permitted.
- This option may encourage growers to use alternative frost protection methods such as helicopters, which are not controlled for noise or vibration effects in the district plan (see page 8).

## Option H - Review Management of Residential Development & Amenity Values in the Rural Area

### *Explanation*

This paper has previously discussed how effects from the use of mechanised frost protection devices can become resource management issues in the rural area in one of two ways. Firstly, if adjoining dwellings are close enough that the noise and air vibration disturb people. Secondly, if people in the surrounding area do not agree that these effects are appropriate in a rural area.

These situations can come about due to the way the district plan manages activities in the rural area. In particular:

(i) The physical distance between activities, which is (partly) affected by rules in the district plan about minimum lot sizes for subdividing land or erecting dwellings.

(ii) What controls are placed on different types of activities in rural areas, which send a signal as to the type of environment the rural area is and its associated amenity values.

The Hurunui District Plan currently has a relatively small lot size for subdivision and erecting dwellings over most of the rural area (excluding Environments of Special Concern). This means there is potential for neighbouring activities to locate relatively closely.

The district plan rules for activities in the rural area are liberal. Excluding Environments of Special Concern, the district plan policies and rules allow for most types of activities, (subject to general District-Wide rules). This means that the rural area is a place for activities which are attracted to its open space, peace and tranquility such as rural lifestyle and visitor accommodation; a place for traditional rural activities based around primary production; and a place for businesses and industrial activities. This approach provides landowners with a lot of flexibility in the use of rural land. However, it may also create a greater potential for activities with incompatible effects to locate near one another, and for resource management issues to emerge. One option to manage this issue, is to review how the rural area is managed in the district plan.

### *Evaluation*

The Council is supportive of Option H as one of the options to deal with this issue. It does regard the current issues with mechanised frost protection devices as partly a product or example of this wider issue. The Council is committed to a review of the rural area provisions in its district plan in the latter part of this year. However, the Council does not support this option as the sole method to manage effects from mechanised frost protection devices, for the following reasons:

- This approach will not deal with potential resource management issues in areas where incompatible activities are already located near one another.

- The effects of rural activities at the interface with residential or rural lifestyle areas, must still be managed.
- Separation distances and large lot sizes may not be a ready solution, as many vineyards and horticultural ventures require small sites as well.
- Effects from mechanised frost protection devices can create issues with adjoining, larger rural properties as well, particularly if dwellings are sited close to property boundaries.

## Option I – Noise Insulation in Dwellings

### *Explanation*

This option is to introduce higher noise insulation requirements in dwellings which are located in proximity to viticulture or horticulture properties. The Council is able to require higher standards for noise insulation in dwellings than those required under the Building Act 2004, if it is for a resource management purpose.[5] This has to be done using rules in the district plan.

### *Evaluation*

This option is not a preferred option of the Council on its own. It may be an option in combination with options D or E if considering a resource consent application to reduce the separation distance or increase the noise level between a dwelling and a wind machine. The reasons are:

- The rules cannot be retrospectively applied to existing dwellings. In the case of existing dwellings, the landowner would have to agree.
- It would be unreasonable to require higher noise insulation standards on all new houses in the rural area, or even in the Waipara Wine Growing Area, in case adjoining land may use mechanised frost protection devices, at some stage. Rather any such rules would have to apply to specific, identified areas in the district plan which can be shown as subject to higher noise levels, eg if a dwelling was built within a specified distance of an existing vineyard/orchard which uses mechanised frost protection devices.

[5] This was established in a High Court case: Building Industry Authority and Christchurch International Airport v Christchurch City Council AP 78/96

# Where to From Here?

## *Feedback sought*

Firstly, thank you for taking the time to read this issues and options paper. The Hurunui District Council would appreciate any feedback you wish to give. Your comments can relate to specific options or you may want to make more general comments about the issue. The more information the council has, the better we can understand the issue and the options for managing it. Remember, written comments are sought by ***Friday 22 August 2008***. Feel free to use the summary table in Part Three, (p.17) to help organise your comments.

Please send your comments to:

Frost Protection Devices
Issues and Options Paper
Attn: L. Weastell/J Weaver
Hurunui District Council
PO Box 13
Amberley

Comments may also be faxed: 03 314 9181
or emailed: submissions@hurunui.govt.nz

The council will consider all the comments it receives, along with any other relevant information in determining whether there is a clear option(s) emerging or whether some more in-depth work needs to be done.

Once we have what we think may be a workable solution; the council will notify any changes it proposes to the district plan in the form of a proposed plan change. This is done through a formal planning process under the RMA, and will include the opportunity for people to make submissions.

## *Further Information*

If you have any questions or concerns, please fell free to contact either Lynda Weastell or Jan Weaver at the Council's Amberley Offices (Ph 03 314 8816).

# References


| | |
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| Civil Aviation Authority | *Consider Thy Neighbour – Helicopter Frost Protection Operations, Civil Aviation Authority, Wellington, undated.* |
| EPA Victoria | *Guidelines on Noise From Wind Machines, Publication 1043, EPA Victoria, Melbourne, 2006.* |
| Marshall Day Acoustics Ltd | *Hurunui Wind Machines Proposed Noise Rules Report 06014C/1, Marshall Day Acoustics Ltd, Christchurch, 2006.* |
| NZ Winegrowers | *Wind Machines Code of Practice, NZ Winegrowers, Wellington, 2008.* |
| Trought MCT, GS Howell & N Cherry | *Practical Considerations for Reducing Frost Damage in Vineyards – A Report to New Zealand Winegrowers, Lincoln University, Lincoln, 1999.* |

### *Websites:*

www.nzwine.com

www.waiparawine.co.nz