Lake Rotorua Catchment Stakeholders Advisory Group

3 December 2012

Nutrient Allocation Hand-out

Purpose of today's session

- Share knowledge
- Understand allocation as part of the Regional Policy Statement
- Advise staff what further information StAG needs on allocation
- Decide the format to progress our thinking on allocation e.g. facilitated workshop, experts to invite.

Nutrient allocation – a working definition:

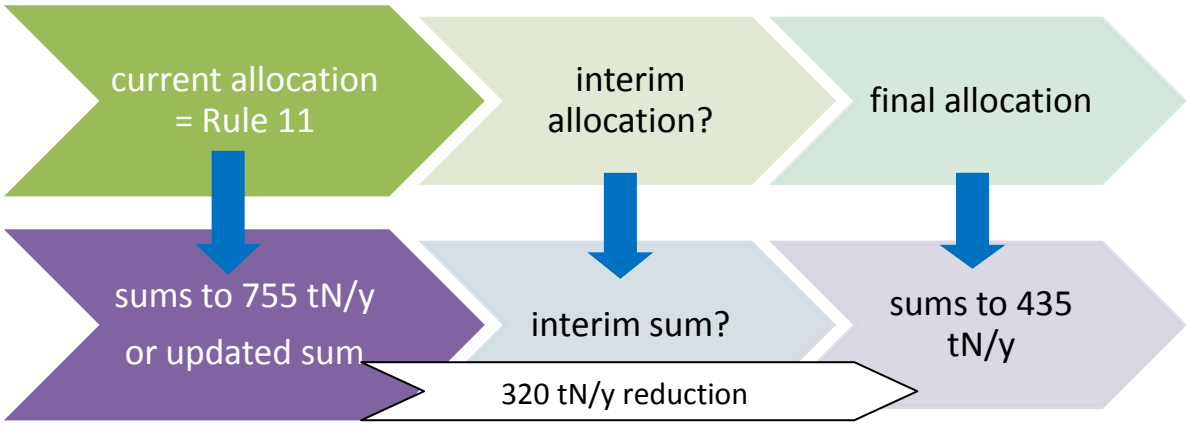
- Allocating property-based nutrient discharge rights within a total catchment nutrient limit

Lake Rotorua, the RPS nitrogen target and allocation

To meet the water quality target TLI of 4.2, scientists have calculated that the sustainable load of nitrogen in Lake Rotorua is 435 tonnes per year (tN/y). While catchment phosphorus reductions and sediment management are also needed, allocation policy focuses on nitrogen due to the larger and more challenging nature of reducing nitrogen loads.

The Regional Policy Statement requires that the sustainable lake load of 435tN/y will be allocated amongst land use activities and that new rules in a regional plan will determine allocation. The total "steady state" nitrogen load to Lake Rotorua from current land use was estimated at 755 tN/y in the 2011 ROTAN modelling report. Therefore the reduction needed to achieve the sustainable load is 320 tN/y.

While the 755 tN/y load estimate may change as new information becomes available, the allocation issues will be similar but with a different "start point". The broad allocation concept is indicated in the diagram below:



The diagram above is based on “whole-of-catchment” nitrogen loads used in the ROTAN model. It has been estimated we can achieve a maximum of 50 tN/y reduction through “engineering” interventions, comprising 30 tN/y from treating the Tikitere geothermal springs and a combined 20 tN/y from sewage reticulation/upgrades and stormwater treatment. Forestry nutrient losses for both native and production forestry cannot be reduced. A simplified nitrogen budget based on ROTAN data is shown in the 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 incl. 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**

The indicated reduction from pastoral sources is 270 tN/y which is a 51% reduction from 526 to 256 tN/y. Pasture includes dairy (~5000ha), drystock (~15,000ha) and lifestyle land (~1000ha). Gorse losses were not explicitly modelled in ROTAN but the potential reduction has been separately estimated at 30 tN/y. Depending on how gorse N is accounted for, it may reduce the reduction needed from pastoral land. Conversely, if the allocation to land currently in bush or pines was to increase, a correspondingly larger reduction would be needed from pastoral land in order to meet the 435 tN/y target.

If there is no change to forestry allocation (relative to current losses) and if we ignore gorse (for simplified illustrative purposes), then the long term allocation challenge becomes:

How do we allocate 256 tN/y across 21,175 ha currently in pastoral land uses.

Selecting a suitable allocation method

The nutrient allocation method selected will affect:

- Land owner equity
- Economic viability
- Future land use change
- Development opportunities
- Social and economic disruption

Therefore the type of allocation method chosen and specific implementation methods need to be aligned to the characteristics of the Lake Rotorua catchment and its community. Policy WL 5B in the Regional Policy Statement (Council Decisions version, March 2012) provides principles for nutrient allocation for Lake Rotorua and other water bodies, as follows:

Allocate among land use activities the capacity of Rotorua Te Arawa lakes and other water bodies in catchments at risk to assimilate nutrient discharges contaminants within the discharge limits established under in accordance with Policy WL 3B having regard to the following principles and considerations:

(a) Equity/Fairness, including intergenerational equity;

(b) Extent of the immediate impact;

(c) Public and private benefits and costs;

(d) Future vision for landscape;

(e) Iwi land ownership and its status including any Crown obligation;

(f) Cultural values;

(g) Resource use efficiency;

(h) Existing land use; and

(ha) Existing on farm capital investment; and

(i) Ease of transfer of the allocation.

These RPS "principles and considerations" will guide the development of new allocation rules via a plan change to the Regional Water and Land Plan. We also need to consider:

- how nutrients will be allocated at the property scale
- what allocation applies when new rules take effect, as well as the "final" allocation
- what (if any) transition will apply from the current "Rule 11" allocation
- measurement and monitoring of allocated nutrient discharge rights
- interaction with any incentive funding policy
- the large variability between land uses, farms and farmers in terms of the ability to meet any future allocation.

Allocation options

Methods to allocate nutrient discharges can be divided into three main groups.

1. Grand parenting
2. Averaging
3. Land Capability

Each of these methods can be applied with specific adjustments to address some of the economic or social issues created through using a particular allocation method. Notably, nutrient trading and nutrient reduction incentives may apply after allocation has been determined.

Grand parenting

Grand Parenting is an allocation of nutrients that is based on actual current or recent historical nutrient discharge levels. This means that all landowners would start with an allocation aligned to their current or recent land use. The allocation can be based on an

average nutrient loss over a specified period (say 3-4 years) to take account of annual variations in climate and productivity, or allow some choice e.g. the “best” year within a range of specified years (as in the Lake Taupo catchment).

Both Rule 11 and the Lake Taupo “Variation 5” are grand parenting methods where the allocation is referred to as the “nutrient benchmark” and “nitrogen discharge allowance” (NDA) respectively.

To consider:

- Grand parenting caps nutrient losses and will not meet the RPS 435 tN/y target. Reductions would entirely rely on incentives and voluntary measures.
- Variations on grand parenting could be considered e.g. grand parented levels could be reduced proportionally. However, this cannot apply to forestry where nutrient losses are impossible to reduce further.
- Benefits landowners with more developed/intensive land uses.
- Land owners with a lower allocation are restricted in their development options, especially land use intensification
- Can reward bad practice by giving out large allowances to “inefficient” operations e.g. where profitability per kg of nitrogen leached ($/kgN/ha/y) is relatively low.
- Nutrient trading system would be useful

Allocation based on averaging

This method allocates an averaged level of nutrient discharge rights, with the level(s) set in order to achieve the sustainable load target. Initial average levels can be set:

- the same for all land in the catchment, or;
- across specific classes of land use e.g. dairy / sheep & beef / deer / forestry, and/or;
- for subsets within a land use class e.g. dairy with high (>2000mm) and low rainfall.

To consider:

- identify exclusions before determining average figure for catchment (e.g. DOC, covenanted indigenous forest, lakeside settlement)
- implications of average figure for affected landowners – would the average allow any reasonable land use?
- Could allow some development on forestry less developed pastoral land
- Variations on averaging based on economic value
- A nutrient trading system would be necessary to enable flexibility from the allocated average levels of nutrient loss.

Land Use Capability

Under this “land use capability” (LUC) method allocation is based on the biophysical potential of the soils and locality (climate, slope, aspect). The LUC allocation method is independent of current land use and encourages the use of land at its natural carrying

capacity, with higher nutrient limits allocated to better classes of land. LUC Class 1 land would receive the highest allocation (kg N per hectare), progressing through to Class 8 with the lowest allocation.

To consider:

- Allows flexibility on what can be produced on the land
- Might not reflect current land use and sunk investments
- Sustainable land uses do not necessarily correspond to land use class
- Issues with accuracy of land use capability mapping
- LUC productivity indices were derived from sheep stock unit carrying capacities is based on clover-ryegrass pastures without fertiliser N

Other potential allocation methods

a) Auctions
b) Output based

<u>Auctions</u>

Under this method, allocation could be undertaken via an auction, possibly combined with a (reverse) auction for incentive funding. Farmers would have to develop bids based on scenarios around both the cost/benefit of nutrient loss mitigation and the cost/benefit of purchasing additional nutrient discharge rights if required.

The value of a reverse auction is that it requires landowners to undertake their own long-term analysis and to declare the preferred price at which they are prepared to undertake the transition to lower nutrient land use. The drawbacks relate largely to the need for extensive market preparation and information, and the risk that many landowners will baulk at the process as too complex and uncertain.

<u>Output based</u>

Under this method the people who can demonstrate that they can create the greatest output (milksolids, timber, jobs etc) per ‘unit’ of nutrient allocation will be awarded them.

An example would be allocating to someone based on how many kg of milk solids or revenue produced with 1 kg of nitrogen leached i.e. favour the efficient user over the less efficient. This balances conflicting polices drivers of environmental protection and economic growth, and supports not giving ‘units’ to inefficient use.

How have nutrient discharges been allocated in New Zealand?

Waikato (Lake Taupo catchment)

All landowners start with their existing land use allocations, based on the highest annual N loss rate between July 2001 and June 2005. No landowner can change their land use in a way that increases nitrogen leaching. Waikato Regional Council and the Lake Taupo Protection Trust will work with landowners through monitored resource consents and incentives to reduce nitrogen loss by a further 20%.

Manawatu/Wanganui

Nitrogen limits depends on the land use capability class of each property which is closely linked to soil types. This will form part of nutrient management plans that determine the limits for each property. If these limits cannot be met then a more detailed assessment of mitigation options for Nitrogen loss will be required.

Environment Court found evidence *strongly supports* the use of LUC approach as a tool for allocating Nitrogen limits

Canterbury

Canterbury Regional Council is consulting on a new land and water regional plan, classifying each of the region's catchments by their nutrient state. In over-allocated, or red and sensitive zones, land-use changes over the next five years require a 'non-complying' resource consent. It has adopted a threshold for nitrogen at 20 kilograms of nitrogen per hectare per year.

Otago

Otago Regional Council has heard submissions on its “Proposed Plan Change 6A (Water Quality)” and is currently deliberating. The plan change sets water quality targets and discharge limits for nitrogen (nitrate/nitrite), ammonia nitrogen, phosphorus, sediment and E-coli. For defined “nitrogen sensitive zones”, the maximum permitted activity level is 10 kgN/ha/y, with other land subject to a 30 kgN/ha/y limit. There is a seven year transition to 2019 meet the nitrogen limits.

Southland

Environment Southland has introduced a regional rule requiring resource consents for all new dairy farming. The council is working through focus activities including hill country development, nutrient management and winter grazing. The council is in the process of deciding catchment-based limits.

Key themes from literature review on allocation

- More economic and social impact analysis required e.g. How much additional cost can be imposed on each industry sector before unintended consequences?
- Consideration of farm system types and industry benchmarks could be tools to support nutrient use efficiency
- Allocations should be tradable – this will create incentive for innovation and higher efficiency where allocation is scarce
- Transition periods from current use to allocated use required in all cases. A grace period allows farmers time to adapt their systems, trade allowances or exit the catchment before compliance monitoring begins
- Land user's cost of nutrient reductions consist of cost of initial reductions **and** limits on future land use
- Likely practical issues include:
    - Importance of nutrient export estimation tool
    - Certainty for landowners
    - Market place infrastructure
    - Education / upskilling internally and externally
    - Plan changes contested in Environment Court

This paper has been prepared by BoPRC's Planner Lisa Power plus consultant Simon Park