IN THE ENVIRONMENT COURT
AT AUCKLAND

I TE KŌTI TAIAO O AOTEAROA
KI TĀMAKI MAKAURAU

Decision [2021] NZEnvC 096

IN THE MATTER OF	an appeal under Clause 14 of Schedule 1 of the Resource Management Act 1991 (**the Act**) in relation to Topic 8 Agrichemicals of the proposed Northland Regional Plan
BETWEEN	POPULATION AND PUBLIC HEALTH UNIT OF THE NORTHLAND DISTRICT HEALTH BOARD (ENV-2019-AKL-126)
AND	HORTICULTURE NEW ZEALAND (ENV-2019-AKL-116) Appellant
AND	NORTHLAND REGIONAL COUNCIL Respondent

Court:	Judge J A Smith Commissioner S C Myers[1]
Hearing:	Whangarei on 27-28 April 2021
Last case event:	Signed joint consent memorandum of provisions agreed prior to hearing, filed 1 June 2021
Appearances:	MJ Doesburg and ES Lake for the Northland Regional Council (**the Council**) H A Atkins for Horticulture New Zealand (**Horticulture NZ**) W D McKean for the Northland District Health Board (Public and Population Health Unit) (**Health Board**) S T Shaw for LMD Wheelers (s 274 Party) H F Adams, A D Ross and C Smith in person (s 274 Party – referred jointly as **The Residents**) P R Gardner for Federated Farmers of New Zealand (**Federated Farmers**) (s 274 Party)
Date of Decision:	- 9 JUL 2021

[1] Although Commissioner S K Prime sat on the hearing, he is not available to finalise the decision.

Date of Issue: - 9 JUL 2021

DECISION OF THE ENVIRONMENT COURT

A: A: The parties' agreement as to the definition of Spray Sensitive Areas has been settled in terms of the Proposed Regional Plan. The parties have agreed that the permitted activity standards should be concluded by reference to those Spray Sensitive Areas.

B: The parties have reached agreement by consent memorandum dated 1 June 2021 as to the wording of the plan provisions that relate to:

(a) Rule C.6.5.1 Application of agrichemicals – permitted activity, in part;

(b) Rule C.6.5.2 Application of agrichemicals into water – permitted activity, in part;

(c) New appendix H.X Qualifications required for the application of agrichemicals; and

(d) The definition of "spray-sensitive area".

The wording agreed between the parties is annexed hereto as **A**.

This court concludes this wording is most appropriate under the Act including s 32AA, and the Court adopts that wording for the purposes of this decision. Such changes are to be incorporated within the Proposed Regional Plan forthwith. They are regarded as operative for current purposes.

C: The unresolved wording of Rules C.6.5.1 and C.6.5.2 was considered at this hearing. To the extent the wording is in dispute, the Court concludes that the most appropriate wording is that proposed by the Regional Council in the memorandum filed to the Court during the hearing as annexed in **B,** except to the extent we conclude alternative wording should be adopted as contained in

paragraph 73 and summarised in the table annexed in **C** of this decision.

D: In particular and for the avoidance of doubt, we conclude there shall be:

(a) General requirement for a Spray Assessment for all spray events;

(b) The content of that Spray Assessment should be similar to that proposed by Horticulture New Zealand, annexed as **D**;

(c) Different additional requirements should apply in most circumstances as proposed by the Regional Council (as set out in annexure **B** of this decision), except to the extent we conclude alternative wording which is contained in paragraph 72 and summarised in the table annexed in **C** of this decision. Those requirements should vary depending on various factors;

(d) The key requirement is that spray drift should be limited to avoid Spray Sensitive Areas.

E: The council is to make any amendments in accordance with this decision and circulate them to the parties for consideration within 20 working days.

(a) All parties are to advise the Council within a further 10 working days where any provision does not reflect the decision;

(b) The Council is then to provide a memorandum to the Court and parties within a further 10 working days, identifying the provisions that are in dispute and identifying those provisions that are now agreed and any provisions remaining in dispute. In respect of each provision in dispute, the Council shall provide its preferred wording and outline the position of each party in respect of that wording.

F: The court will then consider the memorandum and either issue a final decision

or convene a teleconference to address finalisation of the provisions.

REASONS

Introduction

[1] The proposed regional plan for Northland (**Proposed Regional Plan**) takes a wide-ranging approach to regional planning for Northland. It addresses water, biodiversity and air as just three examples. It includes the coastal areas covered by New Zealand Coastal Policy Statement and inland waterways as well as a wide range of biodiversity including indigenous, threatened and rare taxa.

[2] As part of this proposal, the Council has addressed the question of the application of agrichemicals within the region and has introduced objectives and policies, definitions and provisions to properly manage and control application.

[3] The general provisions for the plan are not in dispute and the parties have over the past period settled many of the provisions. Those that are the subject of this hearing are the two remaining provisions yet to be resolved in full being:

(a) Rule C.6.5.1, application of agrichemicals to air as a permitted activity; and

(b) Rule C.6.5.2 application of agrichemicals into water as a permitted activity.

The matters subject to consent order

[4] The settled provisions were not before us at hearing, and it was not until 1 June 2021 that they were filed with the Court in the form of a consent memorandum and a draft consent order.

[5] Annexed and marked hereto as **A** is a copy of the various amendments that parties have agreed to make to the plan.

Progress

[6] The consent order annexed as **A** resolves in part the wording of:

(a) Rule C.6.5.1 Application of agrichemicals – permitted activity; and

(b) Rule C.6.5.2 Application of agrichemicals into water – permitted activity.

[7] The parts of Rules C.6.5.1 and C.6.5.2 that remain unresolved relate to the use of agrichemicals in proximity to Spray Sensitive Areas.

[8] In addition, the parties have agreed on new Appendix H.X (in annexure **A**) relating to qualifications required for application of chemicals and the definition of "Spray Sensitive Area".

[9] As it turns out, the definition of spray sensitive areas was a matter of particular importance to resolving the remaining issues in dispute between the parties in relation to the rules. The provisions agreed to be changed and marked in annexure **A** have the changes shown in strike out and colour.

New provisions

[10] Broadly, the mediation produced the addition of Appendix H.X (contained in annexure **A**), which specifies the structure, content, competency and assessment requirements for the training programme for persons applying chemicals. Parties have also agreed on a wording of Spray Sensitive Area and have replaced the reference to wetland to natural wetland.

[11] The end result is that these changes are ones that follow logically from a more appropriate approach to the application of chemicals from both ground based and aerial spraying.

[12] The parties are satisfied that they are consistent with the National Policy Statement for Freshwater Management 2020 (**NPSFM 2020**) and do not create any conflict of duplication with the National Environmental Standards for Freshwater (**NES 2020**).

Evaluation of agreed changes

[13] All the changes and minor changes are now considered in terms of their cost and benefit under s 32AA. Interests of the various aspects of public interest were represented through the mediation process.

[14] We are satisfied from hearing the substantive case that these provisions are essentially a logical and consequential approach. The definition of "Spray Sensitive Areas" is of course a critical consideration for permitted activity status and standards. We conclude that the more comprehensive definition is more appropriate.

[15] Moving to the matters that have been agreed in respect to this substantive rule change, these were for the most part minor changes. They clarify and give a balanced position in respect of the public interest.

[16] Backpack spraying has been changed to handheld spraying because of the definition of that term in the Proposed Regional Plan. It also relates to the type of spraying rather than the fact the container is in a backpack. Overall, the changes in **A** are ones which we consider the most appropriate provisions in terms of the widespread interest represented at the hearing. It includes changes to the rules that were not disputed. We proceed on the basis these changes are operative.

Further changes in the course of the hearing

[17] In respect of the issues that were heard by the court, there was some degree of agreement between the parties. Firstly, on the definition of Spray Sensitive Areas. Moreover, the parties have agreed on certain other aspects of the wording which may overlap and include some of the items in **A**, being matters that they held in common. Accordingly, we attach as **B** a copy of the memorandum filed to the court during the hearing. This suggests the areas of agreement as to wording and areas of dispute.

Issues

[18] The issues remaining between the parties relate to the potential for spray to

leave the target area and affect other people, property or indigenous biota, i.e. non target application. The following issues arise:

(a) What conditions, particularly wind conditions, might trigger different responses for permitted activities?

(b) The separation distances that are appropriate for ground based or aerial spraying;

(c) What other intervening methodologies might be relevant to determining the separation distance or application. This transpired to include such items as shelterbelt, the height of the application, the droplet size, the toxicity of materials and the receiving environment itself; and

(d) Whether application should only occur when it is away from sensitive areas and what type of wind conditions particularly high wind conditions affect the application of the spray. We now consider these issues.

Spray Sensitive Areas

[19] Spray Sensitive Areas have now been resolved by definition in annexure **A** as follows:

> *Spray sensitive areas are:*
>
> *(a) Residential buildings and associated garden areas; and*
>
> *(b) Schools, hospital buildings and care facilities and grounds; and*
>
> *(c) Amenity areas where people congregate including parks and reserves; and*
>
> *(d) Community buildings and grounds, including places of worship and marae; and*
>
> *(e) Certified organic farms; and*
>
> *(f) Orchards, crops and commercial growing areas; and*
>
> *(g) Water bodies used for the supply of drinking water and for stock drinking; and*
>
> *(h) Natural wetlands and significant areas of indigenous vegetation and habitats of indigenous fauna as defined in the Regional Policy Statement for Northland and apiaries.*

The parties' positions

[20] As might be expected in an area with the degree of scientific complexity involved in agrichemicals, the position of the parties has been an iterative one. The position of the parties changed from these at the commencement of the hearing.

[21] The hearing panel's decision on the Proposed Regional Plan allowed for agrichemical application as a permitted activity provided that, within 100 m of a spray sensitive area:

(a) A risk assessment is carried out and measures are taken to minimise adverse effects on spray sensitive areas;

(b) Application only occurs when the wind direction is away from spray sensitive areas; and

(c) Application equipment spray quality is no smaller than "coarse".

[22] There is no dispute that agrichemical use that does not meet the permitted activity rules is a discretionary activity under Rule 6.5.5.

[23] Horticulture NZ, supported by Federated Farmers, seeks a relaxation of the rules by removing the restrictions on wind directions and droplet size. The Health Board seeks retention of the restrictions on wind direction and droplet size, with minor amendments and the inclusion of a new control on secondary spray drift.

[24] The s 274 parties seek the retention of the restrictions with some minor amendments.

[25] The Council's position was between those of the parties. They sought:

(a) That within 100 m of the spray sensitive area, a risk assessment is carried out and measures are taken to minimise adverse effects on spray sensitive areas;

(b) Application only occurs when the wind direction is away from spray

sensitive areas and instead of a blanket droplet size, a buffer distance is implemented depending on the method of spray application and the presence or absence of shelterbelt.

[26] During the hearing, the position of the parties developed, and the Regional Council sought leave to file a memorandum clarifying the areas of agreement and disagreement. The Regional Council filed a memorandum with the Court to update the position on the 24 May 2021; this is attached in annexure **B**. Clearly, Annexure **A** postdates and to some extent settles difference in Annexure **B**.

Agrichemicals in Northland

[27] The development of more intensive horticulture, particularly, at a major commercial/industrial scale is a relatively new phenomena in Northland.

[28] Although citrus fruit was particularly popular around Kerikeri though the 1960s and 1970s, the majority of these orchards had become economic by the 1980s and were subdivided to provide some income for the owners. This has led to relatively small rural landholdings with sites that are residential in nature (what we would describe as large scale residential) and smaller horticulture, or other specialist units.

[29] Throughout Northland as a whole, there has been a move in the last few years from dry stocking to cropping, but particularly towards more intensive cropping such as potatoes, kumaras and horticultural croppings such as avocados.[2] A recent example includes the Court's decision in relation to the Aupori Aquifer in the Far North.[3]

Biodiversity in Northland

[30] On the other hand, Northland contains a large percentage of the remaining significant indigenous biodiversity for New Zealand (along with the west coast of the South Island). This includes areas of sensitive vegetation and threatened species with large areas of native forest (kauri), manuka, mangroves and the like.

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[2] Recent moves to consent water storage and reticulation through fast track processes suggested more potential for crops such as berries and avocados.

[3] *Burgoyne v Northland Regional Council* [2019] NZEnvC 028

[31] The interrelationship of these species with both salt and freshwater has been the subject of previous decisions of this court, for example, biodiversity, and a number of other appeals including water quality (at this stage still reserved).

[32] By way of a general statement, there is a need to ensure that any development in Northland does not further marginalise the existing biodiversity or have unintended effects on the ecotones or ecosystems that are either adjacent or nearby.

[33] In this regard, the use of insecticides and weedicides can be seen as having a clear potential to adversely affect indigenous ecosystems and species and the range of biodiverse ecosystems. Without extreme care, there is a potential for agrichemical use to compromise these areas and lead to the need for greater restrictions.

[34] For our part, we do not think that the approach to agrichemical application that has been adopted overseas or in less biodiverse environments is necessarily appropriate for Northland. That said, we acknowledge that the plan has been through an extensive and iterative process and that we are focussed only on the provisions that are before us. Nevertheless, we repeat our earlier comments and other decisions about Te Mana o te Wai and the need to protect not only our waters but our biodiverse ecotones from further loss.

[35] Beyond this, the Health Board is particularly concerned at the potential for agrichemicals to affect humans. They note that the Northland population is among the most deprived in New Zealand and that many of these most deprived populations are near or adjacent to rural areas. Accordingly, the Health Board is concerned that there are already adverse health effects from such deprivation, and these could be significantly exacerbated by exposure to adverse levels of agrichemicals.

Common outcome

[36] All parties agree that the objective of these permitted activities rules seek to ensure that there are no adverse effects on either people or any other biodiversity (including plant, animal and fish species).

[37] The difficulty of course is in providing rules that provide sufficient surety that there will no measurable adverse effects (beyond those that could be regarded as transitory or minimal), while providing for an important economic contributor to Northland's future.

[38] For our part, we have worked from a basis of caution, which we conclude is inherent within the RMA. As we understand the evidence from all the expert witnesses, they too have worked on the same basis. The differences relate to honestly held opinions of those involved as to how this balance might best be achieved with minimal effects while allowing flexibility for economic benefit.

The expert evidence

[39] Fundamentally, the experts did not disagree on the principles applicable. They accept that:

(a) Sprays should be targeted to particular purposes;

(b) They should remain on target so far as is possible;

(c) That the application beyond the target spray area should be reduced to such an extent that those effects are minimal within a reasonable distance;

(d) That those effects should be at least 100 m separated from spray sensitive areas;

(e) That such separation would also ensure that secondary spray drift (arising after the spray has settled on its target) would also be reduced to minimal levels;

(f) The potential to reach off target is affected by both atmospheric and wind conditions;

(g) That a particular site risk assessment plan (We will call this a **Spray Assessment**) is required on each occasion spray is applied both prior to, and during, the spraying to ensure that conditions are appropriate and

that all potential risks are taken into account;

(h) The risk is minimised where wind directions are low but away from any sensitive areas;

(i) At wind speeds between 0 and 1 m/s inversion layers and ponding can be problematic and need to be given particular consideration;

(j) At wind speeds between 1 and 5 m/s agrichemical application is low risk, particularly if wind direction is away from any sensitive areas. Where wind direction is towards sensitive areas, particular steps would need to be taken if it was appropriate to undertake spraying. The experts differ as to whether or not this could be undertaken safely or if it is preferable to avoid this risk. The optimum condition for Agrichemical spraying is between 1 – 3 m/s with wind away from Sensitive Areas;

(k) At wind speed over 6 m/s, all parties agree that the wind strength is such that it cannot be confidently said that spray could be applied in a safe manner even with a risk assessment. Several experts seem to consider that it might still be appropriate provided there were no sensitive areas downwind. However, the distance to sensitive areas would need to increase significantly with increasing wind speed. The risk for aerial spray also increases significantly above 6 m/s and we are unsure that any expert suggested aerial spraying at these wind speeds.

[40] These comments related to the application of spray by land-based methods, and there are particular constraints by each of the experts in relation to it. Helicopter spraying is more problematic and there was disagreement as to whether or not it could be applied in any circumstances, except where wind speed is 1 to 3 m/s and away from sensitive areas. We note that the release height for the sprays is a matter of particular importance. This application height is equally important for helicopter application.

[41] We were advised by the experts that the risk is higher with aerial spraying as the spray plume is above the crop and there is high potential for spray drift. The risk increases for helicopter spraying as the spray release height is higher than for fixed

wing aircraft. It was considered that the use of coarse spray quality is particularly important for aerial application to reduce the risk of spray drift.

Industry background

[42] We now go on to address the background to the provisions and the issue particularly before us. We accept that agrichemical use is widespread in the horticulture, agricultural and forestry sectors. Sprays are also used by the Government and Local Authorities in public parks, reserves, domestic gardens and in road and rail corridors.

[43] In Northland, agrichemical spraying has been regulated in regional plans for some time. There have been levels of concern expressed by the public, particularly about the application of sprays in public areas but also in relation to spray drift from private application. The Section 32 report for the Proposed Regional Plan identified that notification prior to spraying was a key issue for agrichemical use.

[44] There were a number of concerns from residents reflected at this hearing around concerns about spray drift from application. In short, the position adopted both in the notified and now Proposed Regional Plan is that there be:

(a) No noxious, dangerous, offensive or objectionable odour, smoke, spray or dust or any noxious or dangerous levels of airborne contaminants beyond the boundary of the property;

(b) There be no damage to any spray sensitive area beyond the boundary of the property; and

(c) Requirements for notification, signage and training for sprayers.

[45] Council officers recommended that the Proposed Regional Plan be amended to require compliance with mandatory aspects of the New Zealand Agrichemical Standard and that the Regional Plan provides additional requirements for agrichemical use near spray sensitive activities.

[46] Overall, it appears to have been concluded that agrichemical spray could be administered as a permitted activity in certain circumstances. It also seems to be accepted that control is required beyond the standards to require risk assessmentand avoid offensive, objectional, noxious, dangerous and damaging agrichemical sprays. The objective of the relevant Rule 6.5.1 and 6.5.2 is clearly to avoid harm to people and the environment. The identification and clarification of the sensitive receptors (i.e. spray sensitive areas) assists in identifying the levels of care that must be taken to avoid any particular harm to spray sensitive areas.

The scope of the appeal

[47] We wish to make it very clear that no party before us sought to prevent the application of agrichemicals completely. The most restrictive outcome sought was that from the Health Board. Its position was that the question as to the most appropriate form of rules relating to agrichemical use in proximity to people or spray sensitive areas required consideration of mandatory buffer zones.

[48] The Health Board sought to retain the decision of the Council Commissioners who heard from the parties. They seek the following modifications to the decisions version:

(a) To distinguish aerial spraying from ground based spraying in setting the trigger distance to sensitive areas;

(b) Take into account particular risks with people beyond just the buildings or areas they occupy;

(c) To consider those who are particularly vulnerable such as:
   (i) Children;
   (ii) Pregnant women;
   (iii) Elderly;
   (iv) The health compromised;
   (v) People who live in high deprivation.

[49] The Health Board position (which was not disputed) is that many people who

live in residential buildings at the margins of agrichemical application areas are among the most vulnerable. The Health Board submits (and others agree) that the rules need to be clear, certain and enforceable. The Health Board says that some minor amendments to the current rule achieves that. They say that the safest way toachieve this is to distinguish aerial spraying from ground based spraying and require a risk assessment within 100 m of a sensitive area for ground based spraying and 300 m from a spray sensitive area for aerial spraying.

Spraying in different wind conditions

[50] A major issue that arose during the hearing was why a separation distance would be required for assessment of risk if the wind was away from the sensitive area.

[51] Initially, it was suggested that spray may travel upwind. However, it was later clarified by the experts that this could only occur between 0 and 1 m/s wind speed but could not occur between 1 and 5 m/s windspeed. This was also subject to the qualification that wind can change direction especially in lower wind conditions beneath 1 m/s.

[52] In respect of winds over 1 m/s, the experts were clear that the optimum conditions were between 1 – 3 m/s away from any sensitive area.

[53] At wind speeds up to 5m/s plus gusts and towards a spray sensitive area the experts advised that spraying may be acceptable. This acceptability was conditional on the use of appropriate management tools including whether there was "effective shelter", the rate and type of application, droplet size, use of shrouds, the toxicity of the chemical and whether there were particularly susceptible receivers (human or environmental). For the spray sensitive area, distance needed to be calculated from the down wind edge of the target area.

[54] Clearly, the objective of the rule would be to encourage people to spray away from spray sensitive areas and adopt a spraying regime within their property which

seeks to contain all spray. There are good environmental reasons for this but it also maximises the use of the spray itself, to ensure that it is not wasted.

[55] Although there is generally a preference for block spraying at the current time, this may encourage a spraying regime which seeks to spray on the upwind edge of the property when the wind direction is appropriate. This would mean that areas were sprayed more by the orientation to the wind than they are by the planted block areas.

Application requirements

[56] During the hearing several matters were covered which are extremely important for the application of spray and to minimise its deposition beyond the property. There are four main elements:

(a) The administration of the spray at least 1 metre below the height of the shelterbelt;

(b) A complete and full shelterbelt (**effective shelter**) that does not allow general permeability. This in turn requires the definition of effective shelterbelt;

(c) The spray droplet size, particularly with higher toxicity sprays;

(d) The toxicity level of the spray itself (and potential receivers).

Effective shelter

[57] We conclude that the spray can largely be contained within the site between 1 and 5 m/s (plus gusts) where the spray is administered below the shelterbelt height. This is more problematic with aerial spraying which generally has to occur above the shelterbelt. We are satisfied that there is a high level of certainty with light to moderate winds, 1 to 5 m/s (plus gusts), that these would be contained within the shelterbelt area if the target area is short of the boundary and is applied 1 m below the height of the shelterbelt.

[58] We therefore conclude the definition of shelterbelt needs to be addressed. There was some difficulty originally on this but by the end of the hearing the parties are agreed on the following definition of "Effective Shelter":

(a) Taller (at least > 1 m) than the height of the spray plume4 when the plume interacts with the shelter; and

(b) Have foliage that is continuous top to bottom; and

(c) Achieves in the order of 50% optical and aerodynamic porosity; and

(d) Has a high surface area (note that fine needles are more effective at collecting fine spray than broad leaves); and

(e) Is not deciduous; and

(f) Has a width to height ratio of 1:3.5.

[59] The Health Board and Residents sought a minimum height of 3.5m also.

[60] We conclude that a minimum height is an appropriate requirement given the need to establish growth. Shelter would typically be much higher than 4 -5 m and we consider 3.5 m is a modest height to ensure the functioning of the vegetation.

Pre-approval

[61] The next issue that arises in respect of spray application is whether or not there has been communication with the neighbours and whether approval can be obtained. A consent/approval under s 104(3)(a)(ii) would prevent the authority from taking into account any adverse effect on that person. For the same reason, we consider that such a consent should operate as part of a permitted activity standard where the other spray assessment steps are undertaken.

[62] This really would normally only arise in a situation where the wind is towards that person but could clearly also authorise a situation where the wind is away if appropriate. This is not a licence to pollute as clearly the obligation would remain with the applicator, both prior and during the spray to ensure there was no adverse effect beyond the boundary. All agrichemical applications require a Spray Assessment.

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[4] This is not necessarily the same as the projected height (at point of discharge) as it will typically rise ifit drifts

Consents

[63] Any consent would need to be an informed one and would need to note the nature of the spray sensitive area, the distance to the target application area and include an undertaking of provision requiring the applicator to comply with the spray assessment on each occasion. It would be helpful if the agreement also attached a copy of that document.

The spray assessment

[64] The question of a spray assessment is one that was discussed in various ways at the hearing. It transpired that Horticulture New Zealand already have, as part of their certification programme, a spray diary and risk assessment requirement that includes some but not all of the elements that have been discussed in this hearing. We conclude that the Spray Assessment required as part of these provisions should be similar to that proposed by Horticulture NZ and which is attached to the memorandum filed to the court during the hearing and annexed at **D** to this decision.

[65] We consider that the Spray Assessment should make it clear what outcomes of that assessment should be achieved. The particular applicator should turn their minds on every occasion to the particular issues arising. The Spray Assessment may not be entirely complete given the way in which the parties' agreement and subsequently this decision may affect the criteria. Nevertheless, there is no doubt that such criteria could be included as additional items. We envisage a document of this sort being used in the spray assessment on every occasion when spray is applied (not just where the sensitive areas are involved).

Buffers

[66] One of the issues that parties have used in part during this hearing although it was not the subject of particular wording, addressed before us was the question of a buffer. The definition of buffer was agreed by the parties (in Annexure **A**), as follows:

> *buffer zone distance means a specified horizontal distance from a downward spray-sensitive area, measured from the downward edge of the application area closest to the*

spray sensitive area.

[67] The Regional Council has proposed additional permitted activity requirements for buffer distances in their version of the provisions in Table X (in annexure **B**). These require different buffer distances with or without shelter for different wind speeds, and generally follow the buffer distances in the New Zealand Standard Management of Agrichemicals. We agree with this approach.

[68] We also agree that there needs to be a consideration of what the words "away from" mean. Various definitions are given in the parties' submissions. In our own view, "away from" should mean:

(i) Not towards;

(ii) It includes 45 degree either side of direction; and

(iii) The wind speed must be moderately steady over 1 m/s.

[69] One particular concern raised that we thought had been resolved before us was the issue as to whether there should be a buffer even where the wind is away from the site. It seems to have resurrected itself as a 50 m buffer in the proposals of the Health Board and residents. The experts have agreed that there cannot be a flow upwind provided the wind was moderately steady. We have taken it from their evidence that this is windspeeds above 1 m/s. The adoption of a figure of 2 m/s would create additional confusion and the suggestion that wind can nevertheless go upwind is inappropriate.

[70] For our part, we have concluded that provided the wind is moderately steady and over 1 m/s and away from the site the spray application can occur. We consider that the impacts of preventing owners applying spray even when the conditions are away with a 50 m buffer from the neighbouring property would be inappropriate. In practical terms, to create such a blight on neighbouring land when there is no identified adverse effect would not be reasonable and we are not prepared to impose this additional constraint without some scientific justification.

[71] Having discussed these preliminary matters, we now come to discuss in more

detail the remaining differences between the parties. As it can be seen, the areas of disagreement between the parties cover not only the preliminary issues. We do not understand there to be any significant difference in respect of Clause 1 and 2 of C.6.5.1 and overall prefer the Regional Council's wording of Clause 1 and Clause 2 in C.6.5.1.

Conclusions regarding ground and aerial spraying

[72] We have concluded that the requirements for ground based and aerial spraying of agrichemicals should vary depending on wind conditions. To be a permitted activity the following should be applied:

(a) Every spray activity must be undertaken in accordance with a Spray Assessment that is recorded in a spray diary and made available to the Council on request.

(b) The Spray Assessment must be carried out prior to the application and be re-evaluated during the spray application.

(c) The content of the Spray Assessment should be similar to that proposed by Horticulture New Zealand (annexure **D**), and

(d) Address all the elements listed by the Health Board, annexed in **B**, including the likelihood of spray drift occurring and ways of eliminating the risk of spray drift.

(e) For any spray activity the applicator must:

a. take all practicable steps to ensure that agrichemicals are used appropriately and accurately and are confined to target areas;

b. take all practicable steps to ensure that no adverse effects occur beyond the application area, and

c. ensure that relevant tolerable exposure limits (TELs) and environmental exposure limits (EELs) are not exceeded.

(f) Where a) to e) above is undertaken, the following requirements should apply:

Low risk, ground based spray

1. Where wind speeds are between 1-3m/s, plus gusts, and away from sensitive area(s) then there are no further requirements

Assessed risk, ground based spray

2. For wind speeds between 1-5m/s and towards sensitive area(s), or between 3m/s and 6m/s and away from sensitive area(s), the following additional requirements should be assessed:

i) The buffer on the downward boundary of the target application area and whether effective shelter is present.

ii) Sensitivity of receivers

iii) Spray quality

iv) Toxicity of spray

v) Whether agrichemical direct application methodology is used (e.g. shrouds).

3. If wind speeds are between 0-1m/s application should not occur if inversion or ponding conditions are present. If conditions are suitable spraying may occur and the following additional requirements should be assessed:

i) The buffer distance on all boundaries of the target application area and whether effective shelter is present.

ii) Height of spray release (for boom or blast spraying it should be below the shelter to prevent spray drift)

iii) Sensitivity of receivers

iii) Toxicity of spray

iii) Whether agrichemical direct application methodology is used (e.g. shrouds).

Aerial spraying – assessed risk

4. If wind speeds are 0-1m/s spray application should not to be undertaken in inversion or ponding situations.

5. If wind speed is 1-5m/s and away from sensitive area(s), the following additional requirements should be assessed:

i) Whether effective shelter is present

ii) Height of spray release and risk of spray drift

iii) Sensitivity of receivers

iv) Toxicity of spray

iv) Spray quality.

6. If the wind speed is 0-1m/s (and not inversion or ponding conditions), or 1-3m/s and toward sensitive area(s), the following additional requirements should be assessed:

i) The buffer distance and whether effective shelter is present.

ii) Height of spray release and risk of spray drift

iii) Sensitivity of receivers

iv) Toxicity of spray

v) Spray quality.

High risk – land based or aerial spraying

7. Spraying in wind speeds over 6m/s plus gusts is high risk and not

appropriate to be undertaken as a permitted activity

[73] We summarise this in the attached table annexed as **C** of the decision.

Analysis under s32 and 32AA

[74] We conclude that these provisions are the most appropriate way to achieve the objectives of the Proposed Regional Plan. Objective F.1.12 – Air quality seeks to ensure that human health, ambient air quality, cultural values, amenity values and the environment are protected from significant adverse effects caused by discharge of contaminants to air. Objective F.1.2 Water quality is relevant to Rule C.6.5.2 and seeks to ensure that water quality is maintained or improved, life supporting capacity, ecosystem process and indigenous species are maintained and drinking water sources are protected. If the application of agrichemicals is not managed near spray sensitive areas there is a risk that significant adverse effects will result particularly in relation to human health, water quality and the environment.

[75] Section 32AA requires a limited assessment given matters agreed in **A** and the scope of appeal. We conclude that the most appropriate permitted activity standards should protect humans and biodiversity while allowing the agricultural activities to continue where properly managed. We conclude our modified provisions meet this balance of cost and benefit and are therefore appropriate under the Act.

Overall conclusion

[76] There has been a high level of agreement on this matter and the differences between the parties have narrowed rather than being of significant substance. Nevertheless, the differences between the parties are clearly justified by their different levels of concern over impacts. We consider that the experts in this case will approach the matter in a full and fair way and this is not a case in which one could say that the differences between the parties are based upon any wrong matters, principle or law.

[77] Overall, we have tried to adopt an outcome which is both practical in terms of its benefits for the economic community, and safe for those who must live and operate within it. This of course includes those horticulturists who live and work within these orchards. In the long term, we consider that alternatives should be found to continue to reduce the application of sprays but we acknowledge the need for these permitted activity rules in the meantime as do all the parties. I commend the parties for their thoughtful and helpful approach.

[78] We accordingly conclude:

(a) **The parties' agreement as to the definition of Sensitive Areas has been settled in terms of the Proposed Regional Plan. The parties have agreed that the permitted activity standards should be concluded by reference to those Sensitive Areas.**

(b) **The parties have reached agreement by consent memorandum dated 1 June 2021 as to the wording of the plan provisions that relate to:**

(i) **Rule C.6.5.1 Application of agrichemicals – permitted activity;**

(ii) **Rule C.6.5.2 Application of agrichemicals into water – permitted activity;**

New Appendix H.X Qualifications required for the application of agrichemicals; and

(iii) **The definition of "spray-sensitive area".**

The wording agreed between the parties is annexed hereto as A. This court concludes this is most appropriate under the Act including s 32AA and adopts that wording for the purposes of this decision. Such changes are to be incorporated within the Proposed Regional Plan forthwith. They are regarded as operative for current purposes.

(c) **The unresolved wording of Rules C.6.5.1 and C.6.5.2 was considered at this hearing. To the extent the wording is in dispute, the court concludes that the most appropriate wording is that proposed by the Regional Council in the memorandum as annexed in B, except to the extent we conclude alternative wording should be adopted as set out in paragraph 72 and summarised in the attached table in annexure C.**

(d) In particular and for the avoidance of doubt, we conclude there shall be:

(i) General requirement for a Spray Assessment for all spray events;

The content of that Spray Assessment should be similar to that proposed by Horticulture New Zealand, which is annexed as D;

(ii) Different additional permitted activity requirements should apply in most circumstances as. proposed by the Regional Council (as set out in annexure B of this decision), except to the extent we conclude alternative wording in paragraph 72 and summarised in the attached table annexed as C of this decision;

(iii) The key requirement is that spray drift should be limited to avoid Spray Sensitive Areas.

(e) The council is to make any amendments in accordance with this decision and circulate them to the parties for consideration within 20 working days.

(i) All parties are to advise the council within a further 10 working days where any provision does not reflect the decision;

(ii) The Council is then to provide a memorandum to the Court and parties within a further 10 working days, identifying the provisions that are in dispute and to identifying those provisions that are now agreed and any provisions remaining in dispute. In respect of each provision in dispute, the Council shall provide its preferred wording and outline the position of each party in respect of that wording.

(f) The court will then consider the memorandum and either issue a final decision or convene a teleconference to address finalisation of the provisions.

For the Court:

J A Smith
Environment Judge

THE SEAL OF THE ENVIRONMENT COURT OF NEW ZEALAND

Annexure A

BEFORE THE ENVIRONMENT COURT

I MUA I TE KOOTI TAIAO O AOTEAROA

IN THE MATTER	of the Resource Management Act 1991
AND	of appeals under Clause 14 of Schedule 1 of the Act in relation to the Proposed Regional Plan for Northland
BETWEEN OF	PUBLIC AND POPULATION HEALTH UNIT THE NORTHLAND DISTRICT HEALTH BOARD (ENV-2019-AKL-000126) HORTICULTURE NEW ZEALAND (ENV-2019-AKL-000116) HANCOCK FOREST MANAGEMENT NZ (ENV-2019-AKL-000096) Appellants
AND	NORTHLAND REGIONAL COUNCIL Respondent

Environment Judge – sitting alone pursuant to section 279 of the Act

In Chambers at Auckland

CONSENT ORDER

[A] Under section 279(1) of the Resource Management Act 1991, the Environment Court, by consent, orders that the appeal is allowed in accordance with Annexure A to this Order.

[B] Under section 285 of the Resource Management Act 1991, there is no order as to costs.

REASONS

Introduction

1 The Appellants listed above have appealed provisions of the Proposed Regional Plan for Northland as they relate to Topic 8 Agrichemicals.

2 The Court has read and considered the memorandum of the parties dated 1 June 2021, which proposes to resolve the appeals that relate to:

a. Rule C.6.5.1 Application of agrichemicals – permitted activity;

b. Rule C.6.5.2 Application of agrichemicals into water – permitted activity;

c. new Appendix H.X Qualifications required for the application of agrichemicals; and

d. the definition of "spray-sensitive area".

3 The following people gave notice of their intention to become parties under section 274 of the Act and have signed the memorandum of the parties dated 1 June 2021:

a. Federated Farmers of New Zealand;

b. Horticulture New Zealand;

c. Heather Adams and Duncan Ross;

d. Cinna Smith;

e. Minister of Conservation;

f. Douglas and Linda Wheeler; and

g. Rayonier New Zealand Limited.

4 The Court is making this order under section 279(1)(b) of the Act; such order being by consent, rather than representing a decision or determination on the merits pursuant to section 297. The Court understands that for the present purposes that:

a. All parties to the proceedings have executed the memorandum requesting this order;

b. All parties are satisfied that all matters proposed for the Court's endorsement are within the scope of submissions and appeals, fall within the Court's jurisdiction, and conform to relevant requirements and objectives of the Resource Management Act 1991, including in particular Part 2.

Order

5 Therefore, the Court orders, by consent, that the Proposed Regional Plan for Northland be amended as set out in **Annexure A** to this Order.

6 The order resolves new Appendix H.X and the definition of "spray-sensitive area".

7 The order resolves Rules C.6.5.1 and C.6.5.2 in part. The parts of Rules

C.6.5.1 and C.6.5.2 that remain unresolved relate to Horticulture New Zealand and the Public and Population Health Unit of the Northland District Health Board's appeal points relating to the use of agrichemicals in proximity to spray-sensitive areas. Rules C.6.5.1 and C.6.5.2 were heard in the week of 27 April 2021.

8 There is no order as to costs.

DATED this day of 2021

J A Smith
Environment Judge

ANNEXURE A

Rule C.6.5.1 Application of agrichemicals – permitted activity

The discharge of an agrichemical into air or onto or into land is a permitted activity, provided:

1) for all methods (including hand-held spraying, ground-based spraying and aerial application):
   a) the discharge does not result in:
      i. any noxious, dangerous, offensive or objectionable odour, smoke, spray or dust, or any noxious or dangerous levels of airborne contaminants beyond the boundary of the subject property or in the coastal marine area[1], or
      ii. damage to any spray-sensitive areas beyond the boundary of the subject property or in the coastal marine area, and
   b) there is no direct discharge into or onto water,
   and c) notification is given, either:
      i. other than for spraying in plantation forestry where notification must be given at least ~~20~~24 hours and no more than 60 working days before spraying commences, neighbouring properties receive notification no less than 24 hours and no more than three weeks before the spraying activity is to take place, as set out in Table 11: Spraying notification requirements, ~~and~~ or
      ii. according to an alternative notification agreement, that meets the requirements of Table 11: Spraying notification requirements; and
   d) if agrichemicals are applied within 100 metres of a public amenity area, prominent signs are placed prior to the commencement of the spraying and remain in place until spraying is complete. The signs must include the contact details of the property owner or applicator, details of the chemical to be sprayed, the time period during which the spraying is likely to take place, indication of any specific hazards and the application method. A record of the ~~notification~~ signage undertaken must be kept and made available to the Regional Council on request, and
   e) for spraying by any method in public road corridors and rail corridors:
      i. other than for ~~backpack~~ handheld spraying of roadside boundary fence lines adjacent to private land, a public notice must be placed in a newspaper, or a letter drop made to properties within 30 metres (or 200 metres for aerial ~~spraying~~ application) from the area to be sprayed, at least seven days and not more than one month before spraying is to take place, and

ii. the signs, public notice and letter drop must include the contact details of the property owner or applicator, details of the chemical to be sprayed, the time period during which the spraying is likely to take place, and the application method, and

iii. vehicles used for spraying must display prominent signs (front and back) advising that spraying is in progress, and

iv. a record of the ~~notification~~ signage undertaken must be kept and made available to the Regional Council on request.

Table 11: Spraying notification requirements

Spraying method	Properties to be notified	Notification requirements
Hand-held spraying	Nil (unless a public amenity area or public road corridor or rail corridor under the specific requirements above).	Nil (unless a public amenity area or public road corridor or rail corridor under the specific requirements above).
Ground-based spraying	Any property with a spray-sensitive area within 50 metres of the spraying, including when spraying is taking place in public amenity areas but excluding when the spraying is taking place in a public road corridor or rail corridor.	Either: 1. Notification: a) is to be undertaken by the owner or occupier of the property where agrichemicals will be applied unless delegated to the applicator, management company, forest manager, or pack house operator, and b) is to be in writing (which can include email or other electronic means) or by telephone, and c) includes: i. the days and times during which the agrichemical application is likely to take place, including alternative days and times if the weather is unsuitable, and ii. the contact details of the owner or occupier of the property, or
Aerial application	Any property with a spray-sensitive area within 200 metres of the spraying, including when spraying is taking place in public amenity areas, but excluding when the spraying is taking place in a public road corridor or rail corridor.	
Granules, gels and agrichemical baits	Any property with a spray-sensitive area within 30 metres of the agrichemical application, including when agrichemical application is taking place in public amenity areas, but excluding when the agrichemical application is	

Spraying method	Properties to be notified	Notification requirements
	taking place in a public road corridor or rail corridor.	applicator, or management company forest manager, or packhouse operator, and iii. the details of agrichemicals being applied, and iv. indication of any specific hazards (including toxicity to bees), and v. the application method. 2. Alternative notification agreement: (a) Notification is undertaken according to a notification agreement with the occupier. The notification agreement must: i. contain (as a minimum) method of notification and minimum time for notification prior to spraying ii. be recorded in writing and signed by all parties iii. be reviewed and re-signed annually.

2) for ground-based spraying and aerial spraying:

a) the activity is undertaken in accordance with the following sections of the New Zealand Standard. Management of Agrichemicals (NZS 8409:2004) as it relates to the management of the discharge of agrichemicals:

i. Use – Part 5.3, and

ii. Storage – Appendix L4, and

iii. Disposal – Appendix S, and

iv. Records – Appendix C9, and

b) a Spray Plan must be prepared annually for the area where the agrichemical is to be applied, and

c) where the activity is undertaken within 100 metres of a spray sensitive area (:

i. a risk assessment must be carried out prior to the application of an agrichemical and measures must be taken to minimise adverse effects on spray-sensitive areas. The risk assessment must include Table G1 of the New Zealand Standard. Management of (NZS 8409:2004), and

ii. agrichemicals must only be applied when the wind direction is away from the spray-sensitive area, and

iii. the application equipment must produce a spray quality no smaller than "coarse" according to Appendix Q Application Equipment of the New Zealand Standard. Management of Agrichemicals (NZS 8409:2004).

3) for ground-based spraying:

a) an applicator who is a contractor holds a current GROWSAFE Registered Chemical Applicators Certificate or a qualification that meets the requirements of Appendix H.X of this plan ~~(or equivalent)~~, and

b) an applicator who is not a contractor holds a current GROWSAFE Standard Certificate (or its equivalent) or is under direct supervision of a person with a GROWSAFE Registered Chemical Applicators Certificate or GROWSAFE Advanced Certificate or a qualification that meets the requirements of Appendix H.X of this plan ~~(or their equivalent),~~ and

4) for aerial application:

a) an applicator holds a current GROWSAFE Pilot Agrichemical Rating Certificate issued by the Civil Aviation Authority of New Zealand ~~(or their equivalent)~~, and

5) for agrichemicals containing 2,4-D:

a) the agrichemical is non-volatile or is slightly low volatile[2], or
b) application is by hand-held spraying, or
c) application by ground-based spraying or aerial ~~spraying~~ application only occurs between 1 May and 31 August.

Notes:

In addition to the requirements of Rule C.6.5.1 the agrichemical must be approved for its intended use by the Environmental Protection Authority under the Hazardous Substances and New Organisms Act 1996 and all other conditions set for its use must be complied with.

In relation to a non-aerial application, the applicator must hold an Agrichemical Certified Handler certificate (Worksafe New Zealand) where required by any Environmental Protection Authority approval for the agrichemical under the Hazardous Substances and New Organisms Act 1996,

or equivalent as recognised and required by the Environmental Protection Authority or Ministry for Business Innovation and

Employment, and be able to demonstrate competency using agrichemicals to avoid adverse impacts.

In relation to aerial application, the applicator and ground crew must hold qualifications and competencies as required by Environmental Protection Authority and Worksafe New Zealand.

For the avoidance of doubt this rule covers the following RMA activities:

- Discharge of an agrichemical onto or into land or into air (s15(1) and s15(2A)).

[1] Refer to Appendix H.7 Interpretation of noxious, dangerous, offensive and objectionable effects.

[2] Vapour pressure less than 1 x 10-4mmHg

Rule C.6.5.2 Application of agrichemicals into water –

permitted activity

The discharge of an agrichemical into water is a permitted activity provided:

1) other than for the control of plant pest species listed in the Regional Pest Management Plan or the National Pest Plant Accord, there is no discharge into coastal water, and

2) the discharge does not cause, beyond the zone of reasonable mixing in the receiving waters from the point of discharge:

   a) the production of conspicuous oil or grease films, scums or foams, of floatable or suspended materials, or

   b) an increase in the temperature by more than three degrees Celsius, or

   c) the pH to fall outside the range of 6.5 - 8.5 or change the pH by more than one pH unit, or

   d) the dissolved oxygen to be less than five milligrams per litre, or

   e) any conspicuous change in the colour or visual clarity, or

   f) the rendering of fresh water unsuitable for consumption by farm animals if the water is used for stock drinking water, and

3) an applicator holds a recognised application qualification (GROWSAFE with an aquatic component or a qualification that meets the requirements of Appendix H.X of this plan ~~its equivalent with an aquatic component~~), and

4) the activity is undertaken in accordance with the following sections of the New Zealand Standard. Management of Agrichemicals (NZS 8409:2004) as it relates to the management of the discharge of agrichemicals:

   a) Use – Part 5.3, and

   b) Storage – Appendix L4, and

c) Disposal – Appendix S, and

d) Records – Appendix C9, and

5) where the activity is undertaken within 100 metres of a spray-sensitive area:

a) a risk assessment must be carried out prior to the application of an agrichemical and measures must be taken to minimise adverse spray sensitive areas. The risk assessment must include reference to the Drift Hazard guidance chart in the New Zealand Standard. Management of Agrichemicals (NZS 8409:2004), and

b) agrichemicals must only be applied when the wind direction is away from the spray-sensitive area, and

c) the application equipment must produce a spray quality no smaller than "coarse" according to Appendix Q Application Equipment of the New Zealand Standard. Management of Agrichemicals (NZS 8409:2004).

6) ~~the following notification takes place~~notification is given either:

a) other than for spraying in plantation forestry where notification must be given at least ~~20~~24 hours and no more than 60 working days before spraying commences, every person taking water for potable supply within one kilometre downstream of the proposed discharge is notified no less than 24 hours and no more than two weeks prior to the proposed commencement of any spraying, and

b) every holder of a resource consent for the taking of water for water supply purposes downstream of the proposed discharge is notified at least seven days before the discharge, and

c) notification must be undertaken by the owner or occupier of the property to be sprayed, unless delegated to the applicator, management company, forest manager or packhouse operator, and must be in writing (which can include email or other electronic means) or by telephone, and

d) notification must include:

i. the days and times during which the spraying is likely to take place, including alternative days and times if the weather is unsuitable, and

ii. the contact details of the property owner or applicator, and

iii. the details of agrichemicals being sprayed, and

iv. an indication of any specific hazards (including toxicity to bees), and

v. the application method, ~~and~~or

e) notification is undertaken according to a notification agreement with the occupier. The notification agreement must:

i. contain (as a minimum) method of notification and minimum time for notification prior to spraying

ii. be recorded in writing and signed by all parties

iii. be reviewed and re-signed annually; and

7) in addition, for aerial application into water:

a) an applicator holds a current GROWSAFE Pilot AgricChemical Rating Certificate (or equivalent qualification) issued by the Civil Aviation Authority of New Zealand ~~(or its equivalent)~~, and

b) there is no aerial application in urban areas, and

8) if agrichemicals are applied within 100 metres of a public amenity area, prominent signs are placed prior to the commencement of the spraying and remain in place until spraying is complete. The signs must include the contact details of the property owner or applicator, details of the chemical to be sprayed, the time period during which the spraying is likely to take place, an indication of any specific hazards (including toxicity to bees), and the application method. A record of the ~~notification~~ signage undertaken must be kept and made available to the Regional Council on request, and

9) in addition, for spraying by any method in public road corridors or rail corridors:

a) prominent signs are placed at the beginning and end points of the area to be sprayed, prior to the commencement of the spraying, and remain in place until spraying is complete, and

b) a public notice must be placed in a newspaper or a letter drop made to properties within 30 metres (or 200 metres for aerial ~~spraying~~ application) from the area to be sprayed at least seven days and not more than one month before spraying is to take place, and

c) the signs, public notice and letter drop must include the contact details of the property owner or applicator, details on the agrichemical to be sprayed, the time period during which the spraying is likely to take place, an indication of any specific hazards (including toxicity to bees), and the application method, and

d) vehicles used for spraying must display prominent signs (front and back) advising that spraying is in progress, and

e) a record of the ~~notification~~ signage undertaken must be kept and made available to the Regional Council on request.

Notes:

In addition to the requirements of Rule C.6.5.2, the agrichemical must be approved for its intended use by the Environmental Protection Authority under the Hazardous Substances and New Organisms Act 1996 and all other conditions set for its use must be complied with.

In relation to a non-aerial application, the applicator must hold an Agrichemical Certified Handler certificate (Worksafe New Zealand) where required by any Environmental Protection Authority approval for the agrichemical under the Hazardous Substances and New Organisms Act 1996, or equivalent (as recognised and required by Environmental

Protection Authority or Ministry for Business Innovation and Employment) and be able to demonstrate competency using agrichemicals to avoid adverse impacts.

In relation to an aerial application, the applicator and ground crew must hold qualifications and competencies as required by the Environmental Protection Authority and Worksafe New Zealand.

For the avoidance of doubt this rule covers the following RMA activities:

- Discharge of an agrichemical into water (s15(1)).

Appendix H.7 Interpretation of noxious, dangerous, offensive and objectionable effects

1) Several rules in this Plan use the terms 'noxious', 'dangerous', 'offensive', and 'objectionable', particularly rules relating to the discharges of contaminants into air. These terms are also included in section 17 of the RMA. Whether an activity is 'noxious', 'dangerous', 'offensive' or 'objectionable' depends on an objective assessment, based on the principles set out by case law. A Regional Council enforcement officer's views will not be determinative but may trigger further action and may be one factor considered by the Court if formal enforcement action is taken.

2) There is no standard definition of 'noxious', 'dangerous', 'offensive', and 'objectionable' terms because of the need to take account of case law precedent as it develops, that is, the Plan cannot override interpretations decided by the Courts. However, the following notes are intended to provide some guidance for interpreting these terms:

   a) NOXIOUS, DANGEROUS – the Concise Oxford Dictionary defines 'noxious' as "harmful, unwholesome". Noxious effects may include significant adverse effects on the environment (for example, on plant and animal life) even though the effects may not be dangerous to humans. 'Dangerous' is defined as "involving or causing exposure to harm". Dangerous discharges include those that are likely to cause adverse physical health effects, such as discharges containing toxic concentrations of chemicals. WorkSafe New Zealand's "Workplace Exposure Standards and Biological Exposure Indices, November 2018, 10th Edition" can be used for interpreting the terms 'noxious' and 'dangerous'.

   b) OFFENSIVE, OBJECTIONABLE – 'Offensive' is defined as "giving or meant to give offence; disgusting, foul-smelling, nauseous, repulsive". 'Objectionable' is defined as "open to objection, unpleasant, offensive". Case law has established that what may be offensive or objectionable under the RMA cannot be defined or prescribed except in the most general of terms. Each case will depend upon its own circumstances. Key considerations include:

i. location of an activity and sensitivity of the receiving environment – for example, what may be considered offensive or objectionable in an urban area, may not necessarily be considered offensive or objectionable in a rural area;

ii. reasonableness – whether or not an activity is offensive or objectionable should be determined by an ordinary person who is representative of the community at large and neither hypersensitive nor insensitive; and

iii. existing uses – it is important to consider what lawfully established activities exist in an area, that is, if a new activity requires a permit, the effect of existing discharges of contaminants into air should be considered.

The Regional Council's investigation of a complaint concerning offensive or objectionable discharges will depend upon the specific circumstances. However, for odour, the approach will generally be as follows:

3) An assessment of the situation will be made by a Council officer who has experience in odour complaints and has had his/her nose calibrated using olfactometry. This assessment will take into account the FIDOL factors – frequency, intensity, duration, offensiveness, location; and those matters identified below:

a) if the discharge is deemed to be offensive or objectionable by the Council officer, the discharger will be asked to take whatever action is necessary to avoid, remedy or mitigate the effects of the discharge;

b) if the discharger disputes the Council officer's assessment or the problem is ongoing, then a number of approaches may be taken, including one or more of the following:

i. assessments by other suitably qualified and experienced Council officers,

ii. asking people living and working in the subject area to keep a diary which notes details of any offensive or objectionable odours,

iii. promoting the use of community working groups and other means of consultation between the affected community and the discharger,

iv. using the services of an independent consultant to carry out an investigation, and/or community survey, v. using the services of the Council's odour panellists who have all had their noses calibrated by olfactometry and are deemed to have an average sense of smell,

v. undertaking an odour assessment using an olfactometer, or other appropriate technology, or

vi. leaving the matter to be determined by the Environment Court.

If the discharge is found to be offensive or objectionable, then enforcement action may be taken. This could be in the form of an abatement notice, infringement notice, enforcement order or prosecution. In the case of a permitted activity causing an offensive or objectionable discharge, a resource consent may be required to allow the discharge to continue.

4) Further information can be found in the following guidance documents produced by the Ministry for the Environment:

   a) Good Practice Guidance on Odour;

   b) Good Practice Guidance on Dust;

   c) Good Practice Guidance on Industrial Emissions.

Appendix H.X Qualifications required for the application of agrichemicals

A training programme, must meet the following specifications:

- Structure of the programme
- Content of the

Structure of the programme:

1. The training programme will include delivery of the contents set out below. 2. The training programme and provider of such training should be regularly
   reviewed and appraised by a suitably qualified external party to ensure ongoing quality and relevance of training;
3. The assessment process will be moderated to ensure that it adequately addresses matters covered in the course.
4. The programme will certify competency on the matters set out in the contents below for a period of five years which will then be reviewed through a refresher programme.
5. The programme provider will provide a copy of training materials to the Regional Council.

Content of the programme

A. 'Standard' qualification equivalent

The training programme will include the following content:

1. The hazard classifications of agrichemicals to be used and related requirements
2. Adverse effects that could be caused by agrichemicals
3. Agrichemical best practice for the safe, responsible and effective use of agrichemicals based on NZS8409:2004 Management of Agrichemicals as follows:

Topic	Relevant sections of NZS8409:2004
Managing environmental risks	Section 2 Management of Agrichemicals Section 5 Use of Agrichemicals Appendix F Environmental Management
Property spray plans	Appendix M Notification
Notification	Section 5 Use of Agrichemicals (5.3.1) Appendix M Notification and Signage for the application of agrichemicals
Signage	Section 5 Use of Agrichemicals (5.3.1) Appendix M Notification and Signage for the application of agrichemicals
Storage	Section 4 Storage and supply of Agrichemicals Appendix L General Storage Requirements
Emergency preparedness and management	Section 7 Emergency Preparedness and Management Appendix K Emergency Management
Operating equipment – nozzle selection and calibration, mixing sites	Section 5 Use of Agrichemicals (5.3.3) Appendix Q Application Equipment Appendix R Handling and Mixing Agrichemicals
Minimising spray drift	Section 5 Use of Agrichemicals (5.3.4) Appendix G Spray Drift Hazard and Weather Conditions
Record keeping – inventory, spray diaries, tracking	Section 2 Management of agrichemicals (2.6 Documentation and Licensing) and Appendix C (C9) Section 5 Use of Agrichemicals (5.3.5)
Agrichemical disposal	Section 6 Disposal of agrichemicals and containers Appendix S Disposal of Agrichemicals and Containers

4. Relevant regulatory requirements including under the Northland Regional Plan, EPA Notices and relevant regulations made under the Health and Safety at Work Act 2015
5. Working knowledge of operating equipment

Assessment of competency:

The training programme must include either a practical, verbal or written assessment to enable the participant to demonstrate knowledge and understanding of the contents of the course.

B. 'Advanced' qualification equivalent

In addition to the training content in A above, the training programme for more advanced users (which enables supervision of agrichemical application) must also include the following content:

1. Health and safety, and emergency response;
2. Hazardous Substances and New Organisms Emergency Management and Preparedness procedures;
3. Risk management, including undertaking a risk assessment prior to application; 4. Planning agrichemical applications;
5. Environmental effects, including spray drift minimisation; 6. Equipment calibration;
7. Product label interpretation.

The training programme must include being able to demonstrate:

1. Knowledge of agrichemicals, mode of action and use of additives and adjuvants;
2. Knowledge of developing and implementing spray plans;
and 3. Calibration of one type of motorised equipment.

And, attainment of all of the following:

1. New Zealand Certificate in Agrichemical Application with relevant strand or New Zealand Qualifications Authority (NZQA) unit standard 21563 with one of: NZQA unit standard 23620, 28216, 23617, 6239, 6236 or 6242.
2. Certified Handler Test Certificate (only required if using class 6.1A or B products)

The renewal of this qualification must include both theory and practical assessments.

C. 'Contractor qualification equivalent'

In addition to the training content in A and B above, the training programme for Contractors must also include the following content:

1. preparing, implementing and monitoring spray plans; 2. supervision of staff and providing direction;
3. management of agrichemical applications; 4. managing the safety of people and livestock; 5. nozzle selection and drift reduction;
6. notification requirements including signage;

7. transport, storage and disposal of agrichemicals; and
8. selection, calibration and operation of application equipment for specific operations

And, attainment of all of the following:

1. New Zealand Certificate in Agrichemical Application with relevant strand or New Zealand Qualifications Authority (NZQA) unit standard 21563 with one of: NZQA unit standard 27216; unit standard 6237; or unit standard 6238.
2. Certified Handler Test Certificate (only required if using class 6.1A or B products)
3. evidence of 200 hours of practical spraying experience, including spray diary verification

The procedure for renewal of this qualification, required at an interval of no more than five years following certification, must include all of the following:

1. both theory and practical assessments;
2. be subject to an on-site audit by an independent third-party auditor;
3. confirm that a review of the commercial contractor operations has been undertaken; and
4. confirm that the commercial contractor has undertaken continuing professional development.

Additional qualification requirements for aquatic application under Rule C.6.5.2

For agrichemical spraying to water, an equivalent qualification must also include attainment of the New Zealand Certificate in Agrichemical Application with aquatic strand or Unit Standard 6240.

Advice note:

The Plan seeks to ensure that those using and applying agrichemicals are competent to undertake such applications. The plan has a training requirement that forms the basis of competency.

The requirements of this Plan only relate to those matters pertaining to the regional council functions for agrichemicals – discharge to air, land and water. A training programme may include other components relating to requirements of other agencies (for example, WorkSafe) and legislation, (for example, Health and Safety at Work Act 2015 and the Agricultural Compounds and Veterinary Medicines Act 1997). However, such components are not part of the competency required to meet the objectives, policies and rules of the Northland Regional Plan.

Definition of spray-sensitive area

1) Residential buildings and associated garden areas, and
2) schools, hospital buildings and care facilities and grounds, and
3) amenity areas where people congregate including parks and reserves, and
4) community buildings and grounds, including places of worship and marae, and
5) certified organic farms, and
6) orchards, crops and commercial growing areas, and
7) water bodies used for the supply of drinking water and for stock drinking, and

8) Natural wetlands and significant areas of indigenous vegetation and habitats of indigenous fauna as defined in the Regional Policy Statement for Northland, and apiaries.

Annexure B

IN THE ENVIRONMENT COURT OF NEW ZEALAND AUCKLAND REGISTRY

I TE KŌTI TAIAO O AOTEAROA TĀMAKI MAKAURAU ROHE

IN THE MATTER of the Resource Management Act 1991

AND of an appeal under clause 14 of Schedule 1 of the Act

BETWEEN **PUBLIC AND POPULATION HEALTH UNIT OF THE NORTHLAND DISTRICT HEALTH BOARD**

HORTICULTURE NEW ZEALAND

Appellants

NORTHLAND REGIONAL COUNCIL

Respondent

MEMORANDUM OF COUNSEL FOR NORTHLAND REGIONAL COUNCIL REGARDING POST-HEARING DISCUSSIONS ON PROVISIONS

TOPIC 8: AGRICHEMICALS

24 MAY 2021

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MAY IT PLEASE THE COURT

1. During the Topic 8 – Agrichemicals hearing the Court observed that the parties' positions on the provisions relating to spray-sensitive areas in Rule C.6.5.1 Application of agrichemicals – permitted activity and Rule
C.6.5.2 Application of agrichemicals into water – permitted activity were narrowing.

2. In light of this, the Court directed the parties to confer and file by 21 May 2021 either:

   a. agreed provisions, if agreement could be reached; or

   b. a memorandum identifying the areas of agreement and disagreement.

3. On 21 May 2021 the Council requested a one day extension to the filing deadline, to allow further refinement in response to discussions between experts.

4. Full agreement on the provisions has not been reached. However, the parties have reached agreement on a number of issues, which are recorded below.

5. Attached in **Appendix 1** is a table summarising Northland Regional Council (**Council**), Horticulture New Zealand (**HortNZ**), Northland District Health Board (**NDHB**) and Mr and Mrs Wheeler's proposed wording of the provisions relating to spray-sensitive areas. Two proposed frameworks have arisen: the Council and HortNZ have taken a similar approach; as have the NDHB and Mr and Mrs Wheeler (though there are minor differences between each parties' approach).

6. Federated Farmers has confirmed that it is comfortable with the Council and HortNZ's position. Mr Duncan Ross and Ms Heather Adams have confirmed that they support Mr and Mrs Wheeler's position, subject to comments below regarding Figure 1 relating to cross-wind. Ms Cinna Smith supports Mr and Mrs Wheeler's position.

7. This memorandum has been prepared in consultation with the

parties that attended the Topic 8 hearing.

Areas of agreement

8. The parties generally agree on the following issues:

a. Clause 2(c) of the rule applies where agrichemical application is to be undertaken within 100 metres for ground-based methods and 300 metres for aerial application;

b. the applicator must take all practicable steps to ensure that agrichemicals are used appropriately and accurately and are confined to target application areas, to ensure that no adverse effects occur beyond the target application area, and to ensure that TELs and EELs are not exceeded;

c. the activity must be undertaken in accordance with a risk assessment that is documented and made available to Council on request;

d. a risk-based approach requiring increasing mitigation for agrichemical application risk factors ranging from low risk to high risk is a more nuanced approach than the decisions version of the rule;

e. additional requirements do not apply to agrichemical application if the occupier of the spray-sensitive area has provided (and not withdrawn) written approval for the type and method of agrichemical application;

f. agrichemical application must not occur if inversion conditions are present or likely to be present;

g. agrichemical application undertaken in a fully enclosed environment is not subject to the same requirements; and

h. the definitions of "spray-sensitive area" and "buffer"'.

9. In respect of the specifics of agrichemical application, the parties agree that:

a. all applications of agrichemicals subject to clause 2 (ground-based and aerial spraying) of C.6.5.1 (and the equivalent clause in C.6.5.2) require a risk assessment to be undertaken.

b. for agrichemical applications where the wind is away from spray sensitive areas and within 1-3 m/s, that no additional requirements need to be stipulated as permitted activity

conditions in the rule.

c. information on the measurement of wind speed should be added, as well as a definition for 'effective shelter' and 'away from', however the specific wording for these has not been agreed.

10. The parties agree that a risk assessment should include the measures set out in **Appendix 2** to this memorandum. The parties agree that the risk assessment be undertaken prior to and during application (some parties also seek this is required after the application); and records should be kept of the risk assessment, which should be made available to the Council on request.

Areas of disagreement

11. There are differences between the parties on matters of detail. In summary, the parties disagree on the following issues:

a. the detail of the proposed tiered approach to be incorporated into the provisions and the certainty that approach provides;

b. how the specific conditions (including application method, wind speed, wind direction, and additional requirements) should be included within the provisions and how those relate to the different risk levels, and in particular what the appropriate wind speed thresholds are and what standards (mitigation) should apply in each scenario;

c. whether application should be able to occur under any circumstances above windspeeds of 5m/s or 6m/s;

d. whether additional requirements should be included in the risk assessment, including:

i. the likelihood of spray drift occurring; and

ii. the ways of eliminating the risk of spray-drift occurring and selection of the practicable steps to ensure that agrichemicals are confined to target application areas;

e. whether written approval can be given for the application of agrichemicals with high or very high human toxicity;

f. how wind speed is to be measured;

g. the definitions of "effective shelter" and "away from" and whether a new definition of "agrichemical direct application methodology" should be included; and

h. other minor differences (e.g. the use of "must" vs. "shall" in the provisions, and whether wind speeds should be stated in both m/s and km/h)).

12. HortNZ also put forward, as an alternative to the list of items to be addressed in a risk assessment in Appendix 2 to this memorandum, a more detailed risk assessment framework as **Appendix 3**, which is set out in a table which would be included as an appendix to the plan, including:

a. the inherent hazards of the agrichemicals being used, and

b. consideration of key risk factors (high, medium, low) that could increase or decrease risks of spray movement onto sensitive areas, and guidance actions on how risks could be mitigated.

13. Mr Ross has concerns with Figure 1 in the definition of "away from". He seeks that the figure is amended to show the right-hand side of the diagram as a mirror image of the left and that the term "cross-wind" is replaced with a term like "the turbulent sideways spreading of the spray plume down-wind from the sprayed area". The Wheelers also consider that the diagram is less than clear, particularly the reference to "crosswind" which should perhaps be to "across the wind", and preferred a possible alternative diagram being discussed by the air quality experts.

DATED this 24th day of May 2021

M J Doesburg / E S Lake

Counsel for Northland Regional Council

Appendix 1: Table of parties' proposed provisions

Appendix 2: Measures to be included in risk assessment

1. A risk assessment must include:

   a. Confirmation of the target application area;

   b. Appropriateness of product for the weed, pest, or crop;

   c. Location of spray-sensitive areas;

   d. Weather conditions (wind speed, wind direction, humidity and temperature, atmospheric stability);

   e. Appropriateness of particle size and release height, particularly in relation to sensitive areas and buffer zones;

   f. Presence and condition of shelter;

   g. Fit for purpose equipment and personal protective equipment;

   h. Confirmation that notification has been carried out and required signage is in place;

   i. Confirmation that any relevant regulatory requirements can be complied with;

   j. Confirmation that all other risk factors, including those identified in the spray plan, are being managed in accordance with the spray plan;

   k. Toxicity of the agrichemical to be applied;

   l. Application rate;

   m. Volatility;

   n. Timing and duration of operation; and

   o. Type of sensitive area and sensitivity of persons / animals / vegetation potentially exposed

Appendix 3: HortNZ Risk Assessment Table

PROPOSED ON-SITE RISK ASSESSMENT MATRIX
Table XX

SITE FACTORS		Risk assessment based on	Documentation requirements	Checklist	Notes
1	Application site (target)	Location and boundaries	Map showing the property and surrounds - this should be part of the property spray plan. **For each application event** the target application area(s) should be documented and referenced to the spray plan map.	☐ Spray plan map ☐ Application areas identified	
2	Sensitive areas	Nature of and location with respec to application area.	Potential sensitive areas should be recorded in the property spray plan with distance references noted for sensitive areas that require operational risk management.	☐ Human toxicity sensitive area(s) ☐ Other crops sensitive area(s) ☐ Aquatic ecotoxicity sensitive area(s) ☐ Terrestrial ecotoxicity sensitive area(s)	
3	Shelter belts	Nature of and location with respec to application area	Shelter between application area and sensitive areas noted and assessed for potential risk reduction relative to type of spraying operation.	☐ Shelter meets definition of effective shelter ☐ Shelter partial ☐ No shelter	

TOXICITY FACTORS			High hazard	Medium hazard	Low hazard	Considerations/Mitigations	Notes
4	Product hazard HUMAN RISK	Products to be applied identified and the relevant HSNO hazard classification or GHS equivalent noted.	HSNO 6.1A, 6.1B	HSNO 6.1C	HSNO 6.1D, 6.1E or no 6.1 hazard rating	Product(s) selected according to application task, taking account of HSNO class, efficacy and other attributes and the at-risk sensitivelocations. Select the lowest hazard products as possible.	*Hazard assessment should be based on the highest hazard classes of the products to be used.* *Risk is a function of hazard X application rate X risk of exposure. Mitigation in any of these three areas has an additive risk reduction effect.*
5	Product hazard ENVIRONMENTAL RISK	Products to be appliedidentied and the relevant HSNO hazard classification or GHS equivalent noted.	Aquatic HSNO 9.1A Terrestrial HSNO 9.2A OR 9.3A OR 9.4A	Aquatic HSNO 9.1B Terrestrial HSNO 9.2B OR 9.3B OR 9.4B	Aquatic HSNO 9.1C or D Terrestrial HSNO 9.2, 9.3,9.4 C ORD rating, OR unrated	Product(s) selected according to application task, taking account of HSNO class, efficacy and other attributes and the at-risk sensitivelocations.	*Hazard assessment should be based on the highest hazard classes of the products to be used.* *Risk is a function of hazard X application rate X risk of exposure. Mitigation in any of these three areas has an additive risk reduction effect.*
			High risk factors	**Medium risk factors**	**Low risk factors**	**Considerations/Mitigations**	
6	Secondary drift risks (Volatile products)	Vapour pressure of applied products	High vapour pressure >10 mPa	Vapour pressure between 0.1-10 mPa	Low vapour pressure <0.1 mPa	Check product label, SDS or manufacturer informatation and instructions for use and risk mitigation when using products with secondary drift risks.	*Specific controls according to the volatility of the product being applied - these include seasonal dates of no use for products like 2,4-D hormone herbicides.*
WEATHER CONDITIONS			**High risk factors**	**Medium risk factors**	**Low risk factors**	**Considerations/Mitigations**	
7	Wind direction	Direction (bearing) at the application site at the time of application	Unpredictable	Possible wind direction changes during spraying	Predictable and away from sensitive areas	Tools to monitor wind direction before and during application are in place. Visual indicators and/or Weather station and/or hand held anemometer	*Spray areas closest to sensitive areas under best possible wind conditions - this is often early on a spraying day.* *Spray applicators have a documented set of rules eg SPRAY or NO SPRAY for application behaviour near sensitive boundaries under different wind conditions.*
8	Wind speed	Speed at the application site at the time of application	High speed > 6 m/s OR Very low 0 to 1 m/s	Variable and/or speeds 3 6 m/s	Stready Speeds 1-3 m/s		
9	Evaporative potential	Air temperature and humidity Delta T	Low humidity Delta T above 8 °C	Delta T between 4 and 8 °C	High humidity Delta T < 4 °C	Temperature and Humidity measured and recorded on site at the time of applicaiton	*Guidelines for spraying under different Delta T conditions are well established.*
10	Atmospheric stability	Inversion layer (smoke behaviour)	Inversion present	Potential inversion conditions (night time spraying with low wind speeds)	No inversion present	Wind and temperature data recorded on site indicate that no inversion layer is likely, and/or visual indictors (e.g. smoke) suggest no inversion risk.	*No machine applications should be undertaken outdoors under inversion conditions.* *If volatility risk is medium or high then an on-site test for an inversion layer should be undertaken.*
APPLICATION FACTORS			**High risk factors**	**Medium risk factors**	**Low risk factors**	**Considerations/Mitigations**	
11	Application method and Maximum height ofspray release	Aerial Airblast orchard type Boom	>10 m above target >2 m above target >1m above target, and/or Travel speed > 15km/h	5-10 m above target 1-2 m above target 0.6-1 m above target and/or Travel speed 8 to 10 km/h	<5 m above target <1 m above target <=0.5 m above target and/or Travel speed <=8 km/h	Application equipment selected to minimise product losses between the point of release and the target all fully documented	
12	Spray droplet size	Physical properties of the product being applied	Very fine or smaller spray quality (Significant volumes in droplets <50 µm diameter)	Fine or medium spray quality	Coarse or greater spray quality (Most of output volume in droplets >250 µm diameter)	Refer to nozzle charts for spray quality, pressure related. Can use water sensitive paper to record/demonstrate droplet sizes of spray plume.	
13	Drift reducing adjuvants				Only use provendrift reducing adjuvants.	Effects same as increasing droplet size and changing spray quality.	
14	Use of shrouds/screens				Shrouds or screens are used	Effect is as for reducing wind speed and should be scored there.	
15	Application targetting	Spray not directed downwind when treating downwind block edges	No adjusment tosprayer or spraying emission patterns.	Air blast sprayers - In the edge and second downwind side rows spray is only directed into the block (upwind).	Boom spraying - Use of end boom nozzles. Air blast sprayers - In the three downwind side rows spray is only directed into the block (upwind).		
BUFFER ZONES			**High risk factors**	**Medium risk factors**	**Low risk factors**	**Considerations/Mitigations**	
16	Proximity of sensitive areas to treated area	Downwind application free zone See buffer zone distances table for different application methods and wind conditions	Sensitive area within buffer zone. NO SPRAYING PERMITTED	Downwind sensitive area 1 to 3X recommended buffer zone distance away from downwind edge of treated area.	Downwind sensitive area> 3X the recommended buffer zone distance away from downwind edge of treated area.	Location of application target and sensitive area known and logged, communication/notification confirmed, spray quality, and wind direction known and drift modelling done	

Buffer zone guideance and responses

No risk of harmful effects and virtually no risk of detection of applied products beyond the buffer zone distance provided no high hazard factors identified in the risk assessment above

		No shelter	Shelter		
Aerial spraying	Windspeed <1 m/s	300 m	100 m	From all sprayed area edges	*Measurements taken from the downwind edge or corner of the treated area.* *Sensitive areas included for wind directions up to 45° downwind from the treated area*
	Windspeed 1-6 m/s	300 m	100 m	On downwind edges of sprayed area	
	Windspeed >6m/s	900 m	900 m	On downwind edges of sprayed area provided no high hazard factors	
Airblast spraying	Windspeed <1 m/s	30 m	10 m	From all sprayed area edges	*Measurements taken from the downwind edge or corner of the treated area.* *Sensitive areas included for wind directions up to 45° downwind from the treated area*
	Windspeed 1-6 m/s	30 m	10 m	On downwind edges of sprayed area	
	Windspeed >6m/s	90 m	30 m	On downwind edges of sprayed area provided no high hazard factors	
Boom spraying	Windspeed <1 m/s	10 m	2 m	From all sprayed area edges	*Measurements taken from the downwind edge or corner of the treated area.* *Sensitive areas included for wind directions up to 45° downwind from the treated area*
	Windspeed 1-6 m/s	10 m	2 m	On downwind edges of sprayed area	
	Windspeed >6m/s	30 m	10 m	On downwind edges of sprayed area provided no high hazard factors	

Outcomes driven risk assessment

Two desired outcomes

1) No risk of off target spray deposits at levels that could be expected to cause harm.
   This has to be related to the toxicity of the chemical(s) being applied to; humans (class 6), aquatic ecosystems (class 9.1) or terrestial ecosystems (classes 9.2, 9.3 and 9.4).
   The key areas of toxicity concern are human and aquatic ecosystems and highly sensitive terrestial ecosystems (as opposed to general land usage around sprayed areas).
2) No risk of contamination of adjacent crops or animals that could lead to market acceptability issues.
3) Minimal risk of contamination of drinking water sources - especially roofing for collection of drinking water.

Topic 8 – Agrichemicals

Table of parties' positions on revised spray drift provision – 24 May 2021

Northland Regional Council	Horticulture NZ	Northland District Health Board	Mr and Mrs Wheeler
Rule C.6.5.1 Application of agrichemicals – permitted activity The discharge of an agrichemical into air or onto or into land is a permitted activity, provided: 1. for all methods (including hand-held spraying, ground-based spraying and aerial application): (aa) The following preconditions must be met for any discharge of agrichemicals into air or onto land: i) the applicator must take all practicable steps to ensure that agrichemicals are used appropriately and accurately, and are confined to target application areas; ii) the applicator shall take all practicable steps to ensure that no adverse effects occur beyond the application area; and iii) the applicator shall ensure that relevant tolerable exposure limits (TELs) and environmental exposure limits (EELs) are not exceeded. ... 2. for ground-based spraying and aerial application: (a) the activity is undertaken in accordance with the following sections of the *New Zealand Standard Management of Agrichemicals (NZS8409:2004)* as it relates to the management of the discharge of agrichemicals: i) Use – Part 5.3, and ii) Storage – Appendix L4, and iii) Disposal – Appendix S, and iv) Records – Appendix C9, and [References to be updated if 2021 Standard approved] (b) a Spray Plan must be prepared annually for the areas where agrichemicals are to be applied, which shall be made available to the Council on request; (c) Where the activity is undertaken within 100 metres of a spray-sensitive area or 300 metres for aerial application: i) a risk assessment must be carried out prior to the application to determine the site characteristics on the day, particularly wind speed and wind direction, the level of risk present, and use of appropriate methods to mitigate that risk; ii) the applicator must re-evaluate the risk assessment during the application to ensure that the situation has not changed and that the application methods and drift mitigations are still appropriate; iii) the risk assessment must be recorded in a spray diary (in the form that meets the requirements of Appendix X), which shall be made available to the Council on request; iv) the activity must be undertaken in accordance with the risk assessment, spray diary and the spray plan; and v) the application must meet the requirements in Table X; (d) agrichemical application must not occur if: i) wind speeds are greater than 6m/s; or ii) inversion conditions are present or likely to be present during application; (e) the requirements in (2) above do not apply to agrichemical application if: i) the occupier of the spray sensitive area has provided written approval for the type and method of agrichemical application and: 1) the written approval is re-signed annually;	**Rule C.6.5.1 Application of agrichemicals – permitted activity** The discharge of an agrichemical into air or onto or into land is a permitted activity, provided: 1. [as per consent agreement] 2. for ground based spraying and aerial applications: a) the activity is undertaken in accordance with the following sections of the New Zealand Standard Management of Agrichemicals (NZS8409:2004) as it relates to the management of the discharge of agrichemicals: i) Use – Part 5.3, and ii) Storage – Appendix L4, and iii) Disposal – Appendix S, and iv)Records – Appendix C9, and [References to be updated if 2021 Standard approved] b) a Spray plan must be prepared annually for the areas where agrichemicals are to be applied, and made available to the Regional Council on request. c) Where the agrichemical application is to be undertaken by ground-based methods within 100 metres of a spray sensitive area, or by aerial application within 300 metres of a spray sensitive area the following conditions must be met: i) The applicator must take all practicable steps to ensure that agrichemicals are used appropriately and accurately and are confined to target application areas, to ensure that no adverse effects occur beyond the target application area. ii) A risk assessment must be carried out prior to the application to determine the site characteristics on the day, particularly wind speed and wind direction, the level of risk present, and use of appropriate methods to mitigate that risk based on Table XX (Appendix 3) to ensure that condition 2 c i) is met. iii) An applicator should re-evaluate the risk assessment during the application to ensure that the situation has not changed and that the application methods and drift mitigations are still appropriate. iv) The application must be undertaken in accordance with the spray plan and risk assessment. v) The risk assessment must be documented and made available to the Council on request. vi) The application must meet the requirements in Table X The application is not permitted if the following conditions are present: i) Inversion conditions are present, or	**Rule C.6.5.1 Application of agrichemicals – permitted activity** The discharge of an agrichemical into air or onto or into land is a permitted activity, provided: The following preconditions must be met for any discharge of agrichemicals into air or onto land: • the applicator must take all practicable steps to ensure that agrichemicals are used appropriately and accurately, and are confined to target application areas; • the applicator shall take all practicable steps to ensure that no adverse effects occur beyond the application area • the applicator shall ensure that relevant tolerable exposure limits (TELs) and environmental exposure limits (EELs) are not exceeded; 2. Where the activity is undertaken within 100 metres of a spray-sensitive area (or 300 metres for aerial application): a. The following risk assessment requirements are met: i) a risk assessment must be carried out prior to, during and after the application of an agrichemical by the person applying the agrichemical; ii) The risk assessment must include assessment of all the factors listed in Table Y; iii) the risk assessment and all actions undertaken to mitigate identified risks must be recorded in a spray diary; iv) the activity must be undertaken in accordance with the risk assessment and spray diary; v) the person completing the risk assessment must sign the entry in the spray diary; vi) the spray diary and electronic or paper records from the digital/electronic wind direction and wind speed measuring device shall be made available to the Council on request; and b. Agrichemical application is a permitted activity provided that the requirements in Table ZA are met: 3. The requirements in Table ZA do not apply to agrichemical application if: a) the occupier of the spray sensitive area has provided written approval for the type and method of agrichemical application and: i) the agrichemical to be applied is not high or very high human toxicity; and ii) the written approval is re-signed annually; and iii) the occupier is provided with a copy of the annual spray plan before signing (or re-signing) and that spray plan identifies the use of any agrichemicals with high human toxicity; and iv) the written approval has not been withdrawn, withdrawal only being effective if three months' notice has been provided; and v) a copy of the relevant spray diary is provided to the occupier of the spray sensitive area upon request. 4. Agrichemical application must not occur in the circumstances in Table ZB.	**Rule C.6.5.1 Application of agrichemicals – permitted activity** The discharge of an agrichemical into air or onto or into land is a permitted activity, provided: The following preconditions must be met for any discharge of agrichemicals into air or onto land: • A Spray Plan must be prepared annually for the areas where agrichemicals are to be applied, which must be made available to the Council and the occupiers of spray sensitive areas on request; • the applicator must take all practicable steps to ensure that agrichemicals are used appropriately and accurately, and are confined to target application areas; • the applicator must take all practicable steps to ensure that no adverse effects occur beyond the application area; • the applicator must ensure that relevant tolerable exposure limits (TELs) and environmental exposure limits (EELs) are not exceeded; 2. Where the activity is undertaken within 100 metres of a spray-sensitive area (or 300 metres for aerial application): a) The following risk assessment requirements are met: i) a risk assessment must be carried out prior to, during and after the application of an agrichemical by the person applying the agrichemical; ii) The risk assessment must include assessment of all the factors listed in Table Y; iii) the risk assessment and all actions undertaken to implement the risk assessment must be recorded in a spray diary; iv) the activity must be undertaken in accordance with the risk assessment and spray diary; v) the person completing the risk assessment must sign the entry in the spray diary; vi) the spray diary and electronic or paper records from the digital/electronic wind direction and wind speed measuring device must be made available to the Council on request; and b) Agrichemical application is a permitted activity provided that the requirements in Table ZA are met: 3. The requirements in Table ZA do not apply to agrichemical application if: a) the occupier of the spray sensitive area has provided written approval for the type and method of agrichemical application and: i) the agrichemical to be applied is not high or very high human toxicity; and ii) the written approval is re-signed annually; and iii) the occupier is provided with a copy of the annual spray plan before signing (or re-signing) and that spray plan identifies the use of any agrichemicals with high human toxicity; and iv) the written approval has not been withdrawn, withdrawal only being effective if three months' notice has been provided; and v) a copy of the relevant spray diary is provided to the occupier of the spray sensitive area upon request. 4. Agrichemical application must not occur in the circumstances in Table ZB.

Northland Regional Council

2) the occupier is provided with a copy of the annual spray plan; and

3) the written approval has not been withdrawn, withdrawal only being effective if three months' notice has been provided;

(f) agrichemical application undertaken in a fully enclosed environment (for example a greenhouse) is not subject to the requirements of (2) above.

Agrichemical application that does not meet all of the preconditions and is not permitted under (2) above is a discretionary activity under Rule C.6.5.5.

3. [training requirements for ground based as per agreed provisions]
4. [training requirements for aerial as per agreed provisions]
5. [2,4-D provisions as per agreed provisions]

Application method	Wind speed	Wind direction	Additional requirements to be a permitted activity:
Boom spraying	0-1m/s	Any wind direction	There is a buffer distance on all boundaries of the target application area of: • 2 m with effective shelter, or • 10 m without effective shelter.
	1-6m/s	Wind away from sensitive area(s)	No additional requirements apply.
		Wind toward sensitive area(s) or wind direction unpredictable	There is a buffer on the downwind boundary of the target application area of: • 2 m with effective shelter, or • 10 m without effective shelter Use coarsest spray quality possible and implement spray drift mitigation controls identified in risk assessment.
Airblast spraying	0-1m/s	Any wind direction	There is a buffer distance on all boundaries of the target application area of: • 10m with shelter, or • 30m without shelter.
	1-6m/s	Wind away from sensitive area(s)	No additional requirements apply.
		Wind toward sensitive area(s) or wind	There is a buffer distance on all boundaries of the target application area of: • 10m with effective shelter, or

Horticulture NZ

ii) Where a high human risk hazard (Table xx) is present, and the spray quality is fine or smaller, and the wind direction is towards a spray sensitive area; or

iii) Where a high human risk hazard (Table xx) is present, and the chemical has high vapour pressure (>10 mPa)

iv) The requirements in Table X are not met.

d) The requirements in 2 c) above do not apply to agrichemical applications if the occupier of the spray sensitive area has provided written approval for agrichemical applications and:

i) the written approval is re-signed annually

ii) the occupier is provided with a copy of the annual spray plan; and

iii) the written approval has not been withdrawn, withdrawal only being effective if three months notice has been provided.

e) The requirements of 2c) and d) do not apply to agrichemical applications undertaken in a fully enclosed environment (such as a greenhouse).

3. [training conditions as per consent document]
4. [training conditions as per consent document]
5. [2,4-D conditions as per consent document]

Table X – Permitted activity requirements under 2 (c)

Application method	Wind speed	Wind direction	Additional requirements to be a permitted activity:[x]
Boom spraying	0-1m/s	Any wind direction	There is a buffer distance on all boundaries of the target application area of: • 2 m with shelter, or • 10 m without shelter.
	1-6m/s	Wind away from sensitive area(s)	No additional requirements apply.
		Wind toward sensitive area(s) or wind direction unpredictable	There is a buffer on the downwind boundary of the target application area of: • 2 m with shelter, or • 10 m without shelter
	>6m/s	Wind away from sensitive area(s)	Use coarsest spray quality possible and implement mitigation controls identified in risk assessment.
		Wind toward sensitive area(s) or wind direction unpredictable	There is a buffer on the downwind boundary of the target application area of: • 10 m with shelter, or • 30 m without shelter And • no high human or high ecotoxic risk products as identified through Table XX to be applied. • use coarsest spray quality possible and implement

Northland District Health Board

5. Agrichemical application that does not meet all of the preconditions and is not permitted under (2) or (3) above is a discretionary activity under Rule C.6.5.5.

Table ZA – Permitted Activities	
Activity	**Standards**
A. Ground application	
Wind away from spray-sensitive area	
Wind speed 0-1m/s	i. The agrichemical is applied using **Agrichemical direct application methodology**
Wind speed 1-3m/s	Nil
Wind speed 3-5m/s	**EITHER:** i. Effective shelter is present; and ii. Spray quality is as coarse as practicable; and iii. Spray is non-volatile **OR:** The agrichemical is applied using **Agrichemical direct application methodology**
Wind changeable or toward spray-sensitive area	
Wind speed 0-1m/s	i. The agrichemical is applied using **Agrichemical direct application methodology**
Wind speed 1-3m/s	**EITHER:** i. Effective shelter is present; and ii. A 50m buffer is observed; and iii. Spray quality is medium or coarse; and iv. Spray is non-volatile; v. Spray is not high or very high human toxicity or ecotoxicity; and vi. Maximum height of spray release is <=0.5m (boom) or <1 m (airblast) above target.

Mr and Mrs Wheeler

5. Agrichemical application that does not meet all of the preconditions and is not permitted under (2) or (3) above is a discretionary activity under Rule C.6.5.5.

Table ZA – Permitted Activities	
Activity	**Standards**
A. Ground application	
Wind away from spray-sensitive area	
Wind speed 0-1m/s (0-3.6km/h)	i. The agrichemical is applied using **Agrichemical direct application methodology**
Wind speed 1-3m/s (0-10.8km/h)	Nil
Wind speed 3-5m/s (10.8-18km/h)	**EITHER:** i. Effective shelter is present; and ii. Spray quality is as coarse as practicable. **OR:** **iii.** The agrichemical is applied using **agrichemical direct application methodology**
Wind toward spray-sensitive area	
Wind speed 0-1m/s (0-3.6km/h)	i. The agrichemical is applied using **Agrichemical direct application methodology**
Wind speed 1-2m/s (3.6-7.2km/h)	**EITHER:** i. Effective shelter is present; and ii. A 50m buffer is observed; and iii. Spray quality is medium or coarse. **OR** **iv.** The agrichemical is applied using **agrichemical direct application methodology**
B. Aerial application	
Wind away from spray-sensitive area	

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		direction unpredictable	• 30m without effective shelter. Use coarsest spray quality possible and implement spray drift mitigation controls identified in risk assessment.
Aerial spraying	0-1m/s	Any wind direction	There is a buffer distance on all boundaries of the target application area of: • 100m with effective shelter, or • 300m without effective shelter. Use coarsest spray quality possible and implement spray drift mitigation controls identified in risk assessment.
	1-6m/s	Wind away from sensitive area(s)	No additional requirements apply.
		Wind toward sensitive area(s) or wind direction unpredictable	There is a buffer on the downwind boundary of the target application area of: • 100 m with effective shelter, or • 300 m without effective shelter Use coarsest spray quality possible and implement spray drift mitigation controls identified in risk assessment.

Note: refer to Appendix Y for measurement of wind speed requirements.

Horticulture NZ

			mitigation controls identified in risk assessment.
Airblast spraying	0-1m/s	Any wind direction	There is a buffer distance on all boundaries of the target application area of: • 10m with shelter, or • 30m without shelter.
		Wind away from sensitive area(s)	No additional requirements apply.
	1-6m/s	Wind toward sensitive area(s) or wind direction unpredictable	There is a buffer distance on all boundaries of the target application area of: • 10m with shelter, or • 30m without shelter.
		Wind away from sensitive area(s)	Use coarsest spray quality possible and implement mitigation controls identified in risk assessment.
	>6m/s	Wind toward sensitive area(s) or wind direction unpredictable	There is a buffer on the downwind boundary of the target application area of: • 30 m with shelter, or • 100 m without shelter And • no high human or high ecotoxic risk products as identified through Table XX to be applied. • use coarsest spray quality possible and implement mitigation controls identified in risk assessment.
Aerial spraying	0-1m/s	Any wind direction	There is a buffer distance on all boundaries of the target application area of: • 100m with shelter, or • 300m without shelter.
		Wind away from sensitive area(s)	No additional requirements apply.
	1-6m/s	Wind toward sensitive area(s) or wind direction unpredictable	There is a buffer on the downwind boundary of the target application area of: • 100 m with shelter, or • 300 m without shelter
		Wind away	Use coarsest spray quality possible and implement mitigation

Northland District Health Board

	OR The agrichemical is applied using **Agrichemical direct application methodology**
B. Aerial application	
Wind away from spray-sensitive area Wind speed 1-5m/s	i. Effective shelter is present; and ii Spray quality is as coarse as possible; and iii Spray is non-volatile.
C. Enclosed structure Agrichemical application undertaken in a fully enclosed structure (for example a greenhouse)	i. The structure remains entirely enclosed for the entire duration of the application of the agrichemical

Table ZB – Discretionary Activities

Activity	Exemptions (Permitted Activity)
Wind speed greater than 5m/s	**i.** The agrichemical is applied using **Agrichemical direct application methodology** ii. The application of citric acid
i. Wind speed 3m/s or greater; and ii. Wind direction away from the spray sensitive area; and iii. The agrichemical has high or very high eco or human toxicity	i. The agrichemical is applied using **Agrichemical direct application methodology**
i. Wind direction changeable or toward the spray sensitive area; and ii. wind speed > 3m/s; or iii. The agrichemical has high or very high human toxicity or ecotoxicity.	i. The agrichemical is applied using **Agrichemical direct application methodology**

Mr and Mrs Wheeler

Wind speed 1-5m/s (3.6-18km/h)	i. Effective shelter is present
C. Enclosed structure Agrichemical application undertaken in a fully enclosed structure (for example a greenhouse)	i. The structure remains entirely enclosed for the entire duration of the application of the agrichemical

Table ZB – Discretionary Activities

Activity	Exemptions (Permitted Activity)
Wind speed greater than 5m/s (18km/h)	**i.** The agrichemical is applied using **Agrichemical direct application methodology** ii. The application of citric acid
i. Wind speed 3m/s (10.6km/h) or greater; and ii. Wind direction away from the spray sensitive area; and iii. The agrichemical has high or very high eco or human toxicity	i. The agrichemical is applied using **Agrichemical direct application methodology**
i. Wind direction toward the spray sensitive area; and ii. The agrichemical has high or very high human toxicity; and iii. The spray-sensitive area is one of: 1. residential buildings and associated garden areas, 2. schools, hospital buildings and care facilities and grounds, 3. amenity areas where people congregate including parks and reserves, 4. community buildings and grounds, including places of worship and marae, 5. water bodies used for the supply of drinking water and for stock drinking, or 6. roofing for the collection of drinking water.	i. The agrichemical is applied using **Agrichemical direct application methodology**

Northland Regional Council	Horticulture NZ	Northland District Health Board	Mr and Mrs Wheeler
	<table><tr><td></td><td></td><td>from sensitive area(s)</td><td>controls identified in risk assessment.</td></tr><tr><td></td><td>> 6m/s</td><td>Wind toward sensitive area(s) or wind direction unpredic table</td><td>There is a buffer on the downwind boundary of the target application area of: • 300 m with shelter, or • 1000 m without shelter And • no high human or high ecotoxic risk products as identified through Table XX to be applied. • use coarsest spray quality possible and implement mitigation controls identified in risk assessment.</td></tr></table> [x]Except that where an EPA approval for an agrichemical specifies a buffer distance, this prevails on any buffer distance requirements stated in Table X. Note: refer to Appendix Y for measurement of wind speed requirements.		<table><tr><td>i. Wind direction toward the spray sensitive area; and ii. The agrichemical has high or very high eco toxicity; and iii. The spray-sensitive area is one of: 1. *water bodies used for the supply of drinking water and for stock drinking,* 2. natural wetlands and significant areas of indigenous vegetation and habitats of indigenous fauna as defined in the Regional Policy Statement for Northland, or 3. apiaries.</td><td>i. The agrichemical is applied using **Agrichemical direct application methodology**</td></tr><tr><td>Inversion conditions are present or likely to be present during application</td><td>i. The application of citric acid</td></tr></table>
Appendix Y **Measurement of wind speed and risk assessment requirements** **How to measure wind speed** 1. Wind speed for risk assessment is best measured onsite at the observed maximum projected height of the spray plume (ideally 0.5 – 1 m above the target), or at the release height of the spray for downward projected nozzles. 2. Wind speed during spraying operations is best measured onsite at the downwind edges of sprayed areas closest to potential sensitive areas. This can be achieved using remote monitoring, wind socks or other visual indicators where the applicator can see them. 3. Wind direction measurement during both risk assessment, spraying operations is best measured onsite at the downwind edges of sprayed areas closest to potential sensitive areas. This can be achieved using remote monitoring, wind socks, or other visual indicators where the applicator can see them. ***Risk assessment*** **Risk assessment** A risk assessment must include: 1. Confirmation of the target application area; 2. Appropriateness of product for the weed, pest, or crop; 3. Location of sensitive areas; 4. Weather conditions (wind speed, wind direction, humidity and temperature, atmospheric stability); 5. Appropriateness of particle size and release height, particularly in relation to sensitive areas and buffer zones; 6. Presence and condition of shelter belts; 7. Fit for purpose equipment and PPE; 8. Confirmation that notification has been carried out and required signage is in place (see C3 and C4); 9. Confirmation that any relevant regulatory requirements can be complied with;	**Appendix Y** **Measurement of wind speed and risk assessment requirements** ***How to measure wind speed*** 1. Wind speed for risk assessment is best measured onsite at the observed maximum projected height of the spray plume (ideally 0.5 – 1 m above the target), or at the release height of the spray for downward projected nozzles. 2. 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Wind speed *for risk assessment* must be measured: i) Onsite; ii) at the observed maximum projected height of the spray plume (maximum 1 m above the target), or at the release height of the spray for downward projected nozzles. iii) using an electronic/digital monitoring device which produces an electronic or printed record. 2. Wind speed *during spraying operations* must be measured: i) Onsite; ii) at the downwind edges of sprayed areas closest to potential sensitive areas; iii) using an electronic/digital monitoring device which produces an electronic or printed record. 3. Wind direction measurement for both risk assessment and during spraying operations must be measured: i) Onsite; ii) at the downwind edges of sprayed areas closest to potential sensitive areas; iii) using an electronic/digital monitoring device which produces an electronic or printed record, together with wind socks or other visual indicators where the applicator can see them. 4. Wind speed and wind direction shall be averaged over a 10-minute period. 5. Wind gust should be measured as the strongest consecutive 3 second reading in any 60 second period. ***Table Y*** ***Risk assessment*** A risk assessment must include: 1. Confirmation of the target application area; 2. Appropriateness of product for the weed, pest, or crop; 3. Location of spray- sensitive areas;	**Measurement of wind speed and risk assessment requirements** 1. Wind speed *for risk assessment* must be measured: i) Onsite; ii) at the observed maximum projected height of the spray plume (maximum 1 m above the target), or at the release height of the spray for downward projected nozzles. iii) using an electronic/digital monitoring device which produces an electronic or printed record. 2. 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Location of spray- sensitive areas;

Northland Regional Council	Horticulture NZ	Northland District Health Board	Mr and Mrs Wheeler
10. Confirmation that all other risk factors, including those identified in the spray plan, are being managed in accordance with the spray plan. Where it is necessary to deviate from the spray plan this must be recorded along with reasoning as to why deviation is necessary; 11. Toxicity; 12. Application rate; 13. Volatility; 14. Timing and duration of operation; and 15. Type of sensitive area and sensitivity of persons/animals/vegetation potentially exposed. 16. The likelihood of spray drift occurring. 17. The ways of minimising the risk of spray-drift occurring and selection of the practicable steps to ensure that agrichemicals are confined to target application areas		4. Weather conditions (wind speed, wind direction, humidity and temperature, atmospheric stability); 5. Appropriateness of particle size and release height, particularly in relation to sensitive areas and buffer zones; 6. Presence and condition of shelter belts; 7. Fit for purpose equipment and personal protective equipment; 8. Confirmation that notification has been carried out and required signage is in place (see C3 and C4); 9. Confirmation that any relevant regulatory requirements can be complied with; 10. Confirmation that all other risk factors, including those identified in the spray plan, are being managed in accordance with the spray plan; 11. Toxicity of the agrichemical to be applied; 12. Application rate; 13. Volatility; 14. Timing and duration of operation; and 15. Type of sensitive area and sensitivity of persons/animals/vegetation potentially exposed. 16. The likelihood of spray drift occurring. 17. The ways of eliminating the risk of spray-drift occurring and selection of the practicable steps to ensure that agrichemicals are confined to target application areas	4. Weather conditions (wind speed, wind direction, humidity and temperature, atmospheric stability); 5. Appropriateness of particle size and release height, particularly in relation to sensitive areas and buffer zones; 6. Presence and condition of shelter belts; 7. Fit for purpose equipment and personal protective equipment; 8. Confirmation that notification has been carried out and required signage is in place (see C3 and C4); 9. Confirmation that any relevant regulatory requirements can be complied with; 10. Confirmation that all other risk factors, including those identified in the spray plan, are being managed in accordance with the spray plan; 11. Toxicity of the agrichemical to be applied; 12. Application rate; 13. Volatility; 14. Timing and duration of operation; and 15. Type of sensitive area and sensitivity of persons/animals/vegetation potentially exposed. 16. The likelihood of spray drift occurring. 17. The ways of eliminating the risk of spray-drift occurring and selection of the practicable steps to ensure that agrichemicals are confined to target application areas
Definitions **Spray-sensitive area** 1. residential buildings and associated garden areas, and 2. schools, hospital buildings and care facilities and grounds, and 3. amenity areas where people congregate including parks and reserves, and 4. community buildings and grounds, including places of worship and marae, and 5. certified organic farms, and 6. orchards, crops and commercial growing areas, and 7. water bodies used for the supply of drinking water and for stock drinking, and 8. natural wetlands and significant areas of indigenous vegetation and habitats of indigenous fauna as defined in the Regional Policy Statement for Northland, and 9. roofing for the collection of drinking water; and 10. apiaries. **Effective shelter** Effective shelter must be: 1. taller (at least >1 metre) than the height of the spray plume[1] when the plume interacts with the shelter; and 2. have foliage that is continuous from top to bottom; and 3. achieves in the order of 50% optical and aerodynamic porosity;[2] and 4. has a high surface area (note that fine needles are more effective at collecting fine spray than broad leaves); and 5. is not deciduous; and 6. has a width to height ratio of 1:3.5. Artificial shelter can also be useful in reducing spray drift (for example overhead hail netting for kiwifruit and apples). *[1] NB: This is the not necessarily the same as the projected height (at point of discharge) as it will typically rise if it drifts.*	**Definitions** ***Spray-sensitive area*** 1. residential buildings and associated garden areas, and 2. schools, hospital buildings and care facilities and grounds, and 3. amenity areas where people congregate including parks and reserves, and 4. community buildings and grounds, including places of worship and marae, and 5. certified organic farms, and 6. orchards, crops and commercial growing areas, and 7. water bodies used for the supply of drinking water and for stock drinking, and 8. natural wetlands and significant areas of indigenous vegetation and habitats of indigenous fauna as defined in the Regional Policy Statement for Northland, and 9. roofing for the collection of drinking water; and 10. apiaries. ***Effective shelter*** Effective shelter must be: 1. taller (at least >1 metre) than the height of the spray plume[1] when the plume interacts with the shelter; and 2. have foliage that is continuous from top to bottom; and 3. achieves in the order of 50% optical and aerodynamic porosity;[2] and 4. has a high surface area (note that fine needles are more effective at collecting fine spray than broad leaves); and 5. is not deciduous; and 6. has a width to height ratio of 1:3.5. Artificial shelter can also be useful in reducing spray drift (for example overhead hail netting for kiwifruit and apples). *[1] NB: This is the not necessarily the same as the projected height (at point of discharge) as it will typically rise if it drifts.*	**Definitions** ***Spray-sensitive area*** 1. residential buildings and associated garden areas, and 2. schools, hospital buildings and care facilities and grounds, and 3. amenity areas where people congregate including parks and reserves, and 4. community buildings and grounds, including places of worship and marae, and 5. certified organic farms, and 6. orchards, crops and commercial growing areas, and 7. water bodies used for the supply of drinking water and for stock drinking, and 8. natural wetlands and significant areas of indigenous vegetation and habitats of indigenous fauna as defined in the Regional Policy Statement for Northland, and 9. roofing for the collection of drinking water; and 10. apiaries. ***Effective shelter*** Effective shelter means: 1. taller (at least >1 metre) than the height of the spray plume[1] when the plume interacts with the shelter; and 2. have foliage that is continuous from top to bottom; and 3. achieves in the order of 50% optical and aerodynamic porosity;[2] and 4. has a high surface area (note that fine needles are more effective at collecting fine spray than broad leaves); and 5. is not deciduous; and 6. has a minimum height of 3.5m; and 7. has a width to height ratio of 1:3.5. *[1] NB: This is the not necessarily the same as the projected height (at point of discharge) as it will typically rise if it drifts.*	**Definitions** ***Spray-sensitive area*** 1. residential buildings and associated garden areas, and 2. schools, hospital buildings and care facilities and grounds, and 3. amenity areas where people congregate including parks and reserves, public footpaths and 4. community buildings and grounds, including places of worship and marae, and 5. certified organic farms, and 6. orchards, crops and commercial growing areas, and 7. water bodies used for the supply of drinking water and for stock drinking, and 8. natural wetlands and significant areas of indigenous vegetation and habitats of indigenous fauna as defined in the Regional Policy Statement for Northland, and 9. roofing for the collection of drinking water; and 10. apiaries. ***Effective shelter*** Effective shelter means: 1. taller (at least >1 metre) than the height of the spray plume[1] when the plume interacts with the shelter; and 2. have foliage that is continuous from top to bottom; and 3. achieves in the order of 50% optical and aerodynamic porosity;[2] and 4. has a high surface area (note that fine needles are more effective at collecting fine spray than broad leaves); and 5. is not deciduous; and 6. has a minimum height of 3.5m; and 7. has a width to height ratio of 1:3.5. *[1] NB: This is the not necessarily the same as the projected height (at point of discharge) as it will typically rise if it drifts.*

Northland Regional Council

[2] *The thicker the shelter belt, (e.g. multiple lines of plants), optically you can't see thought it but it's still aerodynamically porous.*

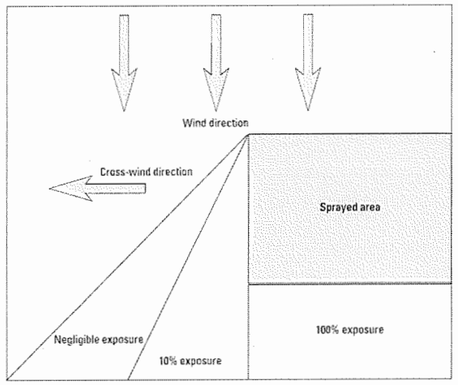
Buffer

Buffer zone distance means a specified horizontal distance from a downwind spray-sensitive area, measured from the downwind edge of the application area closest to the spray-sensitive area.

Away from

"Away from" means "not towards" and includes a 45° either side of 100%.

Figure 1: Exposures cross-wind from sprayed area



Horticulture NZ

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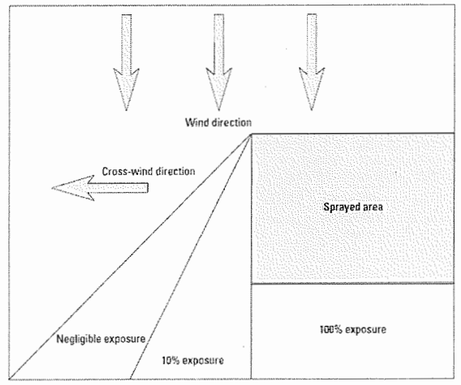
Figure 1: Exposures cross-wind from sprayed area



Northland District Health Board

[2] *The thicker the shelter belt, (e.g. multiple lines of plants), optically you can't see thought it but it's still aerodynamically porous.*

Buffer

Buffer zone distance means a specified horizontal distance from a downwind spray-sensitive area, measured from the downwind edge of the application area closest to the spray-sensitive area.

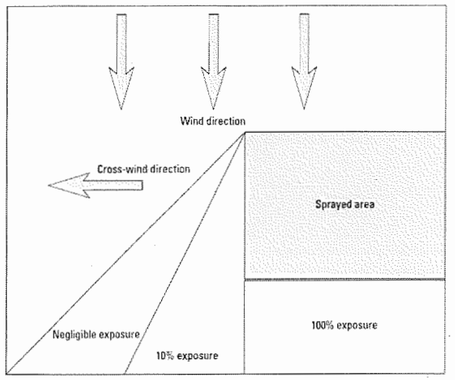
Away from

"Away from" means "not towards".

"Away from" includes 45° either side of 100% where all of the following requirements are met:

a) there is a buffer of at least 50 metres from the downwind edge of the sprayed area to the spray sensitive area;
b) wind direction is moderately steady; and
c) wind speed is at least 2m/s.

Figure 1: Exposures cross-wind from sprayed area



Agrichemical direct application methodology

Agrichemical direct application methodology means the use of a shroud, weed wiper or roller which directly applies the agrichemical to the target in a manner which avoids any spray drift

Mr and Mrs Wheeler

[2] *The thicker the shelter belt, (e.g. multiple lines of plants), optically you can't see thought it but it's still aerodynamically porous.*

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Buffer zone distance means a specified horizontal distance from a downwind spray-sensitive area, measured from the downwind edge of the application area closest to the spray-sensitive area.

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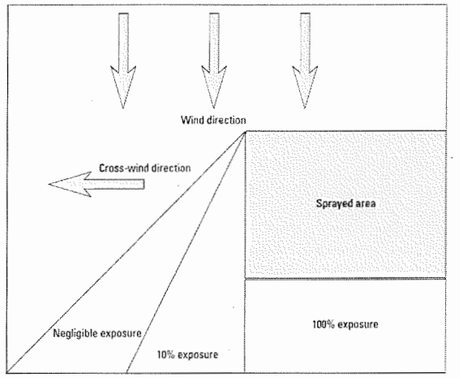
"Away from" means "not towards".

"Away from" includes 45° either side of 100% where all of the following requirements are met:

a) there is a buffer of at least 50 metres from the downwind edge of the sprayed area to the spray sensitive area;
b) wind direction is moderately steady; and
c) wind speed is at least 2m/s.

Figure 1: Exposures cross-wind from sprayed area



Agrichemical direct application methodology

Agrichemical direct application methodology means the use of a shroud, weed wiper or roller which directly applies the agrichemical to the target in a manner which avoids any spray drift

Annexure C

Table X Permitted activity requirements under 2(c)

Wind speed	**Wind direction**	**Additional requirements to be assessed**
Ground based – low risk		
1-3m/s	Wind away from sensitive area(s)	nil
Ground based – assessed risk		
0-1m/s	Any wind direction (not inversion or ponding conditions)	The buffer distance on all boundaries of the target application area and whether effective shelter is present Height of spray release (for boom or blast spraying it should be below the shelter to prevent spray drift). Sensitivity of receivers Toxicity of spray Use of agrichemical direct application methodology (e.g. shrouds).
1-5m/s	Wind toward sensitive area(s)	The buffer distance on the downward boundary of the target application area and whether effective shelter is present Spray quality Sensitivity of receivers Toxicity of spray
3-6m/s	Wind away from sensitive area(s)	Spray quality Sensitivity of receivers Toxicity of spray
Wind speed	**Wind direction**	**Additional requirements to be assessed**
Aerial spraying – assessed risk		

0-1 m/s	Any wind direction (not inversion or ponding conditions)	The buffer distance on all boundaries of the target application area and whether effective shelter is present Height of spray release and risk of spray drift Sensitivity of receivers Toxicity of spray Spray quality is as coarse as possible
1-5 m/s	Wind away from sensitive area(s)	Height of spray release and risk of spray drift Sensitivity of receivers Toxicity of spray Spray quality being as coarse as possible
1-3 m/s	Wind toward sensitive area(s)	The buffer distance on the downward boundary of the target application area and whether effective shelter is present Height of spray release and risk of spray drift Sensitivity of receivers Toxicity of spray Spray quality being as coarse as possible

Annexure D – Spray Assessment Guidelines (Horticulture New Zealand)

D

GROWsafe

Date and time:
Applicator's name:
Applicator's certification:
Location:
Target pest:
Method of application: Equipment: Nozzles: Speed: Pressure: Water rate:
PPE worn: Gloves Hat Boots Cotton overalls Spraysuit **(circle)** Eye protection Respirator Other _____

Agrichemicals used and rate: **(HSR number)**
Additives used and rate:
Total chemical used:

Sensitive areas:
Measures taken to avoid spraydrift:

Notification: **(who, when, how)**
Other notes: **(re-entry, withholding, signage, disposal, etc)**

Weather

Wind speed and direction (circle)

NW				N					NE
	4			4				4	
		3		3			3		
			2	2		2			
				1	1	1			
W	4	3	2	1	0	1	2	3	4 E
				1	1	1			
			2		2		2		
		3			3			3	
	4				4				4
SW				S					SE

0 = No wind
1 = 1-5 km/hour
2 = 5-10 km/hour
3 = 10-15 km/hour
4 = 15+ km/hour

Temperature (circle)
0-5 °C
6-10 °C
11-15 °C
16-20 °C
21-25 °C
26+ °C

Humidity (circle)
Very high (almost drizzling)
High
Average
Low
Very low (dry)

Results achieved: