

Managing the access of livestock access to waterways and the coastal marine area

**Recommendations in response to
submissions on the Proposed Regional Plan
for Northland - Section 42A hearing report**

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Purpose and format of the report

1. This report was prepared in accordance with Section 42A of the Resource Management Act 1991 (RMA). It addresses submissions made on provisions in the Proposed Plan for Northland (Proposed Plan) for the access of livestock to waterways and the coastal marine area.
2. In most cases, the recommended changes to the Proposed Plan are not set out verbatim in this report. The specific changes (including scope for changes) are shown in the document *Proposed Regional Plan for Northland – S42A recommended changes* (attached).
3. If there is no recommendation to amend a provision in the Proposed Plan, then the general presumption is that it should be retained as notified.
4. This report is structured with a focus on the key matters raised in submissions relating to the proposed provisions, which are:
 - The types of animals that the rules should apply to;
 - The waterways that livestock should be excluded from;
 - Fencing setbacks and riparian buffers;
 - Timeframes for excluding livestock;
 - Matters of discretion in Rule C.8.1.2 and notification of resource consents;
 - The scope and stringency of Policy D.4.32; and
 - Accuracy of the lowland and hill country maps.
5. Submissions that fall outside the key matters are addressed in the “Other matters” section in less detail.
6. Further submitters are generally not referred to as they either support or oppose original submissions (they cannot go beyond the scope of the original submissions).
7. The approach of addressing matters raised in submissions (rather than addressing submissions and/or and submission points individually) is consistent with Clause 10 of Schedule 1 to the RMA.

Report author

8. My name is Ben Michael Tait and I have overall responsibility for this report. I am employed as a policy analyst by Northland Regional Council (regional council). For

further details about my qualifications and experience, refer to the RMA section 42 report titled 'General approach'.

9. I have read the Code of Conduct for Expert Witnesses contained in the Practice Note issued by the Environment Court December 2014, and have complied with the code when preparing this report and agree to comply with it at the hearings.
10. The recommendations that I make in this report are not binding on the hearing panel, and I recognise that the hearing panel may not agree with my recommendations.
11. It is also important to note that I may change my recommendations in response to evidence presented by others to the hearing panel. I expect that the hearing panel will ask me to report any changes to my recommendations at the end of the hearing.
12. I have endeavoured to address every submission on the provisions, but there may be cases where inadvertently I have not. Please also note that all references to submissions in this report are in relation to primary submissions only.

About the stock exclusion provisions

13. The relevant provisions in the Proposed Plan are listed below.

<p>Definitions</p> <ul style="list-style-type: none">• Dairy support cattle• Effectively excluded• Livestock• Livestock crossing point• Permanently flowing river or drain <p>Rules</p> <ul style="list-style-type: none">• C.8.1.1 Access of livestock to the bed of a water body or permanently flowing water course – permitted activity• C.8.1.2 Access of livestock to rivers, lakes, and wetlands – restricted discretionary activity• C.8.1.3 Access of livestock to a significant wetland, an outstanding freshwater body, and the coastal marine area – non-complying activity <p>Policies</p> <ul style="list-style-type: none">• D.4.32 Exceptions to livestock exclusion requirements <p>Maps</p> <ul style="list-style-type: none">• Livestock exclusion areas

14. Rule C.8.1.1 permits the access of livestock (dairy cows, dairy support, beef cattle, pigs and deer) to natural wetlands, the bed of a permanently flowing river or lake or a permanently flowing drain, subject to conditions. The primary condition is a requirement

that the livestock are excluded from waterways by certain dates based on the livestock type and the slope category of the land on which they graze.

15. Activities that do not comply with Rule C.8.1.1 are classified as a restricted discretionary activity by Rule C.8.1.2.
16. Rule C.8.1.3 classifies the access of livestock to significant wetlands, outstanding freshwater bodies and the coastal marine area as a non-complying activity.
17. Policy D.4.32 provides direction to decision-makers when they consider an application for a resource consent to authorise the access of livestock to waterways and the coastal marine area.
18. The rules were largely influenced by the Land and Water Forum's recommendations to the previous National-led government on a policy framework for national regulations to exclude livestock from waterways. The National government consulted on draft regulations but to date no national regulations have been issued. The Land and Water Forum stated that their recommendations are:¹

[Based on] the view that stock exclusion requirements should vary according to the type of livestock being farmed, and the terrain. This balances environmental imperatives with the costs and impracticalities of excluding stock from waterways in different farming contexts. The key considerations in designing these stock exclusion requirements for different livestock and terrain types were:

- *the environmental risk arising from stock in waterways*
- *the relative effectiveness of livestock exclusion compared to other management tools*
- *the costs and practicality of exclusion*
- *current government and industry targets.*

The types of animals that the rules apply to

Background

19. The proposed rules apply to dairy cattle (cows and dairy support), beef cattle, deer and pigs. This is consistent with the Land and Water Forum's position:²

¹ Land and Water Forum, 2015. *The Fourth Report of the Land and Water Forum*. p.48

² Land and Water Forum. 2015. p.49

Some livestock types cause more damage from incursions into waterways than others. The main livestock types that can cause significant damage are dairy cattle, beef cattle, deer and pigs. A national stock exclusion regulation that applied to some of these livestock types but not others would be unfair and less effective.

Submissions and analysis

20. Several people submitted that the livestock exclusion rules in the Proposed Plan should apply to other types of livestock. Charles Adamson wants the rules to apply to goats because:³

Goats either farmed or feral can be a very destructive on vegetation and can completely defoliate areas of land by overgrazing and destruction of vegetation which if this is protecting waterways and stream banks can lead to irreversible environmental damage and accelerated erosion.

21. I am not aware of any published data relating to the impacts of goats on riparian vegetation and streambank erosion. I also understand that goat farming is uncommon in Northland and that it can be expensive to contain goats with fences. Without information to substantiate the submission I am not able to recommend that goats are subject to the rules.
22. CEP Services Matauwhi Ltd stated in relation to rules C.8.1.1-C.8.1.3 that “[i]t is not sound resource management practice to apply these rules to a limited variety of stock” and that the plan should be amended to address this.⁴ The submitter, however, did not articulate why it is not sound resource management practice to apply the rules to some stock but not others. The RMA is an effects-based statute, under which, in my opinion, rules issued by councils should corresponds to the scale and significance of the adverse effects of the activities to which that apply.
23. The Minister of Conservation submitted that Rule C.8.1.1 should require sheep to be excluded from lakes and significant wetlands and permanently flowing rivers and drains above outstanding waterbodies, lakes and significant wetlands by 2019.⁵ Several other people want the rules to apply to sheep.⁶ I am not convinced that sheep pose an environmental risk to lakes, significant wetlands and outstanding water bodies that is of

³ Charles Adamson. p.2

⁴ CEP Services Matauwhi Ltd. p.A14

⁵ For example, Minister of Conservation. p.30., Friends of Rangitane Stream. p.1., Vision Kerikeri. p.1.

⁶ For example, Haititaimarangai Marae 339 Trust. p.55., The Royal Forest and Bird Protection Society. p.56

significance to warrant rules. That is, I consider that the costs of requiring sheep to be excluded from waterways will outweigh the environmental benefits. As the Land and Water Forum pointed out:⁷

Sheep are smaller animals than cattle or deer and do less damage to stream banks and beds. They also do not have the same affinity for water - they avoid it and do not like to wallow. As they pose a lower level of environmental risk, a national stock exclusion regulation should not include them.

24. The Royal Forest and Bird Protection Society of New Zealand also submitted that Rule C.8.1.1 should be amended so that allows light grazing where it is beneficial to ecological values by suppressing exotic vegetation/weeds.⁸ I consider that such exemption would be difficult to monitor and enforce under a permitted activity rule. However, I understand that well managed grazing can limit the growth of weeds and maintain good grass cover which helps minimise contaminant losses to water. This should be recognised in Policy D.4.32.
25. Terence Brocx and Bryan Clements stated in their submissions that “[r]eference to dairy cows should be removed” from Rule C.8.1.1 because the dairy farmers have already excluded their cows from permanently flowing rivers, drains, lakes, wetlands and the coastal marine area, and therefore “no rule is required [and it] is an insult to the proactive work of dairy farmers that NRC has even put this in the plan.”⁹
26. I struggle to follow Terence Brocx and Bryan Clements’ argument. Surely, if dairy cows have been excluded from all permanently flowing fresh and coastal waters (as described in their submission) the proposed rules should not be a cause for concern.
27. J.L. Hayes and Sons Ltd believe that Rule C.8.1.1 should be specific to intensively farmed beef cattle, dairy support cattle and deer, rather than all beef cattle, dairy support cattle. This is because “lightly stocked cattle do minimal damage, and generally heavy cattle grazing on the wetter soils is kept to a minimum during winter.”¹⁰
28. I looked at the option of amending Rule C.5.1.1 so that it only applies to people grazing livestock over a certain stocking rate. The approach, on the face of it seems appealing, will be difficult to implement and enforce including because stocking rates are not static. I am also not aware of any information the effects of different stocking rates on water. I also

⁷ Land and Water Forum. 2015. p.49

⁸ The Royal Forest and Bird Protection Society. p.56

⁹ Terence Brocx. p.3., Bryan Clements. p.2

¹⁰ J.L. Hayes and Sons Ltd. p.2

note that there is no clear inflection point in stocking rates on Northland farms (see Appendix B of this report for information on livestock farming intensity in Northland).

Recommendation

29. I recommend that the rules in Section C.8.1 of the Proposed Plan should only apply to dairy cows, dairy support cattle, beef cattle, pigs and deer (as notified).
30. I also recommend the following additional clause be added to Policy D.4.32: “the ecological benefits of grazing the banks of water bodies, including suppression of weeds and maintenance of grass cover to minimise contaminant inputs to water bodies.”

The waterways that stock should be excluded from

Background

31. The proposed rules require livestock to be excluded from the following waterways (water bodies and drains) and the coastal marine area:
 - Permanently flowing streams, rivers and drains greater than one metre wide and deeper than 30 centimetres;
 - Natural wetlands
 - Significant wetlands (a subset of natural wetlands)
 - Lakes (greater than one hectare in size); and
 - The coastal marine area.¹¹
32. It is important to note that beef cattle, dairy support and deer are not required to be excluded from permanently flowing streams, rivers and drains or natural wetlands in hill country areas (land with a slope greater than 15 degrees, as mapped in the New Zealand Land Resource Inventory database).

Submissions and analysis

33. In its submission, CEP Services Matauwhi Ltd. stated that “[t]he most important rivers for stock exclusion are those less than 1 metre wide and 30 cm deep, as these smaller streams have the greatest affect on water quality.” The statement may indeed be correct;

¹¹ The Land and Water Forum did not make recommendations on excluding livestock from the coastal marine area.

McDowell, Cox and Snelder (2017) tested if the draft national stock exclusion regulations¹² would substantially decrease catchment contaminant loads and found:

The mean proportional load coming from catchments requiring fencing was 16% across all contaminants, varying from about 11% for SS to 21% for NO_x-N. By difference contaminant loads coming from exempt catchments were on average 84% of total load. If only focusing on pastoral land cover (i.e., with grazing animals), the same calculation showed that a lower proportion, amounting to 77% across all contaminants, was coming from exempt catchments; the variation ranged from 73% for DRP and TN to 84% for SS (Fig. 4).

34. McDowell et al. (2017) hypothesised that:

*...focusing on contaminant delivery to headwaters, which are not currently required to be fenced (i.e., narrow, shallow, or sloping streams), **may be more cost-effective than trying to mitigate delivery or their impact farther downstream. But further work is required to confirm this.** Not fencing these streams will likely delay or impair our ability to meet catchment load objectives where fencing of larger, deeper streams in flat areas of the catchment is not effective. [My emphasis]*

35. In light of this I consider that CEP Services Matauwhi Ltd.'s submission point is relevant and perhaps accurate. That said it is important to note that Rule C.8.1.1 is different that the draft national regulations. Specifically:

- The rule requires dairy cattle and pigs to be excluded from all permanently flowing waterways (rivers, streams and drains) regardless of size,¹³ whereas the draft regulations would require dairy cattle and pigs to be excluded from waterways over 1 metre wide on all slopes and waterways less than 1 metre wide on the plains (0-3°); and
- The rule requires dairy support cattle, beef cattle and deer to be excluded from all permanently waterways on undulating/rolling land (>3-15°) regardless of size, whereas the draft regulations only require dairy support cattle, beef cattle and deer to be excluded from permanently flowing waterways on undulating/rolling land (>3-15°) over 1 metre wide.

¹² Ministry for the Environment. 2017. Clean Water package 2017. Ministry for the Environment, Wellington, New Zealand.

¹³ The rule specifies a staged approach, with the first requirement being waterways greater than one metre wide and the second requirement being waterways less than one metre wide.

36. Therefore, I consider that Rule C.8.1.1 provides more protection for headwater streams and drains in lowland (0-15°) and hill country areas than the draft regulations, including streams and drains that are less than 1 metre wide.
37. However, Rule C.8.1.1 does not require beef cattle, dairy support cattle and deer to be excluded from permanently flowing waterways in hill country areas (>15°) on the grounds the evidence to date suggests the practicalities and costs of doing so outweigh the benefits. I consider that further research is required to determine if permanently flowing streams in hill country areas being used for grazing beef cattle, dairy support cattle and deer are a significant critical source of catchment contaminant loads with respect to higher order rivers.
38. Therefore, I disagree with submitters including, for example, Haititaimarangai Marae Trust 339 and the Honeymoon Valley Landcare Trust, that consider that Rule C.8.1.1 should be amended to require livestock to be excluded from all waterbodies, including ephemeral waterbodies, and in hill country areas. The Land and Water Forum pointed out in its most recent advice to the Government that:¹⁴

*...livestock can disturb stream beds and transport soil into waterways if not excluded. This is particularly problematic in intensively farmed areas. **In hill country areas sediment management is often more appropriately undertaken through critical source area identification and management. Requiring fencing in hill country can increase sediment loss to waterways** through land clearance and track building and maintenance for fences. [My emphasis]*

39. DairyNZ support the requirement to exclude stock from water bodies “given the importance of managing sediment loss in Northland, particularly to dune lakes, and the government’s goal of achieving 90% swimmable rivers by 2040.”¹⁵ However, it submitted that the rules should specify a minimum size for natural wetlands. In other words, the rules should not apply to all wetlands, regardless of their size.
40. Federated Farmers of New Zealand also requested a minimum size threshold for natural wetlands and the identification of significant wetlands on a map in the plan. It considers

¹⁴ Land and Water Forum. May 2018. Land and Water Forum advice on improving water quality: preventing degradation and addressing sediment and nitrogen. p.18

¹⁵ DairyNZ. p.18

these amendments “may discourage the perverse outcome of deliberate grazing of wetlands during the summer months or dry conditions prior to rule introduction.”¹⁶

41. The plan defines a natural wetland as “any wetland including induced and reverted wetlands, regardless of whether it is dominated by indigenous vegetation, but does not include: 1) a constructed wetland, or 2) wet pasture, damp gully heads, or where water temporarily ponds after rain or pasture containing patches of rushes.” It is a rather broad and wide encompassing term.

42. The plan defines a significant wetland as:

*A natural wetland that triggers the significance criteria in the Regional Policy Statement, Appendix 5 – “Areas of significant indigenous vegetation and significant habitats of indigenous fauna in terrestrial, freshwater and marine environments”. **This includes** wetlands comprising indigenous vegetation exceeding any of the following area thresholds:*

- 1) *saltmarsh greater than 0.5 hectare in area, or*
- 2) *shallow water (lake margins and rivers) less than two metres deep and greater than 0.5 hectare in area, or*
- 3) *swamp greater than 0.4 hectare in area, or*
- 4) *bog greater than 0.2 hectare in area, or*
- 5) *pakihi (including gumland and ironstone heathland) greater than 0.2 hectare in area, or*
- 6) *marsh, fen, ephemeral wetlands or seepage/flush greater than 0.05 hectares in area. [my emphasis]*

Note:

- 1) *If there is any doubt over wetland extent use: Landcare Research, Published 2014: A vegetation tool for wetland delineation in New Zealand. This report is available on Landcare Research's website.*
- 2) *The regional council's wetland mapping indicates the extents of known wetlands – these can be found on the regional council's website. The purpose of this mapping is to help locate and identify different wetland types. The maps do not form part of the regional plan.*

43. While it would be desirable to map all the region’s significant wetland in the plan, it is not feasible at the current time. This is because the council has not identified all of them, nor is it able to anytime soon.

¹⁶ Federated Farmers of New Zealand. p.24

44. Federated Farmers of New Zealand's submission prompted me to consider relevant case law on formulating permitted activity rules. The Environment Court in its decision on *Carter Holt Harvey vs Waikato Regional Council* found that permitted activities must:¹⁷
- Be comprehensible to a reasonably informed, but not necessarily expert, person;
 - Not reserve to the council the discretion to decide by subjective formulation whether an activity is permitted or not; and
 - Be sufficient certain to be capable of objective ascertainment.
45. I consider that including significant wetlands within the scope of Rule C.5.1.1 is not appropriate because the definition of a significant wetland, in my opinion, is not comprehensible to a reasonably informed, but not necessarily expert person. Moreover, the definition will require subjective judgement as to whether the activity is permitted or not – likely at the discretion of council.
46. I recommend that the requirement to exclude livestock from significant wetlands (to be classed as a permitted activity) be removed from Rule C.5.1.1. Instead a minimum size criterion (2,000 m²) should be included in the rule for natural wetlands. This will capture all significant wetlands except fens, ephemeral wetlands and seepages greater than 0.05 hectares (which are not as sensitive to disturbance). I also consider that the rules in C.8.1 should only apply to the access of beef cattle, dairy support and deer to natural wetlands greater than 2,000 m² in lowland areas.
47. I sought advice on my recommendations from my Lisa Forester (Biodiversity Manager, Northland Regional Council), a nationally recognised expert on wetland ecology. She stated that 2,000 m² is an appropriate threshold and that anything smaller would be not necessary and wetlands in hill country areas are generally not sensitive to extensively farmed animals.¹⁸
48. I note that some of the most threatened wetlands are in lowland areas, which are associated with more intensive farming systems,¹⁹ rather than in hill country areas which, in Northland, generally contain wetlands (for example, swamps) that are more resilient agriculture.

¹⁷ *Carter Holt Harvey vs Waikato Regional Council* A123/08

¹⁸ Lisa Forester. pers. comm. 6 June 2018.

¹⁹ S.C. Myers, et al. 2013. Wetland management in New Zealand: Are current approaches and policies sustaining wetland ecosystems in agricultural landscapes? *Ecological Engineering* 56 (2013) 107– 120

49. The Royal Forest and Bird Protection Society of New Zealand stated in its submission that Rule C.8.1.1 should be amended to not allow stock access to wetlands because Condition 1 “is meaningless and unenforceable.”²⁰ Condition 1 states that native wetland vegetation in a natural wetland must not be damaged or destroyed. In one respect, I agree; damage will be difficult to establish.

50. The issue was raised by DairyNZ:²¹

[Condition 1] of the rule is problematic as the term ‘damaged’ is unclear. Even human access to wetlands can damage indigenous vegetation, so the term should be removed. As amended the clause will still provide protection for stock entering and trampling or eating indigenous wetland plants.

51. I consider that the words “damaged or” should be deleted from Condition 1 of Rule C.5.1.1.

52. The Minister of Conservation believes that livestock should be excluded from all permanently flowing rivers and drains, lakes and natural wetlands regardless of where they are.²² This may be an appropriate long-term policy, but not within the ‘life’ of the Proposed Plan. The costs of excluding livestock from water bodies in hill country areas can be significant and cost prohibitive for people farming in those areas.

53. In addition, the Minister stated that “[h]aving two water measurement criteria (width/depth) adds confusion to whether stock need to be excluded from a given waterway”²³ and that the 30 centimetre depth criterion should be deleted. I agree that the criterion would be difficult to measure and monitor and should be deleted. The 30cm criterion was included in the Proposed Plan based on the Land and Water Forum’s recommendation to the previous government. However, I consider that it would be difficult to monitor and I do not think that it is effects-based, as highlighted by McDowell et al. (2017).

54. The Far North, Whangarei and Kaipara district councils are concerned that stock accessing waterways upstream of abstraction points for drinking water supplies pose contamination risks. Whangarei District Council stated:²⁴

²⁰ The Royal Forest and Bird Protection Society of New Zealand. p.56

²¹ DairyNZ. p.18

²² Minister of Conservation. p.31

²³ Minister of Conservation. p.29

²⁴ Whangarei District Council. p.28

Regulation 10 of the Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007 provides limitations on permitted activity rules for activities upstream of abstraction points. Due to the risk of contamination, WDC has concerns over stock accessing waterway above drinking water intakes. WDC requests that a rule framework similar to that applying to swimming sites in the Whangarei Harbour Catchment be applied to all registered public drinking water intakes. This rule framework should be supported by an identified map layer of public drinking water intakes (region wide) including a buffer zone around intakes restricting livestock access within the shorter timeframe (2 years from the plan becoming operative). A non-complying activity status for livestock access including crossings within a minimum 5km exclusion zone upstream of public water intakes is recommended.

55. Far North District Council sought “more stringent standards for stock exclusion within 1 km of a potable water take (or similar relief) ...to protect the quality of water used for drinking supplies.”²⁵ Kaipara District Council “has concerns about stock accessing waterways above water takes, and requests a rule framework for all registered water takes which protects public water supplies, in support of the submission made by WDC.”²⁶
56. Despite their concerns, the district councils did not provide any evidence that stock access to waterways upstream of intakes for registered drinking-water supplies are causing contamination in drinking water. I also understand that the majority of takes from rivers and streams for registered drinking-water supplies are treated to eliminate pathogens. That is, drinking-water suppliers are subject to the Health Act 1956 and the Drinking-Water Standards for New Zealand 2005 (Revised 2008).
57. I also note the Rule E.0.9, which requires livestock to be excluded from waterways draining to swimming sites in the Hatea and Raumanga rivers is for the purposes of minimising risks to ingesting untreated river water.
58. While I agree that it is prudent, indeed necessary, to minimise the risk of pathogens entering drinking water, I am not aware of any available data on instream attenuation of faecal contamination over the distance that faecal pathogens travel down a water body.
59. I am not opposed to stronger controls on the access of livestock to water bodies in the interests of reducing the potential for adverse effects on drinking water supplies. However I need information on contamination risks, including how they are currently being

²⁵ Far North District Council. p.17

²⁶ Kaipara District Council. p.18

prevented or mitigated, and also information on appropriate buffer zones to attenuate faecal pathogens to appropriate levels before I am prepared to make a recommendation on if and how stronger control should be applied.

60. Lastly, Rules C.8.1.1 and C.8.1.2 apply to permanently flowing drains. I think the rules would be clearer if the word “drain” was replaced with “artificial watercourse”, this is more consistent with the definition of a river in the RMA which excludes “any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal)”.

Recommendation

61. I recommend that the plan should be amended as follows:
- Change the word ‘drain’ to ‘artificial watercourse’ in Rules C.8.1.1 and C.8.1.2;
 - Introduce a minimum size criterion (2,000 m²) for natural wetlands in Rules C.8.1.1 and C.8.1.2;
 - Remove the term ‘significant wetlands’ from Rules C.8.1.1 and C.8.1.3;
 - Delete the word ‘damage’ from Rule C.8.1.1; and
 - Delete the 30 centimetre depth criterion for a permanently flowing river, stream and drain from Rule C.8.1.1.

Evaluation of recommended changes

62. The first recommended amendment is of minor effect and is accordance with Clause 16, Schedule 1, RMA.
63. Section 32AA of the RMA requires an evaluation of the other recommended changes to the proposed. I consider that the amendments will make the rules easier to implement, in terms of compliance and monitoring, by largely eliminating uncertain conditions and reducing the costs of implementing the rules.
64. While the changes include removing the requirements for drystock to be excluded from significant wetlands in hill country areas and stock from small natural wetlands (<2,000 m²), I believe that overall the level of protection for wetlands from livestock will remain high. As an aside, natural wetlands (including significant wetlands) in hill country areas are reasonably robust because such areas are typically extensively, as opposed to intensively, grazed.

Fencing setbacks and riparian buffers

Background

65. The proposed rules do not require fences (permanent or temporary) to be setback from the bed of a stream, river or lake, from the margins of wetlands, or from the coastal marine area. Nor do the rules require vegetated riparian buffers.
66. As the Land and Water Forum (LAWF) pointed out, the appropriate setback distance will vary at different points along waterways.²⁷ LAWF also highlighted the costs and challenges of retiring and managing riparian buffer areas:

Management of riparian areas requires significant investment from land-owners (and/or other contributors such as councils) and unless the fenced areas are well planted can have other negative impacts like allowing the growth of weeds such as gorse and blackberry that may require extra spraying and maintenance. An increase in weed can result in culverts becoming blocked and cause small-scale flooding. Most importantly, setbacks result in land being removed from production which reduces profitability for landowners, and economic activity within the catchment. (However, there are smart ways of using riparian zones for productive purposes, some of which are described later in this section.)

67. It is important to reiterate that the costs of creating riparian buffers can be significant. For example, the average annual mitigation cost (over 25 years) for implementing the proposed rules and requiring vegetated five metre stream buffers in the Kaipara Harbour Catchment is estimated to be \$41.3 million dollars compared to \$10 million for just fencing.²⁸ The estimated annual average reduction in sediment losses to water is 13 and 31 percent respectively for the two scenarios. However, buffer zones are likely to be less effective for *E.coli* and nitrogen.

Submissions and analysis

68. Mick Kelly and Sarah Granich submitted that “[r]equiring fencing off of water bodies alone means that riparian planting is extremely unlikely to occur in the future as it would likely

²⁷ Land and Water Forum, 2015. *The Fourth Report of the Land and Water Forum*. p.50

²⁸ Adam Daigneault, John Dymond, Les Basher. 2017. Kaipara Harbour sediment mitigation study: Catchment economic modelling. Prepared for Streamlined Environmental Ltd by Landcare Research.

necessitate re-fencing” and that a “setback distance for fencing from the margin of the water body must be specified.”²⁹

69. I agree that people may be reluctant to create vegetated riparian buffers once they have installed fences immediately adjacent to water bodies, but I do not think it would be extremely unlikely. Fences can be moved or new fences installed over time. The more pressing thing to do is exclude livestock from water bodies. I also do not believe fences will be constructed at the immediate edge of water bodies because there is the potential for fences to be lost to riverbank erosion or large flood events. The more likely scenario is that they will be set back from the bank edge.
70. CEP Services Matauwhi Ltd stated that the “stock exclusion rules do not provide adequate protection of indigenous riparian margins, or to prevent bank erosion”³⁰ and that the plan should be amended to address this issue. I disagree. The rules require stock to be excluded from the beds of rivers, which includes their banks. The RMA defines a bed in relation to any river as “the space of land which the waters of the river cover at its fullest flow without overtopping its banks”.³¹ I also note that the council can only issue rules for the clearance of vegetation on land if it is for soil conservation or maintaining and enhancing water quality, maintaining water quantity, or maintaining and enhancing ecosystems in water bodies and coastal water.³²
71. I consider that Rule C.8.4.2, if amended as per my recommendations,³³ will provide sufficient protection for indigenous riparian vegetation for the purposes of the regional council functions that I just highlighted.
72. Haititaimarangai Marae 339 Trust stated that “[v]egetative buffers areas play an important role in the management of water quality particularly the overland flow of faecal material, sediment and the attached phosphorus.”³⁴ The Trust wants the plan amended by requiring all new fences “alongside permanent rivers, lakes and outstanding water bodies be setback at least 10m from the bed of the waterbody and wetlands.” They also consider that new fences should be required to be set back 5 metres from intermittent rivers and wetlands, and that the requirements should be applicable to all stock exclusion activities.

²⁹ Mick Kelly and Sarah Granich. p.2

³⁰ CEP Services Matauwhi Ltd. p.A14

³¹ RMA s2

³² RMA s30

³³ See Section 42A report for earthworks, land preparation, vegetation clearance and bores

³⁴ Haititaimarangai Marae 339 Trust. p.56

John Hughes submitted that all fenced waterways should have a 6 metre riparian buffer vegetated with native species.³⁵

73. Some people though supported the plan not requiring fences to be set back from waterways, including because of the likelihood of pests and weeds to colonise such riparian buffers.³⁶ I am not aware of any definitive data on optimum width(s) and vegetation types for riparian buffers. LAWF commented:³⁷

... riparian buffers can perform a wide variety of functions, but their relative effectiveness varies between catchments, between farms and even within farms depending on the terrain, land use type, the contaminants being managed in the catchment, and the other mitigation options available

... riparian setbacks and management strategies should be considered alongside other mitigations at a property-level and included in GMP requirements where appropriate. Ideally, a property-level assessment should be undertaken to determine the optimal setback width and management strategy at every point along all waterways.

74. It is important to note that the Proposed Plan does not require property-level assessments for excluding livestock and establishing riparian buffers. Nor do I think that such assessments should be required at this point of time.

Recommendation

75. I recommend that the rules are not amended to require setback distances and vegetated riparian buffers

Timeframes for excluding livestock

Background

76. The timeframes for excluding livestock from water bodies, which for the most part align with the dates recommended by LAWF, reflect:³⁸

³⁵ John Hughes. p.2

³⁶ See Aaron Bainbridge, Julianne Bainbridge, Arran Simpson, Man O'War Dairies Ltd.

³⁷ Land and Water Forum, 2015. *The Fourth Report of the Land and Water Forum*.

³⁸ Land and Water Forum, 2015. *The Fourth Report of the Land and Water Forum*. p.50

- *the different levels of progress different industries have already made in excluding stock (e.g. dairy have a head start with progress made on the Sustainable Dairying: Water Accord)*
- *the costs and impracticalities of excluding different livestock types (e.g. the high cost of deer fencing)*
- *the costs and impracticalities of stock exclusion in particular terrain types (e.g. hill country).*

Submissions and analysis

77. Many people disagreed with the timeframes for excluding livestock from waterways because they believe that they are too generous. For example, Mick Kelly and Sarah Granich stated that “[s]ome of the exclusion dates, c.f. with regard to beef and cattle etc in lowland areas, are so far into the future to render them meaningless.”³⁹ I highlight some of the submissions for shorter timeframes below.
78. Ko Te Ahua Marae, Parapara Marae and Andreas Kurmann stated that the Rule C.8.1.1 should require pigs, dairy cows and beef cattle to be excluded from water bodies and permanently flowing drains by 1 January 2020, and all sheep and deer be excluded by 2025.
79. Margaret Hicks and Gordon Hosking believe the plan should require livestock to be excluded from all waterways and wetlands by 2022.⁴⁰
80. Shorter timeframes for excluding livestock were also sought by Vision Kerikeri. It submitted that Rule C.8.1.1 should require pigs and dairy cows to be excluded from all permanently flowing rivers, streams and drains and natural wetlands by 2020 and beef cattle, dairy support cattle and deer be excluded from permanently flowing rivers, streams and drains and natural wetlands by 2023.⁴¹
81. Susan McIntyre submitted that “all catchment rules relating to exclusion of stock from waterways and wetlands should be amended to include the exclusion of beef cattle, deer, sheep and pigs from said waterways according to the same timeline as those proposed for dairy cattle.”⁴²

³⁹ Mick Kelly and Sarah Granich. p.2

⁴⁰ Margaret Hicks. p.11., Gordon Hosking. p.2

⁴¹ Vision Kerikeri. p.1

⁴² Susan McIntyre. p.1

82. Amber Brownie believes that Rule C.8.1.1 should require all livestock should be excluded from waterways once the plan is operative.⁴³
83. The Royal Forest and Bird Protection Society of New Zealand also believes that the timeframes for requiring livestock exclusion are too long and that Rule C.8.1.1 should be amended by setting “a deadline for all stock exclusion of 31 December 2018 at the latest.”⁴⁴
84. Friends of Rangitane Stream strongly supports Rule C.8.1.1 but considers that the proposed timelines are much too slow and stock exclusion should be required by 31 December 2019 at the latest. Furthermore, it submitted that if the dates are not changed to 2019 then the access of livestock to water should be classed as a restricted discretionary activity, with public notification.
85. The Minister of Conservation requested different timeframes to be included in the plan, including by specifying actual dates to replace the “date this rule becomes operative”.
86. The Minister of Conservation asked for C.8.1.1 to be amended by requiring livestock, including sheep, to be excluded from water bodies and permanently flowing drains by 1 July 2022 in catchments above outstanding waterbodies, lakes and significant wetlands.
87. The Minister of Conservation submitted that Rule C.8.1.1 should require “[i]mmediate exclusion of livestock from outstanding waterbodies, as well as inanga spawning and threatened species fish species habitat.”⁴⁵ The Minister also submitted that the stock exclusion dates should be brought forward for all water bodies and permanently flowing drains.
88. It is important to note that the council has not mapped inanga spawning sites.
89. Some submitters are concerned that the timeframes are not appropriate for other reasons. For example, Matt Long requested for Rule C.8.1.1 to be amended so that dairy cows are required to be excluded from permanently flowing rivers and drains, lakes and wetlands by 2030 (rather than 2023) in lowland areas, except where the stocking rate for the cows exceeds 2 cows per hectare, in which case they must be excluded by 2023. In addition, he submitted that the rule should not require dairy cows to be excluded from permanently

⁴³ Amber Brownie. p.1

⁴⁴ The Royal Forest and Bird Protection Society of New Zealand. p.56

⁴⁵ Minister of Conservation. p.30

flowing river and drains (greater than one metre wide), natural wetlands, or lake in hill country areas. Matt Long pointed out that the proposed rule is not evidence based.⁴⁶

90. Regarding Rule C.8.1.1, Federated Farmers considers that the requirement that stock must be excluded from significant wetlands by the date that the rule becomes operative is particularly onerous if the wetlands are not mapped and that the date should be changed to 1 January 2020.
91. Matauri Trustee Ltd stated that it “is supportive of stock exclusion requirements from sensitive waterbodies and is actively managing its farm to achieve this objective in accordance with its farm plan.”⁴⁷ However it stated:⁴⁸

The requirement however to exclude beef cattle, dairy support cattle and deer from significant wetlands from the date the rule becomes operative does not provide sufficient certainty as to the date implementation is required nor a buffer period from this operative date. Therefore, it does not allow the stock exclusion measured to be properly budgeted or factored into farm planning.

92. Earlier in this report I recommended that the term significant wetland be deleted from Rule C.8.1.1 and a minimum size threshold be applied to natural wetlands.
93. Fonterra would like the timeframes in Rule C.8.1.1 to be consistent with the Sustainable Dairying: Water Accord and with the draft national regulations for stock exclusion. It points out that the explanation on Policy 4.2.2 of the Regional Policy Statement states that stock exclusion rules “should reinforce the intent of the Sustainable Dairying: Water Accord”, but that Rule C.8.1.1 is more permissive than the Accord in relation to stock crossing points and the timeframes for non-dairy cattle even under intensive systems. Fonterra goes on to state:⁴⁹

*While Fonterra recognises the need to allow for sensible lead in timeframes we do not believe that providing for an 8 year lead in before any stock exclusion rules apply for even the most intensively farmed dry stock operation on lowlands can be justified. We note that for particular rivers in the Whangarei Harbour Catchment, exclusion rules for **all** cattle and deer come in to force in the same accelerated timeframe.*

⁴⁶ Matt Long. p.2

⁴⁷ Matauri Trustee Ltd. p.3

⁴⁸ Ibid

⁴⁹ Fonterra. p.45

94. I note that the Dairying and Clean Streams Accord, which was agreed in May 2003 had a nine-year target for dairy cattle to be excluded from 90 percent of Accord-type waterways. What is more, the Sustainable Dairying: Water Accord, which replaced the Clean Streams Accord in 2012 extended the 2012 target by two years (31 May 2014) and provided an additional three years for dairy cattle to be excluded from waterways and drains that permanently contain water.
95. Therefore, I disagree that an eight-year lead in time is not appropriate for drystock farms because, as demonstrated, the dairy sector required almost eleven years.
96. The New Zealand Deer Association “considers that there are significant differences in managing flat (0-3°) and rolling/hilly (4-15° slope) land within mixed livestock farms and that stock exclusion provisions should reflect these differences”.⁵⁰ It submitted that Rule C.8.1.1 should include stock exclusion dates for deer (and beef cattle) that align with the draft national regulations and the Land and Water Forum’s recommendations.
97. I consider, on balance, that introducing the additional slope category and align the dates with the Forum’s recommendations would make the rules unnecessary complex.

Recommendation

98. I consider that the timeframes in Rule C.8.1.1 should not be changed unless evidence can be provided that demonstrates the need for different dates.

Matters of discretion in Rule C.8.1.2 and notification of resource consents

Background

99. Rule C.8.1.2 classes the access of livestock to a natural wetland, the bed of a lake or permanently flowing river or permanently flowing drain that is not permitted by Rule C.8.1.1 as a restricted discretionary activity. The rule contains eight matters of discretion.
100. The rule also stated that resource consent applications made pursuant to the rule are precluded from notification (public and limited).

⁵⁰ New Zealand Deer Farmers Association. p.8

Submissions and analysis

101. Several people requested additional matters of discretion to be included in the rule, including:
- Impacts on natural character and ecological values;⁵¹
 - The accuracy of the lowland and hill country stock exclusion maps;⁵²
 - Effects on indigenous biodiversity, wetland and natural character;⁵³
 - Effects on public drinking water supply;⁵⁴ and
 - Effects on life-supporting capacity, ecosystem processes and indigenous species, including their associated ecosystems of fresh water.⁵⁵
102. The Royal Forest and Bird Protection Society of New Zealand stated that either additional matters of discretion should be included in the rule or the rule should be changed to a full discretionary activity.⁵⁶
103. I consider that the most appropriate option is to change the rule to a discretionary activity because the access of livestock to waterways can have a range of different adverse effects on the environment.
104. Kaipara District Council and Whangarei District Council are concerned that because Rule C.8.1.2 precludes public or limited notification of applications for resource consents it will exclude water suppliers and Northland District Health Board from being considered as effected parties. They requested that the non-notification clause in the rule be removed.⁵⁷
105. Friends of Rangitane Stream submitted that if the rule remains a restricted discretionary activity then applications for resource consent should not be precluded from public notification.
106. I consider that public notification may be required in certain circumstances, for example if the waters affected by the access of livestock are popular for recreational purposes. I also accept Kaipara District Council and Whangarei District Council's concerns that certain people may be affected by the access of livestock to water. Therefore, I agree with the

⁵¹ Bay of Islands Maritime Park Inc.

⁵² Lynley Newport

⁵³ Royal Forest and Bird Protection Society.

⁵⁴ Kaipara District Council. p.18., Whangarei District Council. p.28

⁵⁵ Minister of Conservation

⁵⁶ Royal Forest and Bird Protection Society of New Zealand. p.57

⁵⁷ Ibid

submitters that the direction on notification of applications for resource consents be removed from Rule C.8.1.2.

Recommendation

107. I recommend that Rule C.8.1.2 should be amended by:

- Changing the activity classification of the rule from restricted discretionary to discretionary; and
- Deleting the direction on notification of applications for resource consents.

Evaluation of recommended changes

108. Section 32AA of the RMA requires an evaluation of recommended changes to the proposed. I consider that the amendments will ensure that decision-makers have regard to the full range of actual and potential effects on the environment of allowing the access of livestock to a natural wetland, the bed of a permanently flowing river or artificial watercourse. The amendments may result in some people facing higher costs when applying for resource consents, however in my opinion the costs are outweighed by the benefits of more robust decision-making under Section 104 of the RMA.

Scope and stringency of Policy D.4.32

Background

109. Policy D.4.32 provides direction to decision-makers when considering an application for a resource consent to allow the access of livestock to a wetland, the bed of a permanently flowing river or drain, or the coastal marine area. That is, it requires decision-makers to have particular regard to:

- Any relevant priorities and recommendations in a farm plan prepared or approved by the regional council;
- The need to extend the deadline for livestock to be effectively excluded on the grounds of significant practical constraints; and
- The implementation of substitute mitigations such as constructed wetlands to avoid or minimise losses of sediment and faecal microbes to downstream water bodies and coastal waters.

Submissions and analysis

110. CEP Services Matauwhi Ltd stated in its submission that the “policy doesn’t address any of the unwanted adverse effects of stock access” and that “[c]onsideration should also be required of policies 11 and 21(d) of the Coastal Policy Statement and the relevant policies of the Regional Policy Statement.”⁵⁸
111. I note that Policy D.4.32 is not the only policy that decision-makers will have to have regard to. Section 104 requires decision-makers to have regard to, inter alia, any relevant provision of a New Zealand Coastal Policy Statement and a regional policy statement.
112. Policy 11 of the New Zealand Coastal Policy Statement 2010 (NZCPS) provides direction on the protection of indigenous biological diversity in the coastal environment. Policy 21(d), shown below and more relevant, provides direction on improving water in the coastal environment that is deteriorated:

Where the quality of water in the coastal environment has deteriorated so that it is having a significant adverse effect on ecosystems, natural habitats, or water based recreational activities, or is restricting existing uses, such as aquaculture, shellfish gathering, and cultural activities, give priority to improving the quality by:

...

(d) requiring that stock are excluded from the coastal marine area, adjoining intertidal areas and other water bodies and riparian margins in the coastal environment within a prescribed time frame;

113. I am not aware of information that shows that the access of livestock to waterways is, on its own or in combination with other activities, causing fresh or coastal waters in the coastal environment to be deteriorated to the point that they are having significant adverse effects on the matters listed in Policy 21(d).
114. However, I understand that excluding livestock from rivers is an effective method for reducing sediment and *E.coli* loads to water. It is also can prevent damage to in-stream habitat and aquatic plants.
115. For these reasons the council proposed Rule C.8.1.3, which classifies the access of livestock to the coastal marine areas as a non-complying activity, and Rule C.8.1.1, which requires livestock to be excluded from permanently flowing rivers and drains, lakes and

⁵⁸ CEP Services Matauwhi Ltd. p.A21

wetlands by prescribed dates. This is consistent with the direction in Policy 21(d) of the NZCPS.

116. Federated Farmers of New Zealand asked for clause two of Policy D.4.32 to be amended to recognise stocking density as a substitute mitigation to fencing. It stated that “stocking density [should] be a recognised mitigation measure for sediment and E.coli management.”⁵⁹ I think that determining appropriate stocking densities for the purposes of allowing livestock to water would be very difficult to do in practice. I also believe that stocking density is also not a key determinant of water contamination.
117. Friends of Rangitane Stream stated in its submission that “[i]t may be acceptable to allow exceptions but only if the exceptions are for very unusual circumstances, and strictly limited (e.g. for 6 months maximum)” and that the clauses in D.4.32 “need to be revised so that the grounds for obtaining an exception are much more restricted.” It also stated that “[f]ull substitute mitigations must be required in every case” and the words “or minimise” in clause three “should be deleted, because substitute mitigations should prevent and avoid (not just minimise) losses of sediment and other pollutants to downstream water.”⁶⁰ The Royal Forest and Bird Protection Society made a very similar submission.⁶¹
118. I am not convinced that it is appropriate to specify maximum timeframes for exempting livestock from exclusion requirements. I think it is better that decision-makers have the ability to exercise their discretion on a case-by-case basis.
119. I also disagree with the Friends of Rangitane Stream’s position that substitute mitigations must prevent, rather than minimise, contaminant losses to water. It would be very difficult for an applicant to demonstrate that an alternative mitigation to stock exclusion will prevent the equivalent loads of contaminants being lost to water. However, for clarity I think that it would be useful to replace the term ‘substitute mitigations’ with ‘substitute measures’ and replace the word ‘minimise’ with ‘mitigate’.
120. Other people believe that the plan should not provide for people to obtain resource consents to authorise the access of livestock to fresh and coastal waters.⁶²

⁵⁹ Federated Farmers of New Zealand. p.32

⁶⁰ Friends of Rangitane Stream. p.7

⁶¹ Royal Forest and Bird Protection Society. p.70

⁶² For example, Billy Leonard and Margaret Hicks.

121. Landcorp Farming Ltd. believe that Policy D.4.32 should be clearer about “what constitutes a farm plan and that it [should include] any industry or council approved Farm Environment Plan.”⁶³ I agree that it is not clear what is meant by a farm plan approved by the regional council. The policy does not set out the process for obtaining approval. I consider that Clause 1 should be amended so that it provides for a farm environment plan prepared by the regional council or an industry approved farm plan.

122. Matauri Trustee Ltd. raised a key point:

Policy D.4.32 as drafted only relates to situations where the Council is considering applications for resource consents and, as such, does not provide a policy basis for the permitted or restricted discretionary (where the matters of discretion differ from those listed in the policy) rules relating to livestock exclusion.

123. Policy D.4.32 is not the basis for Rule C.8.1.1. Rather its purpose is to provide direction to decision-makers (and applicants) when considering applications for resource consents to authorise livestock access to water.

124. Note that I recommended in the previous section of this report Rule C.8.1.2 should be changed from restricted discretionary activity rule to a discretionary rule.

125. I also consider that the words “have particular regard” in Policy D.4.32 should be changed to “have regard to”, which is more consistent with the wording of section 104 of the RMA. It will also reduce the emphasis on granting applicants for resource consents to authorise the access of livestock to water, which should go some way towards satisfying Friends of Rangitane Stream.

126. Northland Fish and Game considers that Policy D.4.32 should apply to all wetlands, not just natural wetlands. It is important to note that the term ‘natural wetlands’ is defined in the plan include any wetland, including induced and reverted wetland, regardless of whether it is dominated by indigenous vegetation, but does not include (a) constructed wetlands, or (b) wet pasture, damp gully heads, where water temporarily ponds after rain, or pasture containing patches of rushes. Northland Fish and Game gave no reason in its submission why the stock exclusion rules and associated policy should apply to constructed wetlands.

⁶³ Landcorp Farming Ltd. p.17

Recommendation

127. I recommend that Policy D.4.32 is amended by:

- Directing decision-makers to have regard to, rather than particular regard to, the matters in Clauses 1 – 3; and
- Changing Clause 1 so that it provides for a farm environment plan prepared by the regional council or in an industry approved environment farm plan; and
- Making minor changes to Clause 3.

Evaluation of recommended changes

128. I consider that amending Clause 3 of Policy D.4.32 is of minor effect and are within the scope of a change under Clause 16, Schedule 1 of the RMA.

129. Section 32AA of the RMA requires an evaluation of recommended changes to the Proposed Plan. The amendment to the first part of the policy will result in less emphasis being placed on the matters in Clauses 1 – 3. The amendment to Clause 1 will allow people to rely on farm environment plans prepared in accordance with industry approved programmes, rather than solely on plans produced by the regional council. I consider that these changes are of low significance

Accuracy of the lowland and hill country maps

Background

130. Rule C.8.1.1 references maps that show where the exclusion of livestock from certain water bodies and artificial water courses is required (or not required for certain stock types). The maps were generated using the New Zealand Land Resource Inventory database at the 1:50,000 scale. Lowland areas are defined as areas of land that have dominant slope of between 0-15 degrees.⁶⁴ Hill country areas are defined as areas of land that have a dominant slope greater than 15 degrees.⁶⁵ It is important to note that the maps

⁶⁴ The lowland area contain one or more of the following slope groups:

- A: 0-3 degrees (flat to gently undulating)
- B: 4-7 degrees (undulating)
- C: 8-15 degrees (rolling)

It also contains areas that are a combination of the C group and a steeper groups (i.e. D and F, see below).

⁶⁵ The hill country areas contains one or more the following slope groups:

are not entirely accurate. The methodology used to derive the lowland and hill country maps is set out in Appendix C of this report.

Submissions and analysis

131. Somewhat surprisingly, not many people made submissions on the lowland and hill country livestock exclusion maps.
132. Beef and Lamb NZ supported the approach of defining stock exclusion maps based on lowland and hill country areas because “this provides a pragmatic approach to delineating stream type; appropriateness of management approaches, given the constraints imposed by land form; and risk of impact.”⁶⁶
133. Landcorp Farming Ltd stock exclusion maps are not sensitive enough to determine where stock exclusion is required. In other words, they are difficult to interpret at the property scale.⁶⁷ Man O’War Dairies Ltd is also concerned about the accuracy of the stock exclusion maps and stated that they should be amended.⁶⁸ However, the submitters did not provide any specific information on where and why the maps should be amended with respect to their properties.
134. Aran Nelley requested that an area mapped as lowland be changed to a hill country on a property adjacent to Hicks Road, Broadwood.⁶⁹ Arran Simpson asked for his farms to be remapped because he considers that they are currently correct.⁷⁰
135. Michael Mitchell (Land Management Advisor – Hill Country, Northland Regional Council) did a desk-top review, using recent oblique photographs, of the accuracy of the lowland and hill country maps with respect to the properties referred to in the submissions made by Landcorp Farming Ltd, Man O’War Dairies Ltd, Aran Nelley and Arran Simpson. The review relied on recent aerial imagery (oblique photographs). His review and recommendations are set out in Appendix D of this report. Based on the review, I consider

-
- D: 16-20 degrees (strongly rolling)
 - E: 21-25 degrees (moderately steep)
 - F: 26-35 degrees (steep)
 - G: >35 degrees (very steep).

⁶⁶ Beef and Lamb NZ. p.4

⁶⁷ Matua Farming Ltd. pp. 8, 14

⁶⁸ Man O’War Dairies Ltd. p.5

⁶⁹ Aran Nelley. p.2

⁷⁰ Arran Simpson. p.12

that some changes should be made to the maps relating to the properties. The changes are shown in the revised planning maps.

136. Lynley Newport also questioned the accuracy of the lowland and hill country maps and requested if the mapping is found to be incorrect then any application for a resource consent should be processed and granted at no cost.⁷¹ The council recognises that the maps are not completely accurate and any further questions on the accuracy should be resolved through applications for resource consents or a plan change (to incorporate updated maps). While I believe that the council should cover the associated costs I am unable to recommend that this be codified within the plan. It is implementation not an RMA planning matter.
137. Finally, Charles Adamson pointed out that the title of the map (Livestock exclusion areas) is confusing because it implies farming livestock in the areas are not allowed. He suggested that the title should be amended to state that livestock in the areas are required to meet the exclusion rules from waterways.⁷² I agree that the title of the maps is misleading and should be changed to “Lowland and hill country areas”.

Recommendation

138. I recommend that several changes are made to the lowland and hill country maps that relate to the properties of Man O'War Dairies Ltd, Aran Nelley and Arran Simpson. The amendments are shown in the revised regional plan maps.
139. I also recommend that the name of the map ('Livestock exclusion areas') be changed to 'Lowland and hill country areas'.

Evaluation of recommended changes

140. I consider that the recommended changes are of minor effect.

⁷¹ Lynley Newport. p.3

⁷² Charles Adamson. p.2

Other matters

141. Please refer to Appendix A for the summary of submission points, analysis and recommendations made on the livestock exclusion provisions not addressed in the key matters sections of this report.

Appendix A – Response to other matters raised in submissions

The following table does not include the summary of submission points, analysis and recommendations made on the key matters in the main body of the report.

Provision	Summary of main submission points	Discussion	Recommendation
C.8.1.1, C.8.1.2, E.0.7 and E.0.9	Beef and Lamb New Zealand want new provisions to be included in the Proposed Plan that provide a pathway for pastoral land use where it is undertaken in accordance with an industry farm environment plan, including provision which provide an alternative approach to the stock exclusion rules.	The amendments sought by Beef and Lamb New Zealand also apply to the rules and policy in the Proposed Plan for earthworks, vegetation clearance, cultivation and the access of livestock to waterways. I address Beef and Lamb New Zealand's submission relating to the role of farm environment plans under the Proposed Plan in the RMA s42A report on general water quality matters. In that report, I recommend that the relief sought by Beef and Lamb New Zealand is not accepted.	To not grant the relief sought by Beef and Lamb New Zealand

Provision	Summary of main submission points	Discussion	Recommendation
C.8.1.1	<p>The New Zealand Deer Farmers Association want the following condition added to Rule C.8.1.1:⁷³</p> <p><i>Where there is evidence that an alternative approach to livestock exclusion is likely to result in better environmental outcomes or there are special circumstances that make it impractical to exclude livestock from water bodies and permanently flowing drains, the landowner must provide to council, a council approved Farm Environment Plan that describes how the proposed alternative approach will address or prevent the effects of contaminants entering the water body or permanently flowing drain.</i></p>	<p>I disagree that the condition sought by the New Zealand Deer Farmers Association should be included in Rule C.8.1.1</p> <p>It is not clear what the process is by which farm plans are to be approved by the council, including how an applicant would dispute a decision by council to not approve the plan.</p> <p>I consider that the best way to address farm-specific considerations is by way of a resource consent process,</p>	<p>To not grant the relief sought by the New Zealand Deer Farmers Association.</p>

⁷³ New Zealand Deer Farmers Association. p.12

Provision	Summary of main submission points	Discussion	Recommendation
C.8.1.1	The New Zealand Deer Farmers Association consider that condition 3 of Rule C.8.1.1 should be amended to state “livestock crossing points used by livestock more than once per week on average must...” because “management of farmed deer does not involve numerous stock movements over an extended season.” ⁷⁴	The New Zealand Deer Farmers Association makes a good point and one that is applicable to other types of livestock (for example, beef cattle): Animals may cross a river for example more than one time during a week but not during the following month or two. Condition 3 as proposed would still apply in this situation. Amending the rule would provide for infrequent and irregular stock movements.	To amend Condition 3 of Rule C.8.1.1 so that it does not apply to deer.
C.8.1	Phillip Herbert wants the Proposed Plan to make “provision for animal access to water bodies in the case of major power failures, plant breakdowns or damage done by major storms. “	I accept that giving livestock access to waterways may be necessary when a water reticulation system is not working or fails. Access may also be inevitable because of adverse weather events. I consider that the council will acknowledge these situations when implementing the rules. That is, I believe that it would not enforce the rules if a reticulation system failed for reasons reasonably beyond a person’s control or fences were to be damaged or destroyed by flooding, for example.	To not grant the relief sought by Phillip Herbert

⁷⁴ New Zealand Deer Farmers Association. p.6

Provision	Summary of main submission points	Discussion	Recommendation
C.8.1	Margaret Hicks asked for the stock exclusion rules to include controls on stocking rate on pasture adjoining water bodies.	I disagree with Margaret Hicks. While stocking density may be a driver of water pollution, there are many other variables including the nature of the soils and geology on which animals graze, climate, rainfall, pasture management, and redox potential for example.	To not grant the relief sought by Margaret Hicks.
C.8.1.1	<p>Man O'War Dairies Ltd. stated that it is "concerned that some of the river crossings on our farms may not meet the proposed permitted activity bridging/culverting or fencing/exclusion requirements and the cost implications of upgrade."⁷⁵</p> <p>It asked the council to amend the plan to address the concerns.</p>	It is not clear to me what amendments Man O'War Dairies Ltd want.	Not applicable.
C.8.1.2	Julianne Bainbridge expressed a concern that the stock exclusion rules in the Proposed Plan encourage people to graze animals in wetlands so that will no longer be considered significant.	The concern may be legitimate. However, it is important to note that I recommended in the main body of this report that the rules should not explicitly apply to significant wetlands. Instead, a minimum size threshold should be applied to natural wetlands, which should capture most significant wetlands.	Not applicable.

⁷⁵ Man O'War Dairies Limited. p.5

Provision	Summary of main submission points	Discussion	Recommendation
C.8.1.2	<p>Matauri Trustee Ltd submitted that Rule C.8.1.2 should be amended to provide for stock access to significant wetlands and the coastal marine area as a restricted discretionary activity. It stated that the rule provides appropriate matters of discretion to manage actual and potential adverse effects. That is, Rule C.8.1.2 rather than C.8.1.3 should provide for the access of livestock to significant wetlands and the coastal marine area.⁷⁶</p>	<p>As mentioned immediately above, I have recommended that the rules should not explicit apply to significant wetlands. I also recommended that Rule C.8.1.2 be changed to a discretionary activity rule.</p> <p>The changes, if adopted, will mean that the access of livestock to wetlands greater than 2000 m² will be classified as a discretionary activity.</p> <p>It is also important to note that the Regional Coastal Plan for Northland classifies the access of livestock to the coastal marine area as a prohibited activity. The Proposed Plan classifies the activity as a non-complying activity. The purpose of the rule is more to protect native coastal wetland vegetation than for water quality purposes.</p>	<p>To not grant the relief sought by Matauri Trustee Ltd in relation to the access of livestock to the coastal marine area.</p>

⁷⁶ Matauri Trustee Ltd. p.2

Provision	Summary of main submission points	Discussion	Recommendation
C.8.1.2	<p>The New Zealand Deer Farmers Association requested that Rule C.8.1.2 be changed to a controlled activity and:⁷⁷</p> <ul style="list-style-type: none"> • The application fee and process for approval should be as cheap as possible. • If farmers have the possibility to prepare a Farm Environment Plan to meet a permitted activity status, the same requirements could logically form the basis for a controlled activity. As has also been mentioned above, this plan could also include activities covered in other provisions such as cultivation and vegetation clearance. • Compliance requirements should be proportional to potential impact from the production system (i.e. intensive or higher stocked farms would require more frequent audit/inspection than lower stocked farms) • The consent period is long-term to provide certainty for farm development (such as securing finance for fencing and water reticulation). 	<p>I consider that Rule C.8.1.2 should be amended to be a discretionary activity, for reasons stated in the body of this report. A controlled activity rule is not appropriate because the council would not be able to decline an application for a resource consent to authorise the access of livestock to waterways or the coastal marine area.</p> <p>The cost of resource consent application process and the way that the rules are monitored and enforced by the council are matters that are beyond the scope of the plan.</p> <p>I also note that the Proposed Plan contains policy on the duration of resource consents, which I think will provide sufficient direction to applicants and decision-makers.</p>	<p>To not grant the relief sought by the New Zealand Deer Farmers Association.</p>

⁷⁷ New Zealand Deer Farmers Association. p.13

Provision	Summary of main submission points	Discussion	Recommendation
C.8.1.2	<p>William Simpkin submitted that Rule C.8.1.2 should not apply to the access of his livestock to the Maunganui River from his farm because:</p> <ul style="list-style-type: none"> • Their effect on water quality in the river is minimal • Fencing the approximately 10 km of the river is impractical because of frequent flooding • Excluding the animals could be achieved by providing them with fresh water away from the river. 	<p>William Simpkin did not provide any evidence that the effect of his livestock on the Maunganui river is minimal or that providing animals with water away from rivers is an effective way to exclude livestock from waterways.</p> <p>I also note that Policy D.4.32 provides for exceptions from livestock exclusion requirements on the grounds of significant practical constrains, which could include the impact of frequent flooding.</p>	To not grant the relief sought by William Simpkin.
C.8.1.3	<p>The Royal Forest and Bird Protection Society of New Zealand stated that Rule C.8.1.3 should also address the access of livestock to areas of significant indigenous vegetation and significant habitats of indigenous fauna and provide for the protection of indigenous biological diversity in the coastal environment, as required by Policy 11 of the NZCPS.</p>	<p>I assume the Royal Forest and Bird Protection Society of New Zealand is referring to significant ecological areas and indigenous biodiversity in water bodies.</p> <p>The council has not identified or mapped RMA s6(c) areas in water bodies. Nor is it able to now. It is important to note that the Rule C.8.1.1 and Rule C.8.1.2 provide require livestock to be excluded from all permanently flowing rivers, lakes and natural wetlands, which will protect any RMA s6(c) areas in the water bodies.</p> <p>I also note that Policy 11 of the NZCPS will be a relevant consideration when considering an application for a resource consent pursuant to Rule C.8.1.2 and Rule C.8.1.3.</p>	To not grant the relief sought by the Royal Forest and Bird Protection Society of New Zealand.

Provision	Summary of main submission points	Discussion	Recommendation
C.8.1.1	The Minister of Conservation submitted that a new condition should be added Rule C.8.1.1 that specifies that livestock must be excluded they must “not cause or induce noticeable slumping, pugging or erosion.” ⁷⁸	I consider that the condition requested by the Minister of Conservation will be difficult to monitor and enforce.	To not grant the relief sought by the Minister of Conservation.
C.8.1.1	Mikaere Miru and Tinopai RMU Ltd submitted that a new condition should be added to Rule C.8.1.1. That being, the access of livestock to a permanently flowing river or drain, lake or natural wetland is a permitted activity provided “the activity does not occur within an Area of Significance [to tangata whenua].”	It is not clear to me if Mikaere Miru and Tinopai RMU Ltd are referring to a Place of Significance to Tangata Whenua. Without this information, I am unable to make a recommendation at this time.	To not grant the relief sought by Mikaere Miru and Tinopai RMU Ltd.
C.8.1	Several people consider that the stock exclusion rules are not strong enough, but did not state the reasons why or any sought amendments. ⁷⁹	The submitters did not provide any contextual information or sought amendments. For this reason, I am not able to make any recommendations.	Not applicable.
C.8.1	Gavin King opposes the rules requiring stock to be excluded from waterways because of costs and practicalities and because the damage caused by stock is very minor.	The rule framework was designed with the costs and other practicalities associated with excluding livestock in mind. I consider that they should not be deleted.	To not grant the relief sought by Gavin King.
C.8.1.1	Felicity Foy wants the rule deleted on the grounds that it is not practical or enforceable.	I disagree. I consider that the rule, as amended per my recommendations, is practical and enforceable.	To not grant the relief sought by Felicity Foy.

⁷⁸ Minister of Conservation. p.29

⁷⁹ For example, Patuharakeke Te Iwi Trust Board Inc., Bay of Islands Maritime Park Inc, and Te Roroa Development Group.

Provision	Summary of main submission points	Discussion	Recommendation
C.8.1.1	Richard Alspach submitted that Rule C.8.1.1 should be consistent with the direction in the Regional Policy Statement (RPS).	The RPS contains method (4.2.2) that directs the Council to amend its regional plan by “Where appropriate, requiring the restriction or exclusion of livestock from the coastal marine area, beds and margins of streams, rivers, lakes and wetlands”. I believe that Rules C.8.1.1 – C.8.1.3 and Policy D.4.32 are the most appropriate provisions to deliver the method.	To not grant the relief sought by Richard Alspach.

Appendix B – Livestock farming intensity in Northland

Table 1. Number of livestock farms in Northland and New Zealand (>20 ha) by farm type and livestock intensity, as at June 2012

Region	Unit	Farm type	Dairy cow equivalent per hectare					Total	
			Less than 1.50	1.50 - 1.99	2.00 - 2.49	2.50 - 2.99	3.00 - 3.49		Greater than 3.50
Northland	Number of farms	Dairy	243	285	210	114	51	18	921
		Specialised beef	1,029	171	48	30	12	12	1,308
		Sheep and beef	195	14	5	1	1	0	216
		Specialised sheep	48	4	0	0	0	0	52
		Total	1,515	474	263	145	64	30	2,497
	Number as a share of total livestock farms (%)	Dairy	10%	11%	8%	5%	2%	1%	37%
		Specialised beef	41%	7%	2%	1%	0%	0%	52%
		Sheep and beef	8%	1%	0%	0%	0%	0%	9%
		Specialised sheep	2%	0%	0%	0%	0%	0%	2%
		Total	61%	19%	11%	6%	3%	1%	100%
	Number as a share of farm type (%)	Dairy	26%	31%	23%	12%	6%	2%	100%
		Specialised beef	79%	13%	4%	2%	1%	1%	100%
		Sheep and beef	90%	6%	2%	0%	0%	0%	100%
		Specialised sheep	92%	8%	0%	0%	0%	0%	100%
		Total	61%	19%	11%	6%	3%	1%	100%
	Number as a share of livestock intensity category (%)	Dairy	16%	60%	80%	79%	80%	60%	37%
		Specialised beef	68%	36%	18%	21%	19%	40%	52%
		Sheep and beef	13%	3%	2%	1%	2%	0%	9%
		Specialised sheep	3%	1%	0%	0%	0%	0%	2%
		Total	100%	100%	100%	100%	100%	100%	100%
New Zealand	Number of farms	Dairy	2,121	1,596	2,283	2,439	1,752	1,245	11,436
		Specialised beef	4,611	1,140	480	258	159	378	7,026
		Sheep and beef	3,693	513	117	51	36	45	4,455
		Specialised sheep	4,824	732	120	36	6	33	5,760
		Total	15,249	3,981	3,000	2,784	1,953	1,701	28,677
	Number as a share of total livestock farms (%)	Dairy	7%	6%	8%	9%	6%	4%	40%
		Specialised beef	16%	4%	2%	1%	1%	1%	25%
		Sheep and beef	13%	2%	0%	0%	0%	0%	16%
		Specialised sheep	17%	3%	0%	0%	0%	0%	20%
		Total	53%	14%	10%	10%	7%	6%	100%
	Number as a share of farm type (%)	Dairy	19%	14%	20%	21%	15%	11%	100%
		Specialised beef	66%	16%	7%	4%	2%	5%	100%
		Sheep and beef	83%	12%	3%	1%	1%	1%	100%
		Specialised sheep	84%	13%	2%	1%	0%	1%	100%
		Total	53%	14%	10%	10%	7%	6%	100%
	Number as a share of livestock intensity category (%)	Dairy	14%	40%	76%	88%	90%	73%	40%
		Specialised beef	30%	29%	16%	9%	8%	22%	25%
		Sheep and beef	24%	13%	4%	2%	2%	3%	16%
		Specialised sheep	32%	18%	4%	1%	0%	2%	20%
		Total	100%	100%	100%	100%	100%	100%	100%

Source: Statistics New Zealand, 2012 Agricultural Production Census

(1) Dairy cow equivalent is the livestock multiplied by the conversion factor supplied by the client.

(2) Number of farms are randomly rounded to base 3 and may not add to totals.

Figure 1. Cumulative proportion of livestock farms in Northland and New Zealand by livestock intensity

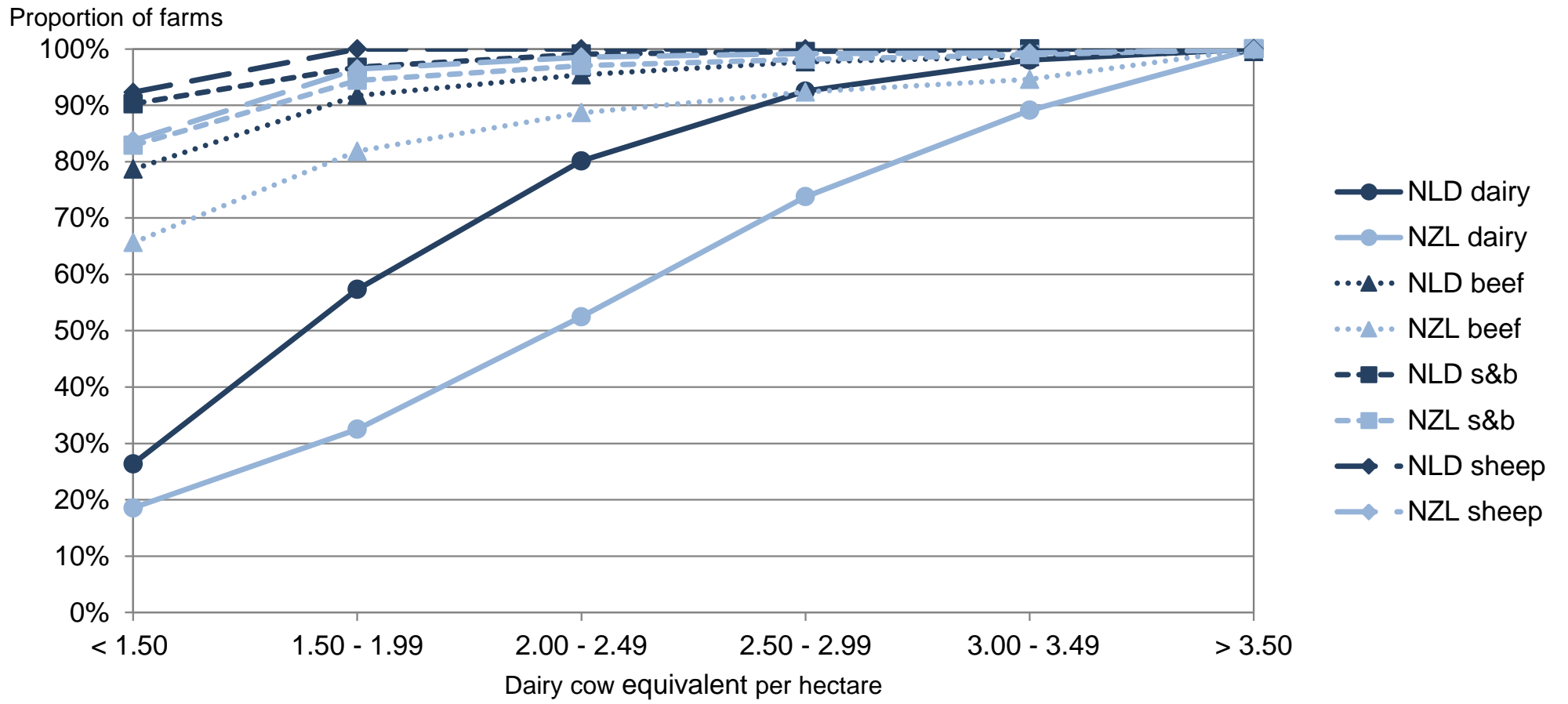


Table 2. Number of dairy farms in Northland and New Zealand by farm size and livestock intensity, as at June 2012

Region	Unit	Farm size (hectares)	Dairy cow equivalent per hectare					Total	
			Less than 1.50	1.50 - 1.99	2.00 - 2.49	2.50 - 2.99	3.00 - 3.49		Greater than 3.50
Northland	Number of farms	300+	75	81	33	9	3	3	201
		200-299	51	54	48	27	12	3	195
		100-199	75	111	93	45	15	6	345
		20-99	42	39	36	33	21	6	180
		Total	243	285	210	114	51	18	921
	Number as a share of total dairy farms (%)	300+	8%	9%	4%	1%	0%	0%	22%
		200-299	6%	6%	5%	3%	1%	0%	21%
		100-199	8%	12%	10%	5%	2%	1%	37%
		20-99	5%	4%	4%	4%	2%	1%	20%
		Total	26%	31%	23%	12%	6%	2%	100%
	Number as a share of farm size category (%)	300+	37%	40%	16%	4%	1%	1%	100%
		200-299	26%	28%	25%	14%	6%	2%	100%
		100-199	22%	32%	27%	13%	4%	2%	100%
		20-99	23%	22%	20%	18%	12%	3%	100%
		Total	26%	31%	23%	12%	6%	2%	100%
	Number as a share of livestock intensity category (%)	300+	31%	28%	16%	8%	6%	17%	22%
		200-299	21%	19%	23%	24%	24%	17%	21%
		100-199	31%	39%	44%	39%	29%	33%	37%
		20-99	17%	14%	17%	29%	41%	33%	20%
		Total	100%	100%	100%	100%	100%	100%	100%
New Zealand	Number of farms	300+	600	537	507	273	126	93	2,136
		200-299	480	360	426	384	204	144	1,998
		100-199	696	504	867	936	639	459	4,098
		20-99	345	195	483	846	783	549	3,204
		Total	2,121	1,596	2,283	2,439	1,752	1,245	11,436
	Number as a share of total dairy farms (%)	300+	5%	5%	4%	2%	1%	1%	19%
		200-299	4%	3%	4%	3%	2%	1%	17%
		100-199	6%	4%	8%	8%	6%	4%	36%
		20-99	3%	2%	4%	7%	7%	5%	28%
		Total	19%	14%	20%	21%	15%	11%	100%
	Number as a share of farm size category (%)	300+	28%	25%	24%	13%	6%	4%	100%
		200-299	24%	18%	21%	19%	10%	7%	100%
		100-199	17%	12%	21%	23%	16%	11%	100%
		20-99	11%	6%	15%	26%	24%	17%	100%
		Total	19%	14%	20%	21%	15%	11%	100%
	Number as a share of livestock intensity category (%)	300+	28%	34%	22%	11%	7%	7%	19%
		200-299	23%	23%	19%	16%	12%	12%	17%
		100-199	33%	32%	38%	38%	36%	37%	36%
		20-99	16%	12%	21%	35%	45%	44%	28%
		Total	100%	100%	100%	100%	100%	100%	100%

Source: Statistics New Zealand, 2012 Agricultural Production Census

(1) Dairy cow equivalent is the livestock multiplied by the conversion factor supplied by the client.

(2) Number of farms are randomly rounded to base 3 and may not add to totals.

Figure 2. Cumulative proportion of dairy farms in Northland and New Zealand by livestock intensity

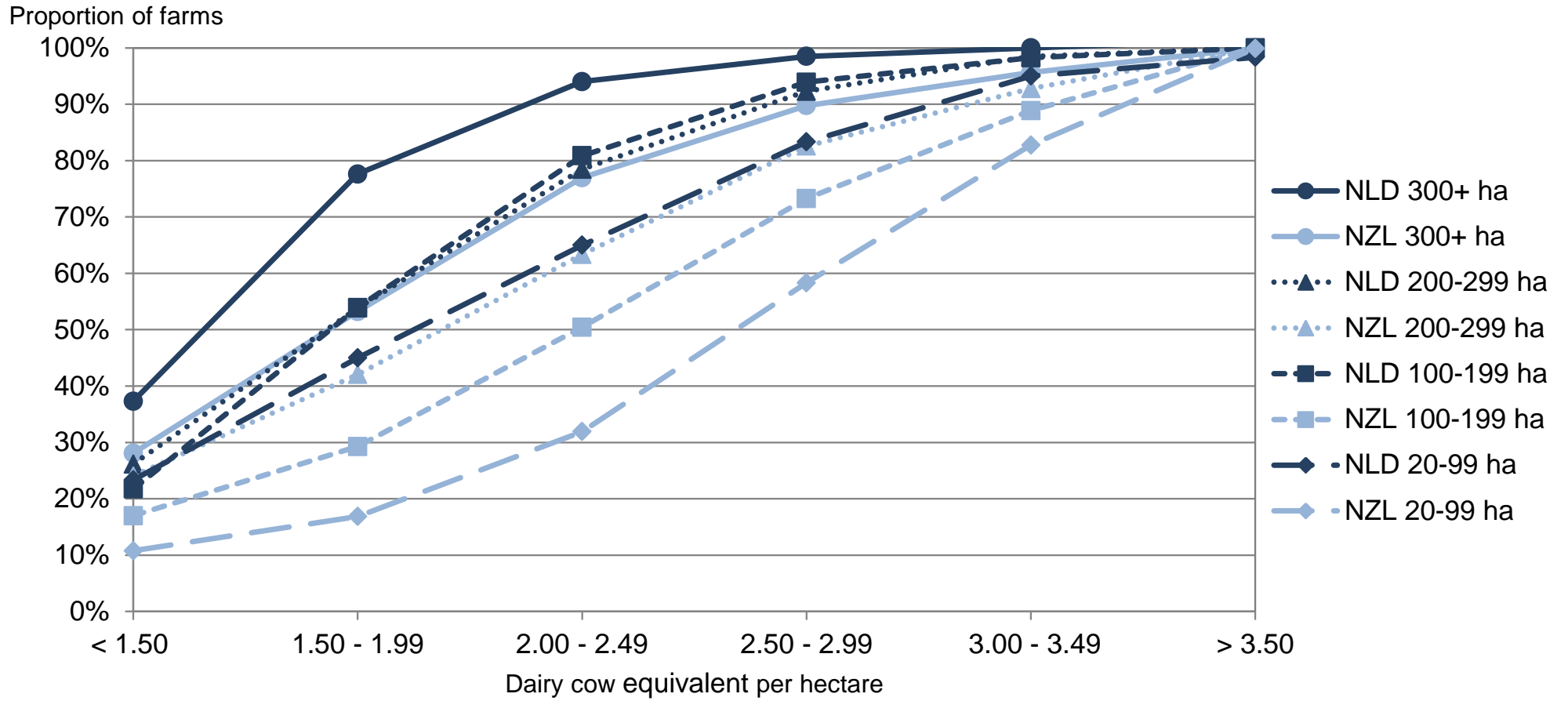


Table 3. Number of specialised beef farms in Northland and New Zealand by farm size and livestock intensity, as at June 2012

Region	Unit	Farm size (hectares)	Dairy cow equivalent per hectare					Total	
			Less than 1.50	1.50 - 1.99	2.00 - 2.49	2.50 - 2.99	3.00 - 3.49		Greater than 3.50
Northland	Number of farms	300+	171	21	3	0	0	0	195
		200-299	102	21	0	6	3	0	132
		100-199	237	36	15	3	0	3	297
		20-99	519	93	30	21	9	9	684
		Total	1,029	171	48	30	12	12	1,308
	Number as a share of total specialised beef farms (%)	300+	13%	2%	0%	0%	0%	0%	15%
		200-299	8%	2%	0%	0%	0%	0%	10%
		100-199	18%	3%	1%	0%	0%	0%	23%
		20-99	40%	7%	2%	2%	1%	1%	52%
		Total	79%	13%	4%	2%	1%	1%	100%
	Number as a share of farm size category (%)	300+	88%	11%	2%	0%	0%	0%	100%
		200-299	77%	16%	0%	5%	2%	0%	100%
		100-199	80%	12%	5%	1%	0%	1%	100%
		20-99	76%	14%	4%	3%	1%	1%	100%
		Total	79%	13%	4%	2%	1%	1%	100%
	Number as a share of livestock intensity category (%)	300+	17%	12%	6%	0%	0%	0%	15%
		200-299	10%	12%	0%	20%	25%	0%	10%
		100-199	23%	21%	31%	10%	0%	25%	23%
		20-99	50%	54%	63%	70%	75%	75%	52%
		Total	100%	100%	100%	100%	100%	100%	100%
New Zealand	Number of farms	300+	696	108	33	27	15	42	921
		200-299	372	93	33	15	27	54	594
		100-199	894	243	78	48	27	75	1,365
		20-99	2,649	696	336	168	90	207	4,146
		Total	4,611	1,140	480	258	159	378	7,026
	Number as a share of total specialised beef farms (%)	300+	10%	2%	0%	0%	0%	1%	13%
		200-299	5%	1%	0%	0%	0%	1%	8%
		100-199	13%	3%	1%	1%	0%	1%	19%
		20-99	38%	10%	5%	2%	1%	3%	59%
		Total	66%	16%	7%	4%	2%	5%	100%
	Number as a share of farm size category (%)	300+	76%	12%	4%	3%	2%	5%	100%
		200-299	63%	16%	6%	3%	5%	9%	100%
		100-199	65%	18%	6%	4%	2%	5%	100%
		20-99	64%	17%	8%	4%	2%	5%	100%
		Total	66%	16%	7%	4%	2%	5%	100%
	Number as a share of livestock intensity category (%)	300+	15%	9%	7%	10%	9%	11%	13%
		200-299	8%	8%	7%	6%	17%	14%	8%
		100-199	19%	21%	16%	19%	17%	20%	19%
		20-99	57%	61%	70%	65%	57%	55%	59%
		Total	100%	100%	100%	100%	100%	100%	100%

Source: Statistics New Zealand, 2012 Agricultural Production Census

(1) Dairy cow equivalent is the livestock multiplied by the conversion factor supplied by the client.

(2) Number of farms are randomly rounded to base 3 and may not add to totals.

Figure 3. Cumulative proportion of specialised beef farms by livestock intensity

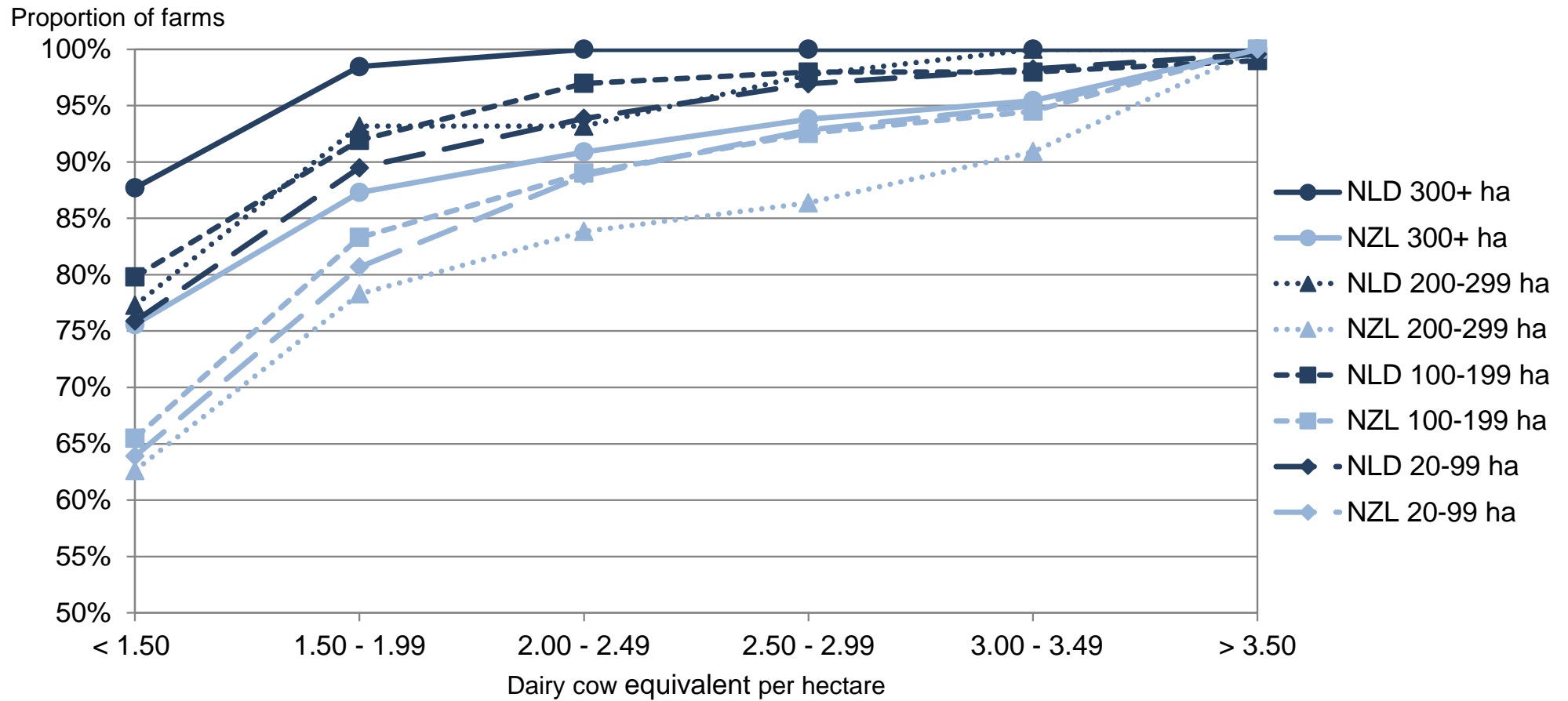


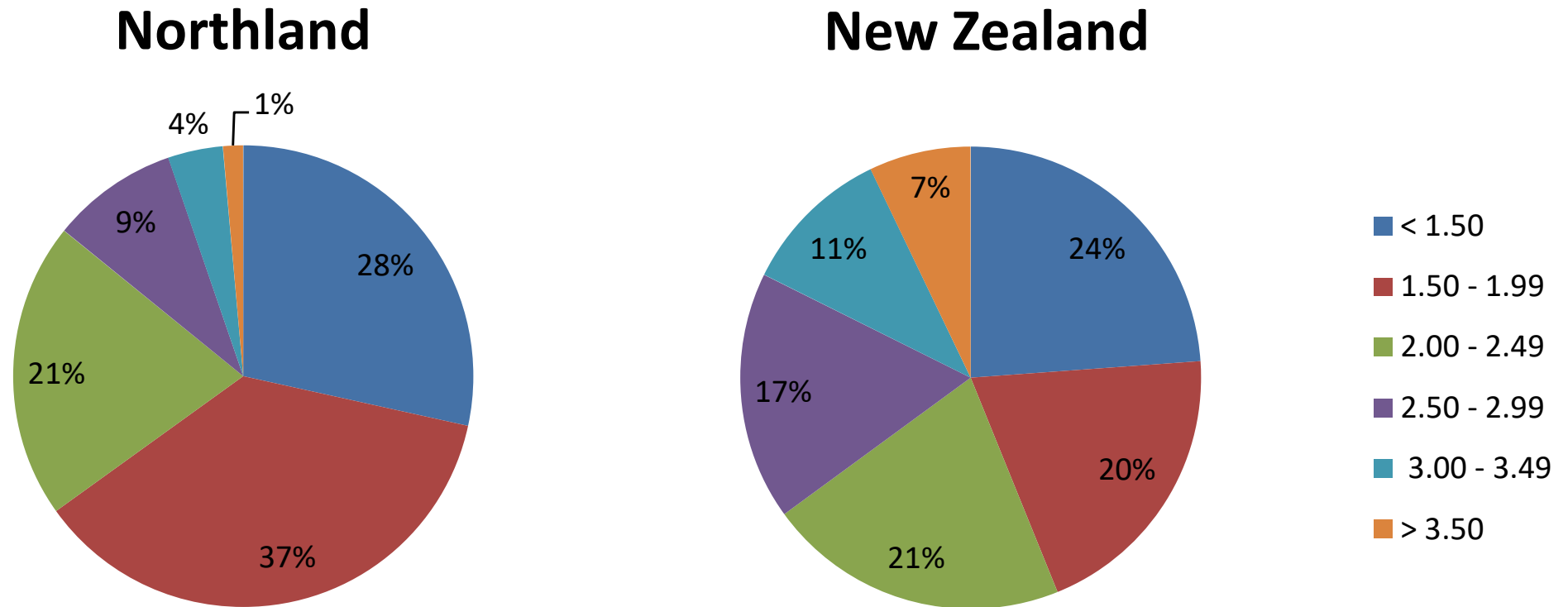
Table 4. Area of dairy farms in Northland and New Zealand by farm size and livestock intensity, as at June 2012

Region	Unit	Farm size (hectares)	Dairy cow equivalent per hectare					Greater than 3.50	Total	
			Less than 1.50	1.50 - 1.99	2.00 - 2.49	2.50 - 2.99	3.00 - 3.49			
Northland	Total area of farms (ha)	300+	32,959	43,788	14,811	3,335	2,023	1,112	98,028	
		200-299	12,941	12,658	11,739	6,185	2,604	651	46,779	
		100-199	10,783	16,883	13,754	6,383		1,861	1,002	50,666
		20-99	2,503	2,866	2,836	2,575	1,552	184	12,516	
		Total	59,186	76,195	43,140	18,479	8,040	2,949	207,989	
	Area as a share of total dairy farms (%)	300+	16%	21%	7%	2%	1%	1%	47.1%	
		200-299	6%	6%	6%	3%	1%	0%	22.5%	
		100-199	5%	8%	7%	3%	1%	0%	24.4%	
		20-99	1%	1%	1%	1%	1%	0%	6.0%	
		Total	28%	37%	21%	9%	4%	1%	100%	
	Area as a share of farm size category (%)	300+	34%	45%	15%	3%	2%	1%	100%	
		200-299	28%	27%	25%	13%	6%	1%	100%	
		100-199	21%	33%	27%	13%	4%	2%	100%	
		20-99	20%	23%	23%	21%	12%	1%	100%	
		Total	28%	37%	21%	9%	4%	1%	100%	
	Area as a share of livestock intensity category (%)	300+	56%	57%	34%	18%	25%	38%	47%	
		200-299	22%	17%	27%	33%	32%	22%	22%	
		100-199	18%	22%	32%	35%	23%	34%	24%	
		20-99	4%	4%	7%	14%	19%	6%	6%	
		Total	100%	100%	100%	100%	100%	100%	100%	
New Zealand	Total area of farms (ha)	300+	331,656	307,943	245,578	137,889	63,279	39,761	1,126,106	
		200-299	117,471	87,376	103,745	90,996	48,371	34,047	482,006	
		100-199	103,929	73,903	124,817	128,999	86,892	63,747	582,286	
		20-99	22,332	12,845	35,276	61,045	54,884	34,878	221,260	
		Total	575,388	482,067	509,415	418,929	253,426	172,433	2,411,658	
	Area as a share of total dairy farms (%)	300+	14%	13%	10%	6%	3%	2%	47%	
		200-299	5%	4%	4%	4%	2%	1%	20%	
		100-199	4%	3%	5%	5%	4%	3%	24%	
		20-99	1%	1%	1%	3%	2%	1%	9%	
		Total	24%	20%	21%	17%	11%	7%	100%	
	Area as a share of farm size category (%)	300+	29%	27%	22%	12%	6%	4%	100%	
		200-299	24%	18%	22%	19%	10%	7%	100%	
		100-199	18%	13%	21%	22%	15%	11%	100%	
		20-99	10%	6%	16%	28%	25%	16%	100%	
		Total	24%	20%	21%	17%	11%	7%	100%	
	Area as a share of livestock intensity category (%)	300+	58%	64%	48%	33%	25%	23%	47%	
		200-299	20%	18%	20%	22%	19%	20%	20%	
		100-199	18%	15%	25%	31%	34%	37%	24%	
		20-99	4%	3%	7%	15%	22%	20%	9%	
		Total	100%	100%	100%	100%	100%	100%	100%	

Source: Statistics New Zealand, 2012 Agricultural Production Census

- (1) Dairy cow equivalent is the livestock multiplied by the conversion factor supplied by the client.
- (2) Total area is total area of farm including effective area plus other native bush, plantation forest, etc..

Figure 4. Distribution of total dairy farm area by livestock intensity



Appendix C – Methodology for defining the lowland and hill country maps

Author: Duncan Kervell, Land Management Manager, Northland Regional Council

The New Zealand Land Resource Inventory (NZLRI) is a regional scale (1: 50,000) database with slope groups defined on a digital geospatial data. It has seven slope categories (“groups”), which are set out in the following table.

Table 1 Slope groupings. (Reproduced from Table 6, page 21 of the Land Use Capability Handbook, 3rd Edition⁸⁰)

Slope Group	Slope angle (degrees)	Description	Typical examples
A	0-3°	Flat to gently undulating	Flats, terraces
B	4-7°	Undulating	Terraces, fans
C	8-15°	Rolling	Downlands, fans
D	16-20°	Strongly rolling	Downlands, hill country
E	21-25°	Moderately steep	Hill country
F	26-35°	Steep	Hill country and steeplands
G	>35°	Very steep	Steeplands, cliffs

We used the following slope groups to identify two land areas (a) flat to rolling ($\leq 15^\circ$), and (b) strongly rolling to very steep ($> 16^\circ$).

The following GIS queries were used to define the breakdown of the feature from the regional NZLRI database. The following queries define all the permutations of slopes within a slope group, as there are many compound and dissected slopes in the NZLRI database.

Below 15 degrees

SLOPE = 'A' OR SLOPE = 'A'" OR SLOPE = 'A' +B' OR SLOPE = 'A' +B' OR SLOPE = 'A +B'" OR SLOPE = 'A' +C' OR SLOPE = 'A' +D' OR SLOPE = 'A /B' OR SLOPE = 'A /B +B' OR SLOPE = 'B' OR SLOPE = 'B'" OR SLOPE = 'B' +A' OR SLOPE = 'B' +A'" OR SLOPE = 'B

⁸⁰ Lynn, I., et al. 2009. Land Use Capability Survey Handbook – a New Zealand handbook for the classification of land 3rd ed. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, GNS Science.

+C' OR SLOPE = 'B +D' OR SLOPE = 'B +E' OR SLOPE = 'B +F' OR SLOPE = 'B /C' OR SLOPE = 'B /C +C' OR SLOPE = 'B /C +D' OR SLOPE = 'C' OR SLOPE = 'C''' OR SLOPE = 'C +A' OR SLOPE = 'C +B' OR SLOPE = 'C +B''' OR SLOPE = 'C +D' OR SLOPE = 'C +E' OR SLOPE = 'C +F' OR SLOPE = 'C +G' OR SLOPE = 'C /B' OR SLOPE = 'C /D' OR SLOPE = 'C /E'

Above 15 degrees:

SLOPE = 'D' OR SLOPE = 'D +A' OR SLOPE = 'D +B' OR SLOPE = 'D +B''' OR SLOPE = 'D +C' OR SLOPE = 'D +C''' OR SLOPE = 'D +E' OR SLOPE = 'D +F' OR SLOPE = 'D +G' OR SLOPE = 'D /E' OR SLOPE = 'E' OR SLOPE = 'E +B' OR SLOPE = 'E +B''' OR SLOPE = 'E +C' OR SLOPE = 'E +D' OR SLOPE = 'E +F' OR SLOPE = 'E +G' OR SLOPE = 'F' OR SLOPE = 'F +E' OR SLOPE = 'F +C' OR SLOPE = 'F +D' OR SLOPE = 'F +E' OR SLOPE = 'F +G' OR SLOPE = 'F /G' OR SLOPE = 'G' OR SLOPE = 'G +E' OR SLOPE = 'G +F'

Table 2 Comparison of the amount of land in the different land slope classes

<15 degrees	>15 degrees
5,129 km ²	7,281 km ²
41% of land area	59% of land area

Appendix D - Summary of recommended changes to the lowland and hill country maps and highly erodible land maps

Author: Michael Mitchell, Land Management Advisor, Northland Regional Council

I assessed, as a desk top exercise, the accuracy of the lowland and hill country maps and highly erodible land (erosion prone land) map in the Proposed Regional Plan for four properties as per the owners' requests in their submissions.

The exercise consisted of analysis of each individual property, through the use of aerial imagery and oblique photography through GIS applications, to assess the topography and LUC class in relation to mapping boundaries.

In brief conclusion, this desktop assessment did not uncover many discrepancies in the mapping boundaries. I recommend only minor amendments to maps relating to three (two properties in owned by Arran Simpson and one by Man O'War Dairies Ltd.).

The proposed amendments were drawn as separate polygon shape files outlining discrepancies relative to the original mapping boundaries.

A brief over view and justification of decisions for each property is as follows.

Aran Nelly

Submission: Lowland and hill country maps – requested the hill country map to extend to roadside boundary.

- Looking over aerial imagery and oblique photography, the waterways captured in the maps 'lowland' area appear correct. Although there may be steeper banks leading into the waterways, the overall topography seemed to be less than 16°.

Arran Simpson

Submission: Lowland and hill country maps and highly erodible land map – requested property be re-mapped.

- Arran Simpson made submissions in relation to two properties (main farm and a run off)
- The main property proved somewhat challenging as there are large areas of the land which could be creeping up toward the higher end of the slope class, but when you look closely, the majority of the property sits on an easy plateau with steeper banks leading into water systems. There is a small area of the property which I would class as 'hill country' that has not been captured.
- The 'Run off' property also had a small area of land captured as "lowland" which should be mapped as "hill country". but this property was more defined with most of the land easily recognised as either "lowland" and "highland".
- There was only a small area of land which was mapped as highly erodible but there was an obvious overlap of land which should not get caught as identical hill country next to the boundary was not being caught.

Man O'War Farms

Submissions relating to stock exclusion maps and highly erodible land layer map – concerns over incorrect mapping.

- Looking over all of the farms included in this submission. There was only one farm that warranted further analyses and mapping amendments, with all the other farms having fairly clear boundaries between “lowland’ and “hill country”.
- The majority of the farm at Moerewa has been mapped as highly erodible land and I can see how there may be reservations as to how any regulations relating to this land may impact on their farming system, where re-grassing and cropping can be integral components of farming systems. In saying that though, from looking at the obliques there did not seem to be any noticeable cropping or regressing occurring on the land captured in the mapping boundaries.
- This was an interesting property though as due to soil characteristics both LUC 6e17 & 19 are captured under this highly erodible layer. There is not a massive amount of this LUC class across northland but this property consists of a substantial amount of 6e17. With this in mind, you could understand why there may be confusion, as being 6e this is a gentler slope than 7e so the comparison on erodibility due to slope is obvious. I would think that this more gently sloping land may be causing confusion, but due to the erosive nature of the soil the map relating to it should not be changed.
- In saying this, due to the mapping scale (1:50,000) there are definitely areas of lower lying river flats and valley bottoms which are being captured as highly erodible land which should not be. These areas of land are obvious when assessing oblique photography and have been highlighted as per the highly erodible land layer amendments.