FARMING UNDER THE LAKE ROTORUA NUTRIENT RULES

Stephen and Paula Holdem

Dairy Farmers,1286 State Highway 5
RD2, Rotorua 3072
Email: hfarm17@gmail.com

Background: Pre-purchase

- Our feeling was regulation was coming to other catchments.
- We knew our 2032 N target.
- Overseer modelling out to 2032 showed a reduction of 30% in cow numbers required to meet N loss targets.
- N loss mitigations such as ecotain can be utilised as they are incorporated into Overseer.
- We had support from the bank and optimism that science would provide the tools to enable this reduction.
- We purchased our farm in 2017.

It was either jump into a regulated catchment with known nitrogen reductions and a 2032 target, or have future rules imposed in another catchment.

Figure 1 below shows the farm location within the catchment and figure 2 identifies the home farm boundary.

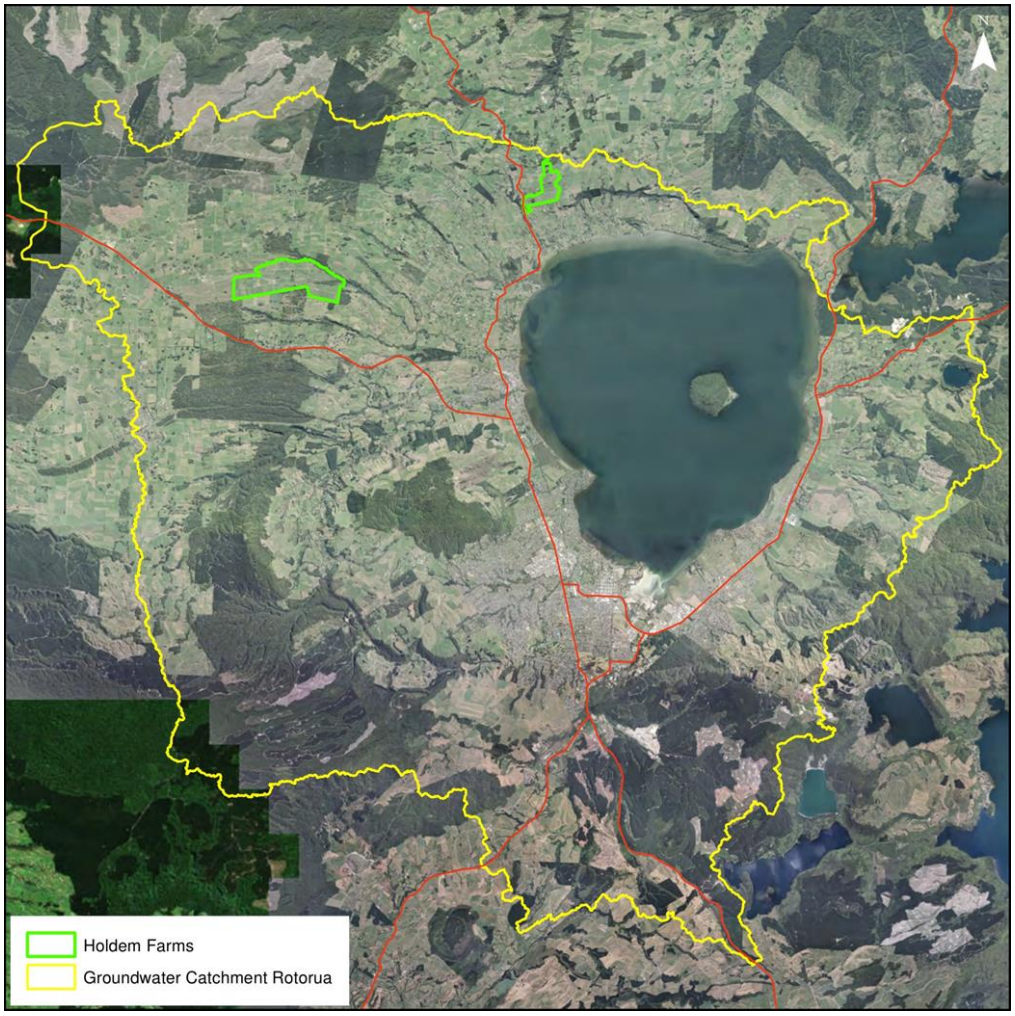

Figure1. Farm Location in the Rotorua Catchment

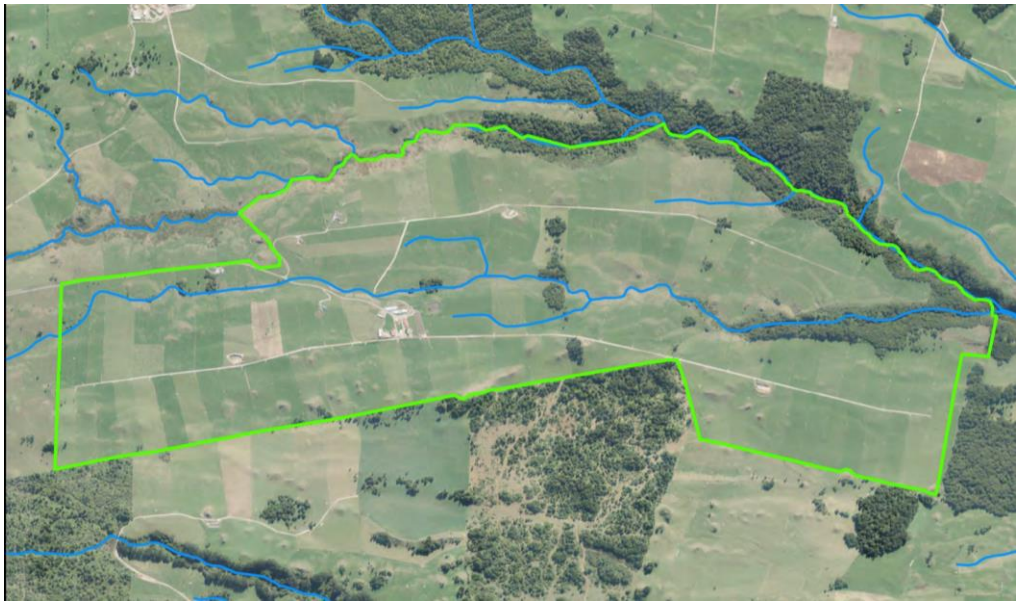

Figure 2. Farm Boundary

Nitrogen Allocation

Properties of over 40ha were referenced from 2001 – 2004.
Farm nitrogen allocations are updated as new Overseer versions are released.

Our farm is required to reduce by 34.14% and this percentage reduction target is fixed. Farms with a higher initial allocation have a greater percentage reduction target. Both the nitrogen allocation in the current version of Overseer and the percentage reduction targets for the property are identified in the NDA report below.

NDA Report Overseer v6.5.4

BAY OF PLENTY REGIONAL COUNCIL TOI MOANA

Nitrogen discharge allocation (NDA) for Holdem Farm Ltd, 05 09 004 01

Illustrated in Figure 1, NDA data extracted on 17 June 2022, 2:10:28 pm

ROTORUA TE ARAWA LAKES PROGRAMME

****The data in this report is valid for OverseerFM Version 6.5.4****

	Property in PC10 boundary	
Area (ha)	387.2	
Timeframes	Per hectare (kg N/ha/y)	Total (kg N/y)
Start Point	60.3	23340
2022-2027	53.9	20882
2027-2032	47.0	18197
2032-	**39.7**	**15373**

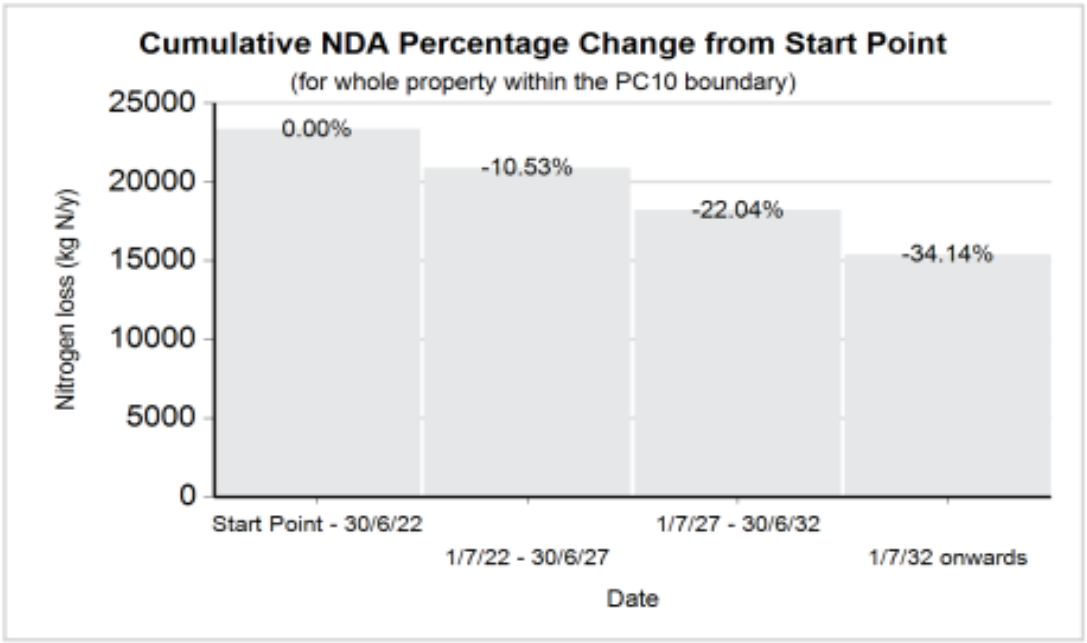

Figure 3. Nitrogen Discharge Allocation

Farm System Options

Farm System Modelling was conducted by Lydia Farrell, DairyNZ as part of SFFF Plantain Potency and Practice Programme with co-funding from MPI, Fonterra and PGG Wrightson Seeds.

Various options to meet the nitrogen through to 2032 were modelled as follows:

Base: The typical, 'current' farm system modelled with 2022 DairyBase data. Youngstock and cows wintered within the system (including milking platform and lease block) and farm modelled in Overseer without plantain.

Plantain +: Including 30% of pasture as plantain at a total cost of $16,738. To get to the target of 41 kg N/ha, as well as plantain, 300 cows were wintered off-farm, earlier autumn culling, reduced and earlier autumn N fertiliser, and 7% lower stocking rate with lower bought-in feed.

Fewer cows: No plantain. Winter grazing-off of 300 cows, earlier autumn culling, reduced and earlier autumn N fertiliser. Then stocking rate needed to be reduced by 31%. No imported feed and surplus silage sold.

Stand off pad: No plantain. 30 ha of less productive pasture into trees, stand off pad added for autumn and winter use with annual cost of $345/cow and effluent area increased accordingly. Earlier autumn culling, reduced and earlier autumn N fertiliser, and stocking rate reduced 5%.

Modelling to get to 41 kg N/ha leached for Steve and Paula Holdem

Scenario	Base	Plantain +		Fewer cows		Stand-off pad	
Stocking rate (cows/ha)	2.7	2.5	-7%	1.8	-31%	2.5	-5%
Peak cows (head)	**708**	**656**	**-7%**	**489**	**-31%**	**674**	**-5%**
Milk solids (kg/ha)	1,115	997	-11%	764	-31%	1,028	-9%
Bought feed (t DM/ha)	2.87	1.82	-37%	0	-100%	2.13	-26%
Pasture conserved (t DM/ha)	0.48	0.64	33%	2.96	517%	0.69	44%
Silage/hay fed (t DM/ha)	0.48	0.21	-56%	0.71	48%	0.66	38%
N fertiliser (kg/ha)	99	92	-7%	92	-7%	72	-27%
Milk revenue ($/ha)	10,366	9,268	-11%	7,107	-31%	9,559	-8%
Livestock revenue ($/ha)	418	402	-4%	295	-29%	362	-13%
Surplus feed revenue ($/ha)	-	136	136%	680	680%	5	5%
Total revenue ($/ha)	10,787	9,806	-9%	8,082	-25%	9,927	-8%
Purchased feed ($/ha)	1,789	1,009	-44%	-	-100%	1,062	-41%
Conserved pasture ($/ha)	64	96	50%	412	546%	93	46%
Grazing ($/ha)	-	258	258%	258	258%	0	-
Total feed costs	1,853	1,363	-26%	670	-64%	1,155	-38%
Total expenses ($/ha)	6,768	5,943	-12%	4,450	-34%	6,552	-3%
Operating profit ($/ha)	**4,019**	**3,864**	**-4%**	**3,631**	**-10%**	**3,354**	**-17%**
Nitrogen leaching (kg/ha)	**59**	**41**	**-31%**	**41**	**-31%**	**41**	**-31%**
GHG emitted (t CO_2-e/ha)	11.7	9.3	-21%	7.2	-38%	8.2	-30%
GHG sequestered (t CO_2-e/ha)						1.1	
Net GHG (t CO_2-e/ha)						7.1	-65%

Figure 4. Modelling conducted by Lydia Farrell

Nutrient Management Plan

- Preferred farm system Overseer analysis was submitted to Council for review.
- The NMP documents the data from our submitted Overseer analysis - stocking rate, fertiliser applications, feed inputs, infrastructure use ie. feedpads.
- Critical source areas (CSA) are identified where there is a risk of phosphorus and/or sediment loss to waterways or ephemeral flow paths. These can be managed (grazed during dry conditions) or eliminated (fenced and retired)

Consent and Monitoring

- A consent allows farmers the ability to secure a modelled farm system for a 5-year period. This protects the consent holder from any technical non-compliance that may arise from a version change.
- Farm employees have a practical seasonal management guide.
- Monitoring and compliance costs
- Year End Overseer analysis to be submitted annually.
- CSAs (Critical Source Areas) monitoring based on risk rating assessment.
- Reduce costs by entering data for own Overseer Year end analysis.

The resource consent holds the percentage reductions required and the latest NMP.

Consultants and landowners are involved at the planning stages of the NMP.

NMP is not just a tick box exercise this information it is used by me as well as farm employees in implementing farm activities and management practices.

Consent variations can be done if an Overseer update justifies a system change – this does come with added costs.

Summary

1. The requirements of the Lake Rotorua Nutrient Rules are enabling us as landowners to stay ahead of the game for industry, financing and exporting requirements.

2. Everyone farms differently and the Lake Rotorua Nutrient Rules allows Rotorua farmers the ability to have management flexibility, keeping the passion for farming and innovation alive.