

Public Summary

(Updated April 2021)

Matariki Forests is the third largest forest owner in New Zealand with more than 150,000 hectares of forest across the country. Matariki Forests are managed by Rayonier New Zealand Ltd (RNZ), a subsidiary of Rayonier Inc.

Growing our tomorrow.

Collectively Matariki Forests and RNZ, employ over 800 forestry and business professionals. On-going training programs ensure our people are trained for not only the current tasks but for the future as well. We foster innovation and creativity and provide an environment for our people to excel.

RNZ provides a full range of forest management services from establishment and silviculture through to harvesting and marketing; this includes a full-service export marketing team. We use leading edge technology and tools for strategic woodflow planning and mapping, and have developed customised applications that provide a competitive edge in tracking and monitoring.



In 2021, it is expected that approximately 4,300 ha of forest will be harvested, yielding in excess of two million tonnes of logs, which is sold to both domestic and export markets. Matariki's 2021 re-establishment programme will result in 4.1 million seedlings being planted over the winter months. These will be planted on areas harvested in 2020.

In addition to being a timber resource, the forests also provide a number of environmental benefits including soil and water conservation, wildlife habitat and

carbon sequestration services. The forests are used by local communities for a variety of recreational activities including walking, mountain biking, hunting and local events. RNZ has a range of environmental safeguards in place to assist in ensuring that any effects associated with the forests or operational activities within and around them are managed appropriately.

Management Objectives

RNZ aims to manage the most profitable and reputable radiata pine timberlands business in New Zealand. Matariki's forests are located across New Zealand and managed from five regional offices, supported by a head office in Auckland.

Each region develops and maintains a three year management plan which addresses all aspects of the business. These plans are approved by the Board of Matariki Forests and are updated annually.

Land Management

Matariki's forests are grown on land which is subject to a variety of land tenures including Freehold, Crown Forest Licence, Leasehold and Forestry Rights. This means that on-going interaction with a variety of landlords, including the Crown, Māori Ahu Whenua Trusts, corporates and private land-owners, is essential.



A number of Matariki's forests were originally established by the NZ Forest Service, with some now into their third rotation. The forests are geographically diverse with locations ranging from Northland to Southland. As a distributed forest estate it is not surprising that stakeholder management issues and local socio-economic conditions are diverse.

Matariki manages forests on the fringes of Auckland that are adjacent to areas of urban growth. These forests are subject to high recreational use and regular neighbor communication is important where forestry operations may affect their communities. Likewise, in Canterbury, Hanmer and Bottle Lake Forests are frequently used by those who enjoy walking, mountain biking and horse riding.

In contrast, the Southland and Hawkes Bay forests fit comfortably into the predominantly rural character of the area and have relatively low levels of recreational use. Other forest locations include the Coromandel, managed by the Bay of Plenty regional team, where the permanent population is small but expands considerably during holiday periods, particularly over summer.

Recreational access to our forests is controlled by permit to ensure commitments to health, safety and environmental protection are maintained while still allowing hunters, mountain bikers, horse riders, car rally clubs and other outdoor enthusiasts to enjoy their pursuits. We actively participate in local community projects ranging from gifting of native logs for cultural purposes to assisting in conservation and local development projects.

Silvicultural strategy

Silviculture is the art and science of growing trees. RNZ is committed to the management of sustainable plantation forests and applies silvicultural practices and regimes that recognize diverse site characteristics and environmental impacts. Within these constraints, RNZ aims to grow a tree crop that produces a mix of logs at maturity that will provide the best returns to the forest owner.

Rate of harvest and species selection

Customer demand, access, safety and environmental requirements, owner returns and sustainable yield are all factors which influence the rate of harvest. RNZ relies upon wood flow models, and analytical scheduling tools, as well as in-house harvest planning skills to establish both the optimal time and location of harvest.

Choice of species for planting is driven by site characteristics, target end markets and risk profile. Primarily *Pinus radiata* is planted, with Douglas fir and *P.radiata x P.attenuata* hybrids being established on exposed, higher altitude sites in the South Island. Some stands of *Cupressus macrocarpa* have historically been established in Southland.

RNZ continues to invest in new harvesting, planting and transport technologies, along with training programs that will improve productivity and safety, keeping Matariki and New Zealand a competitive supplier of forest products to the world.

Monitoring forest growth and dynamics

RNZ look to improve each new rotation we establish with improved genetics, planting systems and forest nutrition. We are actively engaged in forest health research and work with all other major forest owners

through the Forest Biosecurity Committee to ensure our forests are monitored for pests and diseases.

To ensure maximum site potential is realised, forest conditions are monitored throughout a rotation. This is achieved by undertaking inventory assessments at various ages and using that information to formulate planning and operational decisions.

Prior to crop establishment, pest (animal & weed) surveys are undertaken to establish the extent and type of issues present. Should control be required, a range of methods are evaluated to arrive at the solution most appropriate for the site. In the year following planting, survival surveys are carried out to assess the crop condition, noting site factors such as animal browsing and level of weed competition.

As the crop grows through canopy closure further assessments are undertaken. These are critical in the planning and reconciliation of silvicultural operations. At this time the crop is demanding the most nutrients and water from the soil and growing towards full occupation of the site. Silvicultural operations can be very site specific and include fertilising, weed releasing, and thinning.

When the crop is 15-20 years old, inventory is undertaken to give an indication of the volumes and quality of wood available. This data is collated, analysed and then used in growth modelling to determine the best age at which to harvest.

Just prior to harvest, further measurement determines the likely volumes and grades of wood to be harvested and assists in matching the best markets to available wood volumes. This information is also utilised in future crop planning and productivity and quality indicators help determine the optimum tree genetics, land preparation, fertilising and silvicultural regimes for future crops.

Post-harvest reconciliation concludes the forest growth monitoring process and involves comparing actual harvested volume to predicted volume. The output enables predictive yield model assumptions to be tested and refined.

Other monitoring includes:

Forest Health: RNZ participates in a risk-based, Forest Biosecurity Surveillance scheme (FBS) through a Government – Industry Agreement (GIA). This new targeted scheme replaces the previous Forest Health Surveillance scheme (FHS) which was active for more than 60 years. There are three levels of surveillance: 1. Risk-based FBS which focuses on early detection of new pests and pathogens in high risk areas such as urban areas and ports, 2. Surveillance of higher risk forests surrounding Level 1 areas, and 3. Forest Health Assessment (FHA) of the wider forest estate to assess health status and provide early warning of increased impacts of existing pests and pathogens. The new scheme provides early detection of new pests and pathogens, provides a better chance of slowing spread, eradication, or management, provides assurance to trading partners and maintains investor confidence.

Forest Nutrition: Foliage sampling is undertaken in young stands to check nutrient levels and initiate corrective fertilization, if required. Annual fertiliser programmes are implemented in targeted forests, based on this monitoring and nutrition and fertiliser research which is improving our understanding of nutrient management at establishment and mid-rotation.

Soils: RNZ have been participants in industry wide research programmes that examine site management and sustainability. Trials have been implemented, both internally and in collaboration with universities and scientific organisations to assess the impact of soil compaction and ground disturbance. Soil investigation and mapping is also being undertaken in conjunction with nutrition and fertiliser research in the Bay of Plenty and Northland regions.

Animal Pests: Monitoring of possum numbers occurs through the Animal Health Board. Local pest contractors also monitor populations. Regional Councils require management and control of some invasive weed species. These can include broad mapping and monitoring of wild conifer spread and boundary weed issues. Pre-plant pest and weed surveys are undertaken by RNZ to establish optimum control methods.

2020 Pest Control Numbers				
	Possum	Goat	Rodents	Other
Northland	1,165	39	319	293
BOP	11,381	-	590	990
Hawkes Bay	-	1,690	-	19
Canterbury	4195	50	-	56
Southland	7,011	-	40	87

Water Quality and Quantity: Water monitoring for Total Suspended Sediments (TSS) is undertaken at select sites nationwide. The national average in 2020 was 14.6g/m³, the minimum result was <1g/m³ and the maximum reading was 93g/m³, this following a significant weather event. This reading reduced to 11g/m³ the following month when the stream was retested. Some regions participate with regional councils undertaking State of the Environment (SOE) testing which assesses stream health. RNZ is also involved in the MBIE-funded Forest Flows hydrology programme which aims to quantify key hydrological processes to provide world-leading water flow information across a range of environments.

Training: All persons working in the forest are required to be trained for task or under training. RNZ has established procedures internally in conjunction with training providers to monitor individuals training and competence.

Industry Wide Research: RNZ are active participants in industry research programs undertaking scientific trials and research into productivity, genetics, environmental effects, biosecurity and disease resistance, specialty species, fire and harvesting systems.

High Conservation Value Areas (HCVA): These are audited annually to ensure ecological values are being protected. RNZ has HCVAs in every region and are classified as such for their rare ecosystems, biodiversity and cultural values. Some of these areas are co-managed with iwi, community or council.

Environmental Safeguards

Outlined below are some of the key measures undertaken by RNZ and other agencies.



Resource Management Act 1991 (RMA)

The RMA is the cornerstone of environmental legislation in New Zealand. It provides the framework for how all activities, in relation to the environment we live and operate in, can be undertaken. The guiding principle of the RMA is that activities will be conducted as far as practicable in a sustainable manner and that steps will be undertaken to avoid, remedy or mitigate any adverse effects of those activities. An extension of the RMA is the National Environmental Standard for Plantation Forestry (NES-PF) which provides industry specific regulations for 8 operations essential to plantation forestry.

The RMA and NES-PF is implemented and enforced by District and Regional Councils. Forestry activities operate under a range of rules and conditions monitored and enforced by these Councils. These vary from, Permitted Activity (no resource consent required); through to Discretionary Activities (consent required but may be withheld).

Local conditions influence the level of effects that are taken into account. Council staff routinely audit RNZ's operations to ensure compliance with regulations and rules and RNZ endeavors to work closely with these agencies in order to facilitate effective environmental management by both parties.

Environmental Management System (EMS)

The environmental effects of all operations are routinely monitored against minimum standards and best management practices to gauge the level of effects and compliance with these requirements. Results are recorded in Rayonier's Environmental Management System (EMS). Any aspects of these activities that do not comply with any part of the audit are recorded as corrective actions and followed up with remedial action.

The Matariki Forest estate has certification under two international responsible forest management schemes. Forest Stewardship Council® (FSC® C021569) and Programme for the Endorsement of Forest Certification™ (PEFC™/ 15-004-01).

Emergency Management

One of the key components of the EMS is Emergency Response Procedures (ERP's). Rayonier has ERP's in place for Personal Emergency, Fire, Hazardous Substance Spills, Natural Events, Forest Debris Mobilisation, Forest Disease and Accidental Archaeological Discovery.

Forest Accord

Rayonier is a signatory to the Forest Accord via its NZ Forest Owners Association membership. The Accord was signed in 1991 and is an agreement between member forestry companies in New Zealand and environmental non-government organisations to promote the protection of certain classes of indigenous forest. RNZ is not involved in the harvest of indigenous forest.

Ecological Areas

Plantation forestry is unique in that it provides both a financial return to its owners and a range of benefits to the environment.

Matariki's plantation forests contain diversity of endemic, native and exotic vegetation. Many also adjoin Department of Conservation (DoC) estates forming a buffer between conservation areas and farmland. Because of this proximity, the planted forest and their internal indigenous forest areas often provide habitat for wildlife. This adjacency works well when

harvest commences as refuge is available in neighbouring vegetation for native and introduced fauna.



RNZ maintains a Protected Areas database which holds information on natural areas including covenanted areas, wetland, bush and waterways. Independent surveys to assess the values of these natural areas have been undertaken in all regions, with further survey work undertaken as required.

A sample of sites within each region are audited annually to determine their condition. Audit results and management actions required (e.g., pest control) are recorded in the RNZ GIS System via an internally developed app. In 2020, 133 Significant Ecological Areas (SEAs) were audited, the majority of sites were confirmed as passive (requiring no further action) the remainder required some animal or weed pest control action.

Planning of operational activity involving disturbance includes a check of forest protection issues. The protection measures required are communicated to contractors at pre-start meetings via operational maps, procedures and specific site prescriptions. Interim and post operation checks are undertaken to ensure standards are adhered to.

High Conservation Value (HCV) Areas.

RNZ has identified 13 areas which meet the criteria of FSC's High Conservation Value Areas. Management plans have been developed for these in consultation with key stakeholders such as the Department of Conservation, Fish and Game and Territorial Authorities. Plans can be viewed upon request.

HCV areas are audited annually with management plans updated where required. Actions are recorded and monitored in the RNZ EMS database.

Rare Threatened and Endangered Species. (RTES)

RTES Sightings are recorded in the EMS database. In 2020, 71 species were recorded, with NZ falcons being the predominant species, together with a range of avifauna, including Kea, Kaka and Brown Teal.

Archaeological Sites:

All known sites are identified and managed in liaison with Heritage NZ, local Iwi and other affected parties. Contractors and staff receive training on how to identify sites and initiate accidental discovery procedures.

Stakeholder Involvement:

RNZ work with local councils, Heritage NZ, Iwi, DoC, local hunting, and sport clubs to proactively manage all requirements. RNZ actively liaise with neighbours to inform them of operational activities, as well as with community groups and local schools to promote forestry.

Harvesting Techniques for Environmental Sustainability.

RNZ undertakes all harvesting and silvicultural operations using contract crews. Harvesting crews operate either ground-based or cable hauler harvesting equipment and are matched to the terrain of particular areas to be harvested. The harvest system used is based on a number of factors including, topography, soil type, season and environmental and health and safety constraints. In 2021, 60% of the harvested area is expected to be completed using ground-based methods.

Felling is either motor manual, or mechanised. The use of tethered machines for mechanised tree falling on steeper country is increasing for health safety reasons. In 2020 over 82% of harvested volume was felled mechanically.

There is increasing use of short-wood systems involving mechanised cutting to length and branch removal in the bush and extraction to a roadside landing with a forwarder. Tree length extraction with skidder or tractor is also used. Log handling and

loading is generally undertaken with tracked excavators. These machines are also utilised on the cut over to extract wood by "shovel logging" in some situations.

All harvesting operations operate under a harvest plan which specifies permitted harvesting equipment, tracking, stream crossing, water control, landing debris and any RMA management requirements.

All operations must comply with the NZ National Environmental Standards for Plantation Forestry (NES-PF) where permitted, or under a site specific Resource Consent.

Stands are clearcut and are actively reestablished by planting. Depending on the level of post harvest debris or compaction, sites may be prepared by machine ripping and piling of slash to allow planting access. These operations do not occur on steep sites where machine access is not possible.

Health and Safety considerations receive significant attention in all our forest operations. We require that all forest workers be qualified for task or under the direct supervision of someone who is qualified. Hazard management has a considerable focus and all operations are required to put in place control measures to eliminate, isolate or minimise risks to people and property. We run safety improvement programmes and our safety management systems are independently audited.

Regional Office Contacts

Northland: (09) 437-7910

Auckland: (09) 302-2988

Bay of Plenty: (07) 927-2400

Hawkes Bay: (06) 974-1283

Canterbury: (03) 310-7612

Southland: (03) 211-1290

Matariki Forests is a New Zealand incorporated unlimited liability company jointly owned by Rayonier Inc., (a United States based publicly listed forest products and real estate company) and Stafford Capital Partners Limited (the investment manager of Stafford International Timberland Funds). The management of Matariki Forests' is undertaken by Rayonier New Zealand Limited. Matariki has no employees.