



**KAINGAROA
TIMBERLANDS**

Kaingaroa Estate Overview

The Forest Dialogue
30 October 2018



TIMBERLANDS

WELCOME

INTRODUCTION





Overview

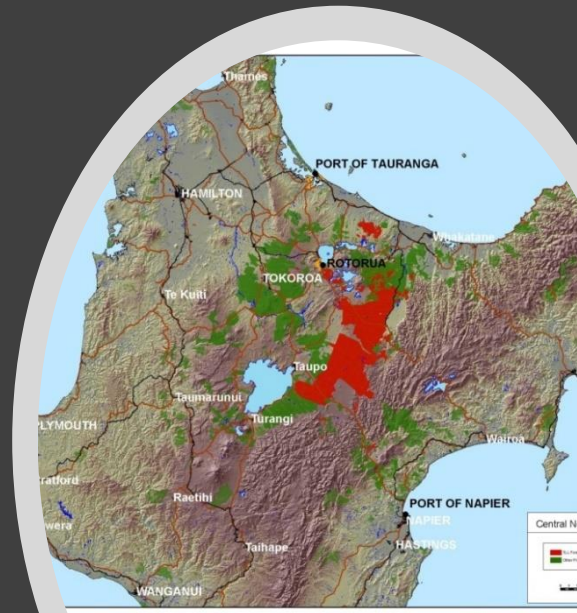
- TL vs KT
- Kaingaroa Timberlands Partnership is a partnership of investors who own the forest plantation (trees only and some assets) as follows:
 - 55.5% PSP
 - 42% NZ Super Fund
 - 2.5% Kakano
- Kaingaroa Processing Plant, Murupara Rail Yard, Forest Genetics and Te Ngae nursery



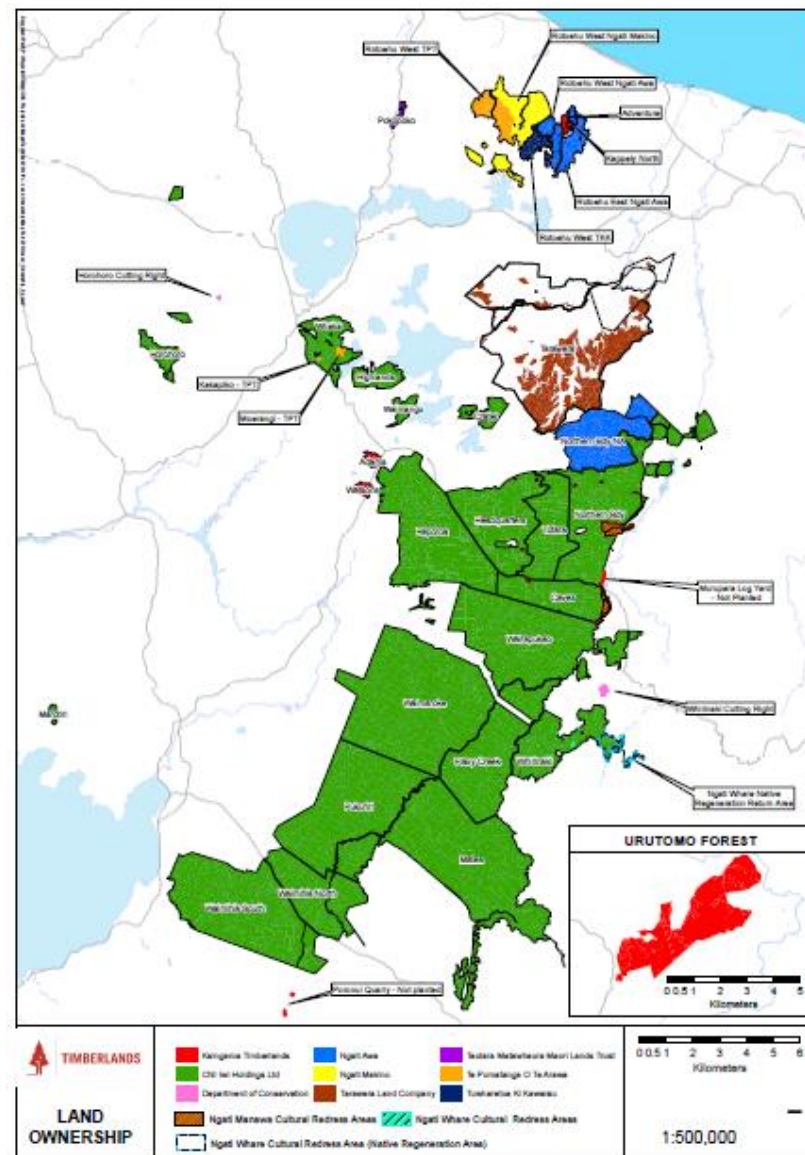


Location

- Middle of NZ's major forest growing region
- Over 500,000ha of exotic plantation forest in the region
- Primarily radiata pine
- Very good infrastructure
 - Transport
 - Road (on highway and off highway)
 - Rail
 - Ports
 - Service industry
- Well developed processing industry
 - Sawmills and pulp mills



Land Owner	Legal Area (Approx Ha)	KT's Property Rights
IWI		
CNI Holdings	171,470	CFLs /Forestry Right
Ngati Awa	9,405	CFLs
Tarawera Land Company Limited	7,844	Forestry Right
Ngati Makino	3,450	CFL (Replacement Forestry Right to be Granted)
Te Pumautanga o Te Arawa Trust (TPT)	1,761	CFL/Forestry Rights
Ngati Tuwharetoa (TKK)	848	CFL
Ngati Manuwa	708	CFL
Tautara Matawhaura Maori Lands Trust (Pokopoko)	189	Forestry Right
CNI Holdings (KPP)	106	Registered Lease
Te Ngae Farm Trust (Te Ngae Nursery)	80	Unregistered Lease
Ngati Whare	10	CFL
DOC	68	Cutting Right
Te Papa Tipu (Sala Street)	1	Registered Lease
OTHER		
KT (Poronui Quarry, MLY, Uritomo, Watsons & Adams)	1738	Freehold
TOTAL	197,678	Ha's





KT High Level Stats

- Area:
 - Total area of 196,000 ha
 - Planted area of 180,000 ha
- Species:
 - 95% Radiata pine, 4% Douglas-fir, 1% Other Species
- Re-establishment Program: 6,500-8,000ha/year
- Thinning Program: 9,200 ha/year
- Volume: (4.5M tonnes = ~600 trucks/day)
 - 4.0M Radiata (Increasing to 4.3M)
 - 250K Douglas-fir – sunset.
 - 90K Other species (liquidation)
 - 190K Production thinning





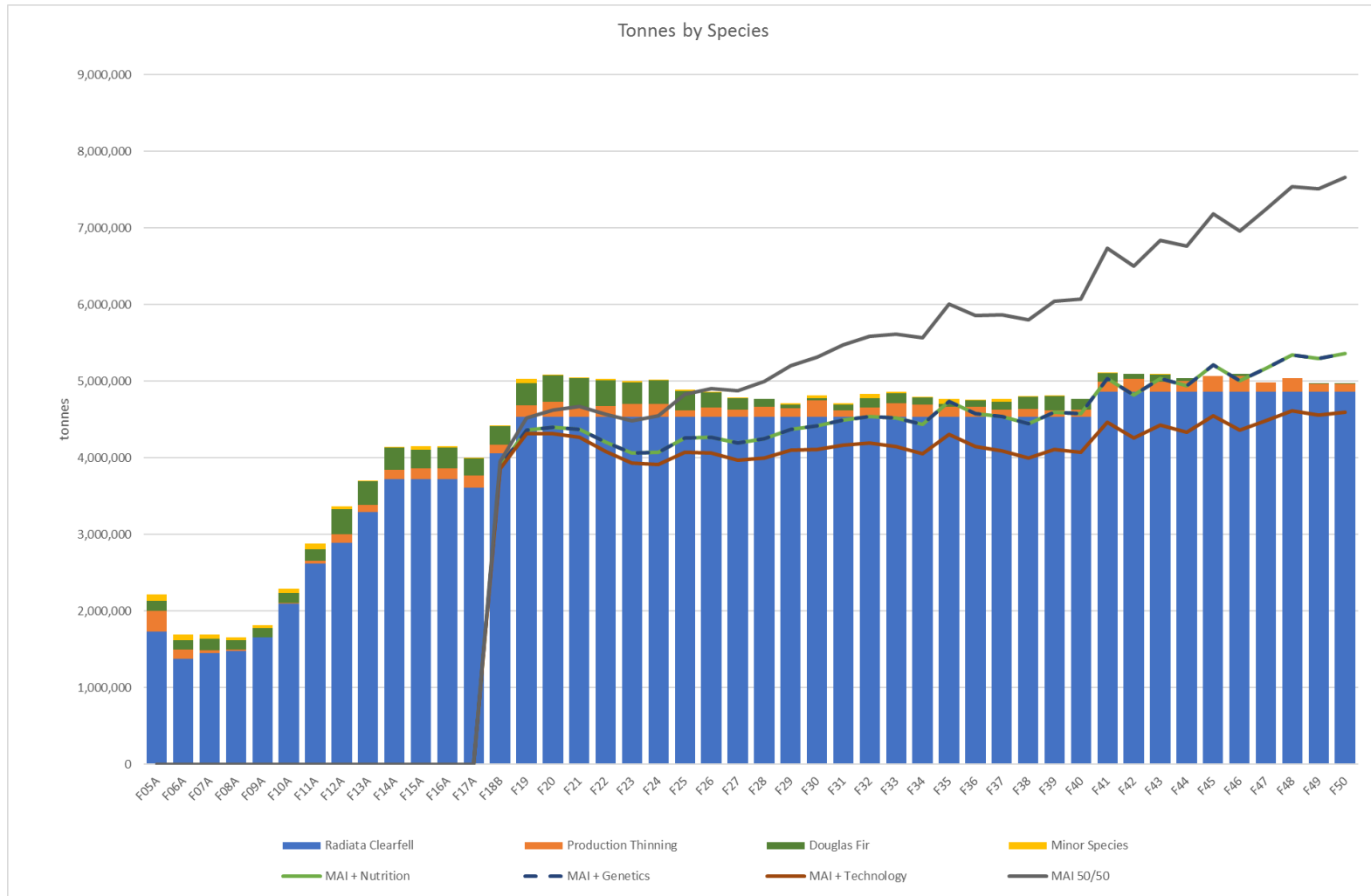
A Few More Facts

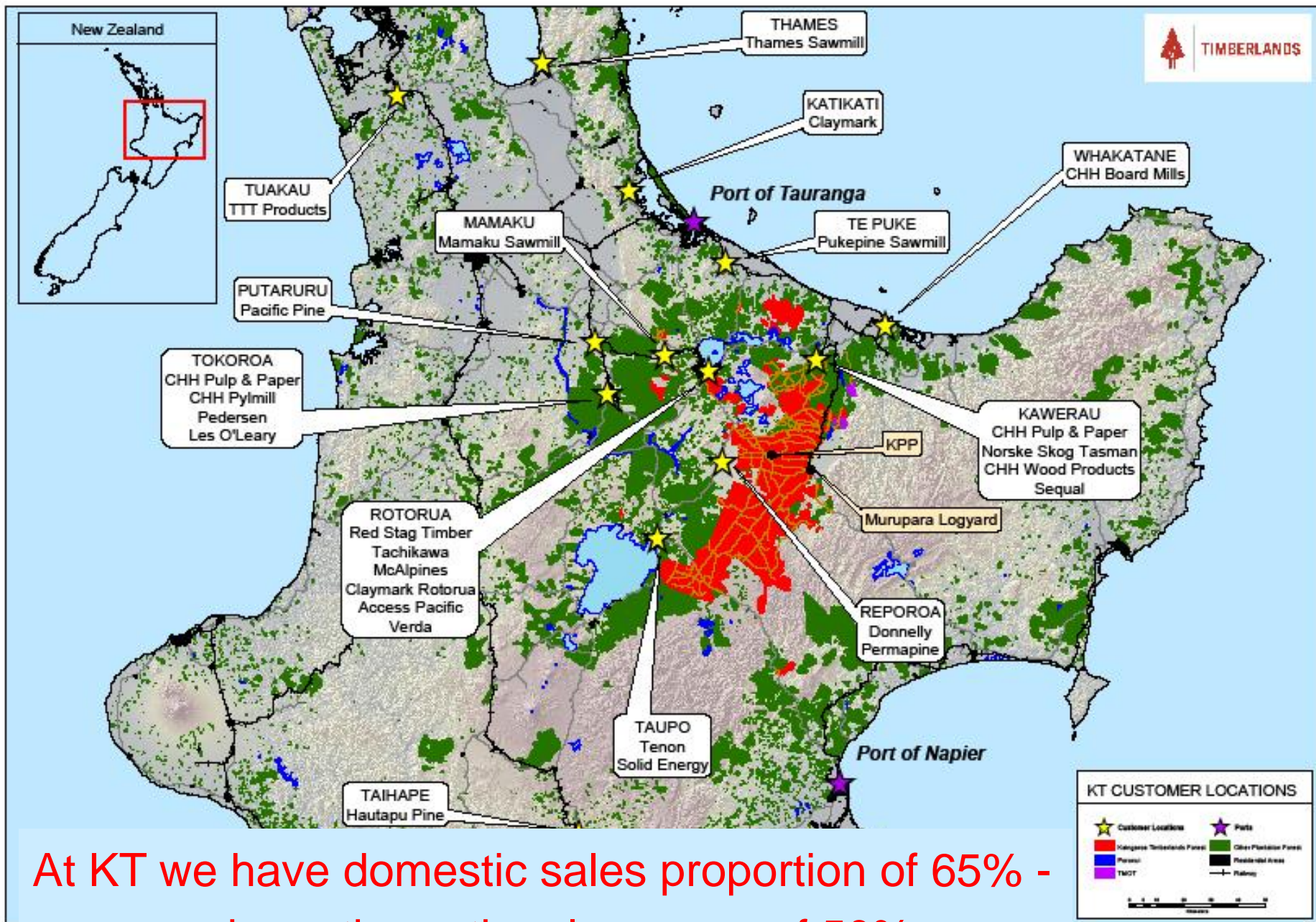
- FSC certified since 1999, PEFC since 2017
- Ownership was transferred by the Crown in a Treaty Settlement in 2009.
- Kaingaroa Timberlands owns the cutting rights to the forest for up to 35 years and has replanting.
- Predominantly established in the 1930's, but some early 1900's.
- Target harvest age of 25 – 30 years for radiata pine – currently 28 yrs and will reduce as growth rates increase.
- Predominantly on pumice soils – water proof!
- 75% flat.
- Historically over 70 different species trialled – resulting in radiata pine.
- Off highway transport – only 3% of volume carted on district roads. The remainder is on private off-highway networks, rail and state highways
- Over 50 protected archaeological sites
- 3,000 registered recreation persons, mainly for hunting (pigs, deer) and fishing (trout, eels).





Harvest Profile





At KT we have domestic sales proportion of 65% - way above the national average of 50%

Field Trip



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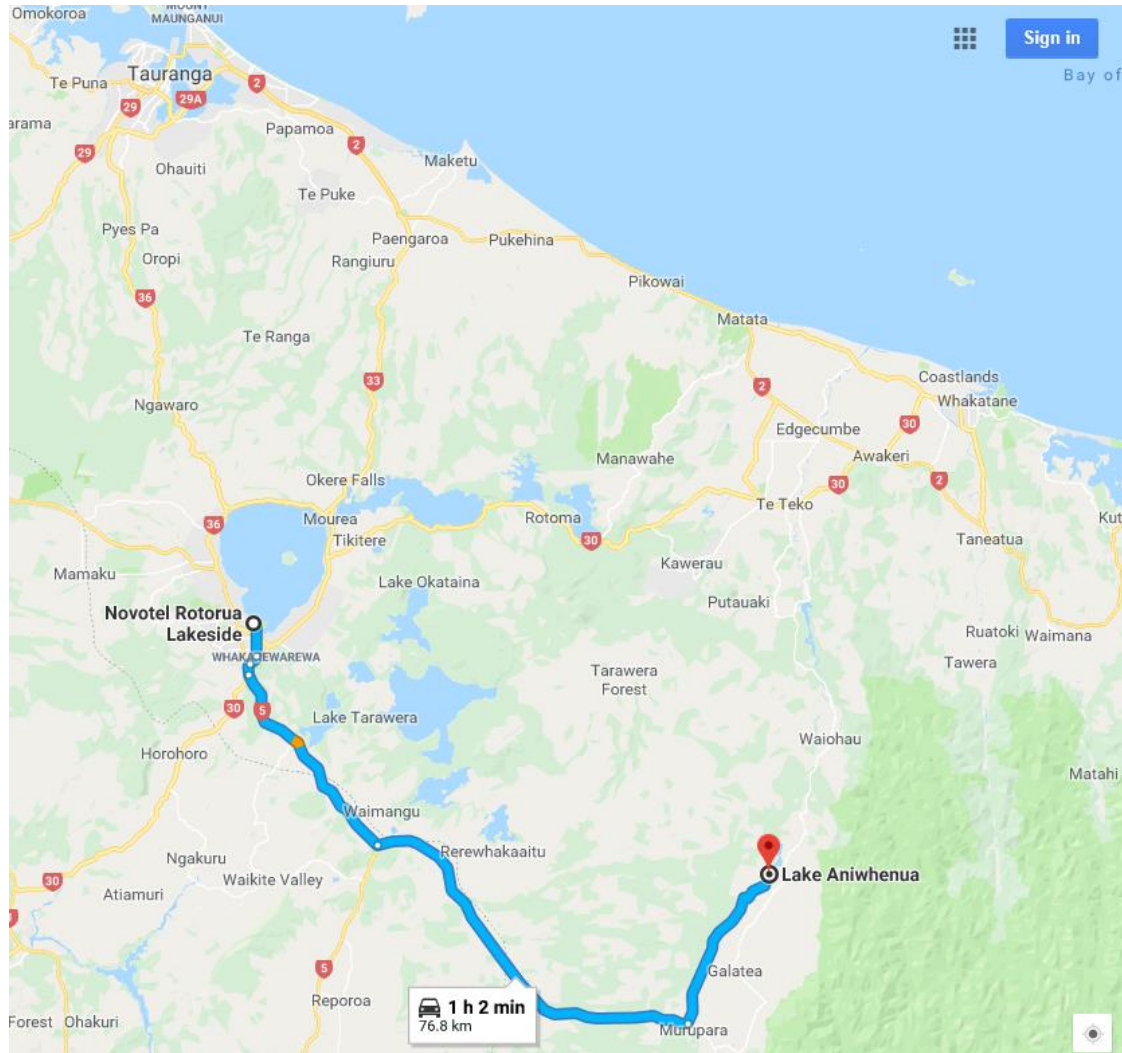


Agenda

Time	Stop location	Notes
8:00 am	Depart Novotel	
8:15 am	Stop 1 – Whakarewarewa Forest	Exploration of multiple-use forestry, specifically the integration of timber management, recreation and conservation
10:00 am	Stop 2 – Lake Rerewhakaaitu	Discussion around New Zealand's productive landscapes and how competition for land drives productivity
11:30 am	Stop 3 – Kaingaroa Forest	Discussion on sustainable intensification and industrial forestry
13:00	Lunch – Aniwhenua Dam	Opportunity to also discuss forest management in sensitive catchments



The Route We'll Drive





Stop 1 | Whakarewarewa



Whakarewarewa



- 3,500 ha
- 2 key iwi (landowners)
- Wander at will – foot, bike, horse. Not right to construct tracks or undertake commercial operations
- Over 130 km of mountain bike tracks and 60 km of walking and horse tracks
- Over 400,000 visits per year
- Over 50 organised mountain bike, running and multisports events per year. Between 40 and 2,000 competitors.
- Whakarewarewa recreation is estimated to contribute approximately \$50 million per year to the Rotorua economy.
- Rotorua District effluent disposal and water supply
- Tripartite management – iwi, council, TL.
- Whaka recreation – Kaingaroa production



Recognition

- NZ's Favourite Off Road Place to Ride – 3rd year running
- Red Bull Top 10
- Track maintenance volunteers recognised during national volunteer week
- Crankworx – 1 of 3 international venues
- TL staff!
- 3 pairs of successful breeding falcon – first NZ urban release of endangered species to breed – they chose Whaka!



Cooperation





STOP 2

LAKE REREWHAKAAITU



Regional Land Use

- Dairy farming and forestry are major contributors to the local economy
- There has been substantial land use change in the past decade
 - Big increase in dairy herd from 2007 to 2012 (relative stable since then)
 - Reduction in the number of sheep, beef cattle, deer and pigs
 - Total area in planted forests fell almost 100,000 ha
- Concerns around the impact that intensive dairy farming will have on aquatic environments due to nitrogen leaching
 - Also has impact on NZ's greenhouse gas budget (49.2% of NZ's gross emissions are from the agricultural sector)
- For forest land to remain in trees, forestry needs to be a profitable land use – this is a major driver of intensification

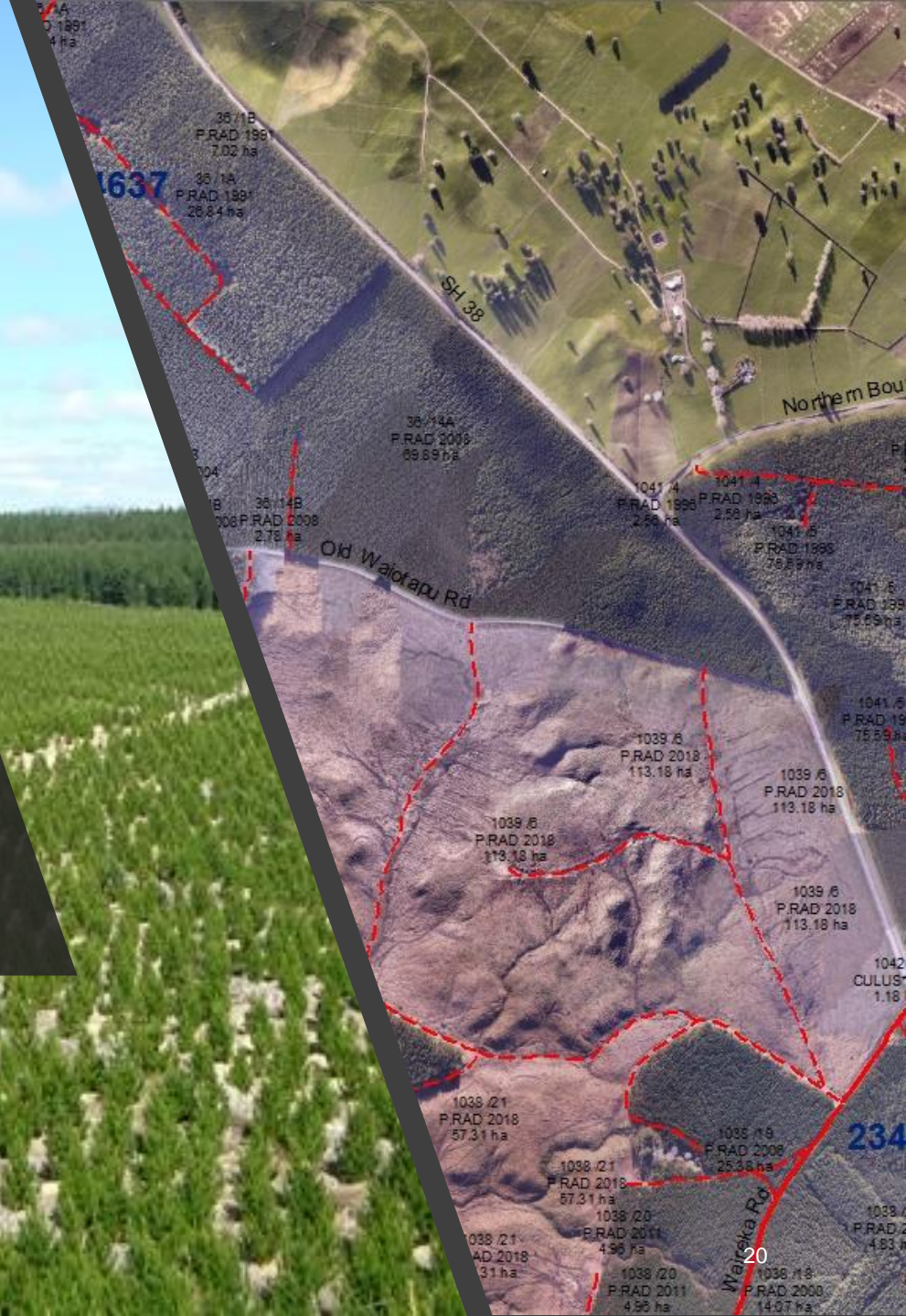


Mt Tarawera Eruption

- Erupted on 10 June 1886
- Estimated to have killed 120-150 people
- Destroyed the Pink and White Terraces which were located close to here at Lake Rotomahana
- Surrounding area was covered in ash, mud and debris up to 20 m thick



STOP 3 KAINGAROA FOREST





Kaingaroa Timberlands' Vision

“We commit to being the safest and best production forest in the world”

- Mo ake tonu atu

“Kei te whakapau kaha matou ki te waiho hei ngahere mahi pai i te ao whanui”

- Forever and ever



Our Vision: Part Two (1)

We will be the best through:

- Applying best practice commercial and legal processes across the forest value chain.
- Conducting all our activities safely, and promoting the health of our people.
- Engaging with Iwi and communities associated with our forest.
- Maintaining a long term view, while recognising short term circumstances.
- Maintaining the full support of our owners.



Our Vision: Part Two (2)

We will be the best through:

- Relentlessly driving productivity and performance in the forest.
- Recognising, rewarding, challenging and growing our people.
- Striving to maximise the positive environmental impact our forest can provide.
- The implementation of science, research and technology that creates opportunity and advantage



‘50 by 50’

We will improve the productivity of our forest from 25 to 50 cubic metres per hectare, per year by 2050

Why 50 by 50:

- It is good for our environment; more carbon removed from the atmosphere and stored in our trees, reducing the impact on intact natural forests and high quality farmland
- It is good for our society; more jobs, more economic activity, more wealth distribution, and further, we will primarily use road and rail infrastructure already in place and funded by us
- It is good for our business
- It is good for Iwi, and for superannuation funds in NZ, and Canada
- It will be done sustainably



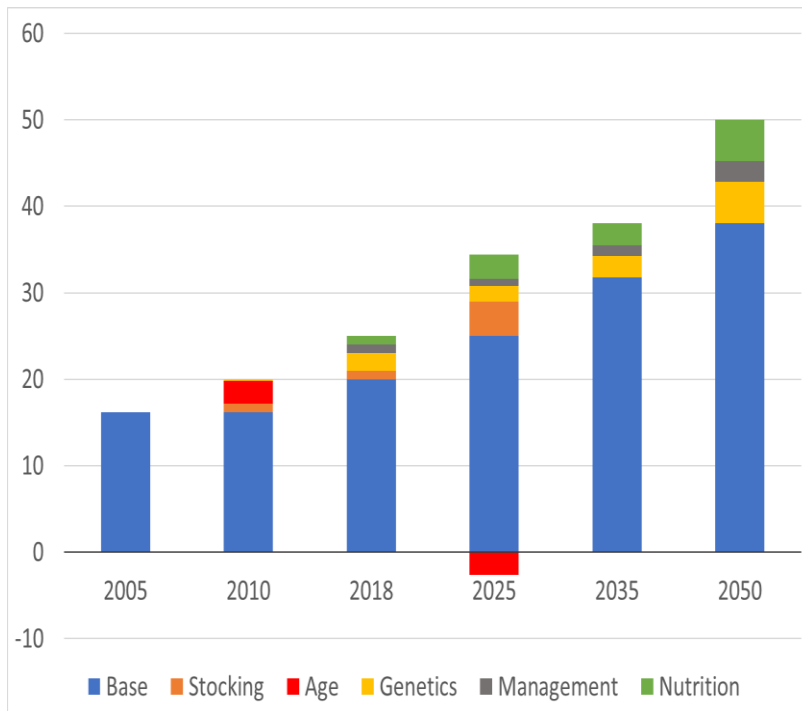
50 by 50 Strategies

- **Strategy 1:**
We will use nutrition to drive our short to medium term gains in Mean Annual Increment (MAI).
 - **Objective 1:**
New nutrition practices designed to lift MAI by 10m³/ha by 2050 will be progressively brought in from 2020.
- **Strategy 2:**
We will use Genetics to drive our long term gains in MAI.
 - **Objective 2:**
Genetics and an active tree breeding program will incrementally deliver increases in crop performance that results in a lift in MAI of 10m³/ha by 2050.
- **Strategy 3:**
Technology will facilitate precision forestry allowing broad-based as well as site-specific MAI improvements.
 - **Objective 3:**
A new data analytic platform, and data collection capability, will improve management and operational decision making adding 5m³/ha to MAI by 2050.



Sustainable Improvement

- Source of MAI Improvement

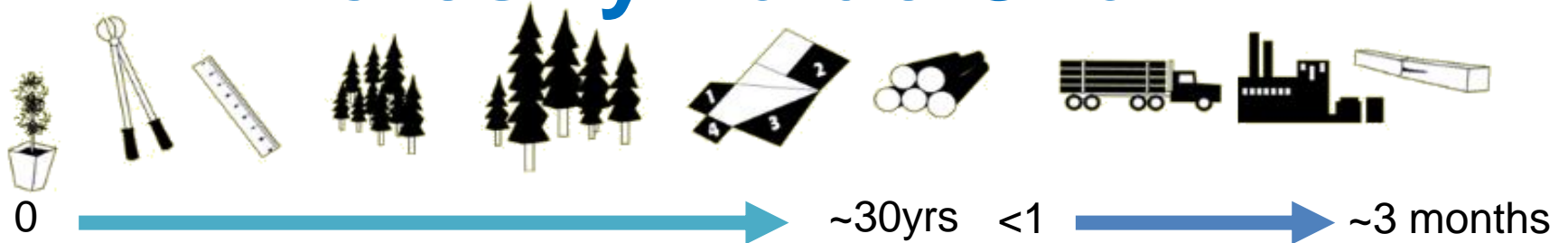


- Key Statistics

Harvest Year	MAI/ha	Sustainable Annual Harvest m ³
2004	16.2	2.9M
2010	20.0	3.6M
2018	25.0	4.5M
2025	31.3	5.6M
2035	38.8	7.0M
2050	50.0	9.0M



Forestry Value Chain

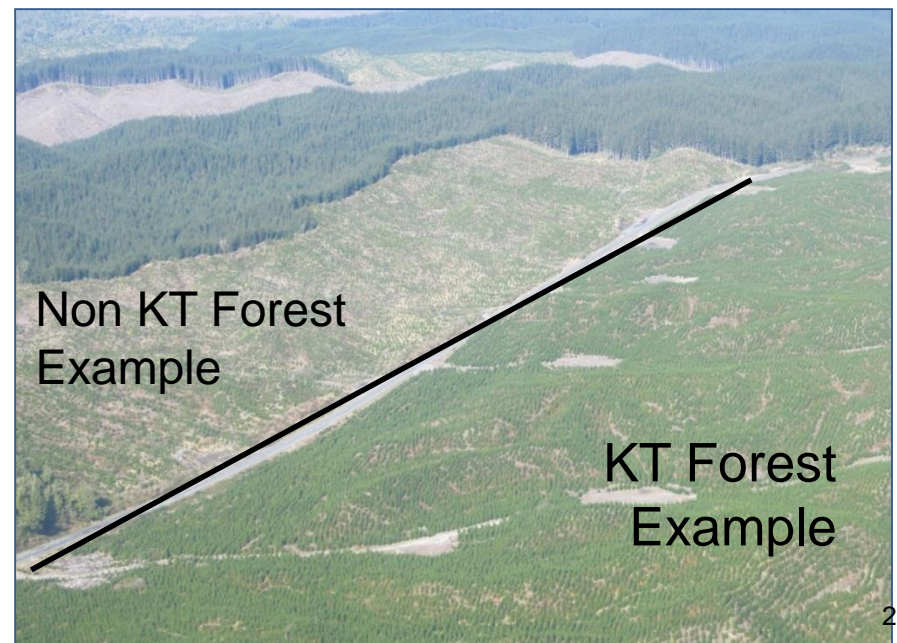




Tree Crop Investment Focus

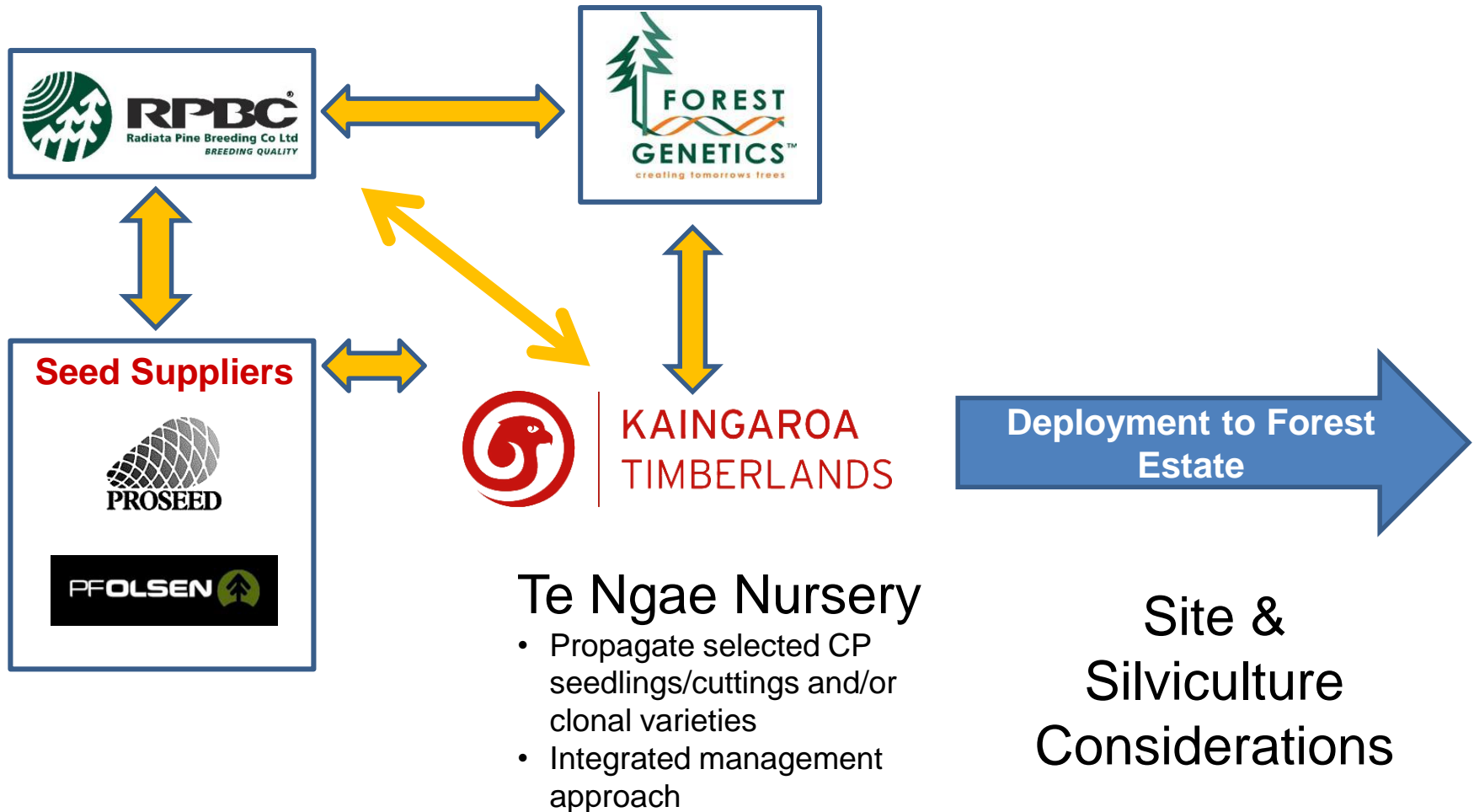
- Establish a consistent, healthy, fast growing crop of trees
- Full site utilisation
- Prudent silvicultural investment:
 - Strategic considerations
 - Economic rationale
 - Site x Silviculture x Genetics
- Risk Mitigation:
 - H&S, Fire, Security, Asset protection, Environmental
 - Forest Health

Forest Establishment





Genetics & Deployment





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Use of Clonal Tree Stocks

In 2008 Timberlands began deploying Forest Genetics (FG) clonal material to the Kaingaroa Forest estate.

Prior to that time a large volume of clones had been deployed to the estate with mixed success.

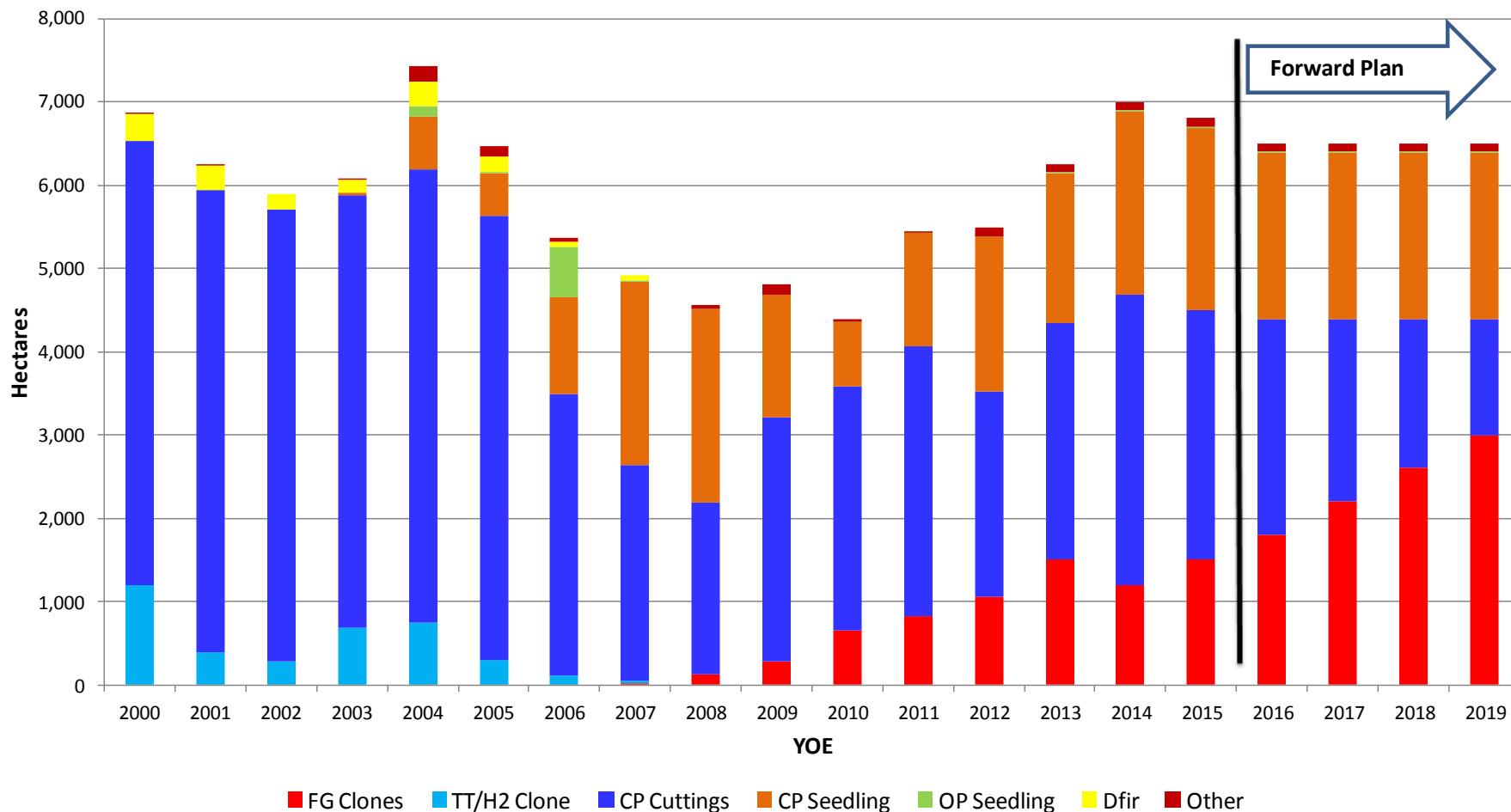
Results coming through from various clonal trials, both FG and others, suggested that with prudent management and deployment of well selected and propagated material the genetic gains arising from clones could potentially be significant.

In 2015 we established 1.5M/plants and continue to be encouraged by some of the results we see in our trials and our operational plantings.



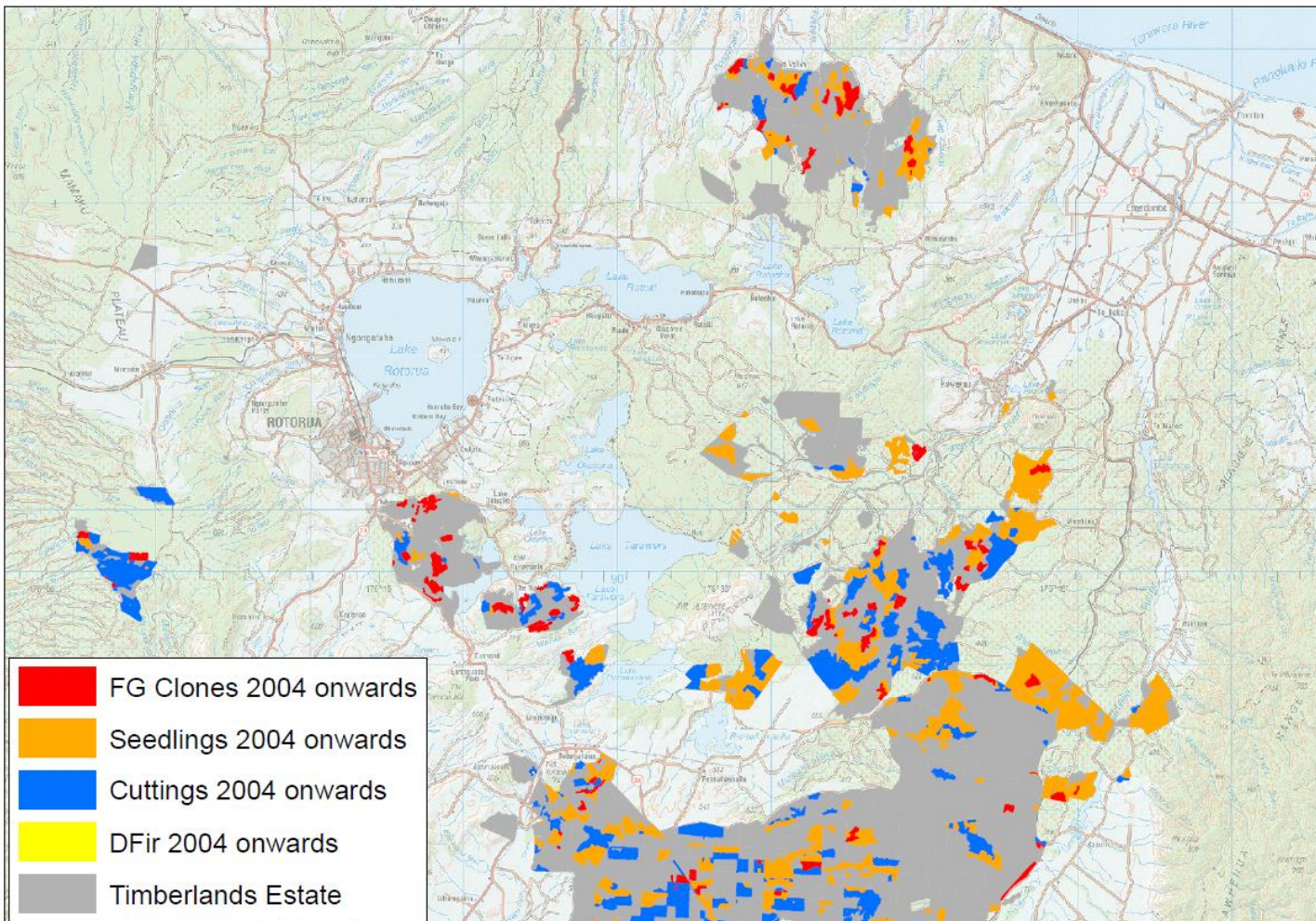


Planted Stocktype by Ageclass





Kaingaroa Plantings (North)



Tree Felling



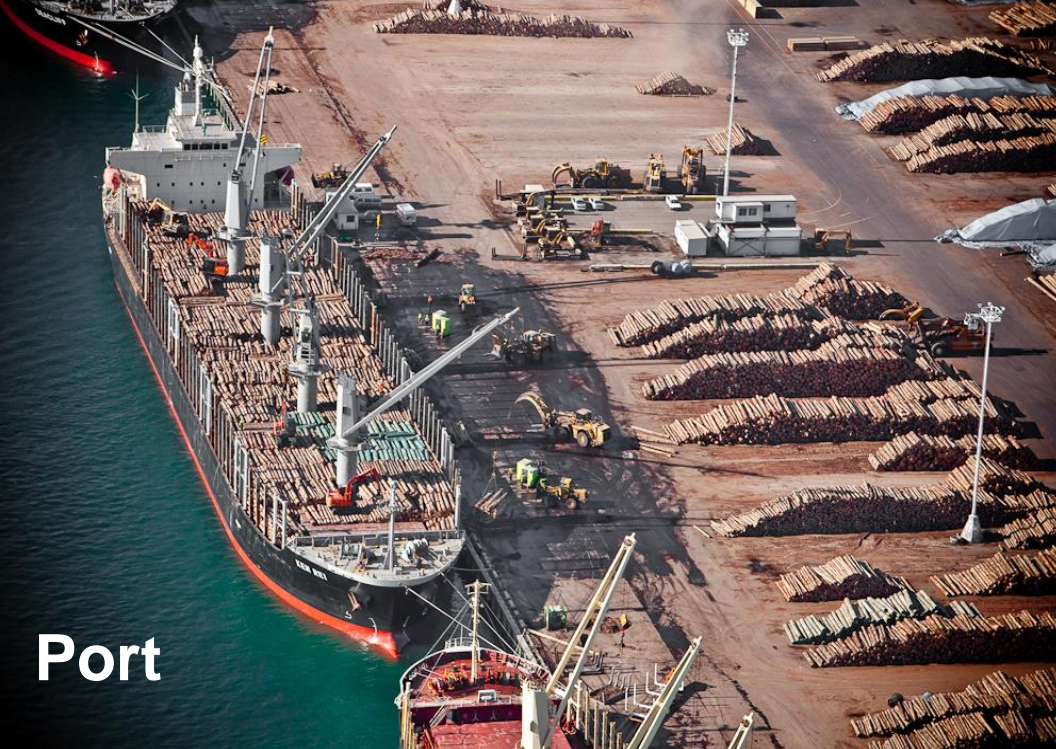
Hauler



Log Loading



Log Skidder



Port



Kaingaroa
Processing Plant



Murupara Log Yard



Off Highway Rig

Forest Risk & Forest Health

- Health & Safety
 - ~105 staff (incl KPP & FG)
 - ~600-800 contractors
 - Mechanisation investment
- Asset Protection
 - Fire
 - Wind
 - Snow
 - Security & Access
- Environmental
 - FSC / PEFC
 - Compliance
 - Community Expectations
- Forest Health
 - Health & Nutrition



Biodiversity

- 16,000 ha of natural (p)reserves, many rare wetland and scrubland ecosystems. But not 10% yet.
- 17 FSC HCV natural areas and 4 HCV in plantations (for soil, recreation, aesthetic and biodiversity – orchids)
- Rare species in the plantation include:
 - Highest density of endangered NZ Falcon
 - Other birds (insectivores)
 - Long tailed bat
 - Plants including: geothermal plants, ferns and orchids
 - Several Invertebrates
- Mosaic of age classes
- Pest control





Challenges (opportunities?)

- Health & Safety
- Labour – supply and pay
- Pests and diseases
- Pesticides
 - FSC pesticide experts – TL doing what is expected.
 - Forest and collaborative trials
 - From 9 to 1 HH pesticide (pre-revision)
 - Debarker = no port methylbromide (20% NZ reduction)
- Sediment / erosion
- Clearcuts
- Monoculture
- Fertiliser





FSC Commitment & Engagement

- Member of FSC
- Attend 4 General Assemblies
- Chair NZ SDG
- FSC International Pesticides Working Group
- CANZUS
- And more....constructive engagement



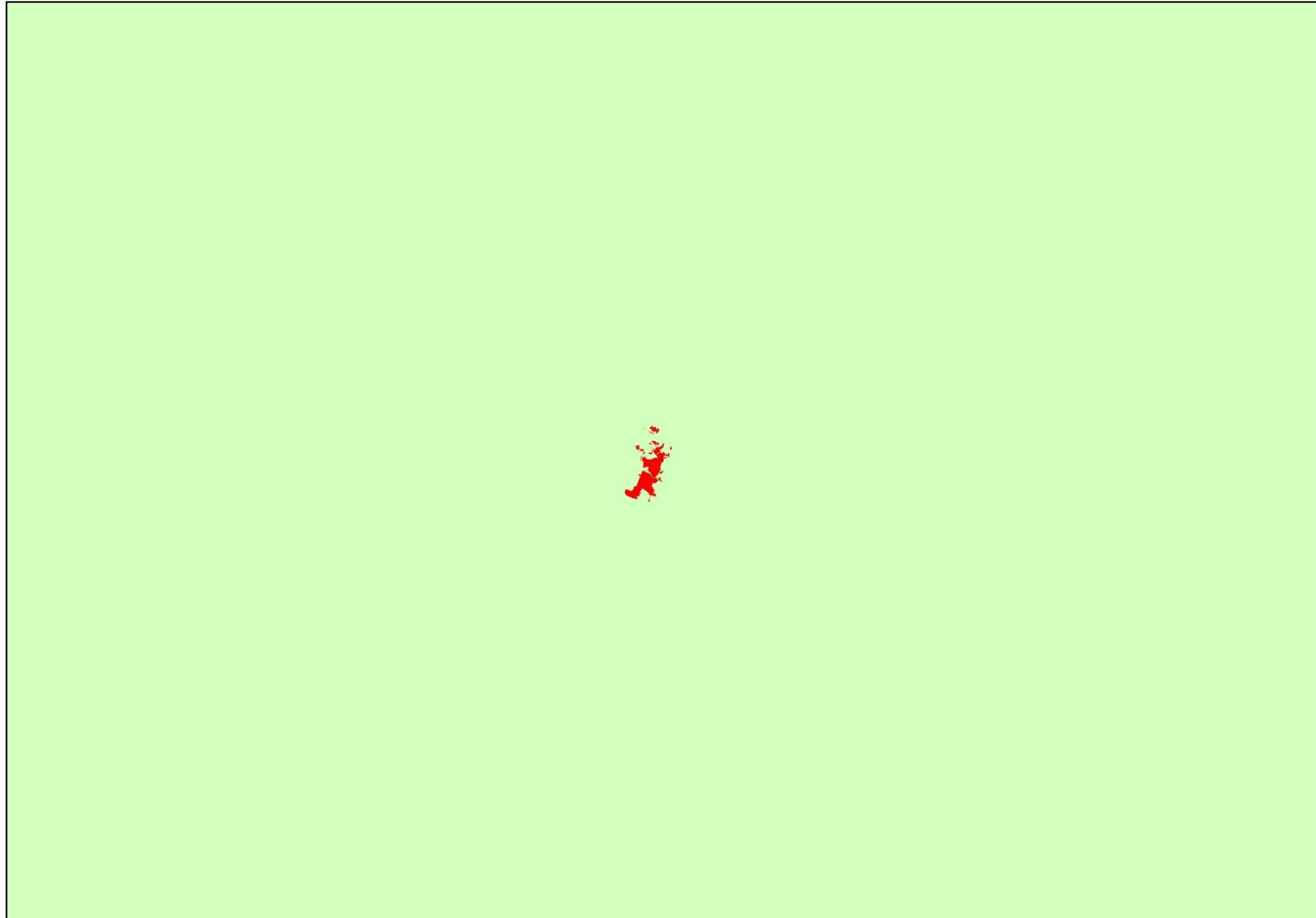
Sustainable Intensification

- More from the same
- Carbon sequestration

Double Kaingaroa productivity, or....



Or 45 million ha of Siberia....





Sustainable Intensification

That's 250 x Kaingaroa

Nearly twice the size of NZ, or Germany plus Denmark & Holland combined

Or 180,000 ha/year Siberian clearfell to produce the same annual volume

That's one Kaingaroa each year.

No new roads vs thousands of km

- Siberia is most likely alternate supply of softwood for China/India/Korea/Japan
- Siberian MAI = 0.2m³/ha/yr (sustainable recoverable yield comparison)
- Siberian standing recoverable volume 50m³/ha
- *“Standing volumes of mature stands of both larch and pine are low – around 100 cubic metres per hectare or less with average annual increments of usually less than one cubic metre per hectare per year. Only about half the standing volume is usable.”*
- NB the figures above are for all Kaingaroa production. The 50 by 50 target doubles Kaingaroa production (to 9 million m³/year) – the additional productivity is approximately the equivalent of sustainably harvesting a new 22.5 million ha in Siberia.
- **No GMO or gene editing.....what if?**