Plan Change 10 Hearing

Response to Panel's request for information

TOPIC: Application of RPS principles and StAG principles

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1. RPS Principles

The RPS principles have been part of the process since 2012 (the principles becoming operative in October 2014). The key analysis is contained within the following document:

Allocating Lake Rotorua's sustainable nitrogen limit amongst land use activities

This document was reported to the SPP Committee (Regional Council) - 17 September 2013[1] and to Rotorua Te Arawa Lakes Strategy Group – 27 September 2013[2]. The decisions made by these forums provided the policy basis for the allocation discussions.

Attachment 2 to the document is a detailed assessment of allocation approaches against the principles. It is copied below in full from the Committee Report.

The master document (and its attachments) is referenced in the Section 32 Report, Section 42A Report and Ms Burton's Rebuttal evidence at page 15, paragraph 120.

2. StAG Principles

The StAG principles are non-statutory and carry less weight in this respect. However the StAG principles provide more guidance in relation to how the allocation decisions were made. In some respects these provide a view on how StAG viewed issues of equity and fairness. They also provide more of a perspective on some of the RPS principles.

Note: the table on page 78 of the Section 32 Report relates to the StAG principles only. This table complements the above document's analysis.

3. Ongoing reference to Principles

Through the process of defining and refining the detailed allocation methodology (often at StAG) the principles were considered on an ongoing basis as noted in the Section 32 Report (for example, section 10.2.4 or section 10.4). The section 32 also contains a copy of the interpretation of the principles.

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[1] SPP Committee (Regional Council) - 17 September 2013 Report – Appendix 1, Attachment 2: http://www.boprc.govt.nz/media/300815/spp-meeting-agenda-tuesday-17-september-2013-pt-1.pdf

[2] http://www.boprc.govt.nz/media/303412/rotorua-te-arawa-lakes-strategy-group-agenda-friday-27-september-2013.pdf

Attachment Two: Detailed assessment of allocation approaches

Assumptions

- Generic assumptions have been made in the following assessment of allocation approaches:
- Our community wants a catchment where land is used efficiently and sustainably for an on-going prosperous community.
- Allocation of nitrogen loss and measures landowners take to meet their nitrogen loss entitlement won't further increase phosphorous losses.
- All allocation methods can be staged with transitional periods. An initial period would allow farmers time to adapt their systems, trade allowances or exit the catchment before compliance monitoring begins.
- For all allocation methods we are assuming a similar timeframe for implementation.
- Allocations can be tradable – this will create incentive for innovation and higher efficiency where the allocated nitrogen discharges are scarce.
- All activities that cannot reduce their current nitrogen loss (e.g. forestry, urban, rain on lake) will receive an allocation equal to their current loss. See table below.

N source	Area ha	load tN/y (ROTAN 2011)		
		current	reduction	target
pasture	21,175	526	270	256
geothermal	59	30	30	0
urban & sewage	3961	93	20	73
pines	8800	35	0	35
bush	12,382	40	0	40
rain on lake	8079	30	0	30
total	**54,456**	**755**	**320**	**435**

Specific assumptions are also made for each allocation method. They are provided in the following assessments.

Grandparenting

Allocation is based on existing discharges and every landowner would receive an allocation equal to their current discharge. This is status quo under existing Rule 11. A grandparenting approach was also used for the Lake Taupō Variation.

Assumptions:

- Good information on current discharges rates is available to inform individual property N discharge allocation.
- "Current" relates to operations and discharges resulting from implementation of Rule 11

Criteria	Comment
Meets policy intent	• No - Will not achieve required target as current discharge levels are greater than the target.
Equity/fairness	• This approach benefits those with highest discharges (giving them the most flexibility of what they do on the land) and penalises those with the lowest discharges. • It supports status quo and those with best practices will be worse off.
Immediate impact	• Enables businesses to continue without disturbing their current operations. Therefore no immediate upfront costs.
Public costs and benefits	• Community and iwi costs when nitrogen targets are not met. • Little long-term monitoring and compliance costs. • Potentially maintains or reduces impacts on current local agricultural economy.
Private costs and benefits	• Growth in intensity of agricultural production is curtailed • Low leaching enterprises cannot increase their leaching loss if they want to change land use activities • Least economic disruption to current landowners. • This allocation approach allows a continuation of activities so provides high level of certainty to current landowners.
Future vision for landscape	• Won't achieve the vision as it doesn't encourage a transition to more efficient resource use.
Iwi land ownership	• Likely to disadvantage undeveloped Māori owned land –as that land will receive a lower allocation and therefore restricts future development (see equity/fairness).
Cultural values	• At risk as water quality will not improve.
Resource use efficiency	• Land use limits are based on past land use rather than land use potential. • Under-developed land cannot develop like other land has in the past. • Potentially rewards current inefficiencies by allocating a higher number of discharge allowances to operations on lower class or high leaching land.
Existing land use and farm capital investment	• Recognises existing land use and sunk capital investment.
Ease of transfer	• Can be applied quickly if based on the information gathered through Rule 11 benchmarking. • No upfront costs to landowners. • Technically feasible.

Grandparenting allocation approach assessed against StAG criteria

No major windfalls for any sector	Existing investment will be recognised	Least overall economic impact	Practices with high nutrient discharge are not rewarded
✓	✓	✓	X

Key
✓ Meets criteria
X Does not meet criteria

Discussion

The policy intent will not be met with grandfathering, as it will not achieve a sustainable lake load of 435t/N/yr. The total "steady state" nitrogen load to Lake Rotorua from current land use is estimated to be 755tN/yr. Therefore, grandparenting cannot be considered as a stand-alone allocation approach.

Staff also considered grandparenting with a proportionate reduction to meet the N target for the lake. To reduce the current pastoral discharge from 526 tN/yr to the required 256 tN/yr equates to an approximate reduction of 50%. This means that if a current nitrogen discharge from a dairy farm was 56 kg/ha/yr and a dry stock farm was 16 kg/ha/yr then their discharges would need to drop to 28 kg/ha/yr and 8 kg/ha/yr respectively. This could be technically and/or financially unfeasible for some land uses.

This approach would penalise those with little room to move or improve and could force them out of their current land use to a lower leaching land use. This could create significant economic impacts.

The above assessment does identify aspects of grandparenting that have merit for inclusion in a hybrid approach. These include:

- Recognise existing land use.
- Recognise existing investment.
- Allocation that considers current nitrogen loss rates.

It is recommended that these aspects be considered as part of any hybrid model(s).

Land Use Capability

The land use capability class approach assesses the physical quality of the land, soil and environment and its productive capability and corresponding loss of nitrogen. Basing an allocation approach on this system means that higher nutrient limits would be allocated to more versatile classes of land, thus improving overall efficiency of land use in the long run.

Assumption:

- More versatile soils are more productive; higher leaching activities should occur on the most productive lands.
- We have the data necessary to determine the most suitable characteristics on which to base the allocation (LUC, N leakiness, etc.).

Criteria	Comment
Meets policy intent	• Yes, providing the N target is used as the basis of the allocation.
Equity/fairness	• Degree of equity as it is partially independent of current land uses. It treats land in the same manner regardless of current use. • Does not recognise existing land uses or the variations in management techniques that are currently in place to deal with environmental variability.
Immediate impact	• There would be a significant and immediate impact as a majority of dairy and drystock farms are on class 4 and 6 land in the Rotorua catchment. Therefore, allocating the bulk of nitrogen to class 1-3 land would disrupt many agricultural landowners at the catchment scale. • Only 15% of the catchment is class 2/3 land. Thus, there is limited additional land that could be suitable for dairy even if relocation of dairying was a desirable objective.
Public costs and benefits	• Significant private costs are likely to have some broader downstream and flow-on costs to the wider community. • Could completely change the rural and urban landscape – which may be either a benefit or a cost. • Encourages sustainable and efficient land use in the long-term reducing future mitigation costs and achieving a clean lake
Private costs and benefits	• Potential benefits for landowners on land considered more versatile (ie have higher leaching allocation) to further reduce their N leaching and sell their excess N loss reductions to others • Cost to intensive farmers on less productive land. Only 15% of the catchment is Class 2/3 land. 81% of existing dairy and 73% of existing dry stock is on class 4-6 land.
Future vision for landscape	• Allows flexibility on what can be produced on the land. • Encourages versatile land to be used more intensely for production. • By encouraging land uses to move to its most suitable location, aligns with assumption that the community wants a catchment where land is used efficiently and sustainably.
Iwi land ownership	• The accompanying map shows Māori owned land with lower productive capability (classes 6-8). See costs above.
Cultural values	• Cultural benefits from a clean lake. • Supports concept of kaitiakitanga.
Resource use efficiency	• Does allow flexibility on what can be produced on the land. • LUC Classes do not determine actual or predicted amounts of nutrient leaching from soils – its intent is to encourage intensive farming towards higher quality soils. • Efficient approach because it encourages production in the most appropriate places. Flow on effect is improved economics. • Sustainable land uses do not necessarily correspond to the land use classification class as LUC does not capture all considerations. For example, class 2 land could be leaky and be next to the lake with a higher probability of that N reaching the lake.

Existing land use and farm capital investment	• Results in a large shift of existing land uses. • Does not acknowledge significant historical investment in infrastructure including nutrient mitigation expenditure.
Ease of transfer	• Complex - Many farms in Rotorua catchment have a number of different LUC classes and it will be difficult to determine how nutrients will be allocated at the property scale. • Resource intensive - Issues associated with the accuracy of LUC mapping. • Not supported by affected landowners (StAG) so risk of poor cooperation from many landowners.

Land use capability allocation approach assessed against StAG criteria

No major windfalls for any sector	Existing investment will be recognised	Least overall economic impact	Practices with high nutrient discharge are not rewarded
-	X	X	X

Key
✓ Meets criteria
X Does not meet criteria

Discussion

Allocation based on LUC or natural capital alone does not specifically address inputs or leaching rates, but it can be designed in such a way that the target can be achieved.

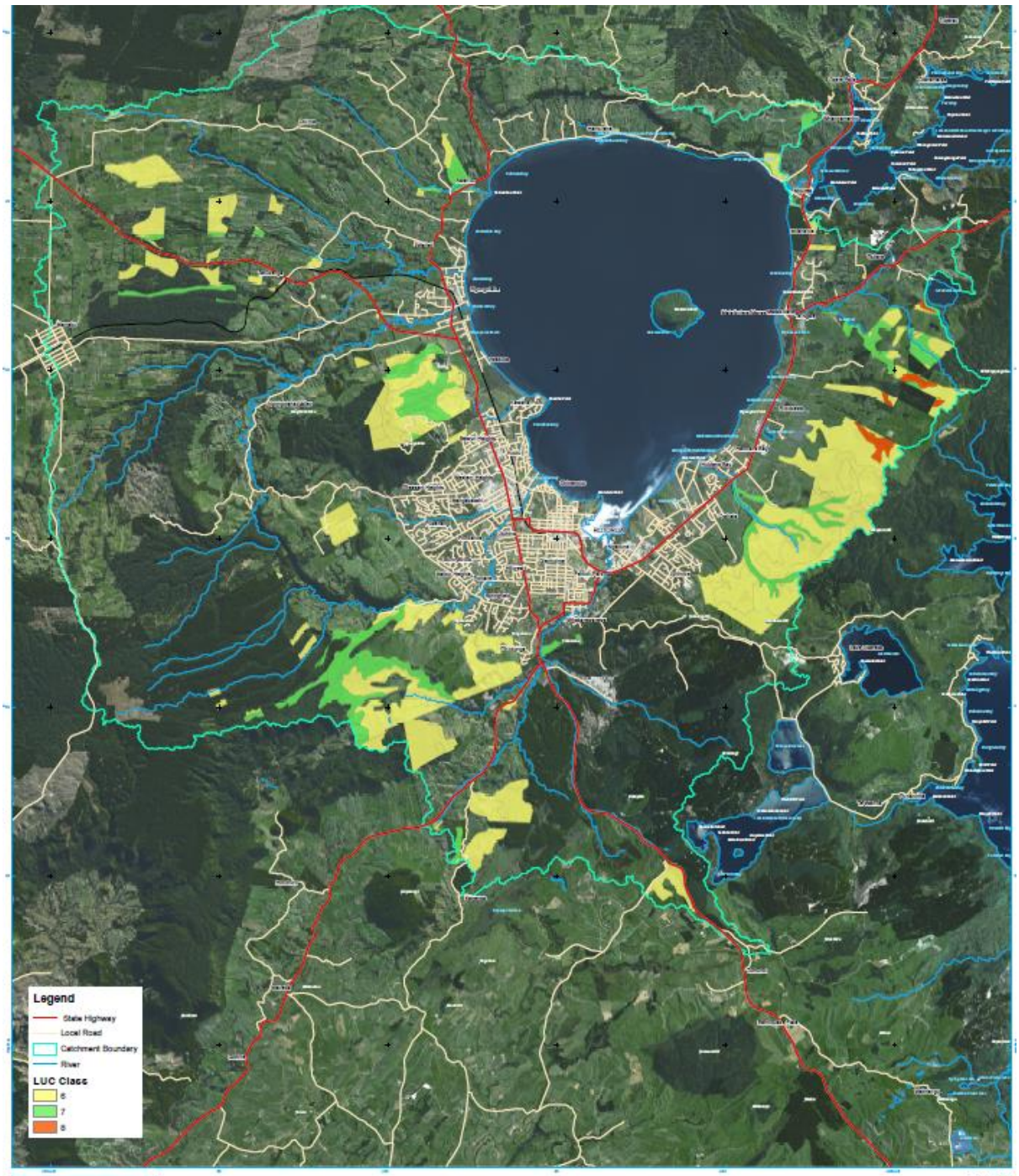
While this approach recognises the capacity of the land, it is difficult to see it as appropriate in the Rotorua context because:

a) Poor correlation between LUC and current land use in the Lake Rotorua catchment.

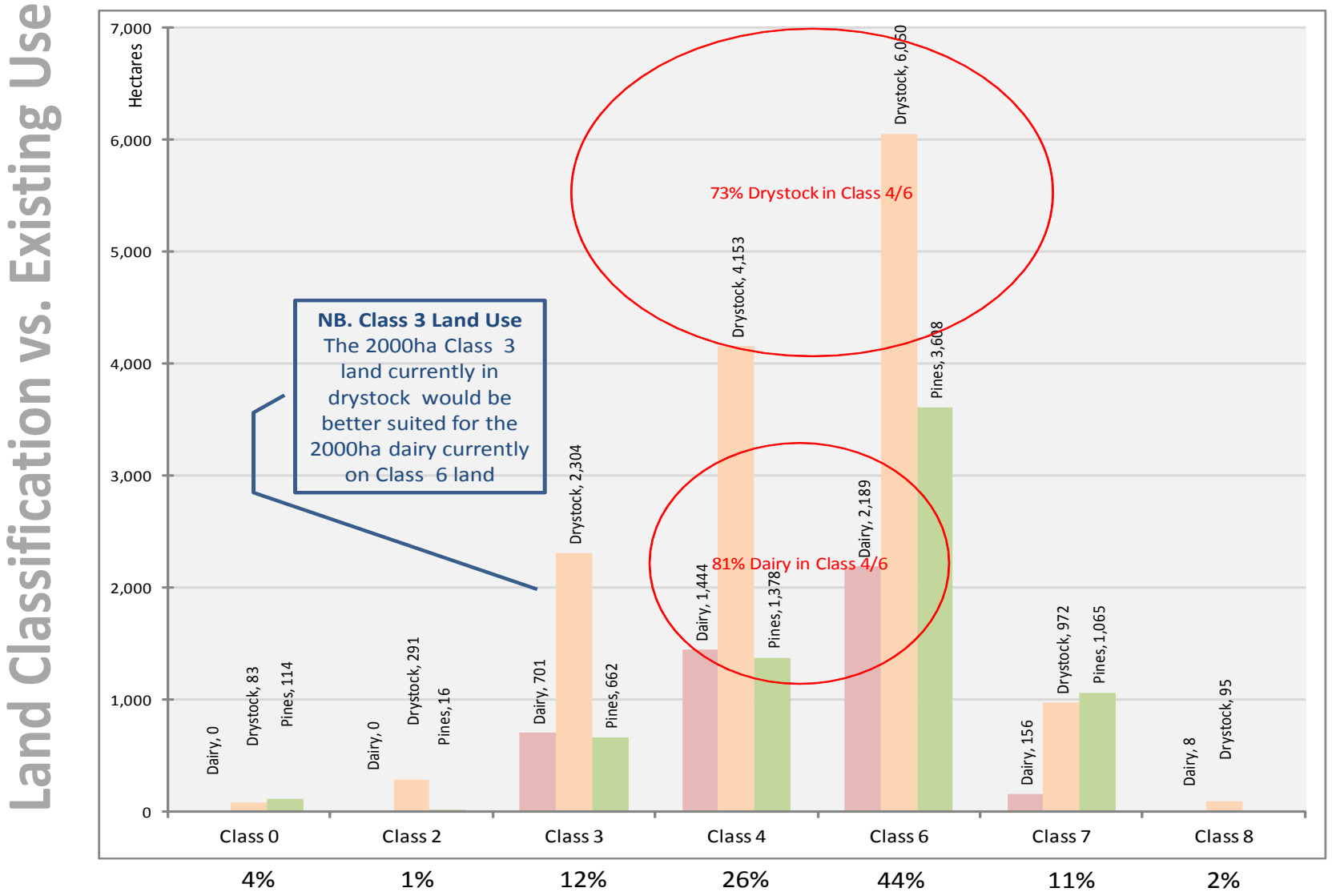
b) Not enough scope for existing farm operations to change where they operate to align with land use productivity (see attached slide).

c) Doesn't recognise all the existing mitigation landowners have already adopted to compensate for soil characteristics.

However, the Regional Policy Statement recognises land use capability as a tool to achieve integrated management. LUC could form part of a high level policy response to achieve the vision for the catchment over the next 50 years rather than as a basis for allocation. We have assumed our community wants a catchment where land is used efficiently and sustainably for a prosperous community. Land use planning could be guided by LUC as opportunities for change arise in the future.


Legend
State Highway
Local Road
Catchment Boundary
River
LUC Class
6
7
8
Bay of Plenty
REGIONAL COUNCIL
GIS-462613
Māori owned land with LUC Classes 6-8 in the Rotorua Lake Catchment

Is allocation by Land Capability relevant in this catchment?



Pastoral Averaging

This is where the sustainable pastoral load (256 t) is divided by the pastoral catchment (21,175 hectares) to give an average N leaching of12kg/ha. Every pastoral landowner in the catchment would receive 12 kg/ha.

Also referred to as equal allocation.

Assumption:

- Averaging only applies to pastoral farming.

Criteria	Comment
Meets policy intent	• Yes. Modelling has shown that to achieve 435t, pastoral farming needs to reduce to 256T. Allocation would be based on meeting this target.
Equity/fairness	• An equal allocation for everyone. • Large wealth transfer – for example windfall gains for undeveloped land or landowners operating below 12 kg/ha as they will be able to sell their excess allowance. • Losses to land uses such as dairy (5050 ha) as they will be required to purchase allowances to continue to operate. • Higher leaching land uses are heavily penalised through the requirement to purchase large number of nutrient discharge entitlements.
Immediate impact	• Large upfront costs to some farmers - they would have to reduce nitrogen to meet rule or purchase discharge allowances from foresters or owners of undeveloped land. • May not be technically feasible to dairy farm at 12 kg/ha so dairy farmers would be required to obtain additional allowances immediately.
Public costs and benefits	• May force certain farm types out of the catchment – loss of diversity in land use. • Likely downstream or flow-on social and economic effects that could impact the community. • The benefits from a clean lake through achieving water quality aspirations over time.
Private costs and benefits	• A cost is the ability to continue dairy farming may not be technically possible without significant new investment. • A benefit is that it provides an incentive to innovate and diversify land use and management.
Future vision for landscape	• Will encourage resource efficiency and prosperity in the long term, so will provide a relatively easy transition to achieving the vision.
Iwi land ownership	• Opportunities for owners of undeveloped “Māori land that are assigned a higher discharge allowance than current discharge levels.
Cultural values	• Meets target so cultural benefits to lake.
Resource use efficiency	• The trading of leaching entitlements can direct those permits to their most efficient use. • Does not encourage marginal land to be retired.
Existing land and farm capital investment	• Does not acknowledge historical investment in infrastructure including nutrient mitigation expenditure.
Ease of transfer	• Risk of poor co-operation from land owners. • Risk that holders of nitrogen allocation surplus refuse to sell.

Pastoral averaging allocation approach compared against StAG criteria

No major windfalls for any sector	Existing investment will be recognised	Least overall economic impact	Practices with high nutrient discharge are not rewarded
X	X	X	✓

Key
✓ Meets criteria
X Does not meet criteria

Discussion

Pastoral averaging will heavily penalise higher leaching land uses and higher leaching environments. This allocation approach does not recognise existing land use (including investment), management practices that may reduce leaching, soil type (leakiness) or areas with higher rainfall.

The Stakeholder Advisory Group does not support pastoral averaging as an allocation approach for the Lake Rotorua Catchment.

The above assessment does identify the following aspect of pastoral averaging as having merit for inclusion in a hybrid approach:

- Resource use efficiency.

It is recommended this aspect be considered as part of any hybrid model(s).

Sector Averaging

This method allocates an averaged level of nutrient discharge rights across specific types of land use e.g. dairy, sheep and beef, deer and forestry.

Assumption:

- Good information on current discharges rates is available to inform individual property allocations.

Criteria	Comments
Meets policy intent	• Yes, provided the total allocation achieves a pastoral N leaching loss of 246T meaning the 435T target is met.
Equity/fairness	• All landowners with similar land uses are expected to achieve the same leaching levels. • Landowners who have developed their pastoral land are more likely to be able to continue their current land use. However, those on undeveloped land (eg. forestry) will be limited in their options.
Immediate impact	• Change required for landowners who have higher discharge rates than the sectoral average (which would achieve the target).
Public costs and benefits	• Benefits from a clean lake through achieving water quality aspirations over time. • On-going Regional Council compliance and monitoring costs.
Private costs and benefits	• Benefits from providing certainty to landowners. • Benefits to those landowners who have used good nutrient management practices as they will more easily meet their nitrogen discharge allowance and have more flexibility for land use options. • Mitigation costs for those landowners with currently high levels of N leaching
Future vision for landscape	• Could force land use change for landowners with high leaching levels.
Iwi land ownership	• See costs.
Cultural values	• This approach will improve water quality and therefore recognise cultural values.
Resource use efficiency	• Encourages good practice to reduce N leaching. • Can encourage marginal land to be retired. • A pure sector averaging approach does not account for variability between soil leaching rates, rainfall etc.
Existing land and farm capital investment	• Recognises existing land use and sunk investment.
Ease of transfer	• Already have information on current discharges (2001-2004) to guide level of change required. • May be unfeasible for some farms to be viable.

Sectoral averaging allocation approach compared against StAG criteria

No major windfalls for any sector	Existing investment will be recognised	Least overall economic impact	Practices with high nutrient discharge are not rewarded
✓	✓	-	✓

Key
✓ Meets criteria
X Does not meet criteria

Discussion

Unlike the pastoral averaging approach, sector averaging recognises current land use, investment and management techniques that reduce leaching rates.

However, every farm is different and it is impractical to say that every hectare of land of the same land use will discharge the same amount of nitrogen (e.g. dairy with high (>2000mm) and low rainfall). The Stakeholder Advisory Group supported sector averaging as an allocation approach.

Some useful concepts to incorporate into a hybrid model include:

- Recognise existing land use.
- Recognise existing investment.
- Allocationconsiders current rates of nitrogen leaching.
- Supports good land use practice.

Input Based Allocation

Input based allocation focuses on controlling the inputs to land use operations by directly managing the amount of nutrients being applied on land. For example, controlling fertiliser and feed application rates.

Assumptions:

- Managing what goes onto a farm can be used to control what is discharged.
- Good data is available that identifies the relationship between inputs and nitrogen loss.

Criteria	Comments
Meets policy intent	• Possible, but it is difficult to link the input control with the nitrogen leaches with any precision. Also, given the scale of reduction required, it is unlikely that traditional input rules will be able to achieve the limit.
Equity/fairness	• Doesn't acknowledge that some landowners have already heavily invested in mitigation techniques to minimise losses, and if these don't fit with the input controlled approach they will be penalised. • All individuals within each sector are treated equally.
Immediate impact	• May require immediate change to existing operations. • Unlikely to result in significant land use change across the catchment.
Public costs and benefits	• On-going Regional Council compliance and monitoring costs. • Further Regional Council (and other) investment to derive the correlation between land inputs and discharges e.g. take into account variances in soil type, climate difference, lag etc. • On-going research and assessment costs as farm inputs change over time.
Private costs and benefits	• Landowners currently operating in accordance with the regime will not have to change (benefit). • Landowners not operating in accordance with the regime will be impacted significantly (cost).
Future vision for landscape	• Doesn't address future vision as it doesn't really change the status quo catchment landscape, and doesn't encourage innovation or diversity.
Iwi land ownership	• May provide new opportunities in undeveloped land, provided it complies with input requirements.
Cultural values	• May not meet limit so unlikely to reflect cultural values.
Resource use efficiency	• Does not require marginal land to be retired or high quality land be intensified. • Limits on inputs could encourage resource efficiency. • Opportunity for land-users, industry sectors and fertiliser companies to develop best practice.
Existing land and farm capital investment	• Does not explicitly acknowledge significant historical investment in infrastructure including nutrient mitigation expenditure. Also doesn't reflect diverse 'non-input' approaches to nutrient management that may be equally valuable.
Ease of transfer	• Hard to implement, may require complex and expensive monitoring and enforcement systems. • Relies on high degree of cooperation from land users. • Feasibility of future continuation of all land users unknown.

Input allocation approach compared against StAG criteria:

No major windfalls for any sector	Existing investment will be recognised	Least overall economic impact	Practices with high nutrient discharge are not rewarded
✓	X	-	✓

Key
✓ Meets criteria
X Does not meet criteria

Discussion

Input and output based allocation is used as surrogate measures for actual (or estimated) N leaching losses. This approach was suggested in response to the potentially high cost and feasibility of measuring or estimating N leaching losses per property in real time.

Of most concern with this approach are the challenges involved in determining the relationship between inputs and nitrogen leaching loss for each climatic, soil and management option. This allocation approach also does not recognise variations in management techniques that may already be in place to mitigate N losses or in response to other environmental or management concerns a landowner may have..

The above assessment identified the following aspects as having merit for inclusion in any hybrid approach(es):

- Resource use efficiency.

It is recommended this aspect be considered as part of any hybrid model(s).

Output Based Allocation

Under an output based approach allocation is based on the greatest units of output leaving a property (e.g. milk solids, timber, kg of meat). An example would be allocating to a landowner based on how many kg of milk solids or revenue produced per 1 kg of nitrogen leached.

Assumptions:

- There is a strong relationship between product output and N leaching.
- Good data is available that identifies the relationship between outputs and nitrogen leaching.

Criteria	Comments
Meets policy intent	• Possible, but unlikely unless the initial calculation of output/N leached is scaled to meet the target. Although we know the N target we need to achieve, we have limited understanding of how this is linked to farm outputs
Equity/fairness	• Doesn't acknowledge that some landowners have already heavily invested in mitigation techniques to minimise losses, as all landowners face the same N leaching allocation per unit of output.
Immediate impact	• May require change to existing operations. • Detailed information required to determine relationship between output and discharge levels.
Public costs and benefits	• On-going Regional Council compliance and monitoring costs. • Further regional council (and other) investment to derive the correlation between output and discharge levels
Private costs and benefits	• Benefits to people who use nutrient most efficiently . •
Future vision for landscape	• Potential public benefit associated with allocation going to those who can generate the most return. Flow on economic impact.
Iwi land ownership	• All landowners are treated the same.
Cultural values	• May favour economic values over other values.
Resource use efficiency	• Supports not giving allocation 'units' to inefficient use.
Existing land and farm capital investment	• Does not acknowledge historical investment in infrastructure including nutrient mitigation expenditure.
Ease of transfer	• Hard to implement, requires complex monitoring and enforcement systems. • Relies on high degree of cooperation from land users. • Feasibility for any landowners unknown.

Output based allocation approach compared against StAG criteria:

No major windfalls for any sector	Existing investment will be recognised	Least overall economic impact	Practices with high nutrient discharge are not rewarded
-	X	-	X

Key
✓ Meets criteria
X Does not meet criteria

Discussion

Input and output based allocation is used as surrogate measures for actual (or estimated) N leaching losses. This approach was suggested in response to the potentially high cost and feasibility of measuring or estimating N leaching losses per property in real time.

This approach could be complex to implement because of the challenges to:

- Establish the relationship between product output and N leaching
- Determine the factors that (could) disrupt that relationship in a way that cannot readily be seen/accounted for
- Production outputs are likely to be highly variable due to factors outside landowner control, eg. market, economics, climate, disease, pests.

For these reasons, staff do not consider output based production as a feasible option for the Lake Rotorua Catchment.