



OneFortyOne New Zealand Ltd

Forest Management Plan
Public Summary
2022



Front cover: Falcon (kārearea) in Collins Block, Rai Forest near Nelson. Credit: Warren Connelly.

This is a working document and may be updated periodically as we continually evaluate, develop, and refine our forest management plans and objectives.
Printed copies are therefore deemed obsolete.

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1 Introduction

OneFortyOne (OFO) is a trans-Tasman business with forests and mills in Australia and New Zealand.

OFO operates throughout the Green Triangle region of Australia, and the Nelson, Tasman, and Marlborough regions of New Zealand (Top of the South). We employ more than 500 people directly and over 3,000 indirectly as contractors. We manage 160,000 hectares of land and plant approximately six million trees every year. We work with domestic processors and manufacturers to ensure that customers can use as much as possible of each tree.

Our aim is to be the company that people think about first when they are considering a career in forestry. We do this by focusing on what matters to our people – their ongoing health and wellbeing, employment conditions and opportunities for professional development. We strive to create a positive culture where everyone’s contribution is recognised and appreciated. Forestry is critical to regional development, and we value and nurture our relationships with local communities. We are major employers in the regions where we work, and we are proud to invest in local environments and local people via our community grants program.

1.1 Our Purpose and Values

Growing a Better Tomorrow is about growing, producing, and delivering wood products in a responsible way that meets rising demand and helps create a sustainable future for people and the planet. We are built on the belief that forestry and wood products could be done differently to make a greater contribution. Today our forests and sawmills create a business that begins with a seed and delivers high-quality wood products in a way that delivers secure careers, contributes to positive environmental outcomes, and shares benefits with the communities where we work. Together we are growing a better tomorrow.

This document is intended to provide OFO New Zealand (OFO NZ) stakeholders with an overview of how we manage our forests and operations while considering environmental, economic, social, and cultural factors.

2 Overview of OFO NZ

2.1 Forest Estate Description

As of December 2022, OFO NZ manages almost 80,000 hectares of which over 66,000 hectares is stocked. The forest area consists of three ex-Crown Forest License areas (Golden Downs West, Golden Downs East, Rai) in iwi ownership; freehold forests; and three joint venture forests. One joint venture expired in October 2022. There have been no forest acquisitions or sales during the 2022 calendar year. A full description of the land and forest areas is captured in [Table 1](#).

OFO NZ’s forest management unit (FMU) contains a range of non-plantation areas that are set aside and maintained as conservation/protection areas (e.g. natural indigenous forest, wetlands) for maintaining indigenous biodiversity. In 2022, 10,958 hectares (17.1%) of the working forest area within the FMU is designated as *conservation areas network*¹.

OFO NZ has two offices. The main office is in Richmond, Tasman region and the second office is in Blenheim, Marlborough region.

¹ Those portions of the management unit for which conservation is the primary and, in some circumstances, exclusive objective. Such areas include Representative Sample Areas, conservation zones, protection areas, connectivity areas, and high conservation value areas (FSC-STD-NZL-02-2023 Plantations EN).

Table 1. Land and forest area description at 31/12/2022.

Land & Forest Area Description (ha)	
1. Radiata pine	56,235
2. Douglas fir	2,806
3. Minor species	611
Total Planted Area	59,652
Available for Planting	2,330
Potentially Plantable	4,050
Total Productive land	66,032
Covenants/ecologically significant areas	3,782
Indigenous forests and riparians	6,585
Transmission lines/fire breaks	398
Retired from production - unusable	591
Roads/skids	1,499
Unplanted other	779
Total Non-Productive Land	13,634
Total Land	79,666

2.2 Land ownership

As a result of Ngāti Kōata, Ngāti Rārua, Ngāti Tama ki Te Tau Ihu, and Te Ātiawa o Te Waka-a-Māui Claims Settlement Act 2014, and the Ngāti Toa Rangatira Claims Settlement Act 2014, the original four Crown Forest Land parcels (Wairau, Rai, Golden Downs West and Golden Downs East Crown Forestry Licenses) were transferred to iwi ownership as part of the Settlement redress to iwi.

- Wairau Crown Forest Land was included in the Settlement redress to Ngāti Rārua, which OFO purchased in 2017. This Forest is now freehold.
- Golden Downs East Forest Land was included in the Settlement redress to Ngāti Toa Rangatira.
- Rai Forest Land was divided roughly in half and one half has been included in the Settlement redress to Te Ātiawa o Te Waka-a-Māui and the other half has been included in the Settlement redress to Ngāti Tama ki Te Tau Ihu.
- Golden Downs West Forest Land was divided into four separate parcels and one part included in the Settlement redress to Ngāti Toa Rangatira, one part to Ngāti Tama ki Te Tau Ihu, one part to Te Ātiawa o Te Waka-a-Māui and one part is held jointly between Ngāti Tama ki Te Tau Ihu and Te Ātiawa o Te Waka-a-Māui.

Termination notices were issued to OFO NZ in respect to each of the Crown Forestry Licenses (CFL) in 2014. The notices have the effect that OFO NZ has 35 years under the CFL to harvest the remaining standing plantation trees and any land cleared (harvested) of forestry trees is to be “returned” or handed back to iwi.

OFO NZ welcomed the Settlement and the opportunity to partner with our new iwi landowners. There is acknowledgement that the need for a long-term view in forestry (because of the time for the trees to grow) aligns well with iwi. New relationships have been formed. The Crown Forest Licenses are being replaced with separate Forestry Rights covering the land owned by Ngāti Toa Rangatira, Ngāti Tama ki Te Tau Ihu, Te Ātiawa o Te Waka-a-Māui and the Golden Downs West land held in joint venture between Ngāti Tama and Te Ātiawa. The new Forestry rights each have a 20-year initial fixed term,

followed by an automatic annual extension until a 35-year Termination notice is issued.

Ngāti Rārua, the beneficial owner of the land under the Wairau Crown Forest License area, decided in 2015 to sell their interest in the Wairau Forest land to OFO (ex-Nelson Forests Limited).

Figure 1 shows land ownership across the OFO NZ Estate as of December 2022.

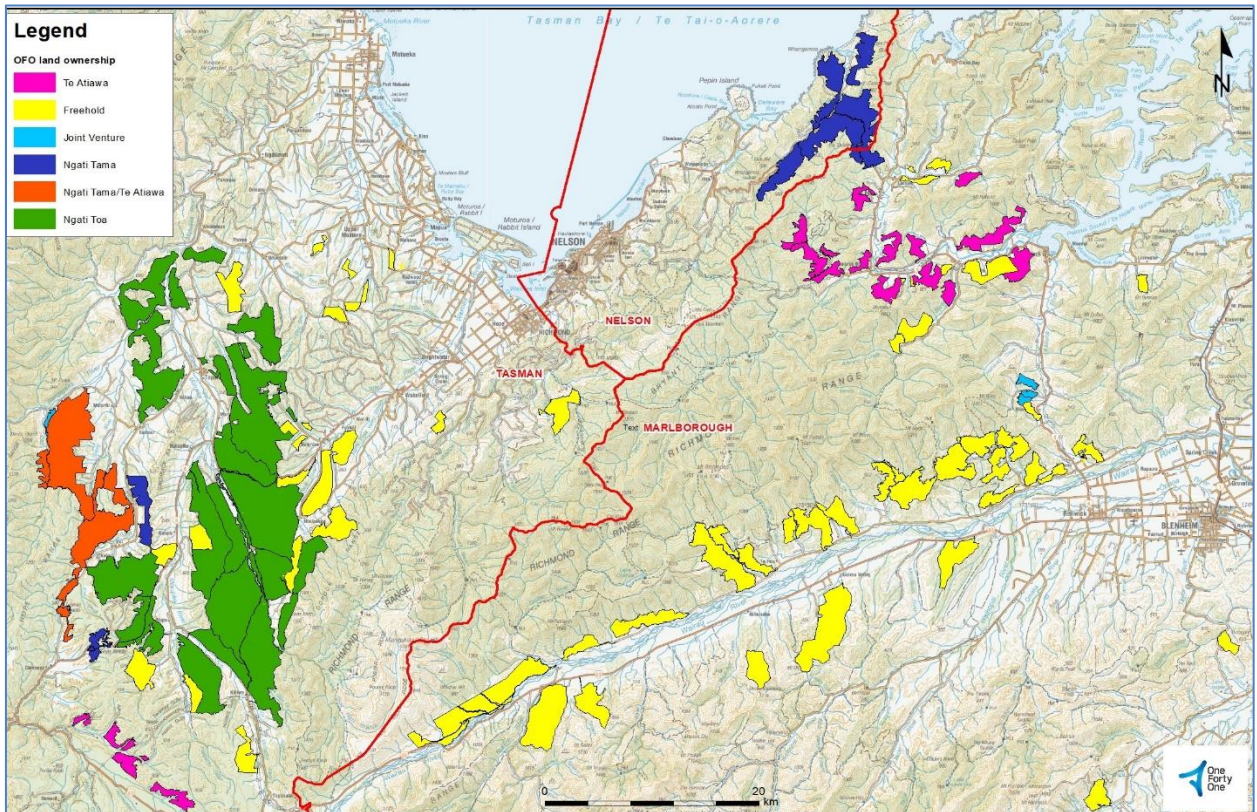


Figure 1. OFO NZ Estate: location and land ownership within each of the three regions.

2.2.1 Golden Downs Forests

Golden Downs is the largest forest unit in the Tasman region, southwest of Nelson City. Golden Downs has a range of geographical features from very steep broken hill country bordering the Kahurangi National Park to easy rolling hill country and river flats. The State Highway from Nelson to the West Coast (SH6) bisects the forest. Several rivers flow through Golden Downs Forest including the Baton, Motueka, Motupiko, Wangapeka, Tadmor, Dart and Stanley Brook. Most of the forest is situated on Moutere gravel soils. Smaller outlying blocks to the west are on soils classed as separation point granites, which are regarded as highly erodible. Land use adjacent to the forest is predominantly farming, forestry and conservation.

Many of the Nelson freehold forests lie on the foothills of the Waimea basin (Serpentine, Kainui, Moutere, Te Hepe and Brightwater). Smaller freehold forests are located adjacent to Golden Downs Forest (Korere). Topography consists of rolling to steep hill country. Land use adjacent to the forest is predominantly farming, lifestyle farming, viticulture, forestry and conservation.

The total area of these forests is 49,232 hectares.

2.2.2 Rai Forest

Rai Forest lies on both sides of the Nelson-Blenheim highway (SH6) in several blocks and extends from the top of the Whangamoia saddle to the township of Havelock. Most of the valley systems leading off the highway and running out to the eastern coastline of Tasman Bay contain parts of the forest. The Whangamoia, Rai, Wakamarina and Pelorus Rivers run through parts of the forest. Soils are

predominantly clay soils on steep topography. Mineral belts (Serpentine) run through small parts of the forest. Land use adjacent to the forest is predominantly dairy and dry stock farming, lifestyle farming, forestry and conservation.

The total area of these forests is 11,182 hectares.

2.2.3 Wairau Freehold Forest

The freehold forests in Marlborough include Wairau North and Manuka Island, which are situated on the eastern side of Mt Richmond Forest Park. The Wairau North Forest is made up of a series of blocks, which extend along the north bank of the Wairau River to the south-west of the SH63 Bridge (Washbridge). Topography consists of rolling to steep hill country. Soils are predominantly Onamalutu steepland soils. Land use adjacent to the forest is predominantly farming, viticulture, lifestyle farming, forestry and conservation.

The remaining Marlborough Freehold forests include Wairau South Forest, Linkwater, Wakamarina, Kaituna Mill, the Opouri Valley and the Awatere Valley. Topography consists of rolling to steep hill country. Land use adjacent to the forest is predominantly farming, lifestyle farming, viticulture, forestry and conservation.

The total area of these forests is 19,252 hectares.

2.2.4 Joint Venture Forests

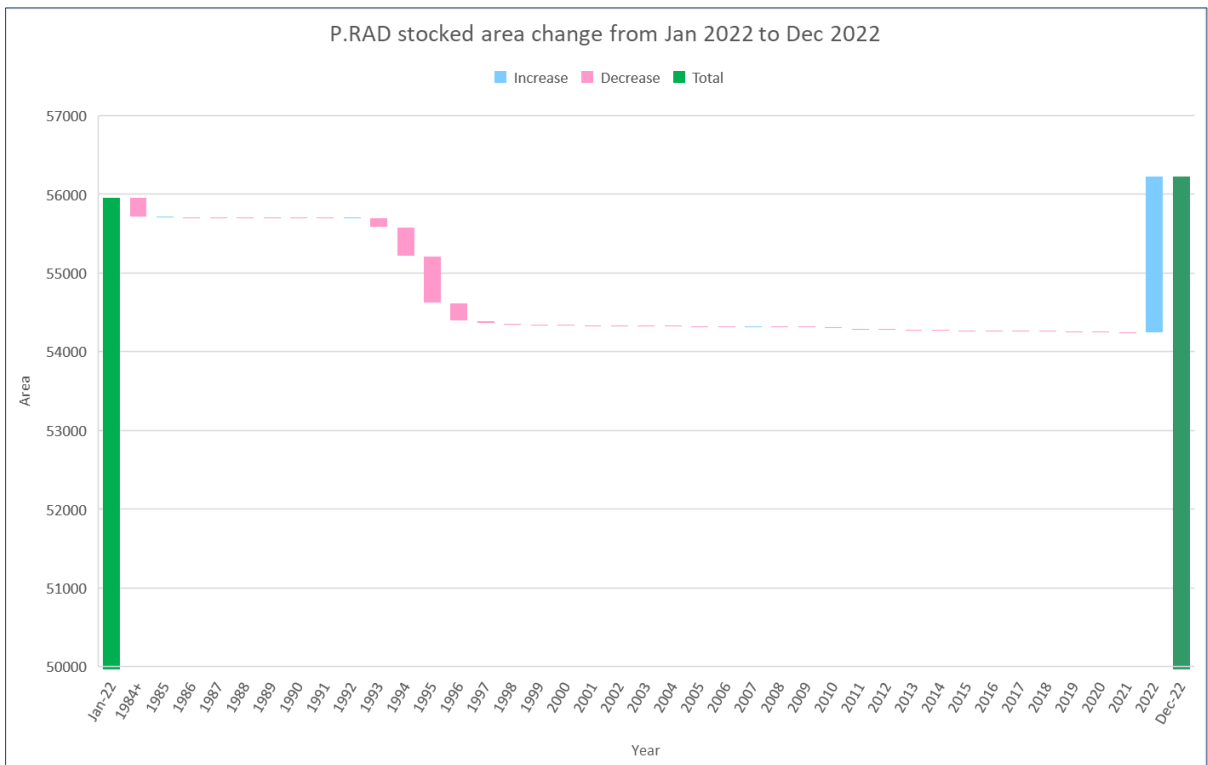
Three relatively small joint venture forests are established in the Tasman and Marlborough regions covering an area of 345 hectares (as of December 2022 and included in the totals above). The joint ventures are set up as Forestry Right agreements.

2.3 Major plantation species area change report

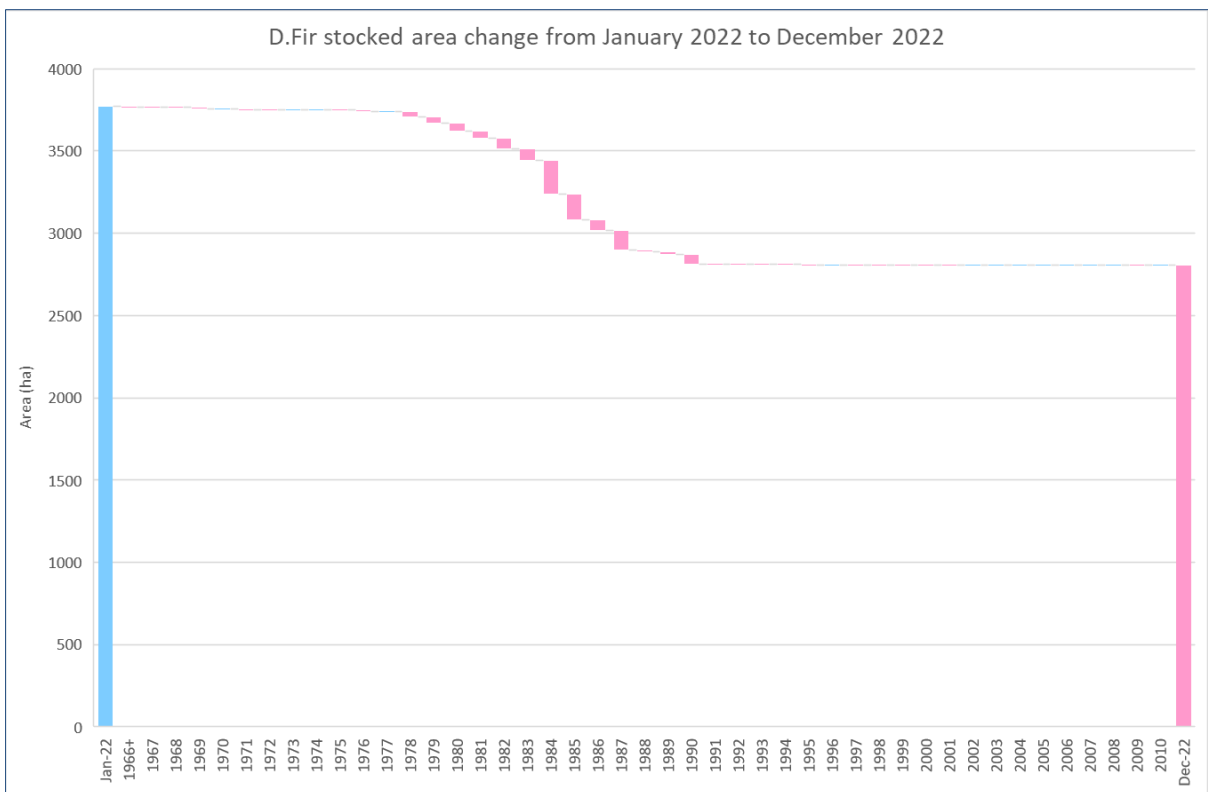
The current strategy of OFO NZ is to replant all productive areas into *Pinus radiata*, which is driving an uplift in the overall *P.radiata* area each year. The stocked area of this species increased by 280 ha between 1 January and 31 December 2022.

Graph 1 shows the change in *P.radiata* stocked area over the past year with decreases reflecting harvesting activity in the 1992 to 1995 age-classes (harvest ages ranging from 26 to 30 years old). Other minor changes are due to ongoing remapping for inventory measurement and mapping of wind damage and miscellaneous unstocked gaps.

During 2022 the stocked area of Douglas fir decreased from 3,327 hectares to 2,806 hectares in line with the decision to replant D.fir harvested areas with *Pinus radiata*. Total Douglas fir area decreased by 521 hectares (Graph 2. Douglas fir area change report from January to December 2022. Graph 2).



Graph 1. Pinus radiata area change report from January to December 2022.



Graph 2. Douglas fir area change report from January to December 2022.

3 Management Objectives

OFO NZ primary objective is to return value to the owners of the forests it manages through the development, management and harvesting of productive and high-quality forests in a safe and sustainable manner.

OFO NZ seeks to achieve its objective through innovative business strategies, proactive management of natural and physical resources, and building strong relationships with stakeholders. We have a strong commitment to managing the land the trees are growing on for our shareholders, landowners, stakeholders, and surrounding communities to ensure the long-term sustainability of our forests.

OFO NZ actively manages its responsibilities in the areas of biodiversity, soil and waterways protection, reserve management, recreation and public access and protection of archaeological sites within the forest Estate. The following is a summary of the key objectives of OFO NZ.

3.1 Forest Management Objectives

- Manage the forest Estate as a renewable and sustainable resource.
- Practice silviculture consistent with best management practice and the maximisation of value to the forest owner.
- Monitor tree breeding to provide the most appropriate stock for the forests.
- Harvest trees as close as possible to the most economically effective age.
- Proactively manage risks to forest health such as fire, pests, and disease.
- Create employment and contracting opportunities for members of local communities within the constraints of meeting other performance criteria.

3.2 Health, Safety and Wellbeing Objectives

- Undertake industry benchmarking, external audits and reviews and participate in health and safety forums to challenge and inform us about how to improve.
- Focus on leadership, worker engagement and risk management, to ensure that wellbeing, health and safety is embedded in the way we do business and that we deliver positive outcomes.
- Ensure that all employees and contractors are trained and competent to undertake their jobs safely.
- Manage the Estate in compliance with all health and safety regulations.

3.3 Quality Objectives

- Focus on effective planning to achieve process reliability across the forest growing and harvesting cycle.
- Establishment and silviculture practices are managed through best practice documents in a forestry operation manual.
- Process reliability in log manufacture incorporates calibration of processing equipment, operator training and a systematic sample (quality assurance) of product from all OFO harvest crews on a weekly basis.
- Information is distributed internally on a weekly basis and shared with contractors and customers monthly.

3.4 Financial Objectives

- The pursuit of financial excellence will be dependent on obtaining and maintaining an

internationally competitive cost position that allows the capture of the value naturally inherent in our Estate, and which will be further enhanced by a dedication to customer needs.

- As a medium-sized organisation we can focus on a small number of critical customers whom we aim to provide with a consistent product and service.

3.5 Stewardship Objectives

- Manage the Estate in compliance with:
 - OFO NZ's Environmental Management System (EMS).
 - Relevant legislation includes the *Resource Management Act 1991*, *Heritage NZ Pouhere Taonga Act 2014*, and *Health and Safety at Work Act 2015*.
 - NZ Forest Accord (1991).
 - Principles for Commercial Plantation Forest Management in NZ (1995).
 - NZ Wilding Conifer Management Strategy.
 - The requirements of voluntary certification systems that OFO NZ is certified (Forest Stewardship Council® (FSC®)).
- Identify and allow for environmental, cultural and social values when planning and undertaking operations to minimise negative impacts on the environment and the community.
- Identify and protect areas of significant ecological and scientific value within our managed forests and put in place processes to protect and enhance identified values.
- Manage our forests sustainably and minimise adverse effects of forest operations on soil and water values.
- Minimise impact of operations on archaeological and historic sites.
- Minimise impact of operations on amenity values (visual, noise, air) and neighbouring properties.
- Manage and use pesticides (including fertilisers) responsibly and seek to minimise the use of pesticides in our operations as far as practical.
- Capture and learn from environmental incidents through reporting, investigation and sharing of learnings.
- Ensure employees and contractor workers receive appropriate training to comply with the law and the requirements OFO NZ's Environmental Management System (EMS).
- Monitor environmental outcomes, and research new ways to minimise impacts of forestry operations on the environment as well as maximise environmental benefits of forests.
- Recognise the recreational value of the forest Estate to local communities and the public and proactively manage public access while managing the health, safety and wellbeing of people and environmental impacts.
- Identify areas within our Estate that meet the definition of high conservation value (HCV), significant natural areas (SNA) and significant biodiversity values and manage these in accordance with relevant regulatory and certification requirements.
- Actively pursue initiatives to reduce carbon emissions from operations under our management.

3.6 Forest Stewardship Council® Certification

OFO NZ operations have been continuously certified by FSC® since 2010 (*FSC Certificate Number SGSCH-FM/COC-007381, License Code FSC-C074692*).

FSC is an international, non-governmental organisation founded in 1994 and is dedicated to promoting responsible management of the world's forests. FSC's pioneering certification system, which now covers more than 200 million hectares of forest, enables businesses and consumers to choose wood, paper and other forest products made with materials that support responsible forestry.

All forests certified by FSC must comply with an international Standard with a set of rules called the *Principles and Criteria*. A new FSC Standard for New Zealand was released in early 2023 ([FSC-STD-NZL-02-2023 Plantations EN](#)). The requirements of FSC cover the full range of forest management, including complying with the law, environmental values (water quality impacts, soils, biodiversity, pesticide use, etc.), social requirements (worker rights, indigenous people's rights, stakeholder, and community benefits, etc.), alternative benefits of the forest beyond core forest products, and sound and economically viable forest management practices. FSC accredits auditors to undertake annual audits of FSC certified forestry operations to confirm compliance with FSC requirements.

For further information about FSC visit their website www.ic.fsc.org and www.anz.fsc.org.

3.7 External Agreements

As a member of the New Zealand Forest Owners Association, OFO NZ is bound by the requirements of the New Zealand Forest Accord (1991) and the Principles for Commercial Plantation Forest Management in New Zealand (1995).

The Forest Accord protects remaining indigenous forest remnants within the plantation forest that meet minimum size and quality criteria from clearance and conversion to plantation forest. All New Zealand Forest Accord vegetation in the OFO NZ's Estate is identified in the company geographic information system (GIS) and is protected.

The Principles for Commercial Plantation Forest Management in New Zealand are complementary to the New Zealand Forest Accord and cover a range of broader principles to promote environmental excellence in plantation forest management, and the protection, preservation, and sustainable management of native forests.

4 Overview of Forest Operations

4.1 Species Selection

Establishment and silviculture practices are adopted with the objective of maximising the value of the forest resource while mitigating and/ or managing any risk factors. Radiata pine (*Pinus radiata*) is the predominant species. Radiata pine has been selected as the preferred species following extensive trials and numerous regime analyses over time. Trials ([Figure 2](#)) also exist within the forest evaluating other potential commercial species. The type of tree grown in the Nelson region has good density and branching habit, which assists in meeting product consistency and recovery.

4.2 Silviculture Management

OFOs objective of tree crop management is to produce high-quality structural logs with high wood stiffness and small branching. The Estate is managed on a standard regime for radiata pine, being the species most adapted to the sites that the Estate occupies.

4.2.1 Land Preparation

On ground-based sites (typically below 26 degrees slope) mechanical land preparation is practiced to slash rake the site and windrow woody debris, where required, so that cuttings and seedlings can be planted into the soil. Approximately 30% of the area to be planted each year is treated by this method.

A pre-plant spray is used on all sites to kill weeds and regenerating conifers from the cones of the previous crop, before establishing the radiata cuttings or seedlings. A record of our pesticide management is kept.



Figure 2. N100 Douglas fir trial plot, Golden Downs Forest.

4.2.2 Establishment and Thinning

The current establishment strategy is to plant all sites into radiata pine for a structural regime.

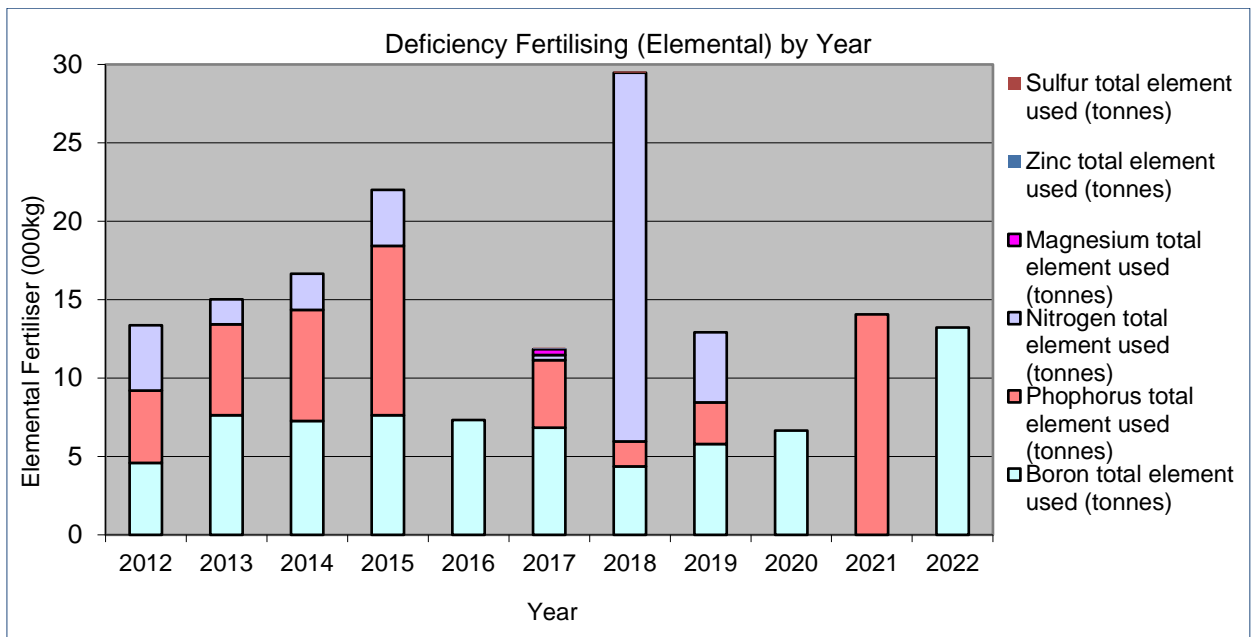
Approximately 15% of the planting stock is cuttings with the remaining stock a 70/30 mix of control and open pollinated bareroot seedlings. Clonal plants are being trialled but no significant areas are planted in clonal material. The initial stocking for most of the sites is 800 seedlings per hectare (sph) with the intention of a non-commercial thinning to take place when the trees achieve a target mean top height (MTH) of 14 meters to a final crop stocking of 550 sph.

In areas where either the terrain makes thinning to waste too risky or where the risk of windthrow is too high, a plant and leave strategy is used. In this case, an initial stocking of 667 sph is practiced.

No commercial pruning is undertaken.

4.2.3 Fertilising application

Current site fertility management decisions are based on annual foliar analysis. The primary objective is to correct elemental deficiencies in the tree when values fall below a deficiency threshold or an imbalance between elements creates an induced deficiency ([Graph 3](#)). Optimal nutrient ratios are also considered for their opportunity to increase growth.



Graph 3. Total elemental fertiliser applied to the FMU each calendar year recorded over a 10-year period.

A measure of plantation forestry sustainability is crop nutrition. Each year the 3-year-old age class foliage is sampled for foliar nutrition, and fertiliser is applied to correct any deficiencies. The application of fertiliser is a measure of the fertility of the land occupied by the current 3-year-old age class. Boron is applied to approximately 48% of the Estate by 4 years old. Nitrogen and/or phosphorus is applied to approximately 4% of the Estate by 10 years old but depends on foliar sampling results and product costs. These fertilisers are generally applied aerially in spring or autumn.

There is a network of over 26 historic and current replicated and operational fertiliser trials (over 100 plots) across the Estate. They explore a wide range of products at varying rates and intervention levels and give valuable insight into the effects of fertilising on crop health and growth. A relational model is currently being created to exploit this information and assist in site specific fertilising decisions to be made. It incorporates financial and physical inputs, a fertilizer optimizer, sensitivity analysis, and volume and grade outputs.

4.2.4 Pesticide application

The rate per hectare of pesticides varies according to the weed type and vigour.

Average glyphosate-use per hectare in 2022 has increased from 2021. Higher per hectare rates are used when more stubborn weeds (Broom) are present or where weeds have more advanced growth. Advanced growth is often due to not using a hold spray or due to delayed timing, so a higher rate is applied to improve effectiveness of weed knock down.

Terbutylazine and hexazinone use has had another increase in average rate per hectare due to aerial releasing, opposed to spot releasing, a portion of 2022 planting. Aerial release improved worker safety by removing them from steep or high hinderance slopes.

Clopyralid, used in age 2 aerial releasing, had a reduction in average rate per hectare from 2021 owing to a program mix that included sites with less vigorous broom where a lower pesticide rate would provide effective control. Pesticide application is also required to control noxious weeds (Figure 3) in accordance with the requirements of regional pest management strategies prepared by Regional Councils.



Figure 3. *Pampus* (*Cortaderia sellonana*, *Cortaderia jubata*) can smother tree seedlings. In scrub areas they prevent native regeneration. Pampas can be a fire hazard due to the large amount of dry matter it produces.

4.2.5 Forest health

An annual forest health survey is undertaken within the OFO estate as part of the New Zealand Forest Owners Association's national biosecurity surveillance program. This program takes a national, risk-based approach to monitoring forest biosecurity.

Under the national program, much of the OFO NZ Estate is considered low risk and it is not considered necessary to undertake 100% annual surveillance.

To supplement the area surveyed in the national program, OFO NZ directs areas planned for *Douglas fir* harvesting to be assessed as part of the non-model allocation (NMA) surveillance. This additional surveillance is to reassure Douglas-fir customers that our forests are free from *Phytophthora kernoviae* and *Phytophthora ramorum*.

Surveillance undertaken by SPS Biosecurity Ltd in 2022 identified *Phytophthora aleatoria* in foliage dieback in one sample which is very unusual. This unusual diagnostic result will be further investigated with contamination a possible reason. All other observations were consistent with previous surveys and the forest was in generally very good health. Detailed reports are available on request to approved parties.

4.2.6 Pest control

Pests have significant economic, environmental, and cultural impacts on the forest estate and wider community. A 'pest' can be a plant, animal, fungi, micro-organism, or pathogen that is adversely affecting something of value including people's wellbeing, plantation crops, and indigenous biodiversity values.

Pests are currently controlled in the Estate for the following objectives:

- To maintain safe working conditions (e.g. wasp control, clearing road side vegetation for safe driving, reducing hindrance levels in stands for silvicultural operations).
- To comply with Regional Pest Management Strategies.
- To maintain ecological, landscape, and amenity values.
- To ensure that a successful crop is established.
- To be a responsible neighbour, in situations where weeds are spreading from the Estate.

- To eradicate a new invasive pest species, or to slow the spread of an existing plant pest species.
- To promote forest fire safety by reducing the amount of flammable vegetation in forests.

OFO NZ is committed to having an integrated pest management program that achieves industry best practice.

4.3 Fire Protection

Management of rural fires comes under the jurisdiction of Fire and Emergency New Zealand (FENZ).

In October 2021 FENZ implemented a unified district structure across New Zealand. At this point the funding by FENZ of contractors and forest company fire training, along with the maintenance of fire appliances, ceased in the Nelson /Marlborough district.

To maintain the collaboration FENZ, OFO NZ, Tasman Pine Forests and PF Olsen came together under a memorandum of understanding (MOU) to offer FENZ both people and plant resources in assisting FENZ meet its legal mandate and responsibility for the suppression of wildfire. As part of this MOU a rural fire contractor has been employed to maintain equipment, arrange training, represent the Top of the South on the NZ Forest Owners Association Fire Committee, as well as being a key liaison point to FENZ.

OFO NZ provides trained personnel to Te Tau Ihu fire region and has four fire appliances: two appliances in Tapawera and one each in Canvastown and Kaituna. OFO NZ provides experienced employees in Incident Management Team (IMT) and OFO contractors contribute to firefighting positions.

Following the 2019 Pigeon Valley fire event, OFO have been enhancing (maintenance and installation) the waterpoint coverage with the goal of a network of waterpoints suitable for helicopter dipping within 2km of all areas of the Estate allowing immediate aerial attack of any fire starts within or neighbouring the estate.

There were no significant fires in 2022 in the OFO Estate that required response by forestry crews. OFO NZ fire appliances have been utilised by FENZ in response to fires outside the Estate.

The Fire Prevention Guidelines for Forestry Operations (2022 version) ensure consistency in fire prevention management of similar risk forestry operations and clarifying rules around operation restriction in very high and extreme fire conditions. The Build-up index (BUI), a measure of the relative availability of heavy fuels to burn, is used as the basis to determine fire risk in the estate ([Figure 4](#)).

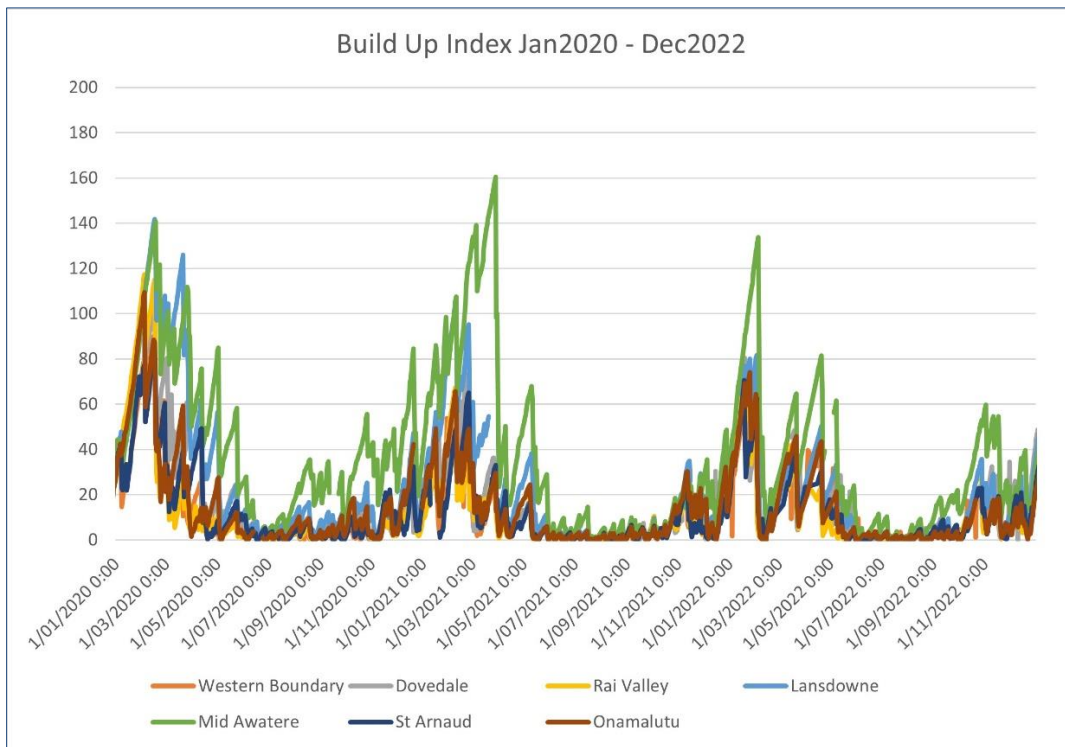


Figure 4. Build Up Index (BUI) by weather stations and date for 2020 to 2022. BUI's exceeding 60 require additional risk reduction and readiness activities, as per the Fire Prevention Guidelines for Forestry Operations.

The fire weather index (FWI), a measure of potential fire intensity, is used to escalate the fire risk from the base BUI. Typically, windy conditions will increase the FWI above 25 and are classed as extreme fire danger days with additional restrictions and risk reduction activities undertaken (Figure 5).

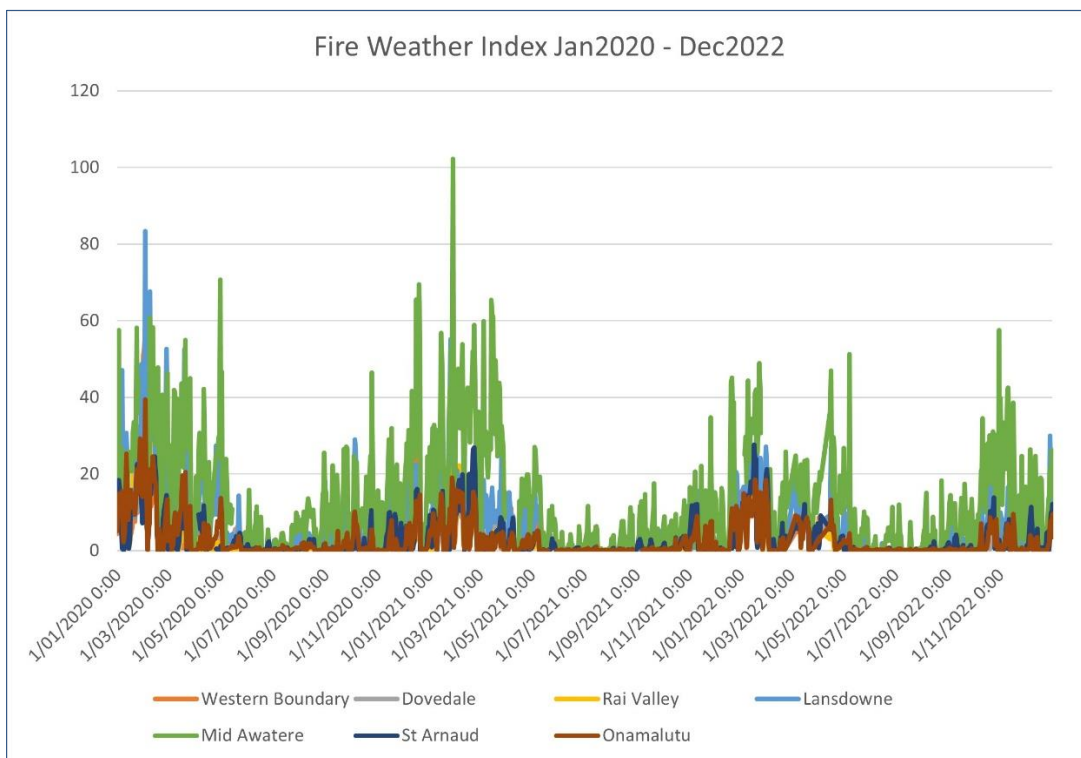


Figure 5. Fire Weather Index (FWI) by weather station for date 2020 to 2022.

4.4 Harvest Operations

4.4.1 Harvest Planning

A comprehensive planning process determines how and when to harvest the wood resource in the Estate. Planning for harvesting of the forest is developed from a long-term forest Estate model which is then refined down to a more detailed five-year plan, and then translated into annual harvest plans. This process involves balancing a range of factors such as predicted forest growth, customer requirements (grade and volume), harvesting capacity, access, third-party ownership requirements, and other environmental constraints. OFO NZ aims to harvest its Estate as close as possible to the optimum tree age for each stand.

The Estate has a relatively even age class distribution although within each region there are significant variations. This means that the total harvest levels can be relatively stable over time, but there will be regional fluctuations in harvesting activity. However, the ability to alter the harvest to respond to market demand fluctuations does exist.

Minor species within the Estate were first established by the NZ Forest Service as part of a mandate to identify other viable timber species. Minor species that are small remnants are harvested when adjacent harvest operation allows. Stumpage harvest programs are focused on minor species as well as on Douglas fir.

All harvesting and engineering and forestry operations carried out in OFO NZ managed forests must have a harvest plan or work prescription in place. One aspect of harvest planning is the identification of all environmental risks of the operation and specifying controls to manage those risks and to ensure compliance with all legal, certification and company requirements including resource consent conditions and permitted activity rules. Key factors considered in harvest planning are:

- Health and Safety – the method that is the most appropriate for the topography and nature of land so that the potential for injury is minimised.
- Environment – the method creates the least impact on the environment.
- Financial – the method is the most practical and cost effective for the area taking safety and environmental considerations into account.

4.4.2 Harvesting

OFO NZ is committed to adopting harvesting techniques and technology that minimise the impact on the environment and reduce the risk of accidents and injuries. Harvesting is undertaken by two key methods:

- Ground-based harvesting – Used on easier terrain (generally <25 degrees), trees are felled and extracted by machines to a processing area. In ground-based terrain, all falling is carried out with mechanised felling machines to minimise the risk of injury during the falling operation. Only a very small proportion of ground-based areas are manually felled where the area is inaccessible to machinery. The stems are typically transported to the processing area by skidders or forwarders, and in some instances by shovel logging.
- Cable harvesting – Used on steeper country (generally >25 degrees), fallen stems are extracted using a hauler (either swing yarder or tower) with trees attached by strops to a cable or extracted by grapple or claw, then hauled to a processing area. Only a very small proportion of manual falling in steep country is used due to inaccessibility to machinery.

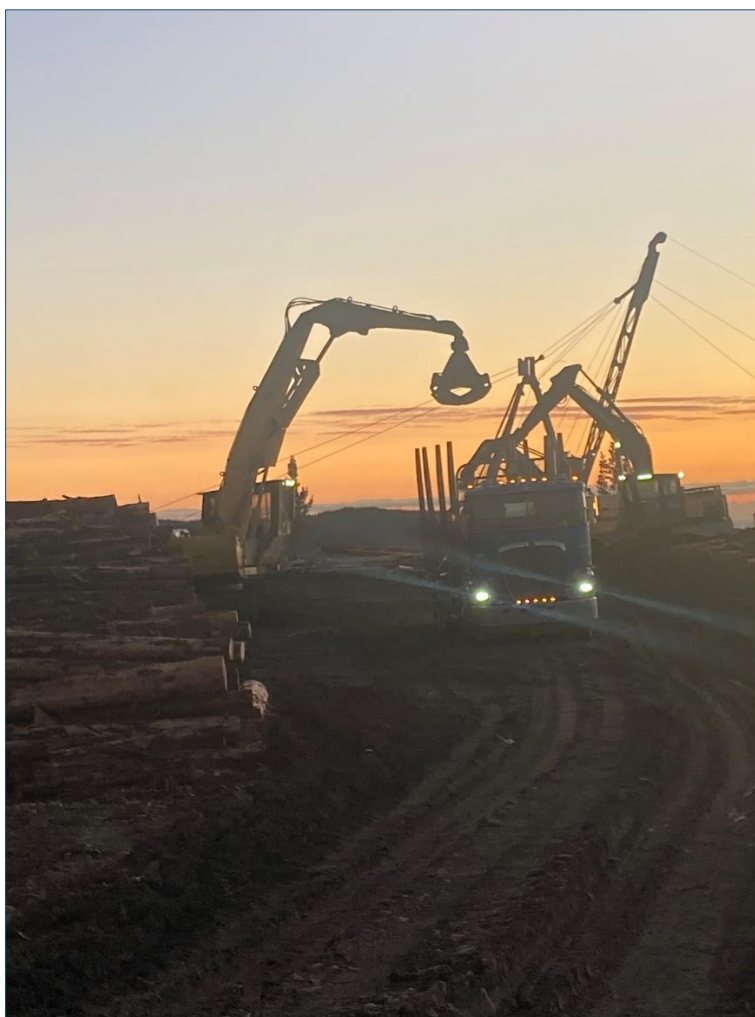


Figure 6. Early morning load out from a harvest landing, Golden Downs Forest (photo M. McCarthy).

4.4.3 Annual Production

Timber production by species, total volume per hectare, stocking per hectare, age, regime type, log grades, total recovered volumes against predicted volume and harvesting methods are key metrics monitored by OFO NZ.

Harvested volumes for 2022 from the OFO NZ Estate is over one million cubic meters (Table 2).

Table 2. Annual harvested volume (m³) between 1 January and 31 December 2022. Minor species comprise macrocarpa, eucalyptus, Lawson, larch, redwood.

Harvested	Volume (m ³)
Radiata pine	774,202
Douglas fir	233,126
Minor species	3,764
Total	1,011,092

4.5 Forest Modelling

Forest modelling is undertaken on several different levels to predict the productivity of the forest estate. Modelling seeks to achieve a non-declining wood yield to be determined, as well as predicting the likely grade outturn to assist in developing potential future markets and meeting customer demands.

Operational areas within the estate are mapped monthly from satellite imagery. Aerial photography is undertaken each quarter and the estate is remapped to account for harvest depletions, mapping corrections and any stand losses due to windstorm or fire events.

Stand records are maintained in a geographical information system (LRM) summarizing every operation undertaken. Detailed inventory (stocking and stem form) is collected from the stands within the Estate as the stands approach maturity/harvest age. LRM supports resource planning (Figure 7) and supply chain planning processes (Figure 8). Together these processes form the basis of timber production management. The information generated is commercially sensitive and is therefore not reported in the management plan or made public.

Process	Time frame	Period length	Review	Model
Estate Run	30+ Years	Year	July	Estate Model
Budget/Equipment Allocation Plan	3-5 Years	Month	September	Tactical Harvest Model (THM)
Sales & Operational Plan	18 Months	Month	Monthly	Crew Scheduler Model (CrewSO)
Master Production Schedule	3 Months	Week	Monthly	Crew Scheduler Model (CrewSO)

Figure 7. Resource planning matrix.

Plan	Reviewed	Time Frame in View	Purpose
Sales and Operational Plan	Monthly	1-18 months	Balances Demand and Supply Links business plan to operational plans Creates cash forecasts, Scenario analysis Value Optimisation across the supply chain
Master Production Schedule	Monthly	1-6 months	Translates SOP plan into detailed plans in order to plan roading, harvest, trucking capacity, schedule crews GFMS
Weekly Woodflow	Weekly	Weekly	Matches customer orders with production in detail Optimised "Right grade, Right Customer, Right Stand"
Cut Cards	Weekly	Weekly	Instructions to harvest crews Grades required from each stand

Figure 8. Sales and operation planning horizon matrix.

5 Health, Safety and Wellbeing

At OFO NZ we are driven to ensure that every person comes to work and goes 'Home Safe and Well' every day.

Our Safety Culture reflects our values, attitudes, perceptions, competencies, and behaviours. It influences the safety and wellbeing of our people and how we perform our work, the values we convey

and the relationships we develop. It says a lot about our commitment to safety as well as the effectiveness of our management system.

Through OFO NZ’s Strategy a plan (Figure 9) is set out to strengthen our safety culture through continuous improvement, learning and innovation. It is a journey of continuous improvement, and we are dedicated to empowering people at all levels to take a proactive and collaborative approach to all aspects of health, safety and wellbeing. OFO NZ’s Health and Safety policy is attached in Appendix I.



Figure 9. Plan on a Page - OFO NZ Purpose, Strategic Priorities and Values underpin the health, safety and wellbeing strategy.

6 Environmental Stewardship

OFO NZ is committed to maintaining a high standard of environmental stewardship when managing our forests and activities and ensuring the long-term sustainability of our operations. Environmental effects are a key consideration when planning and managing our operations, second only to ensuring operations are undertaken safely.

The following sections provide more information about the key aspects of OFO NZ’s environmental stewardship programs.

OFO NZ Environmental Policy and Principles is attached in Appendix II.

6.1 The Environment and Forestry Activities

Forestry activities encompassing silvicultural and harvesting operations can have both beneficial and adverse impacts on the environment depending on the quality of environmental and operational planning and management. Well managed forests can:

- enhance water quality;
- stabilise and conserve soil;
- provide a buffer against flood flows during storms;

- shade waterways keeping water cool for enhanced freshwater aquatic life;
- provide habitat for rare, threatened and endangered native species;
- sequester carbon to combat climate change; and
- provide recreational, economic, and social benefits to the community.

OFO NZ implements a range of measures at each stage of its operations to prevent or minimise the adverse impacts of its forestry activities on the environment. The company audits and reviews its performance standards regularly to ensure that its systems continue protecting natural and physical resources effectively.

OFO NZ’s Environmental Management System (EMS) is the primary tool used for ensuring that company operations meet the highest environmental standards. The EMS contains processes to be followed from initial planning through to completion of operations. It also sets out auditing, monitoring and review procedures that help to ensure continuous improvement of environmental performance.

The EMS sets out clearly the company’s obligations, and those of its contractors, to protect identified environmental values in the areas we operate. These areas include waterbodies and wetlands, indigenous vegetation, riparian, neighbours’ boundaries, protected areas, historic and cultural sites, and high value landscapes. Specific procedures, including monitoring the impact of operations, are followed to ensure protection of these special values.

Any forest establishment work (including pesticide application), earthworks and harvesting operations that have the potential to impact on areas of high ecological value are identified as high risk. Work in such areas is carefully planned, mapped, and prescribed. Specific environmental protection requirements are provided for operators to follow. Operators undergo training and receive specific in-situ advice to ensure they understand the importance of these issues.

Contractors must follow the prescription plan and monitor their operations on a day-to-day basis to ensure that such sites are being safeguarded. Ensuring that protected areas and sensitive areas (e.g. adjacent indigenous vegetation, wetlands and streams) are not damaged is a focus.

The EMS is designed to ensure that the company follows all the regulatory requirements and meets agreed industry standards.

6.2 Operational Planning

Planning is the first critical step in managing the environmental outcomes of our operations. It sets the framework for the **plan/do/check/adjust** structure of continuous improvement.



The National Environment Standards for Plantation Forestry (NES-PF) contains permitted activity standards for many activities. While the EMS is in alignment with the NES-PF, at times the EMS will require a higher level of standards and performance.

Where a planned activity cannot meet the EMS standards but does meet the NES-PF permitted activity rule(s), the approval of the relevant operational manager is required. Once the relevant operational manager has given documented approval, the proposed activity may proceed in accordance with the NES-PF.

At the beginning of the planning phase of harvesting, establishment, or earthworks operations, it is determined whether a resource consent under the *Resource Management Act* or an Authority under the *Heritage NZ Pouhere Taonga Act* is required. OFO NZ undertakes consultation with all those parties who may be affected by the operation. Where a resource consent is required, an application, which includes an assessment of the actual and potential effects of the proposed activity, is submitted to the local authority. The application also provides details of the measures to be used to prevent or minimise adverse effects.

The OFO Operations team is responsible for activity and operation plan development, implementation, and operational compliance. Planning requires equal consideration of safety, values and environmental effects. The activity/operations plan and/or prescription ultimately sets and determines the scale of the environmental impacts of our operations. All operations must have a work prescription and plan in place before work commences (for harvesting operations this is called a Harvest Plan). Each operation is assigned an environmental risk rating (high, medium or low) based on the characteristics of the site. This alerts the contractor of the relative risk level of the job and is also used by OFO NZ to prioritise the frequency of operational and post-operation audits.

Prior to commencing operations, hazard identification is undertaken onsite with the contractor to ensure all safety and environmental hazards are clearly identified with controls in place.

Contractors are required to comply with the relevant prescription as well as with applicable resource consent conditions. Compliance is monitored by OFO NZ operational staff during and on completion of operations.

6.3 Protection of Threatened Species

Planted forests can provide significant habitat for threatened species. Forestry operations can unintentionally damage or destroy plants, animals and/or their habitats. Pesticide spraying operations can kill non-target plants, mechanical land preparation, earthworks and harvesting can damage or destroy plants and habitats, animal poisoning can kill birds or other animals (cattle, sheep, dogs etc.).

OFO NZ is committed to managing our forests to maintain a diversity of indigenous flora and fauna species. Of particular importance are rare, threatened and endangered (RTE) species living within the Estate ([Figure 10](#)).

The NZ Forest Owners Association in conjunction with the Department of Conservation and other recognised technical specialists have prepared Management Plans for a range of threatened species living in forest estates around the country.



Figure 10. Live Powelliphanta snail (left) and NZ Falcon (right) sighted in OFO NZ Estate. Photos: C. Hocking (snail); D.Parsons (falcon).

6.3.1 Recorded Sightings

In October 2022 a new threatened species app was developed (Survey 123) and rolled out to OFO employees and contractors, followed with group and one-on-one training on the app's use and threatened species in general.

As a result, there has been an increase in threatened species awareness and subsequent reported sightings across the Estate (Table 3 and Table 4). The field guide detailing more information on individual threatened species was updated at the same time the new app was released.

Table 3. Contractor and OFO employees' recorded sightings of species in the Estate. 2022 is combined iNaturalist app and new Threatened Species app. ^ = non-threatened species sighting recorded.

Species Recorded	2022	2021	2020
Kārearea	38	15	8
Weka^	14	1	2
Kea	0	1	5
Kererū^	7	1	0
Robin^	0	0	1
Fierce Lancewood	2	0	0
Kākā	4	0	1
Climbing Galaxias	0	0	2
Total	65	18	19

Table 4. Increase in contractor workforce recorded sightings in 2022, compared to other years, because of the new app.

Observer	2022	2021	2020
OFO employees	56%	89%	79%
Contractor workforce	44%	11%	21%

6.4 Indigenous Protected Areas

6.4.1 General

Just under 11,000 hectares (17%) of OFO NZ's Estate is designated as *conservation areas network (CAN)*. The network comprises of indigenous vegetation remnants located within the boundaries and comprises of:

- Crown Forest License Covenants protected under the Conservation Covenant Act
- Tasman Accord areas protected under the Reserves Act
- Significant Natural Areas (SNA) wetlands mapped/listed/described in a regional plan
- FSC® High conservation value forest (HCV)
- Wetlands
- Indigenous vegetation meeting the NZ Forest Accord
- Sites of Special Wildlife interests and Recommended Areas for Protection
- Ecologically significant areas that have been assessed by a qualified ecologist.

All protected areas are identified in the company GIS mapping system and managed as permanent areas.

6.4.2 Protection Status within Ecological Districts and Regions

A requirement of OFO NZ's FSC® certification is to ensure a minimum of 10% of the management unit area is identified, mapped and managed as *conservation areas network (CAN)*. The identified CAN shall be managed to retain or restore it to the condition of indigenous forest or wetlands. Table 5 shows OFO NZ exceeds the 10% minimum (actual 17.1%) for the ecological districts/regions (Figure 11) except in the Wairau ecological region (i.e. Hillersden and Wither Hills ecological districts).

Table 5. OFO NZ conservation areas network: Thresholds for ecological districts/regions across the Estate. Unstocked gaps, areas awaiting planting, roads and landings within the working forest are not included.

Ecological Region	Ecological District	Total reserve set aside (Ha)	% working forest set asides per ecological DISTRICT	% working forest set asides per ecological REGION
Northwest Nelson	ARTHUR	2,189	58.7%	58.7%
Nelson	BRYANT	448	34.3%	
Nelson	MOUTERE	4,193	12.6%	
Nelson	RED HILLS	177	45.0%	13.8%
Richmond	FISHTAIL	995	15.4%	
Richmond	PARA	439	13.9%	19.1%
Richmond	PELORUS	1,904	24.1%	
Sounds Wellington	D'URVILLE	111	21.5%	
Sounds Wellington	SOUNDS	42	43.1%	25.0%
Spenser	ROTOROA	186	16.1%	16.1%
Inland	WAIHOPAI	57	17.0%	17.0%
Wairau	HILLERSDEN	216	4.0%	
Wairau	WITHER HILLS	0	0.0%	3.9%
		10,958	17.1%	

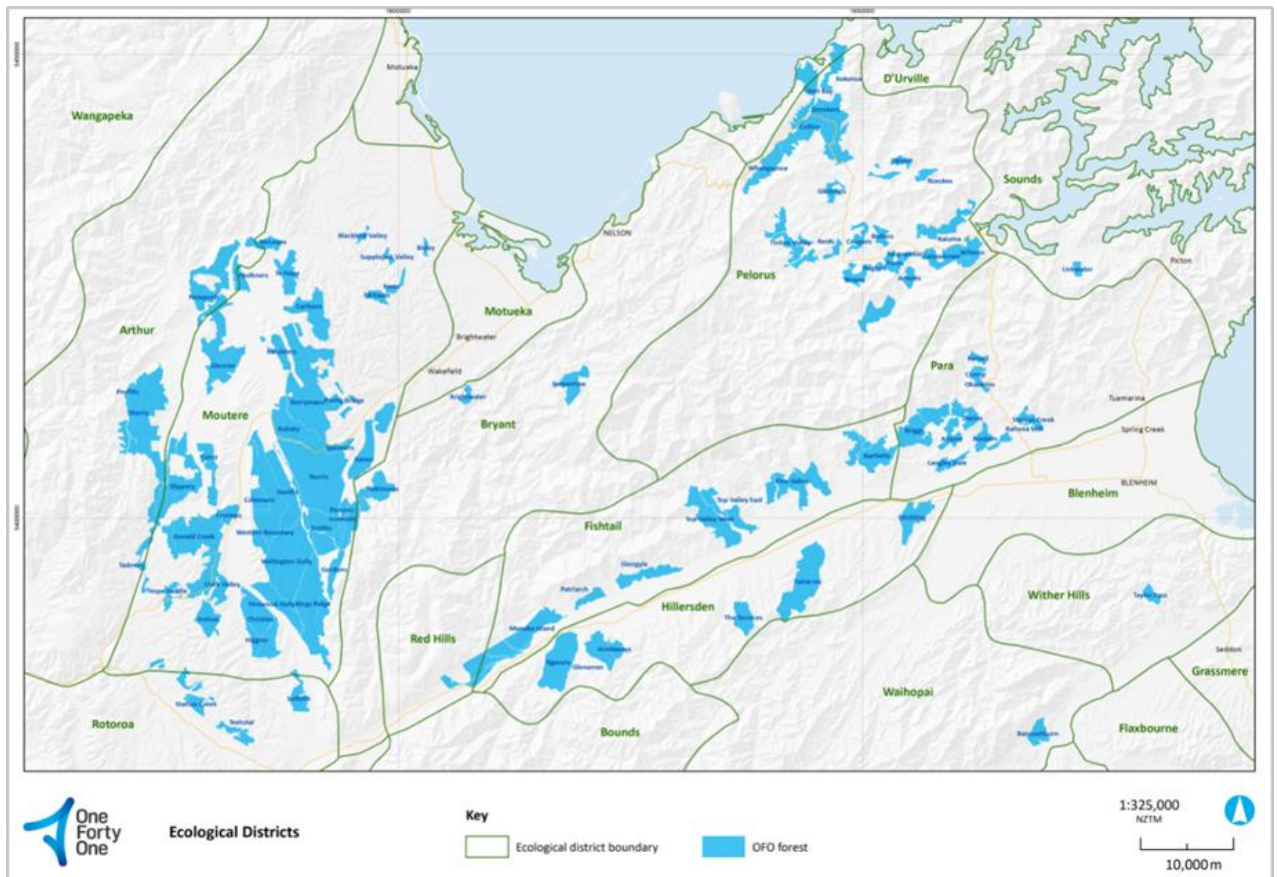


Figure 11. Ecological districts within the OFO NZ Estate.

OFO will be assessing the Wairau region for increased set aside opportunities as we complete harvest of the first rotation over the next ten years. OFO poisoned plantation forest in the Hillersden ecological district in 2021, which resulted in an increase in the set asides for the reporting period.

As part of the Native Habitat Tasman voluntary program with Tasman District Council, OFO remapped existing ecologically assessed protected areas within the Tasman region.

Under our OIO consent, the company commenced mapping proposed areas for inclusion as legal terrestrial indigenous significant natural areas (SNAs) in the proposed Marlborough Environment Plan. This mapping work will continue through 2023 before submission to Marlborough District Council. Wetlands totaling 10.3 hectares in the Manuka Island block have been assessed by Council and included as formal SNA wetlands under the proposed Marlborough Environment Plan in 2022.

To meet the FSC reserve set aside commitments, OFO NZ is contributing over \$100,000 per annum (through to October 2023) to fund a wilding conifer control program in the Mt Richmond Forest Park. This program is in collaboration with the Mount Richmond Forest Park Management Unit Wilding Conifer stakeholder group. The work is regarded as a priority ecological effort for the neighbouring ecological regions of Nelson and Richmond.

In addition to cash contributions, the business is committed to spend slightly less than \$200,000 by June 2024 for direct costs of wilding control in the Mount Richmond Forest Park for a 1-km buffer of the Manuka Island block. The direct control work commenced in May 2020 (Figure 12).

OFO NZ is also committed to wilding conifer control within the Estate, specifically significant natural areas, wetlands and riparian, with the creation of a strategy and an operational management framework using spatial tools. In 2022, \$64,000 has been invested into wilding control.



Figure 12. Manuka Island block and Mt Richmond Forest Park where extensive wilding control is undertaken for a 1-km buffer between land tenure (photo R.Woolley).

6.4.3 High Conservation Value Area Management

There is a High Conservation Value (HCV) area within OFO NZ Estate. Blair Athol Gully in Tasman region is primarily within the Big Bush Conservation Area administered by the Department of Conservation (DoC) but extends across and into the Estate. The site is recognised as containing the nationally critical *Oleria modesta* (creeping foxglove) and nationally endangered *Gratiola concinna* (Figure 13).

OFO completed maintenance weed control work within the margins of the protected site in 2021 targeting broom, gorse, spanish heath, blackberry, and regenerating pine.

In early 2022, DoC built an extension to the fence to include *Ourisia modesta* that was surveyed outside the original fence. This is the largest population of *O. modesta* at the site and is constantly under threat by pig damage. There have been no new pig incursions since August 2021. Other work included removing trees that could likely cause breaks in the fence and maintaining areas where weaknesses were observed. Past damage to the *O. modesta* will take some time to regrow and with the new section of fence, it is hopeful it will protect this population from pigs and allow the plants to recover and expand.



Figure 13. Left: *Ourisia modesta* (creeping foxglove) listed as Threatened-Nationally Critical. Right: *Gratiola concinna* listed as Threatened-Nationally Endangered. Both species identified in the Blair Athol HCV.

6.5 Archaeological Site Management

There are many registered and un-registered archaeological sites within the forest. All sites are protected under the *Heritage New Zealand Pouhere Taonga Act 2014*. An archaeological site is any site in New Zealand that was associated with human activity prior to 1900.

Archaeological sites (including historic buildings) are vulnerable to damage when undertaking earthworks and harvesting. OFO NZ has an archaeological and historic management procedure, which specifies the procedures that must be followed when working around archaeological sites, either known or discovered during operations.

All known sites are recorded in GIS and are considered in the planning of operations. No operations are undertaken that could potentially damage or modify an archaeological site without the necessary authority from Heritage New Zealand Pouhere Taonga. Once the authority is obtained this becomes part of the operational prescription to ensure conditions of the Authority are complied with.

When a notable site is identified during an operation, the procedure requires all work to cease within 20m of the site and the site is visited by an archaeologist and, in the case of Māori sites, local tangata whenua representatives. If the feature is confirmed as an archaeological site a management plan is developed with input from the archaeologist and iwi representatives and, if necessary, an authority is sought from Heritage New Zealand Pouhere Taonga.

In areas of forest with a high likelihood of new sites being discovered, employees and contractors are provided training on identification of archaeological site features and procedures that must be followed in the field.

6.6 Environmental Incident Management

While OFO NZ strives for excellence in the performance of its forestry activities it is inevitable that incident will occur on occasions. When the company becomes aware an incident has occurred, it acts promptly to minimise and remedy adverse impacts on the environment. All incidents are required to be reported and significant incidents are investigated to ensure employees and contractors learn from the experience and management processes are reviewed and revised to avoid repeat incidents.

6.7 Climate Change

OFO NZ has recently developed a Carbon Emissions Reduction Strategy:

“OneFortyOne commits to reduce scope 1 and 2 greenhouse gas emissions by 75% from 2021 levels by 2030. We aim to achieve net zero scope 1, 2 and 3 greenhouse gas emissions by 2050. We will do this primarily by supporting emission reduction technologies in our operations, partnering with suppliers that are consciously taking steps to reduce their own greenhouse gas emissions, and using our forests and expertise to create incremental carbon removal in achieving our net zero goals.”

The 2022 Greenhouse gas emissions/sequestration calculations have been completed using the Forest Industry Carbon Assessment Tool (FICAT). FICAT follows life cycle analysis (LCA) principles and methodologies using international standards. Results obtained include a carbon emission profile, an estimation of forest sequestration due to forest growth and an estimation of the carbon stored in the end use products.

At the end of 2022, OFO NZ Estate store (above and below ground) approximately 43 million tonnes of CO₂e (carbon dioxide equivalent). To put that in perspective, NZ’s total annual emissions in 2022 was 78.8 million tonnes of CO₂e. In addition, the end use products created from OFO NZ’s processing customers store an estimated 480,000 tonnes of CO₂e carbon for the same period.

OFO NZ forestry operations, including transport and shipping, emitted an estimated 59,000 tonnes of

CO2e. Through our Green Emissions Reduction Strategy, we are committed to reducing these emissions through process innovation including the introduction of equipment with lower emission profiles.

7 The Community

Through our management of large areas of forest land, OFO NZ is an integral part of the communities in which it operates, and as a significant business and employer, contributes to the sustainable development of these communities. Community relations are an important focus for the company and OFO NZ is committed to being ethically and socially responsible.

7.1 Stakeholder Engagement

OFO NZ strives to actively engage with stakeholders in the many communities in which we operate, and particularly those directly or indirectly affected by our operations. Prior to commencing harvesting in a new area, OFO NZ engages with representatives of the local community to keep them informed of plans and develop mitigation strategies for identified concerns. Typically, this includes forest neighbours, residents of any rural access roads affected by logging traffic.

7.1.1 Coronation Forest

Each year OFO NZ holds a week-long Coronation Forest commemorative event for schools in the Nelson-Tasman region. In 2022 we had four schools (127 students) aged between 9 and 13 participate in Coronation Forest planting week in September.

Each student plants up to five *Pinus radiata* seedlings and learns about the value of plantation forestry in providing wood for buildings, jobs for people and allowing native forests to be protected.

Activities delivered include:

- Planting plantation trees.
- Walking a conservation trail with ecologists describing the values in New Zealand's natural forest.
- Either visiting a harvesting operation or undertaking a plantation study looking at the features of a growing plantation forest.



Figure 14. Coronation Forest: typical activities at the commemoration week.

7.2 Socio-Economic Conditions

OFO NZ has offices in Richmond and Blenheim and our contracted workforce is spread through several smaller communities in the vicinity of the forests that we manage. The Estate that OFO NZ manages is in areas of rural New Zealand. Forestry and related wood processing remain significant contributors to employment in Nelson-Tasman and Marlborough.

The largest town centre in the Top of the South region, Nelson, also has a strong tourist base, which is enhanced by the plantation forests and their recreational opportunities.

7.3 Sponsorship

During 2022, OFO NZ was pleased to sponsor the following community organisations through sponsorship or community grants:

- Wakefield Fire Brigade
- Moutere Hills RSA Memorial Library (Mapua Community Library)
- Red Cross Pacific Appeal
- Marlborough Boys College
- Queen Charlotte College
- Tapawera School
- Drop for Youth
- Fairhall School
- Rai Area School
- Nav Pasifika Marlborough
- Marlborough Girls College
- Richmond Riding for Disabled Group
- Victory Community Centre – Matariki
- Brook Waimarama Sanctuary Trust
- Tasman Bay Guardians
- Iron Duke Sea Scouts
- Wakatu Riding for the Disabled
- Moutere Community Centre
- Wanderers Community Sports Club
- Moutere Rugby Football Club
- Renwick Menz Shed
- Lions Club Marlborough
- Axeman’s Club
- FC Nelson
- Speak It Up

7.4 Employment

Forest management requires educated and well-trained employees, who understand not just their technical roles, but also the impact on those they lead, health and safety, the environment, and the community.

OFO NZ directly employs approximately 155 employees (45 NZ Forests and 110 Kaituna Sawmill). In addition, OFO NZ engages a significant number of contractors who undertake a range of forest management activities from mensuration and forest protection through to engineering and harvesting.

Employees and contractors receive various levels of training on an on-going basis and are encouraged to continuously improve their performance.

OFO NZ has an active role in initiating training courses to assist young people into the industry in Nelson-Tasman and Marlborough. We are working closely with our community to promote forestry to youth as a career including participating a regional and school career days, promoting the industry via Nelson Regional Development Agency, LifeLab website, Young Enterprise Scheme (YES) sponsorship and judge support, forestry careers and arranging school trips to a working forest (Figure 15) via Nelson Regional Development Agency.

OFO currently has five forestry scholarship students who we support with scholarship funding and holiday work.



Figure 15. Engaging with secondary students in the Top of the South regions to promote forestry as a career. (Photo: M. Buschl)

7.5 Recreation

OFO NZ forests are used for a wide range of recreational activities, including walking, running, mountain biking, motor cross, horse riding, hunting, and a range of other activities. In many cases, the forest is a major recreation resource for local communities.

Access to our forests is managed through an access permit system during period of low fire risk. Hunting is the most popular recreation pastime in the forest (Figure 16). The challenge for OFO NZ is to enable reasonable recreational access to the forests while ensuring protection of environmental and ecological values, and the safety of both recreational users and OFO NZ employees and contractors.

We have long-term access agreements with Nelson-Marlborough Fish and Game for recreational bird hunting, and community groups for horse riding and MTB park development over four forest blocks (combined).

7.6 Commercial Leases

Stock grazing leases have been established in many areas within the OFO NZ Estate. These leases have been established because the land itself was more suited to agricultural use than forests due to access or climatic reasons. OFO maintains grazing permits and charges a commercial lease in line with the term and land value. In 2022, seventeen grazing licenses over 77 hectares were issued/renewed; and 16 licenses were issued giving access to 63,087 hectares for bee keeping.

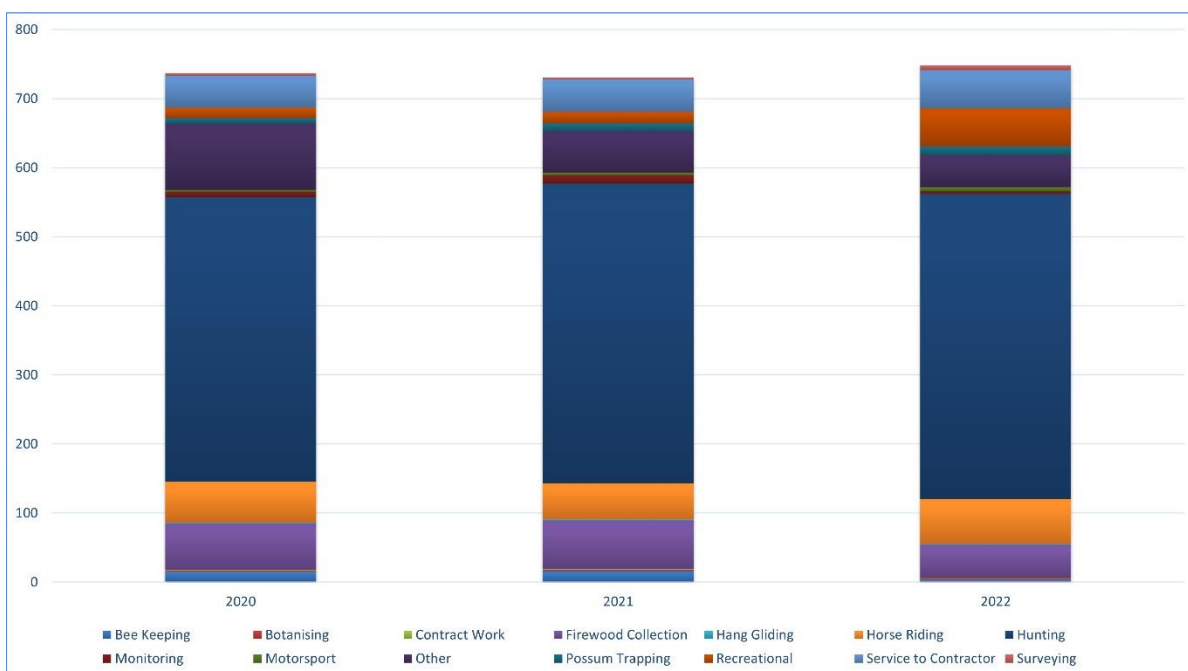


Figure 16. Access permits issued by activity for periods 2020-2022.

7.7 Disputes Resolution

It is OFO NZ intention to proactively manage relationships with stakeholders to avoid situations that progress into complaints or disputes. However, despite the best intentions, such situations will inevitably arise from time to time. It is OFO NZ goal to manage all complaints and disputes ethically and proactively to achieve timely and mutually acceptable solutions wherever practical, and to avoid creating ill-will with OFO NZ stakeholders and risk to the business of OFO NZ or compromising the values or reputations of our clients.

OFO NZ has a *Compliments, Complaints and Disputes* procedure that details the steps that will be followed in the event of a dispute. A copy of the procedure can be made available on request.

8 Monitoring

8.1 General

OFO NZ conducts a comprehensive monitoring program to aid understanding of the impact of its activities on the environment and the impact of the environment on its ability to grow the best trees. This understanding leads to the development of strategies to ensure the company continues to manage its activities in a sustainable way.

In addition to the monitoring reported here, there is extensive operational supervision and management that covers planning, design, performance management and completion reporting of operations and environmental audits. Forest growth and measurement is recorded in forest information systems and is not reported here. Operational decisions are recorded in road line and operations meeting minutes. Contractor performance reporting systems include metrics on delivery, value, volume, productivity, quality control results, environmental and safety performance metrics.

8.2 Operations Monitoring

OFO NZ regularly conducts internal health and safety, and environmental audits to confirm operations have been carried out in accordance with work prescriptions and regulatory requirements, and to identify any corrective actions required.

In the recently updated OFO NZ Environmental Management System, it has been scheduled that the business will undertake five-yearly environmental systems audits with contractors operating in our Estate to ensure they are complying with our Environmental Management Systems and company procedures.

Regional Councils also conduct regular compliance monitoring of operations undertaken under resource consents or the National Environmental Standards for Plantation Forestry (NES-PF) permitted activity rules.

8.3 Biodiversity Monitoring

OFO NZ conducts a range of surveys across the Estate to monitor both impacts of forestry operations on indigenous fauna and to monitor the health and changes to populations. The monitoring program currently includes:

- Annual monitoring of stream health (SHMAK) in selected streams across the Estate. OFO NZ changed its monitoring methodologies in 2022 to include eDNA, which enables information on species presence to be monitored through DNA analysis of water samples. In 2022, 29 streams were included in the SHMAK program (Figure 17). The eDNA health of the streams range between pristine to very good overall.
- Annual monitoring of HCV site to monitor the health of species values resulting in HCV status. This monitoring is led by DOC.
- Fish passage improvements project between 2018 to 2021. OFO NZ continued to work with a local aquatic freshwater ecological consultant to retrofit fish passage (ramps, ropes, etc) to provide for fish passage in stream crossings across the Estate. The monitoring was to continue in Marlborough summer 2022 but due to the extensive damage from the August 2022 storm event in the region and the consulting ecologists' unavailability due to other work commitments, this project will

restart in summer 2023.

- OFO NZ and other agencies, including Regional Councils, monitor plant and animal pest species within and adjacent to the Estate.

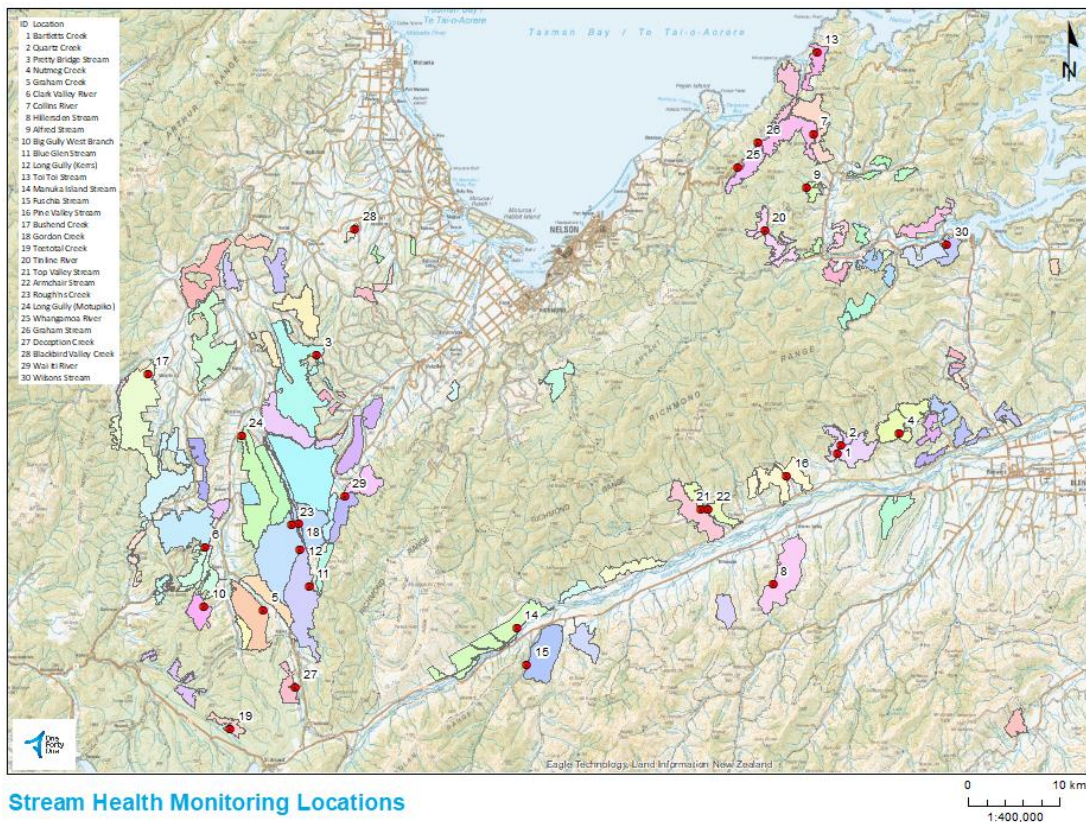


Figure 17. Stream locations within the OFO NZ Estate included in the annual SHMAK program.

8.4 Forest Growth and Dynamics

Forest growth is measured primarily from inventory data and through growth modeling. OFO uses YTGen and Woodstock software to assist in modeling forest growth. As well as inventory data, a network of permanent sample plots (PSP) exist to assist in improving the growth models. Foliage sampling for needle nutrient levels and forest health surveys are also undertaken to assist in monitoring forest growth and performance.

8.4.1 Inventory

Regular forest inventory sampling monitors forest growth and development over the period of throtation. Cengea’s Forest Management Module (FMIS) is used as the primary software for the storage of stand records. Inventory monitoring generally includes:

- Pre-assessment as required (age 6-10) – prior to tending operations.
- Quality Control (Age 1 and age 8 - 12) – following establishment and tending.
- Tactical (age 17 - 23) – to obtain tree size and estimate of recoverable volume by log grade to assist harvest planning and forecast medium and long-term log grades.
- Pre-Harvest (24 - 28) – to obtain estimate of recoverable volume by log grade.

Remapping of forest and cutover is undertaken using both satellite images and aerial surveys. This generally occurs in association with significant forest events such as harvesting or following storm damage.

8.4.2 Permanent Sample Plots (PSP) and Trials

Over 100 Permanent Sample Plots (PSP's) exist within the forest. These plots are measured at regular intervals to monitor growth over the rotation. The results of these plots are used to assist in refining forest growth models. A number of other trials exist in the forest, monitoring key factors (e.g. silviculture, establishment practices, fertilising trials and genetics).

8.4.3 Nutrition Monitoring

An annual nutrient assessment is undertaken each year to monitor the levels of foliage nutrient levels across the estate. Age three trees are targeted as well as any stands that are beginning to show signs of deficiencies.

8.4.4 Forest Health Monitoring

An annual forest health survey is undertaken to the New Zealand Forest Owners Association (NZFOA) standards to detect any potential new pests and diseases, as well as to monitor changes in existing pest and diseases.

8.5 Research Projects

OFO NZ is involved with or contributing to several research projects to improve understanding of the effects of plantation forestry.

OFO NZ contributes funding to research benefitting plantation forestry through the Forest Growers Levy, introduced in 2014.

Since 2019, OFO NZ has funded and supported the Kea Conservation Trust and a Masters student on research and monitoring of Kea (*Nestor notabilis*) within the Estate. The objective of the Masters project is to gain an understanding of Kea abundance, habitat use and feeding behaviour in plantation forests. It is hoped that this understanding can help shape management practices that allow forestry and Kea to inhabit the same space in a safe manor. The published report is due in 2023.

In 2020, OFO NZ in partnership with the Ministry for Primary Industries' and funded under the Sustainable Food and Fibre Futures Fund, commenced a long-term paired catchment study. Partners involved with the study include Manaaki Whenua – Landcare Research, Cawthron Institute, and Envirolink Ltd. The study involves the establishment of a seven-year monitoring program within comparative catchments in the Estate to study the performance of sediment control practices utilised in forest operations (including slash). The three catchments (treatment area 1, treatment area 2, control area) are adjoining catchments of similar sized-area, geology and topography, planted in *Pinus radiata* of similar age (Figure 18).



Figure 18. Donald Creek paired catchment study: Data collection for the study includes setting cotton strips to monitor bacterial and nutrients in the streams.

Home Safe and Well



Passionate about the wellbeing of our people, contractors, and partners.

At OneFortyOne we are driven by our commitment to ensuring that every person comes to work and goes Home Safe and Well every day.

At OneFortyOne we are committed to nurturing and protecting wellbeing through equal consideration of our physical, mental and emotional health.

Together with our employees, contractors, partners and PCBU¹ we are building a culture of wellness to increase the quality of life and reduce the risk of harm for all.

OneFortyOne will meet all legislative Health and Safety requirements² as a minimum and every employee, contractor, partner or PCBU has the right to refuse work if they believe it is unsafe.

We will not encourage or prioritise productivity over wellbeing.

We recognise that mental and emotional health can be a significant contributor to increasing the risk of workplace incidents therefore caring for them is as important as protecting our physical health.

We are committed to developing and maintaining business systems that enable us to share, learn and improve our performance in a consistent, efficient and effective manner.

We encourage honesty and transparency when raising, discussing and solving wellbeing challenges.

We will act in a collaborative and constructive manner.

When incidents do occur, we will show genuine care for all involved and through their recovery.

Our Leaders

At OneFortyOne our leaders are accountable for people's wellbeing and you can expect that they will:

- Proactively live our Home Safe and Well commitment.
- Build an empowered environment that encourages all to join into an open dialogue about how we deliver home safe and well together.
- Provide adequate resources to nurture everyone's wellbeing.
- Transparently share our performance and strive for ongoing improvement.

Our People

To deliver Home Safe and Well requires everyone to passionately embrace and participate in our wellbeing culture. We all share a responsibility for each other's wellbeing and therefore must be committed to:

- Always behaving in a safe manner and encouraging others to do so.
- Ensuring that all employees are competent or under training (and appropriately supervised) to undertake all tasks in a safe manner.
- Actively participate in wellbeing discussions, programs and training.
- Consistently contribute to how we can collectively improve our wellbeing.
- Always identify hazards, report incidents and contribute to mitigating risks.

¹ A PCBU is a Person Conducting a Business or Undertaking as defined by relevant legislation.

² Specific NZ legislation includes, but is not limited to, the Health and Safety at Work Act 2015 and the Health and Safety at Work Hazardous Substances Regulations 2017

Together we can all go HOME SAFE AND WELL every day.

Appendix II – Environmental Management Policy



Environmental Management System – Policy & Principles

Environmental Policy	Maintain OneFortyOne New Zealand Ltd (OFO) environmental stewardship and performance by demonstrating the promotion and care of a healthy functioning environment ¹ .
Environmental Principle	To identify, evaluate and manage the significant environmental effects ² of plantation forestry on the environment.
Compliance Principle	To manage and control activities to comply with environmental legislation and regulations, and the following voluntary codes: <ul style="list-style-type: none"> • National Environmental Standards for Plantation Forestry • Resource Management Plans from the Nelson, Marlborough and Tasman Councils • NZ Forest Accord • Principles for Commercial Plantation Forestry Management in NZ • NZS 8409 Management of Agrichemicals • NZFOA Environmental Code of Practice for Plantation Forestry • NZ Climate Change Accord • Forest Stewardship Council® (FSC-C074692) Standard for Forest Management • NZ Wilding Conifer Management Strategy
Environmental Management Principle	To train and empower employees to manage operations to ensure that desirable environmental outcomes are planned and achieved, and that environmental effects are accepted and sustainable.
Cautionary Principle	To take a cautious approach in operations where the adverse effects of the operation cannot be confidently predicted.
Continuous Improvement Principle	To continuously improve environmental management through regular audits and reviews of the EMS, through environmental research and monitoring of operations.
Future Well-being Principle	To work towards the sustainable management of the natural and physical resources we own or manage, to provide for the well-being of future generations.
Community Principle	To provide for managed recreational & community activities within and adjacent to our forests. To consult with affected persons and demonstrate openness in questions concerning all significant environmental aspects of our activities.
Tangata and Mana Whenua Principle	To develop a relationship with tangata and mana whenua that is equitable and has clarity and transparency in all processes.

Cameron MacDonald
 Executive General Manager Forests
 OneFortyOne New Zealand Limited

12/2/2023

¹ Environment includes the atmosphere, waterways, soil, landscape, ecosystems, people and communities.

² Significant (environmental) effect includes adverse or beneficial effects. It can be temporary or permanent, past, present or future & any cumulative effects that arise over time or in conjunction with other effects that have been evaluated as having the potential to cause a significant impact on the environment. The main environmental effects relate to: Changes to soil structure and fertility, soil erosion, water quality & yield, air quality, landscape, neighbour relations, biological diversity, pollution of land or water from fuel/chemicals/pesticides/contaminants, carbon sequestration, & cultural values/recreation/aesthetics.