File Reference: A2237609

Report To: Lake Rotorua Stakeholder Advisory Group

Meeting Date: 8 December 2015

Report From: Stephen Lamb, Lake Rotorua Policy

Consideration of 4 ha to 10 ha range to apply to permitted activity rule

Executive Summary

As a result of feedback staff have explored the idea of only making the rules apply (in terms of nitrogen limitations) over a certain size threshold. Analysis of the small block sector has provided useful information about this sector and while the data set is limited is does support a recommendation of a 4 ha threshold. Key reasons for this include: the threshold captures between 70 and 75% of properties smaller than 40 ha, properties are less likely to be commercial or intensively farmed, and the threshold aligns with the permitted activity nitrogen loss level.

4 ha is also a historically recognised property size threshold that has often been used in rural planning.

1 Recommendations

That the Lake Rotorua Stakeholder Advisory Group:

1 Receives the report, *Consideration of 4 ha to 10 ha range to apply to permitted activity rule.*

2 Notes the basis for the recommended position.

2 Purpose

The purpose of this report is to present information on the 4 ha threshold and on the potential to increase this threshold to, or towards, 10 ha.

3 Introduction

The Draft Lake Rotorua Nutrient Rules have to date been drafted with on the basis of everyone needing to be part of the solution. Care needs to be taken that this principle does not impose unnecessary costs particularly when the benefits are low. An issue that has been raised through the consultation process is that there should be a lower threshold below which nutrient limitations should not apply.

As a result of feedback, further more specific analysis on the Small Block Sector has been carried out. This has identified that there are a large number of relatively small, relatively low risk, properties in the groundwater catchment. The issue of a threshold has been raised with StAG (10 November 2015) who support the idea of a 4ha threshold – and asked for consideration to be given to increasing this to 10 ha.

The draft rules are based on an underlying principle that everyone needs to be part of the solution. For smaller, non-commercial properties there is no significant reduction in nitrogen leaching being asked for – as there is for the larger, commercial farming operations. This mostly reflects what is currently occurring on the land. The stocking rate table for example, and the associated permitted nitrogen leaching level, reflect a typical, non-commercial approach to grass management on lifestyle properties.

It is correct to say that the rules will impose limitations on what can be done on these properties so there is an impact on the property right in relation to opportunity costs. However, this limitation will in the majority of cases have no or minimal effect. Again this is because the permitted levels reflect how land is currently managed in the majority of the lifestyle sector.

The selection of a threshold is somewhat arbitrary and suggestions have included:

- 2 hectares (previous number used in consultation)
- 4 hectares (change in scale from table)
- 5 hectares
- 10 hectares (bottom of 10 – 40 ha range in draft rules)
- 40 hectares.

Originally there was a 2 hectare threshold below which nitrogen limitations were proposed to not apply. The communication on this was inexact as the rules still applied but no nitrogen leaching controls were going to be imposed. The extension of the draft rules at that time to cover all properties would, as identified above, have minimal impact and was supported by some feedback saying it wouldn't be fair if intensive uses existed on 1.99 ha.

On the basis of feedback and analysis staff have re-introduced a threshold into the Draft Rules. This has been set at **4 ha or less in area**.

3.1 Current Draft Rules in relation to thresholds

Permitted Activities:

- **0 to 4 ha in Area** (no commercial cropping, horticulture or dairying)
- **4 to 10 ha in Effective Area** (must meet stocking rate table, no commercial cropping or horticulture)
- **Any size of Effective Area** (must show Nitrogen loss is less than Permitted Activity level – 68% of drystock reference file)

Note: the exclusion needs to be based on property size not effective area. Using effective area would introduce an element of interpretation into the requirement for a permitted activity. If effective area applies to all properties then there is still the interpretation issue but the rules do apply in one way or another.

3.2 Stocking Rate Table

The stocking rate table provided to assist with consultation process has been reviewed and formalised into the Draft Rules. The stocking table defines the stock numbers for a land owner to comply with a permitted activity status of 18kgN/ha/yr (OVERSEER® 6.2.0). The stocking table requirements were to achieve low intensity farming that approximates typical small block management practices.

3.3 The Consenting option

If small block owners wish to operate above the permitted activity levels they are able to apply for a controlled activity consent in 2022. Prior to that they would be required to submit information to Council about their activities. A consent would effectively mean that they would be allocated the average benchmark and would be required over time to reduce nitrogen loss down to the average NDA as follows:

Activity	Benchmark 2022 (kgN/ha/yr)	NDA 2032 (kgN/ha/yr)
Drystock	30.9	24.7
Dairy[1]	99.7	68.5

Small block owners also have the ability to undertake trading. This would be an option for increasing the nitrogen loss capacity of the property but would involve the associated cost of purchasing NDA and of the transaction. This may however suit some landowners particularly where larger animals (for example horses) or intensive feeding regimes are involved.

4 Altering the thresholds

Staff have explored the idea of only making the rules apply (in terms of nitrogen limitations) over a certain size threshold and have recommended that 4 ha be used. There are practical difficulties associated with a definition but also care needs to be taken in considering a move away from the principle that everyone needs to be part of the solution.

The information provided in the review of small blocks report has highlighted that there are significant numbers of small properties that were unlikely to be farming at commercial levels. The low risk (of nitrogen loss) that these properties present, combined with consideration of the administrative costs means that it is reasonable to reintroduce a threshold for permitted activities (with conditions excluding high nitrogen loss activities – such as dairying and cropping). There is also the reduced consenting cost for any property below the threshold that might otherwise have sought consent. The following sections look at what information is available for defining a threshold. It covers:

- Number and size of properties
- Overall scale of nitrogen loss
- Property based nitrogen loss estimates
- Commerciality (using GST information).

[1] Dairy included for comparison. Small Blocks are modelled as Drystock.

4.1 Number and sizes of properties

The table below identifies the number and size of valuation references (assumed to be properties for the purpose of this analysis) in the Lake Rotorua Groundwater Catchment:

Area Size Band	Total Small Blocks	Cumulative Small Blocks	Total Area Small Blocks (ha)	Average Small Block size (ha)
0.05 - 0.4 ha	214	214	42	0.20
0.4 - 2 ha	674	888	624	0.93
2 - 4 ha	157	1,045	438	2.79
4 - 10 ha	265	1,310	1501	5.66
10 - 20 ha	102	1,412	1389	13.62
20 - 30 ha	56	1,468	1129	20.16
30 - 40 ha	16	1,484	510	31.88
Total	**1,484**		**5634**	**3.80**

4.2 Benchmarked Properties

A small number of properties that have been benchmarked would come under a threshold. If these properties operated as "permitted activities" this would not have any significant impact on data management. The numbers of benchmarked properties under 10 ha are shown below:

Property Size	Number of benchmarked properties	Total area of benchmarked properties (ha)
0 to 2 ha	2	2
2 to 4 ha	2	8
4 to 10 ha	12	79

4.3 Scale of nitrogen loss

In terms of nitrogen management, the way smaller properties are managed (generally as lifestyle blocks) means that they lose less nitrogen. The risk associated with these properties not being "managed" by rules is therefore low. This risk increases with property size. The following table (from the Small Block Analysis) models the amount of nitrogen loss against property size. It shows that with three out of the four scenarios the 4 to 10 ha category shows a non-trivial reduction in nitrogen loss. The scenarios are:

- Scenario 1: benchmark information for small blocks is applied across all properties
- Scenario 2: benchmark information for small blocks is applied across all properties except all less than 10 ha properties are given 18 kgN/ha/yr – the permitted activity level
- Scenario 3: benchmark information for small blocks is used, all non-benchmarked properties get the Drystock average (24.7 kgN/ha/yr)
- Scenario 4: Half of the small block area are given 18 kgN/ha/yr – the permitted activity level and half are given the Drystock average (24.7 kgN/ha/yr).

		All units except area are kgN/ha/y	Scenario 1 Pro-rated from actual BM/pNDA		Scenario 2 Pro-rated from actual BM/pNDA except all <10ha @ 18 kgN/ha/y		Scenario 3 BM land gets actual pNDA; non-BM'd land gets pNDA @ 24.7 kgN/ha/y		Scenario 4 50% area @ 18 kgN/ha/y; 50% area gets pNDA @ 24.7 kgN/ha/y	
Area band	**Effective area ha**	**Status Quo N loss**	**sum pNDA**	**Redn from Status Quo**	**sum pNDA and 18kgN**	**Redn from Status Quo**	**sum pNDA**	**Redn from Status Quo**	**sum pNDA and 18kgN**	**Redn from Status Quo**
0.05-2 ha	369	6,195	6,637	-441	6,637	-441	9,097	-2,902	7,872	-1,677
2-4 ha	312	5,778	5,614	164	5,614	164	7,657	-1,878	6,659	-881
4-10 ha	1,120	25,925	23,141	2,784	20,165	5,760	27,383	-1,458	23,918	2,007
10-20 ha	1,090	30,758	26,972	3,786	26,972	3,786	26,935	3,823	23,273	7,485
20-30 ha	826	22,229	19,136	3,092	19,136	3,092	19,967	2,262	17,627	4,601
30-40 ha	369	12,850	10,535	2,315	10,535	2,315	10,089	2,761	7,870	4,980
Total	4,085	103,735	92,035	11,700	89,059	14,676	101,128	2,607	87,219	16,516
				11.3%		**14.1%**		**2.5%**		**15.9%**

The percentages in the above table (Table 7 from the Small Bock Analysis) refer to aggregate nitrogen reductions from this sector.

These scenarios were developed to look at the scale of nitrogen loss involved in small blocks – on the basis of assumptions as to how they might operates. As expected the larger blocks provide the most nitrogen reduction. The 4 ha threshold was not modelled but is closest to Scenario 2. There is a proportionally larger "effective area" in the 4 to 10 ha category.

4.4 Property based nitrogen loss

The following information is taken from Table 6 Small Block Analysis which looks at information from benchmarked small blocks:

Area Size Band	Total BMed Small Blocks	Average Benchmark
0.05 - 2 ha	2	16.8
2 - 4 ha	2	18.5
4 - 10 ha	12	23.1
10 - 20 ha	19	28.2
20 - 30 ha	15	26.9
30 - 40 ha	8	34.9
Total	**58**	

While noting that there are a limited number of benchmarked small blocks[2] the available information shows that 2 – 4 ha aligns with the permitted activity of 18 kgN/ha/yr. Figure 6 from the Small Block Analysis shows a general trend of increasing nitrogen loss with increasing property size.

[2] Benchmarking was targeted at properties greater than 40 hectares. Some smaller properties were benchmarked and, over time, other properties have been benchmarked for a variety of reasons (for example, to assist in property sale processes or as a result of subdivision).

Subsequent analysis of more discrete size classes using the pro-rate allocation nitrogen scenario (Scenario 1) was then undertaken using regression analysis. This assumes that the benchmarking sample is representative.

Extrapolated Annual N loss for Small Blocks[VR] under 10 hectares

Area bands	Count Small Blocks[VR]	Total area, ha	Effective area, ha	Status Quo N loss, kgN/ha	Sum Status Quo N loss, kgN	Derived pNDA, kgN/ha	sum derived pNDA, kgN	Reduction from Status Quo, kgN
0.05-2 ha	888	666	370	16.8	6215	18.0	6659	-444
2-4 ha	157	438	312	18.5	5770	18.0	5614	156
4-5 ha	117	507	399	22.3	8886	20.3	8089	797
5-6 ha	44	228	168	22.6	3787	20.4	3421	365
6-7 ha	43	269	224	22.9	5140	20.6	4611	529
7-8 ha	25	178	119	23.2	2755	20.7	2454	301
8-9 ha	18	150	105	23.6	2463	20.8	2179	285
9-10 ha	18	169	122	23.9	2924	21.0	2569	355
Total	**1310**	**2605**	**1818**		**37941**		**35596**	**2345**

Note: The "Status Quo N loss" in the table above is based on benchmarked nitrogen loss.

In terms of the management of nitrogen, increasing the size threshold to 5 ha would increase by almost 90% the amount of unmanaged nitrogen (from 11,985 kgN to 20,872 kgN).

Past the 4 ha threshold small blocks will tend to have a higher nitrogen loss than the permitted activity level. This assumption is based on the data available – albeit limited in nature. Permitting a higher level of nitrogen discharge than the permitted activity level (the stocking rate) which is also the bottom of the drystock range would undermine the rationale for how these two thresholds have been set.

4.5 Commerciality

In terms of when a property size might be considered more likely to be commercial rather than lifestyle in nature the following table provides information on GST registration which provides some indication of this:

Farm type	< 4ha	4 - 10 ha	10 - 20 ha	20 - 40 ha	Total
Total GST	24	33	39	36	132
Total Small Blocks	1,045	265	102	72	1,484
% GST Registered	**2%**	**12%**	**38%**	**50%**	**9%**

4.6 Summary of 4ha threshold as the preferred approach

The rationale for setting the threshold at 4 ha is:

- The 4 ha aligns with the permitted activity threshold for nitrogen loss (18 kgN/ha/yr). This threshold is established as the stocking table nitrogen loss rate and as the bottom of the drystock range.
- The GST data suggests that there is a change in nature away from lifestyle to some properties beginning to act in a more commercial way. This change accelerates as size increases.

- A 4 ha threshold captures 70%-75% of the small blocks.
- Properties above 4 ha can still be permitted activities under the draft rules.

The 4 ha threshold is also a commonly used rural property size. It has historically been seen as a standard size for management of properties. The genesis of this size threshold pre-dates the Town and Country Planning Act 1977.

5 Link to the Incentives Scheme

The question has been raised about whether the lower purchase limit would influence a threshold. No lower threshold for nitrogen purchase has been set, or is likely to be formally set, by the Incentives Board.

The following examples are hypothetical nitrogen sales to the Incentives Board:

4 ha property (3.5 ha effective area)
Proposes to go from drystock (24.7 kgN/ha/yr) to trees (3 kgN/ha/yr)
21.7 kgN/ha/yr times 3.5 ha = 75.95 kgN/ha/yr potentially for sale
Maximum value = $213 kgN/ha/yr (OVERSEER® 6.2.0) = $16,177

10 ha property (9.5 ha effective area)
Proposes to go from drystock (24.7 kgN/ha/yr) to trees (3 kgN/ha/yr)
21.7 kgN/ha/yr times 9.5 ha = 206.15 kgN/ha/yr potentially for sale
Maximum value = $213 kgN/ha/yr (OVERSEER® 6.2.0) = $43,910

The Incentives Board needs to balance transaction costs with scale (of nitrogen reductions). Smaller amounts of nitrogen may not be suitable for the Incentives Board. It is self-explanatory that a 10 ha agreement would be preferred to a 4 ha agreement however this topic does not provide guidance for setting a rule threshold.

Under the Integrated Framework the Incentives Fund is designed to substitute for a proportion of the target that would otherwise have been required to be delivered through rules. It is not a compensatory measure. Access to the Incentives Fund needs to be managed in such a way that its prime objectives are met – that is, 100 tonne reduction in nitrogen entering the lake by 2022.

6 Summary

From the above analysis, the recommended approach is to use a threshold of 4ha.

This is based on a threshold of 4 ha representing a significant proportion (between 70% and 75%) of properties in the catchment and because these properties are most likely to be lifestyle properties. 4 ha is a commonly understood property size that has historically been used in rural regulation.

The data set of benchmarked properties is small and therefore there is not good information on which to base a decision – particularly around the risk of increasing the size of the property that the threshold would apply to. However the information that is available identifies the 4ha size as being the point where the permitted activity nitrogen loss level is exceeded.

The larger a property is the more likely it is to be losing higher level of nitrogen and to be being commercially farmed. The further the size threshold is increased the less properties would be under specific nitrogen management. The 4 ha threshold represents a reasonable balance when considering risk, administrative efficiency, cost and the impacts of regulation imposition.

Stephen Lamb
Lake Rotorua Policy
Bay of Plenty Regional Council