



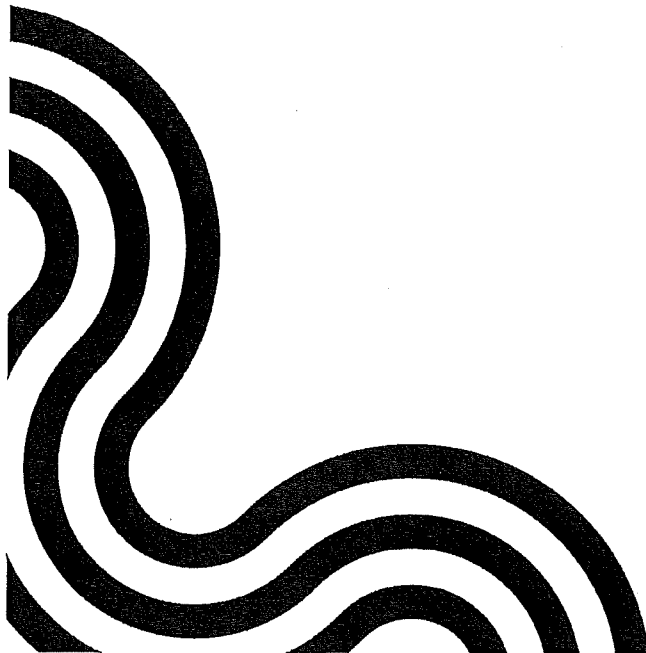
 Duncan Cotterill

In the matter of the Resource Management Act 1991

And

In the matter of an application by Tasman Asphalt for Land Use Consent and Discharge Consent

Statement of Evidence – Gregory Hugh Dryden



Duncan Cotterill
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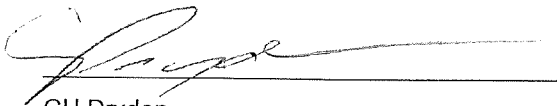
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- 1 My full name is Gregory Hugh Dryden. I am a director of Fruition Horticulture (SI) Ltd and work as a horticultural consultant based in Nelson. I hold a Bachelor of Horticulture Degree and a Master of Horticultural Science in Management Degree, both from Massey University. I completed additional study in Economics, Sustainable Nutrient Management and Adult Education.
 - 2 I have spent over 23 years as a consultant in the horticultural industry. I tutor on a range of fruit crops.
 - 3 A significant part of my consultancy work relates to understanding the effects of growing conditions on plant performance and manipulation of growing conditions to favour productivity.
 - 4 I have relevant experience on the impacts of dust contamination on fruit trees and from time to time I have been an expert witness in applications for resource consents and disputes relating to horticultural matters. This is informed by my knowledge of plant physiology (apples and other fruit) and literature review. Due to the limited number of studies relating specifically to boysenberries my review included dust and contamination impacts on orchard production systems and vegetation in general.
 - 5 I have physically visited the quarry site and the surrounding area. The boysenberry gardens and orchard of Edens Road Fruit Limited and the ground crop growing areas of JS Ewers and Blackbyre Horticulture Limited.
- 2. Scope of Evidence**
- 2.1 In my evidence I address the following:
 - (a) The nature of boysenberry crops;
 - (b) Potential effects of dust on horticulture;
 - (c) Potential effects on pipfruit orchards, berry fruit and market garden crops.
 - 2.2 In preparing this evidence I have read and considered the application. I have also read the evidence of John Graham Iseli, Stephen John Sutton and Pierre Francesco Gargiulo.

- 2.3 Whilst this is a Council hearing I advise that I have read and agree to comply with the Environment Courts Code of Conduct for expert witnesses, contained in the Environment Court Practice Note 2014. My qualifications as an expert are set out above. Other than where I state that I am relying on the advice of another person I confirm that the issues addressed in this statement of evidence are within my own 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.
- 2.4 There are three key and critical times in a year when both pipfruit, berryfruit and market garden crops are the most sensitive to the impact of dust and/or contamination. Those three times are:
- The critical period of pollination. This occurs in November (for berryfruit), from October to early November (for pipfruit). Pollination is not so relevant for ground growing vegetable crops, but they are also subject to dust and other contamination at this time.
 - The next critical time is the period of "*early season growth*", when fruits are rapidly expanding, which runs from late November to mid December (for berryfruit), from early November to late December (for pipfruit). For ground grown market garden crops this can be any time of the year depending on the particular crop.
 - The third critical time is harvest. This occurs mid December to late January (for berryfruit), from late February to May (for pipfruit) and again for ground grown market garden crops can occur at any time of the year depending on the nature of the particular crop.
- 2.5 For berryfruit the most sensitive time of the year is around harvest. Berryfruit both domestic and export is not washed during packing, therefore the risk of berryfruit being rejected based on dust contamination or any other form of contamination is relatively high.
- 2.6 It is slightly different for pipfruit because generally it is washed through water dumps before packing and largely that will remove the dust but there is always a risk of residual dust being held in the calyx or stem end of fruit.

- 2.7 Marketers generally publish guidelines for fruit for both domestic or export sale. By way of example T&G Pipfruit specify that fruit must be free of any foreign smells, foreign taste or foreign matter.
- 2.8 However effective shelter around orchards (shelterbelts live or artificial) can significantly reduce any potential impacts. How effective they will be will depend on wind conditions, the amount of dust or contaminants generated and the "*spread and fall*" of the dust or contaminants generated.
- 2.9 Having visited the site it would seem to me that the risks are from deposit of contaminant from the asphalt blending plant, tainting of produce in the event of any difficulties being occasioned with the asphalt plant giving rise to discharge of contaminants or odours, manoeuvring and use of the roads generating dust. I have researched studies on the effects of uncontrolled dust from unsealed roads to determine the distance which uncontrolled dust could affect sensitive crops. Key facts are wind direction (with more dust being distributed on the prevailing down wind direction), and the height of the crop (with taller crops being affected for a shorter distance from the force of the dust but lower crops such as boysenberries being affected for a longer distance) and market gardens (which are even lower) being affected for a longer distance.
- 2.10 Based on those studies the likely maximum distance at which uncontrolled dust could affect pipfruit trees (which are relatively tall trees) is 25 – 100m from the dust source and 50 – 150m for boysenberries (which are of similar height to grape vines). There are no studies to show the effect on market garden crops that I am aware of but reviewing the literature for pasture the amount of dust generated and wind direction the impact on ground growing market garden crops could be up to 250m. This indication is the distance that dust from road or gravel extraction crusher site and contamination site could potentially carry if they are downwind of uncontrolled activity. I understand that wind directions across the quarry site are indicated as broadly from the southwest and from the sea breeze.
- 2.11 Both berryfruit and pipfruit is grown to target export markets. The effect of dust and taint on the ability to export that product and its price in the exported market will reflect on its price.

- 2.12 Affected fruit (whether berryfruit or pipfruit) is liable to be rejected from the market if there is any element of taint (whether from dust or other foreign matter).
- 2.13 For pipfruit dust is not acceptable on fruit for export and it would seem logical to me that contaminated fruit whether from discharge of dust or discharge from industrial activities such as the asphalt plant will not be acceptable either. It is also important to take into account the effect of dust and other contamination on the ability of plants to take up light – “*photosynthesis*”, fruit colouration (photosensitivity). The reviewed literature and experience suggests photosynthesis (and therefore growth) and fruit colouration are both reduced by heavy dust contamination. While rainfall will limit these effects prolonged dry conditions and heavy dust contamination is likely to affect both growth and colour which are important for both quality and price received.
- 2.14 I do not presently have any examples of berryfruit being tainted by industrial (or other) activities. I have a number of examples of pipfruit being tainted. For example:
- An event where a roadway was sealed adjacent to a producing apple orchard and “*splatter*” of tar ended up on fruit and while only a relatively small area of the orchard was affected, the fruit was rejected for export. From the growers perspective that lead to a necessity to “*over grade*”. The produce did more than just the affected fruit was rejected. A caution.
 - In the Nelson/Tasman Pigeon Valley fires taint was identified as a problem for Nelson Viticulturalists and that led to an investigation of events overseas which had resulted in wine being tainted and rejected for sale. While this did not become an issue in Nelson it just highlights the risks of what can occur.



GH Dryden

17 December 2021