

# Lake Rotorua Catchment - Forward to a Better Future



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Lakes Water Quality Society

# Lake Rotorua

## Our Challenge



# Overview of Challenge -

Task is large but the rewards are huge

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- An improving lake
- A wealthy community and a greater population
- A more diverse catchment with 30% retired from farming
- Sustainable dairy and sheep & beef farming
- Farming carbon
- Reductions in nutrient exports from the catchment achieved

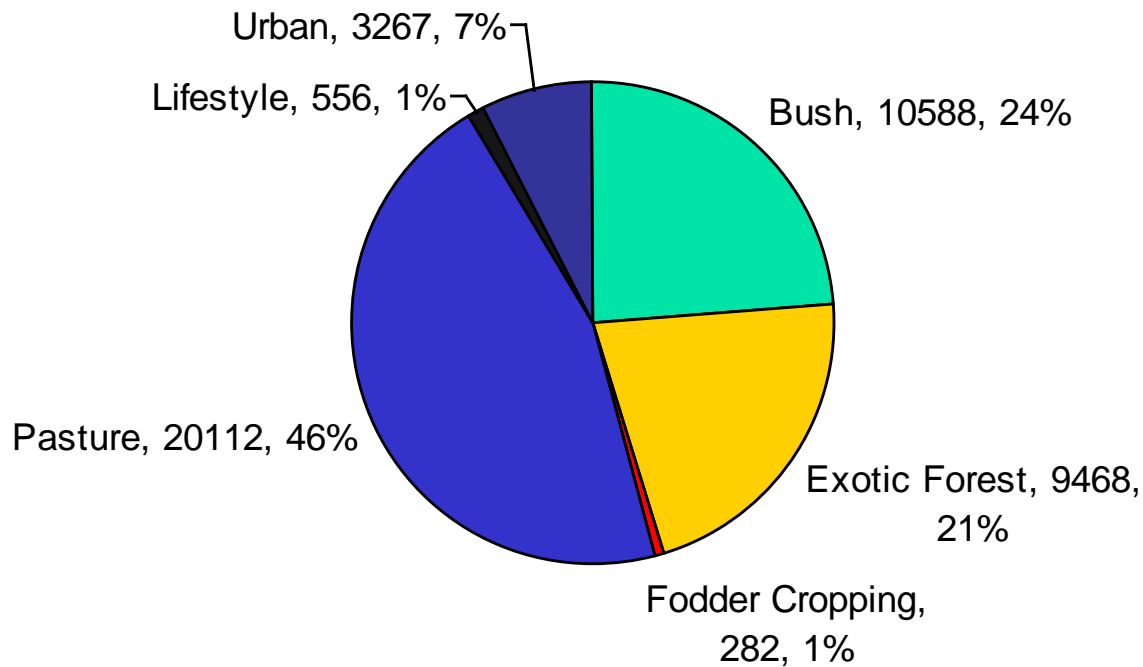


# Delaying is Costly

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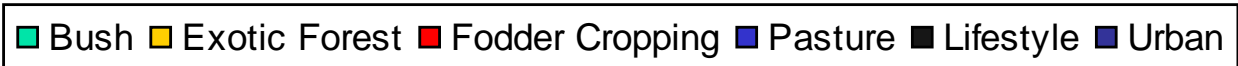
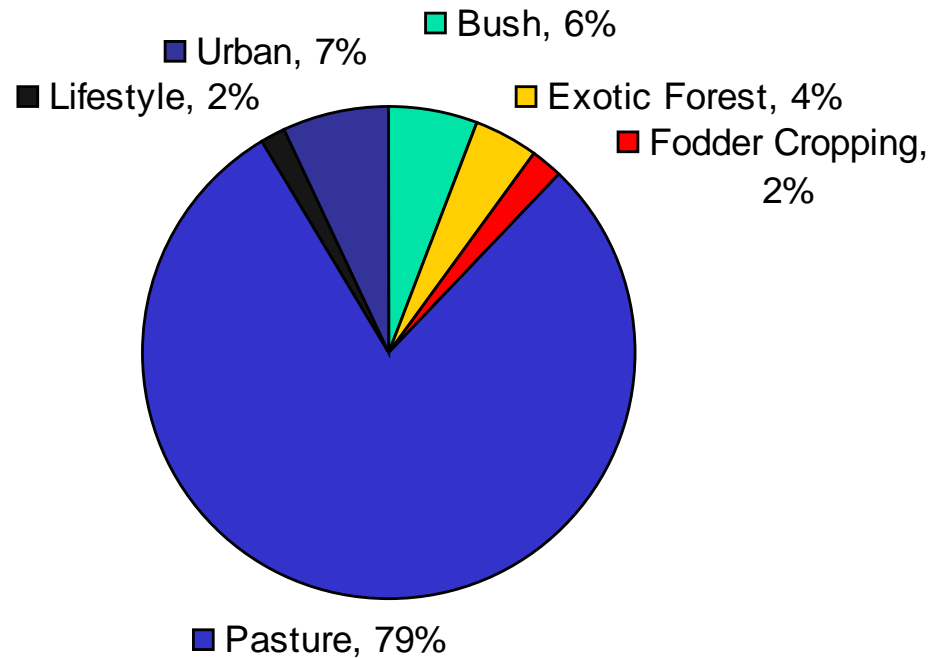
- The lake continues to deteriorate
  - Impacts on Okere Arm and the Kaituna
  - Negative Impacts on
    - Tourism
    - Residential property
    - Wealth of District
- Investment in Changing of Land Use delayed
  - Farming needs certainty
  - Opportunities for rural subdivision restricted
  - Funding initiatives to stimulate change not in place

# Land Use in Catchment - Hectares



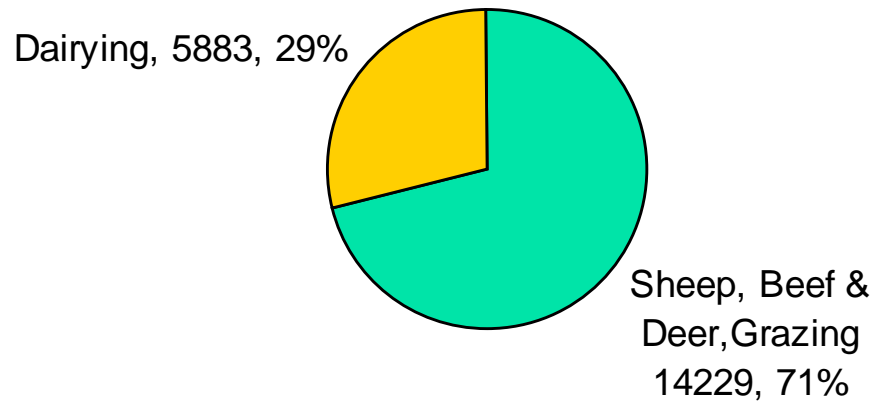
■ Bush ■ Exotic Forest ■ Fodder Cropping ■ Pasture ■ Lifestyle ■ Urban

# Nutrient Losses from the Land



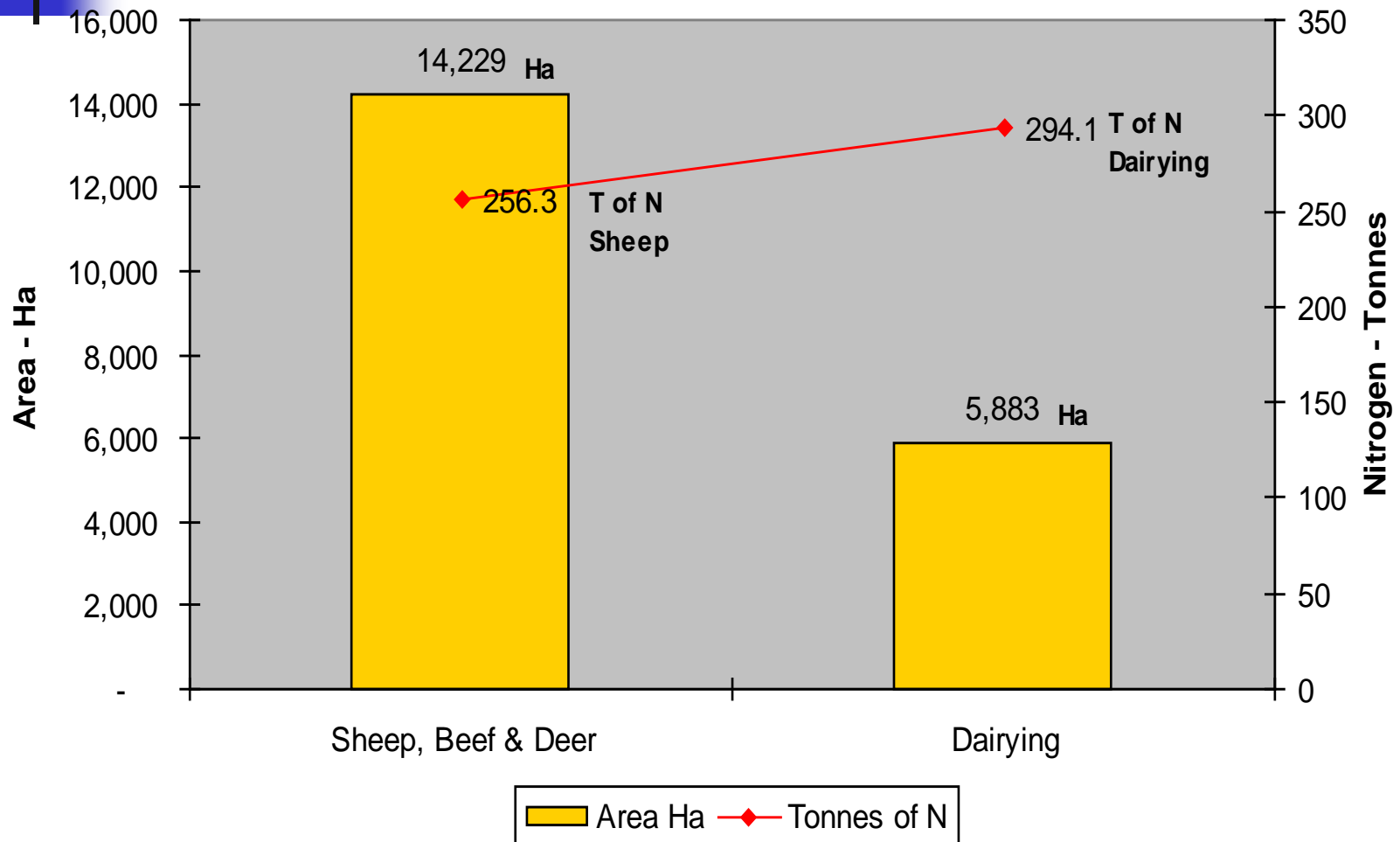
# Farming Area in Hectares

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■ Sheep, Beef & Deer ■ Dairying

# Farming - Area and Nutrient Losses







# Catchment Nutrient Targets t/N/y

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	Current exports	746
<i>Less</i>	Sustainable load	435
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	Required target	311
<i>Less</i>	Non-farming targets	80
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	Catchment Nitrogen Reduction Target	231
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This reduction equates to 41% of the nutrients from farming (Taupo 20%)

(All information derived from the Lakes Rotorua and Rotoiti Action Plan)



# Non Farming Reductions - 80t N reduction

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- Current
  - Sewerage reticulation and upgrade
  - Stormwater Treatment
  - Flocculation of Phosphorus
  - Diversion of Tikitere
- Options
  - Sediment Capping
  - Attenuation through weed beds
  - Harvesting of Lake weed
  - Diversion of Hamurana Stream



# What are the Options available to Farming

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- **Change of Land Use - Either Option**
  - **Removal of Dairying**
    - Even if all removed insufficient to meet target
    - Significant reduction in GDP
    - Unlikely to be politically acceptable
    - Cost Estimated at \$136m
  - **Large scale planting of Forestry**
    - Would require the equivalent planting of all farm land excluding dairying land
    - Cost Estimated at \$142m



# Best Farming Practices

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- Required Best Farming Practices
  - Off farm out of catchment wintering of stock
  - The use of stand off pads
  - Large effluent storage capacity
  - Application of fertiliser in limited amounts and when not vulnerable to leaching
  - Use of nitrogen inhibitors
  - No wintering, on grazing land, of dairy stock in the Catchment
- Assisted nutrient reductions
  - Establishment of herd homes
  - Building of wetlands
  - Providing filters within streams
  - Other??



# Forestry and Bio Mass

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- Emission Trading Scheme passed into law this year.
- Currently the largest driver for change in Taupo
- Taupo trust currently purchasing N at \$400/kg , capital cost for N in perpetuity
- Secured against title by multiple agreements at varying levels
- Carbon is providing farmers an annual return of
  - \$20 to \$25/t @ 30t/ha = \$600 – 750/ha
- Strong economic case for change
- Well suited to Maori Land
- Will need to be facilitated to maximise outcome



# Rural Subdivision for N reduction

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- To achieve the desired outcome this is the most significant contributor in the kit
- Retired land defined as all land contributing < 8kg/ha N
- Low intensity organic type lifestyle farming would be permitted
- On retirement of 180kg of N one residential property could be subdivided as a right
- No public financial contribution to be payable



## (Continued)

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- Consideration to be given to not requiring any payment to RDC reserve or infrastructure
- 30% of catchment to be retired to achieve objective
- Initially land within the Rotorua caldera should be targeted as this will give the most rapid response
- To meet target need
  - 603 lots @180kg / lot = 108.5 t N removed
- Over 10 years this would be 60 houses per year



# The Bucket

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- Only achieved by a combination of choices
  - Optimum outcome
    - Best farm practices – 70% of land
      - Dairying 20% Sheep, beef, deer 10%= 59t N
    - Assisted Farming Practices
      - Dairying and establishment forestry = 63t N
    - Retired farm land – 30% of land
      - Subdivisional Rights granted = 109t N
- Total 231t N





# Cost of the Bucket

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- Best farming practices - Nil, requirement of farming, most are profitable.
- Retirement of land through subdivision – Nil, community accept a change in landscape values and RDC don't collect any development levies
- Assisted farming practices and forestry under ETS
  - (Based on Taupo current cost)  
63t at \$400/kg = \$25.2m



# The District Economy

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- 70% of all farming retained
- 30% lost from all classes

Dairying 1765ha @ Gross income of \$7,000/ha = \$12.354m

Other farming 4269ha @ \$2,500/ha = \$ 10.672m

**Lost from Economy - Total \$23.026m**

- Offset by Change in Land Use

603 Residential Properties @70,000/ household= \$42.210m

Cost of developing say 60 residential properties / year

@500,000 / property = \$30.000m

Forestry under ETS – 2250ha@ \$600/ha = \$1.350m

**Gained by the Economy - Total \$73.560m**

- Plus any increase in tourism from improving water
- All numbers need to have appropriate multipliers applied



# Conclusions

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- Lake Rotorua can be restored while:
  - Most dairy farming continues
  - Economy of District is improved
- Knowledge to achieve this already available
- Wise leadership required from RDC and EBOP and strong Counsel by Te Arawa