

Presentation to Proposed District Plan Hearings Committee:

Hearing 9 Rural Zones

Introduction

My name is Michael John Winch. I live in the Far North District and made a submission on the Proposed Far North District Plan (submission number 67).

This presentation relates to my submissions S67.009 to S67.016 in relation to rural zones.

I am a retired Civil Engineer with over 40 years experience in roading, stormwater and flood management. While working for Haigh Workman Ltd, I assisted in the preparation of their submission on the Proposed District Plan (S512). At this hearing I am speaking in support of my personal submission S67.

Impermeable Surfaces Rules RPROZ-R2 and HZ-R2

The impermeable surfaces rules are the main method in the Proposed District Plan of implementing Objective PROZ-O3(c)(d) and Policy PROZ-P5(c)(d) (and similar objectives and policies in other zones). Clause (c) relates to protecting highly productive land; clause (d) requires land use activities that would exacerbate natural hazards to be avoided.

Highly Productive Land

Refer my submission S67.011, 013 and 016. I agree with the Planner's recommendation to include a new matter of discretion in Rules RPROZ-R2 and HZ-R2 to protect highly productive land in the Rural Production and Horticultural zones (Rural Production S42A page 140 para 517, and Horticultural S42A page 30 para 134) as required by the National Policy Statement for Highly Productive Land (NPS-HPL).

The Proposed Plan as notified does not contain any rules controlling general land use (as opposed to subdivision) on highly productive land. In general, once land is covered with an impermeable surface it is no longer available for land-based primary production. Adding a further Matter of Discretion to the existing Rules RPROZ-R2 and HZ-R2 is an efficient method of protecting highly productive land.

No assessment has been made as to whether the 15% permitted impermeable surfaces threshold in Rules RPROZ-R2 and HZ-R2 adequately implements NPS-HPL, in particular NPS-HPL Policy 3.9. I am not qualified to make that assessment, but suggest that the 5% and 2% thresholds sought in my submission are more consistent with NPS-HPL than the very permissive 15% proposed in the current rules. Given that almost all land zoned Horticultural is highly productive land, a lower permitted threshold is justified in this zone compared with the Rural Production zone.

I accept the Planner's recommendation not to include the new matter of discretion in Rural Lifestyle zone Rule RLZ-R2 because it is outside the scope of the NPS-HPL (Rural Lifestyle S42A page 15 para 67, and page 28 para 133).

Permitted Activity Threshold for Stormwater Management

Refer my submission S67.010 and 012.

I disagree with the Consultant Planner's recommendation regarding the impermeable surfaces permitted activity threshold in Rules RPROZ-R2 and HZ-R2 in the Rural Production and Horticultural zones (Rural Production S42A page 140 para 516, and Horticultural S42A page 29 para 133).

The Planner's report recommends no change to the existing 15% permitted impermeable surfaces in rural zones on the basis that the operative rule seems to be working satisfactorily and no one would create 15% impermeable surfaces without a good economic reason. The argument that there are no problems with the existing 15% threshold is not valid - the threshold is so high that resource consents are almost never required, so Council has no knowledge of what impermeable surfaces are being created in the rural zones and whether or not this is exacerbating downstream flooding.

The District Plan rules need to allow for potential future development, not just historic activities. For example a solar farm or greenhouses with a plan area of 100,000m² impermeable surfaces could establish on a 100ha farm which already has up to 5% impermeable surfaces without breaching the impermeable surfaces rule. The adverse effects of increased stormwater runoff from this level of development would be significant.

The thresholds should be set at a level that allows for reasonable land use while avoiding or minimising off-site adverse effects, including cumulative effects. The thresholds for residential and lifestyle zones generally achieve this purpose. However, cumulative development up to the 15% permitted impermeable surfaces threshold in the Rural Production and Horticultural zones will result in significant adverse effects.

The permitted activity rules do not provide for any mitigation of increased stormwater runoff up to the permitted threshold, so need to be set cautiously.

Stormwater effects are almost always downstream of the site where the activity occurs and include increased erosion as a result of increased velocities, reduction in water quality and flooding of downstream properties.

At 15%, adverse effects would be significant as argued in my submission. For your convenience, I repeat the relevant discussion below:

The impermeable surfaces permitted activity threshold of 15% for Rural Production is excessive and would result in significant adverse effects on stormwater runoff if development were to occur at these levels. A site developed with 15% impermeable surfaces will typically have 20% to 30% higher peak stormwater runoff compared with an undeveloped site, and will result in increased flooding and erosion downstream. As this zone comprises a large proportion of the District, cumulative adverse effects are also likely to be significant.

The 15% permitted activity threshold for the Rural Production zone is inconsistent with the objectives and policies of the zone, for example Rural Production Objective RPROZ-O3 and Policies RPROZ-P2 and P5.

The maximum impermeable surfaces permitted activity thresholds in the Rural Production zone should be reduced to 5%. On a typical 200 ha farm or forestry block, this would allow 10 ha of impermeable surfaces, permitting normal rural buildings, yards, races and roads while minimising cumulative adverse effects.

In the attached appendix, I have provided calculations for stormwater runoff for two typical examples. In one example on medium soakage soil, 15% impermeable surfaces would increase peak runoff by 26%. In the other example on high soakage soil, 15% impermeable surfaces would increase peak runoff by 46%. The downstream effects of these increases would be significant.

The 15% threshold (with no area limit) is inconsistent with the 12.5% / 2500 m² limits in Rural Lifestyle zone Rule RLZ-R2. The Rural Production and Horticultural zones are intended to be **less** developed than the Rural Lifestyle zone, so should have a lower permitted impermeable surfaces threshold.

Rules RPROZ-R2 and HZ-R2 are also inconsistent with earthworks Rule EW-S1 which has a permitted activity threshold of 2500m² per year in all zones (note: this rule deals with on-site stormwater management but does not explicitly control effects on downstream flooding).

I remain convinced that a **5% impermeable surfaces threshold** as sought in my submission for the Rural Production zone is the maximum threshold for a permitted activity. Even with a 5% threshold, peak stormwater runoff could increase by up to 10%. This is not a minor increase (it is similar to the expected effect of climate change in 50 years) but would be acceptable.

Note: If accepted, this reduction may affect the S42A report recommendation to increase permitted building coverage (Rural Production zone S42A report page 193).

As discussed above, a lower threshold is appropriate in the Horticultural zone where there is a greater need to protect highly productive land.

Rural Lifestyle Lot Sizes

Refer my submission S67.009. I agree with the Planner's recommendation to reduce minimum lot sizes in the Rural Lifestyle zone (Rural Lifestyle S42A, page 38 para 185). Rural subdivision should be encouraged in the Rural Lifestyle and Settlement zones rather than compromising the productive capacity of rural land with ad-hoc residential subdivision in Rural Production and Horticultural zones.

Henderson Bay

I own a property at Henderson Bay. Some submissions on this area were addressed in the Rural Production zone S42A report (pages 50, 51, 55). My submission S67.019 seeks to have the Henderson Bay lifestyle properties rezoned from Rural Production to Rural Lifestyle. I understand that this submission will be addressed at Hearing 15B in September next year and I will not address it today.

I seek the following decisions from Council:

Rural Production Zone Rule RPROZ-R2:

- Reduce permitted impermeable surfaces threshold from 15% to 5%
- Add a further matter of discretion: *"The extent to which impermeable surfaces are able to avoided, or otherwise minimised, on highly productive land."*

Horticultural Zone Rule HZ-R2:

- Reduce permitted impermeable surfaces threshold from 15% to 2%
- Add a further matter of discretion: *"The extent to which impermeable surfaces are able to avoided, or otherwise minimised, on highly productive land."*

Rural Lifestyle Subdivision:

Amend Rule SUB-S1 to provide for a controlled minimum lot size of 2ha and a discretionary minimum lot size of 1ha in the RLZ.

Michael John Winch,

2 December 2024

Appendix: Example Stormwater Runoff Calculations

NZ Building Code E1/AS1 details the Rational Method for calculating stormwater runoff from small to medium sized catchments (less than 100 ha) using the formula:

$$Q_c = CIA_c/360$$

where

Q_c = catchment run-off (m³/s).

C = run-off coefficient (see Table 1).

I = rainfall intensity (mm/hr).

A_c = area (hectares) of catchment above the point being considered.

The run-off coefficient C is the variable in the rational formula least able to be precisely determined, and represents the integrated effects of such things as infiltration, storage, evaporation, natural retention and interception, all of which affect the time distribution and peak rate of run-off.

Typical runoff coefficients listed in E1 Table 1 are:

Roofs	C = 0.90
Sealed / concrete paved surfaces	C = 0.85
Unsealed roads	C = 0.50
Heavy clay soil, pasture, 5 to 10% slope	C = 0.40
Medium soakage soil, pasture, 5 to 10% slope	C = 0.30
High soakage soil, pasture, 5 to 10% slope	C = 0.20

Rainfall intensity tables are provided by NIWA HIRDS v4 and include both historic data and allowances for climate change. The normally accepted climate change allowance is currently RCP6.0 for the period 2031-2050. Rainfall intensity varies by location and time of concentration.

The following examples are based on 15% impermeable surfaces on a 200m x 200m catchment (4.0ha), with a 5 to 10% slope. The time of concentration for this catchment is approximately 20 minutes, resulting in a typical 10% AEP + CC rainfall intensity of 80mm/hr.

Medium Soakage Soil					High Soakage Soil						
Pre-development					Pre-development						
Surface	C	I (mm/hr)	A (ha)	Q (m ³ /s)	Surface	C	I (mm/hr)	A (ha)	Q (m ³ /s)		
Pasture	0.30	80	4.0000	0.267	Pasture	0.20	80	4.0000	0.178		
Post-development					Post-development						
Surface	C	I (mm/hr)	A (ha)	Q (m ³ /s)	Surface	C	I (mm/hr)	A (ha)	Q (m ³ /s)		
Roof	0.90	80	0.3000	0.060	Roof	0.90	80	0.3000	0.060		
Concrete paving	0.85	80	0.2000	0.038	Concrete paving	0.85	80	0.2000	0.038		
Unsealed road	0.50	80	0.1000	0.011	Unsealed road	0.50	80	0.1000	0.011		
Pasture	0.30	80	3.4000	0.227	Pasture	0.20	80	3.4000	0.151		
Total			4.0000	0.336	Total			4.0000	0.260		
				Increase in peak runoff	26%					Increase in peak runoff	46%

The percentage increase in runoff from impermeable surfaces on heavy clay soils and steeper land will be less because the pre-development runoff is greater, however, these areas are less likely to be suitable for development with impermeable surfaces.