

**2023 ANNUAL
FOREST STEWARDSHIP COUNCIL®
MONITORING REPORT**

**PF Olsen FSC® Group Scheme
NC-FM/COC-000190**

Reporting Period: JANUARY – DECEMBER 2023

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4 March 2024

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1. Introduction

About PF Olsen

PF Olsen manages significant plantation forest estates and many small to medium-sized woodlots across New Zealand. We pride ourselves on our reputation for delivering a wide range of professional forestry services to a diverse range of clients including TIMOs, farmers, investors, Māori groups, government agencies and others.

We assist forest owners to minimise and manage investment risks, establish, grow and protect high-quality forests and finally maximise the recovery of value from forest harvest operations.

Our Environment and Sustainability Policy

Our Environment and Sustainability Policy is our commitment to appropriate environmental management.

ENVIRONMENT & SUSTAINABILITY POLICY

OBJECTIVE

PF Olsen is committed to sustainable forest and land management, through:

- Promoting and applying high environmental performance standards
- Careful use of natural & physical resources for the production of food and fibre.

WE COMMIT TO:

1. Avoid unnecessary degradation of cultural, ecological, heritage and amenity values and, where possible, enhance these values.
2. Comply with all relevant laws and, where appropriate, exceed environmental statutory requirements and codes of practice.
3. Conform with the requirements of sustainable management standards and other accords and agreements of relevance to our clients.

WE WILL ACHIEVE OUR ENVIRONMENT & SUSTAINABILITY POLICY BY:

- Identifying, evaluating and managing the key environmental impacts of our activities.
- Training all employees and contractors to ensure understanding of our commitment to high standards of environmental performance and empowering them to plan and achieve accepted and sustainable environmental outcomes.
- Supporting and applying the outcomes of environmental and socio-economic research and international agreements to improve environmental performance.
- Promoting the prevention of pollution and waste.
- Promoting the effective and efficient use of energy.
- Demonstrating care for the wellbeing of our community.
- Engaging with our clients, employees, contractors and community and valuing their positive contribution to our business.
- Recognising the significance of Tangata Whenua and Mana Whenua / Traditional Owner's stewardship of cultural heritage, places and values.

This document, signed and dated by the CEO, certifies our commitment.



PF Olsen Ltd – CEO Signature
 Date: 10/01/2024

Forest Stewardship Council® (FSC®)

The Forest Stewardship Council (FSC) is an independent, not-for-profit organisation headquartered in Germany, founded to promote the responsible management of the world's forests. FSC certification is a means by which our clients can be confident that we are managing their forests in a legal, responsible and sustainable manner.

All forests certified by FSC must comply with an international set Principles and Criteria. The requirements of FSC cover the full range of forest management, including complying with the law, environmental requirements (e.g., water quality impacts, soil conservation, biodiversity management, chemical use), social requirements (worker rights, indigenous people's rights, stakeholder and community benefits etc.), alternative benefits of the forest beyond core forest products, and thorough, economically viable, forest management practices.

FSC accredits auditors, who undertake annual audits of FSC certified forestry operations to confirm compliance with FSC requirements. The PF Olsen FSC Group Scheme is currently audited by Preferred by Nature.

For further information about FSC visit <https://fsc.org/en>, or <https://nz.fsc.org/en-nz>.

PF Olsen FSC Group Scheme

PF Olsen established and maintains New Zealand's first FSC Group Scheme. The certificate (NC-FM/COC-000190) is held by PF Olsen on behalf of its clients. Should a client choose to leave PF Olsen and/or the PF Olsen FSC Group Scheme, the certificate remains with PF Olsen, the client's forest is deregistered and decertified.

Please note, because of the diverse environments the PF Olsen FSC Group Scheme forests grow in, combining some data, such as monitoring data, would give an inadequate and misleading summary and is therefore not provided within this report. Specific monitoring information for a given forest can be provided on request. However, commercially sensitive information will NOT be publicised or provided to third parties.

2. Estate Description

Members

PF Olsen’s FSC Group Scheme currently consists of the following members:

Client members	Number of Forests	Certified Area (ha)
Nelson City Forests	4	1,950.2
Oji Fibre Solutions Ltd	25	7,759.6
PĀMU Farms of New Zealand	12	9,827.4
Ponga Silva Ltd	6	1,903.8
ROBMIJON Holdings Ltd	1	168.7
RJ Grigg	1	66.5
Tasman District Council	6	3,375.5
Te Rata LP	1	1,858.8
TGH Natural Resources Ltd	1	546.3
W&S Garland & Tintagel Trust	1	22.5
Whangaparoa 3B Trust	1	50.8
Wightman Forestries	3	594.6
Independent members	Number of Forests	Certified Area (ha)
Summerhill Timbers Ltd	1	243.2
Torlesse Pine Company Ltd	1	20.2
Total	64	28,388.4

Client members have forests that are under the full management of PF Olsen Ltd under the framework of their FSC systems.

Independent members manage their forests, but under the oversight and within the framework of the PF Olsen Ltd FSC systems.

Additions / losses to the PF Olsen FSC Group Scheme

During 2023, four forests were withdrawn from the scheme. One on completion of harvest, and the other three were withdrawn as the forests were put up for sale. Forests are typically withdrawn due to changes of manager, completion of harvesting and transfer of cutting rights, or landowners indicating that they will not pursue certification maintenance.

Over the same period, 29 new forests entered the PF Olsen Group Scheme. Oji Fibre Solutions Ltd of New Zealand added 27 forests, while Te Rata LP and TGH Natural Resources Ltd each entered a forest to the PF Olsen FSC Group Scheme.

Management Units

PF Olsen reviewed the structure of its Group Scheme in 2023. This has resulted in the arrangement of 9 Management Units, based on geographical location of the forests management, except for the two independent client’s forests, which are each their own management unit. The management units (as at 25-Feb-2024) in summary are:

Management Unit	Total FSC certified area (ha)
Northland	1,945
Central North Island (CNI)	10,693
Gisborne	5,986
SNI	168
Nelson	6,239
Marlborough	34
Otago/Southland	5,399
Independent 1	244
Independent 2	20

Area and species

As of 31 December 2023, the forest and land estate contains the following vegetation/land types. On an aggregated basis, the area of indigenous reserves and protected areas is substantial at 28.9% of the total land area.

Area Type	Species	Area (ha)	Area (%)
Planted		19,725.4	69.5%
	Radiata pine	12,846.5	
	Eucalypts	4,897.3	
	Douglas-fir	1,039.8	
	Other Pine Species	251.3	
	Cypresses	161.8	
	Redwoods	138.0	

Area Type	Species	Area (ha)	Area (%)
	Indigenous Species	80.7	
	Other Minor Species	309.9	
Awaiting Planting / Cutover		326.4	1.1%
Reserves		8,195.6	28.9%
	Natural Indigenous	7,399.1	
	Planted Indigenous	506.5	
	Exotic	289.9	
Other ¹		141.1	0.5%
Total Area		28,388.4	100%

Productive and replanting areas are accurate.

Reserve areas are subject to variation as ongoing programmes of assessment and in some cases, retirement from production forest and/or ‘setting-back’ from streams leads to redefinition and minor area changes. Equally, as some cutting rights are completed and the underlying land is returned to the owners, some of the indigenous reserves may also be “returned” leading to deductions from the totals on a year-to-year basis.

Species mix

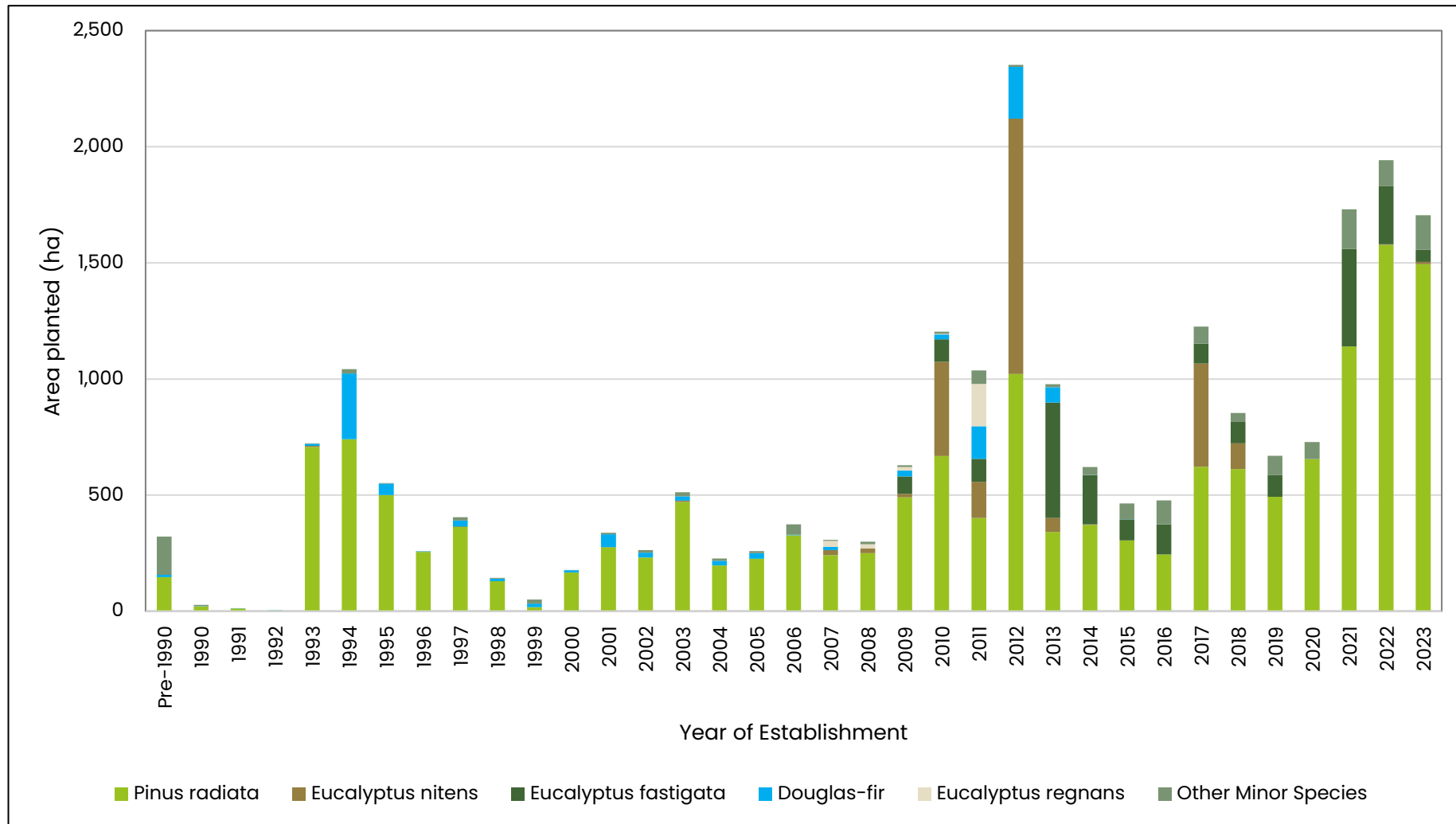
The productive plantation forest is made up of a range of species with the predominant species being *Pinus radiata*. This species is present throughout most of New Zealand due to its capability to grow rapidly and predictably on a wide range of sites, paired with well-established markets and processing capability.

Age distribution

The age-class distribution of forests ranges from newly planted stands to those ready for harvest. The distribution illustrates a loss in area for stands of harvesting age (as would be expected) but also gains in area from the younger age classes as forests have been added to the certificate register and replanting occurs.

¹ Other includes skids, unstocked gaps, and utilities

Species and age distribution of the FSC® forests in the PF Olsen Group Scheme



Stakeholders

Based on the nature of PF Olsen’s FSC Group Scheme, stakeholders are categorised as local or national stakeholders.

Local stakeholders typically consist of forest neighbours, local councils, iwi, and any other groups that may have an interest in the forest (e.g. recreational users, hunters, community conservation groups). National stakeholders are the people and entities that are notified of every certification regardless of the forest’s location. They tend to be other forestry companies with FSC certified forests, government/statutory agencies (e.g. Department of Conservation, Herenga ā Nuku Aotearoa – the Outdoor Access Commission, Fish and Game Councils) and environmental non-governmental organisations (e.g. Forest and Bird).

Stakeholders are consulted during the initial stages of a client joining the PF Olsen FSC Group Scheme, to provide feedback on the forest management plan. After certification, stakeholders are consulted if planned forestry operations may impact their land, their interests, or their activities (e.g. when harvesting may impact a property boundary or recreational area).

Monitoring

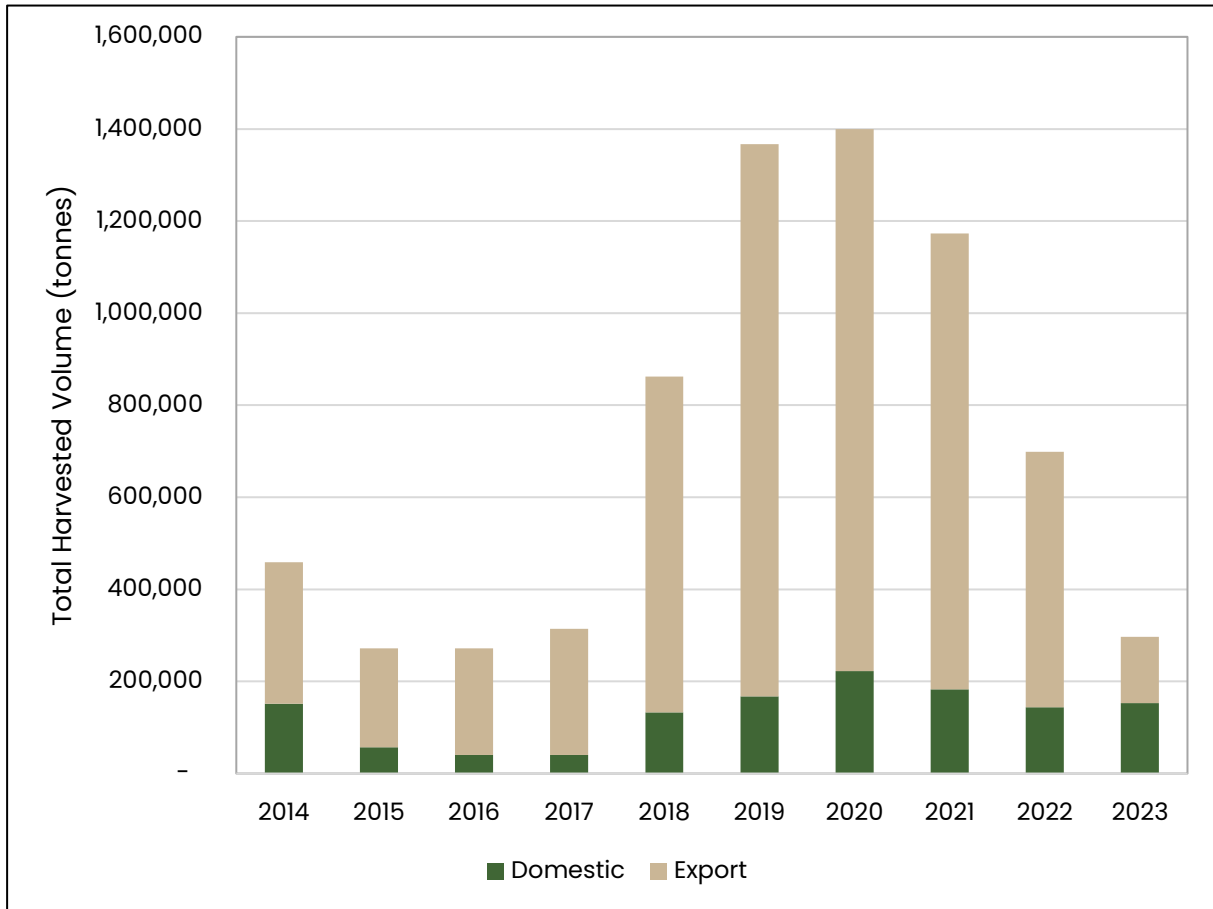
As the forests grow and are tended, a range of forest monitoring activities may take place. Details on the full range of potential monitoring activities can be found in the [Standard FSC Management Plan](#) (Section 14 – what do we monitor), while actual monitoring activities can be found in each forest’s [Specific Management Plan](#).

Yield

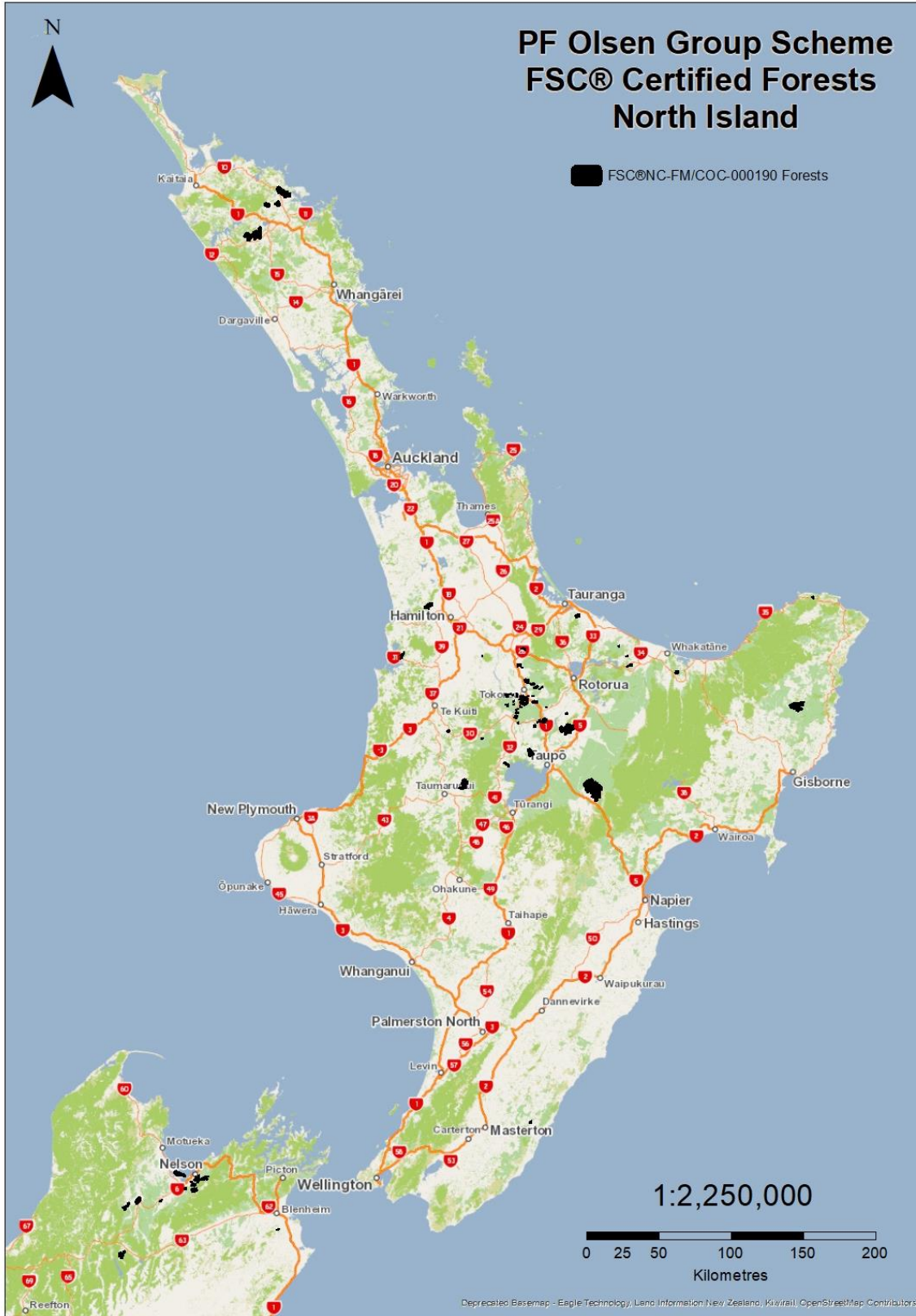
The volume harvested from the PF Olsen FSC Group Scheme member forests varies each year, depending on the area of trees at harvestable age, market conditions, and the number of clients within the PF Olsen FSC Group Scheme.

The graph below shows the volumes harvested out of the FSC forests over the past 10 years by market type.

Harvest volumes by market type from the PF Olsen FSC® Group Scheme forests



2.1 Map of FSC forest locations (as at 31-Dec-2023)



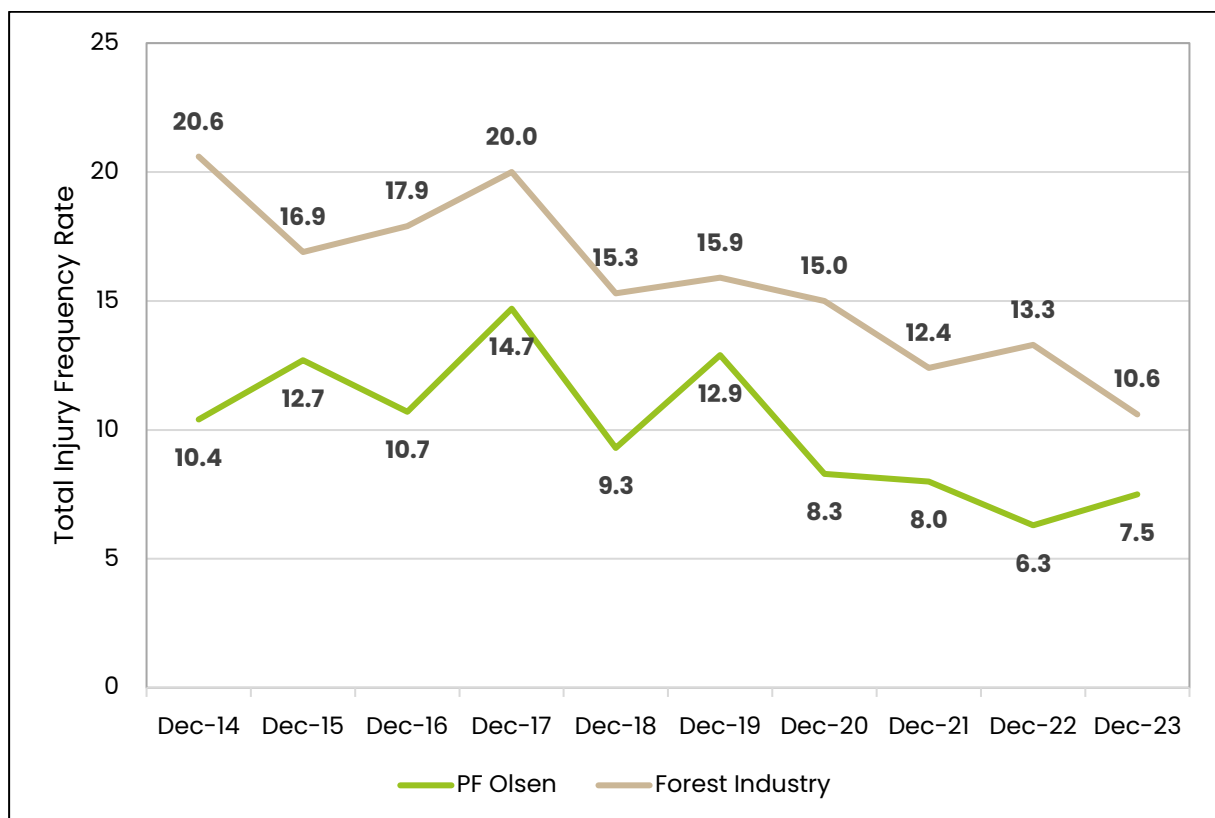


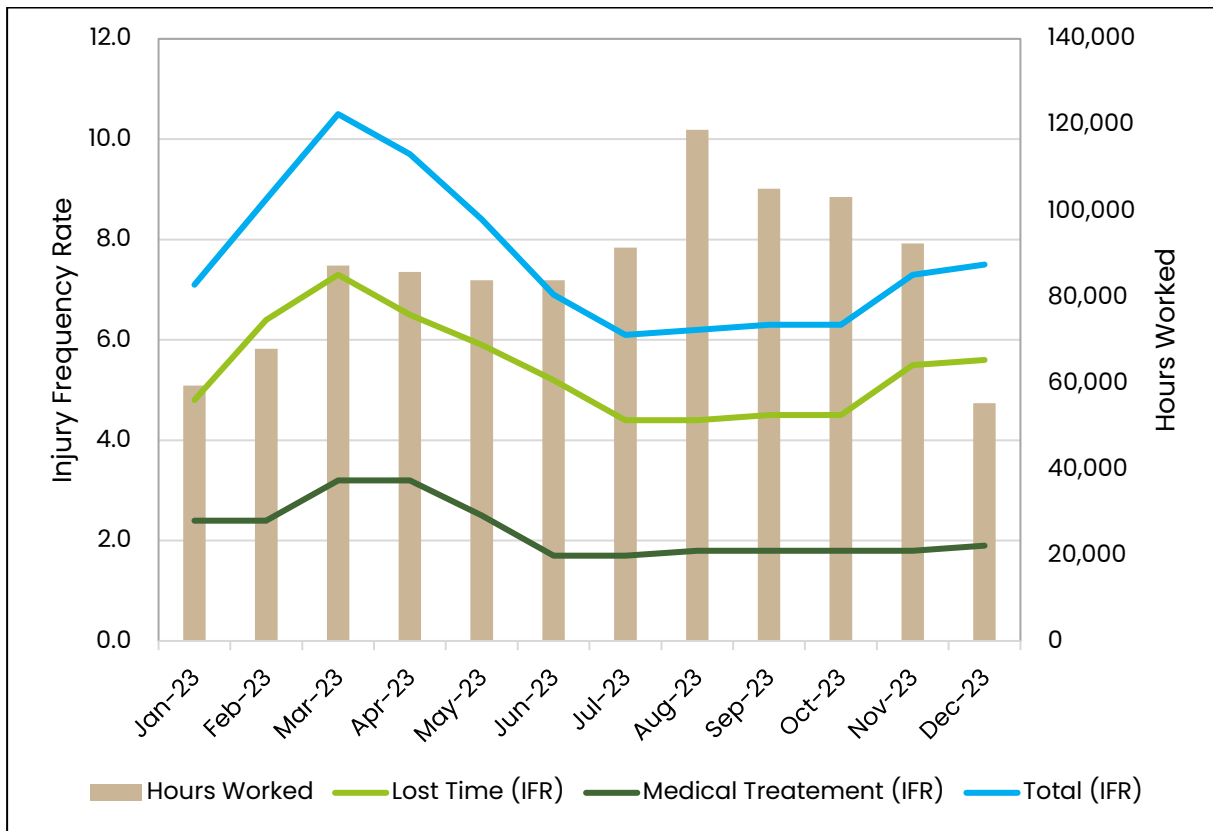
3. Health and Safety

Safety Performance

In 2023, the occurrence of Serious Harm remained consistent with the figures from 2022, recording 6 Lost Time Injuries (LTIs) and 2 Medical Treatment Injuries (MTIs). These figures, combined with a reduction in working hours, resulting in an increase in headline frequency rates.

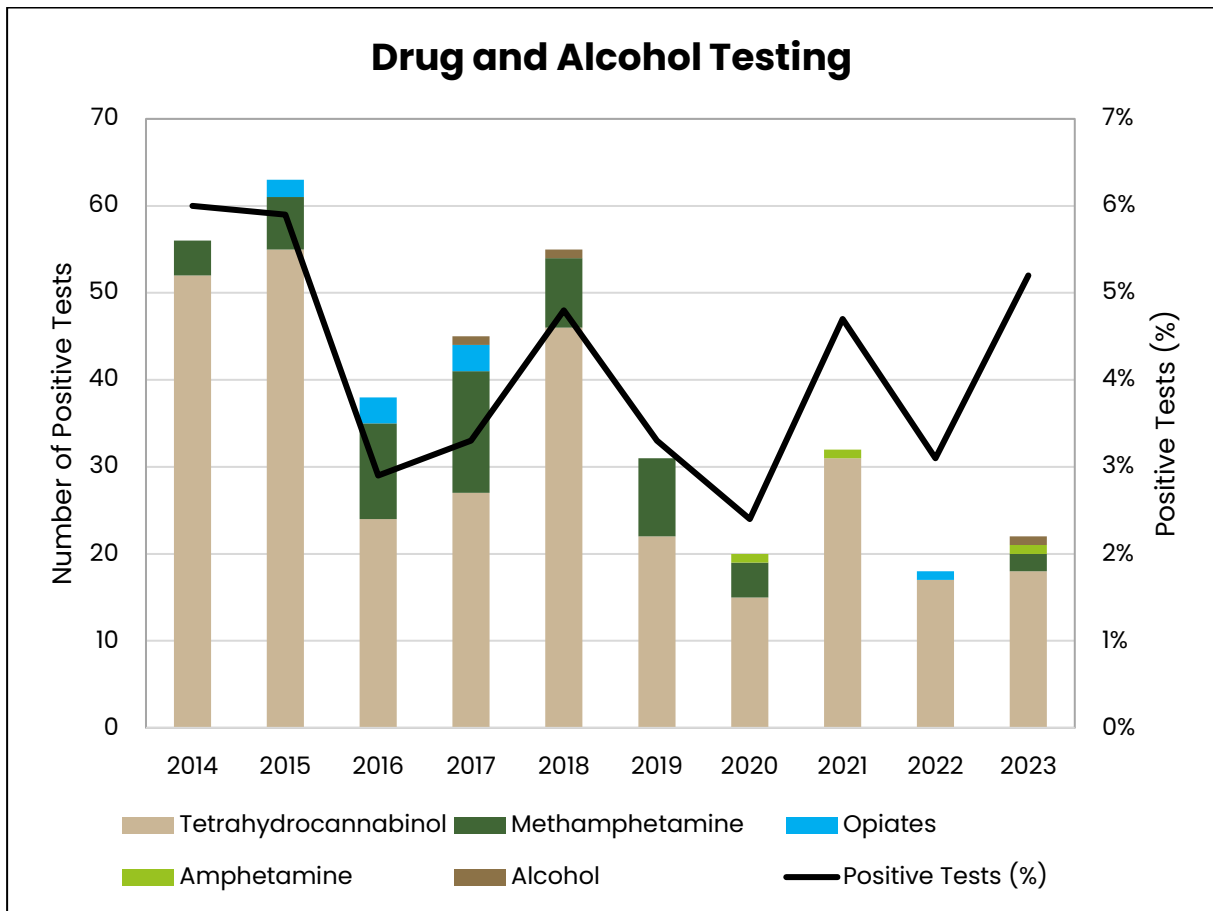
The PF Olsen New Zealand year-end safety statistics revealed a favourable position, in comparison to the national (forest industry) statistics presented in the Safetree IRIS report for December 2023. The industry reported an LTIFR of 6.7 and a TIFR of 10.6, both lower than our figures. These results signify not only a consistent safety record but also indicate the overall health of the industry.





Random drug and alcohol testing

Positive test rates increased during 2023 with 28 positive results (5.2%) from 536 tests. This was an increase on the previous year, however, in line with the rates on increase in the forest industry and in the wider national workforce (according to The Drug Detection Agency – TDDA).

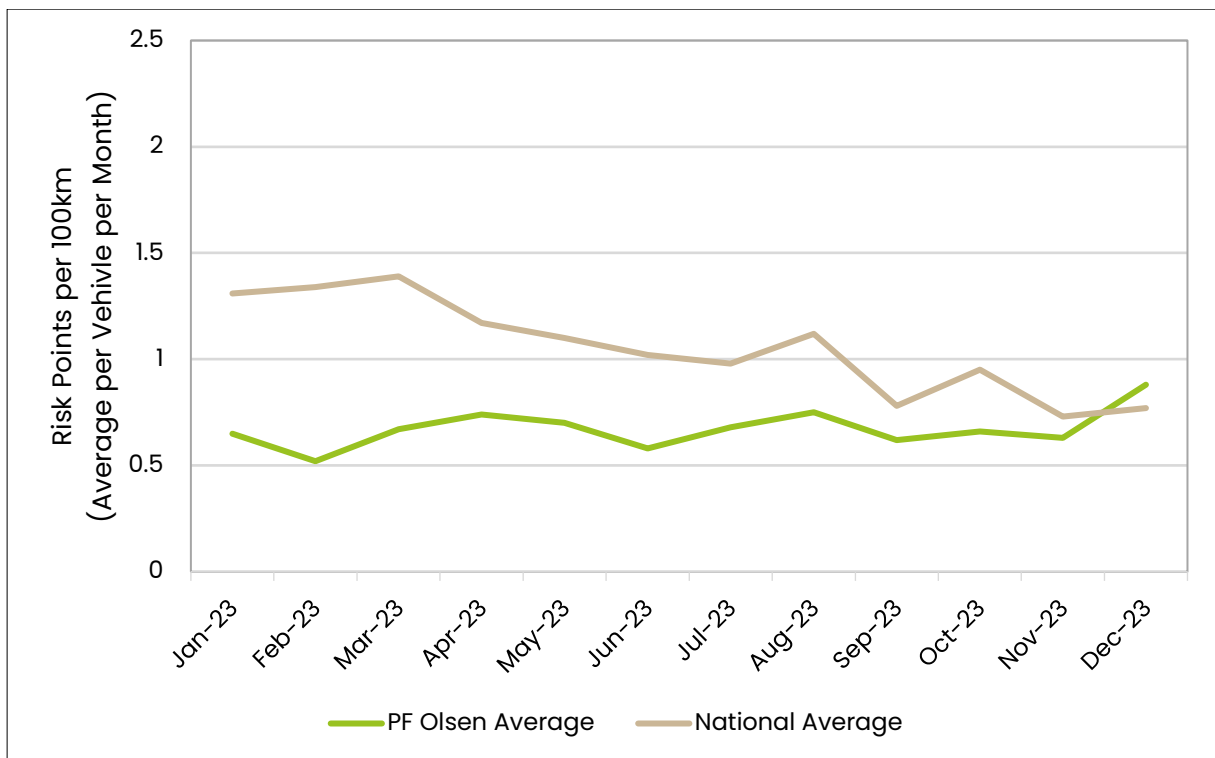


Lead Indicators

- Audit Completions were just under the 90% target but saw a commendable improvement of 35% during 2023.
- Over the course of 2023, overdue action requests averaged 26 per month, showcasing a sustained improvement compared to previous years when this number stood in the mid-40s and much higher in previous years.
- We successfully achieved our goal of recognizing 1 or 2 staff per month, as highlighted in the collage (below). These individuals demonstrated excellence in both culture and safety leadership – worthy ‘Be That One’ award recipients.



- In 2023, most branches conducted at least 4 Local Safety Meetings demonstrating a commitment to safety. Additionally, all 9 branches held a Safe Start-Up event, drawing a collective attendance of 546 staff and contractors.
- The risk points per 100km travelled (RP/100km – vehicle driving risk) measure, averaging 0.6, consistently remained below the national average during 2023. This is a noteworthy achievement as represented in the graph below.



Projects to Improve Safety

- We conducted a three-month trial of the Guardian Autosense fatigue and distraction monitoring equipment in three company vehicles. Extrapolating the results to 91 vehicles, we anticipate an average of 90 notifications per quarter, with 60 related to distraction and 30 to fatigue. Building on these insights, we are planning a subsequent trial in 2024 to further refine driver safety.
- As part of our commitment to improving safety, we have developed an effective 'Event Command Structure' (ECS) modelled on the Incident Command System (ICS). This framework aims to enhance our ability to manage emergency events, such as Cyclone Gabriel, ensuring a prompt and organised response for our staff. To facilitate seamless implementation, we will conduct training sessions on the ECS during 2024.
- Collaborating with the NZ Business Leaders Health and Safety Forum, a small team of Staff actively participated in a Mental Health and Wellbeing program. This initiative yielded six impactful initiatives in key areas for focus. By investing in the holistic well-being of our staff, we aim to create a safer and more supportive work environment, fostering a culture of health and safety excellence.

4. Ecological Management and Monitoring

Protected ecosystems

One of the key components of FSC certification is the protection and management of indigenous flora and fauna. When a client joins the PF Olsen FSC Group Scheme, every effort is made to locate, assess and describe all of the indigenous ecosystems located within the client’s forest land. The areas are mapped and added to the PF Olsen indigenous vegetation/protected ecosystem database.

In addition to determining each area’s vegetation composition and type (terrestrial, riparian, wetland or waterbody), care is also taken to determine if each area is protected under other mechanisms (e.g. Significant Natural Areas, Ngā Whenua Rāhui or QEII Trust covenants).

Management plans may also be developed in conjunction with ecologists for these special areas. Typically, they would include a range of activities – such as restoration (e.g. indigenous planting), protection (e.g. weed control or fencing) or monitoring (e.g. bat monitoring or drone survey of vegetation).

The management and monitoring activities for each forest can be found in the appendices of Specific Forest Management Plans.

High Conservation Value Forest (HCVF) areas

Under the FSC Principles and Criteria, indigenous vegetation within the forest estate that meets the FSC definition of a High Conservation Value Forest (HCVF) must be identified, and management plans developed to maintain or enhance the HCVF.

HCVF’s are defined as areas that possess one or more of the following attributes:

- **HCV1 – Species diversity:** Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant* at global, regional or national levels.
- **HCV2 – Landscape-level ecosystems and mosaics:** Intact Forest Landscapes and large landscape-level ecosystems and ecosystem mosaics that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.

- **HCV3 – Ecosystems and habitats:** Rare, threatened or endangered ecosystems, habitats or refugia.
- **HCV4 – Critical ecosystem services:** Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils.
- **HCV5 – Community needs:** Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, etc.) identified through engagement with these communities or indigenous peoples.
- **HCV6 – Cultural values:** Sites, resources, habitats, and landscapes of global or national cultural, archaeological, or historical significance, and/or of critical cultural, ecological, economic, or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.

The table below shows the areas of HVCF present within each forest; approximately 1,955 ha. The management and monitoring activities for each HCVF area can be found in the appendices of Specific Forest Management Plans.

Forest	HCV1	HCV2	HCV3	HCV4	HCV5	HCV6	Total Area (ha)
1223 Mangamingi			20.2				20.2
1411 Waipori			1,329.7				1,329.7
1450 Waitepeka			3.2				3.2
Bookers			11.8				11.8
Kingsland			34.5				34.5
Maitai	4.6				2.1		6.7
Pinnacle Pine			2.7				2.7
Rabbit Island	6.1		5.4				11.5
Te Rata			535.0				535.0
Total area (ha)	10.7	0.0	1,942.5	0.0	2.1	0.0	1,955.3

Threatened Species

Sightings of New Zealand’s threatened species within PF Olsen managed forests are recorded in [iNaturalist](#) and linked to the ‘[Biodiversity in Plantations](#)’ project (New Zealand plantation forest industry database) to record information on the species that use and/or are present in our plantation forests.

During 2023, PF Olsen staff recorded 22 observations of 13 different species within FSC Group Scheme forests, as shown in the following table. Around 3,000 observations have been made by PF Olsen staff, across all PF Olsen managed forests, since records began.

Species	No. of Observations	Taxon
Banded Tunnel-web Spider	1	Insect
Himalayan Honeysuckle	1	Plant
Kahikatea	1	Plant
Kārearea (New Zealand Falcon)	11	Bird
Leyland Cypress	1	Plant
Northern Red Admiral	1	Insect
Puriri Moth	1	Insect
Puawhananga (Clematis spp.)	1	Plant
Royal Spoonbill (Kōtuku ngatupapa)	1	Bird
South Island Tomtit	1	Bird
Tutsan	1	Plant
Unknown Fungi	1	Fungi
White Basket Fungus	1	Fungi

This included several exotic species – Leyland cypress, tutsan, and Himalayan honeysuckle.

Data logged in iNaturalist is used to assist in identifying where management requirements and or specialist advice might be needed prior to planned forestry operations.

Water quality

Forestry companies often monitor water quality (e.g. eDNA, macroinvertebrate Community Index (MCI), clarity) either to aid their understanding of the impacts of plantation forest operations on receiving waterbodies or to comply with resource consent conditions. Monitoring can either be one-off or repeated over time. Where possible, long-term monitoring sites are paired with comparative sites under different land uses (indigenous forest or agricultural land, or harvested with mid-rotation), to understand the impact of different land uses on water quality. One of the best-known New Zealand examples is the Pakuratahi Land Use Study².

LAWA River Water Quality – National Picture Summary 2021

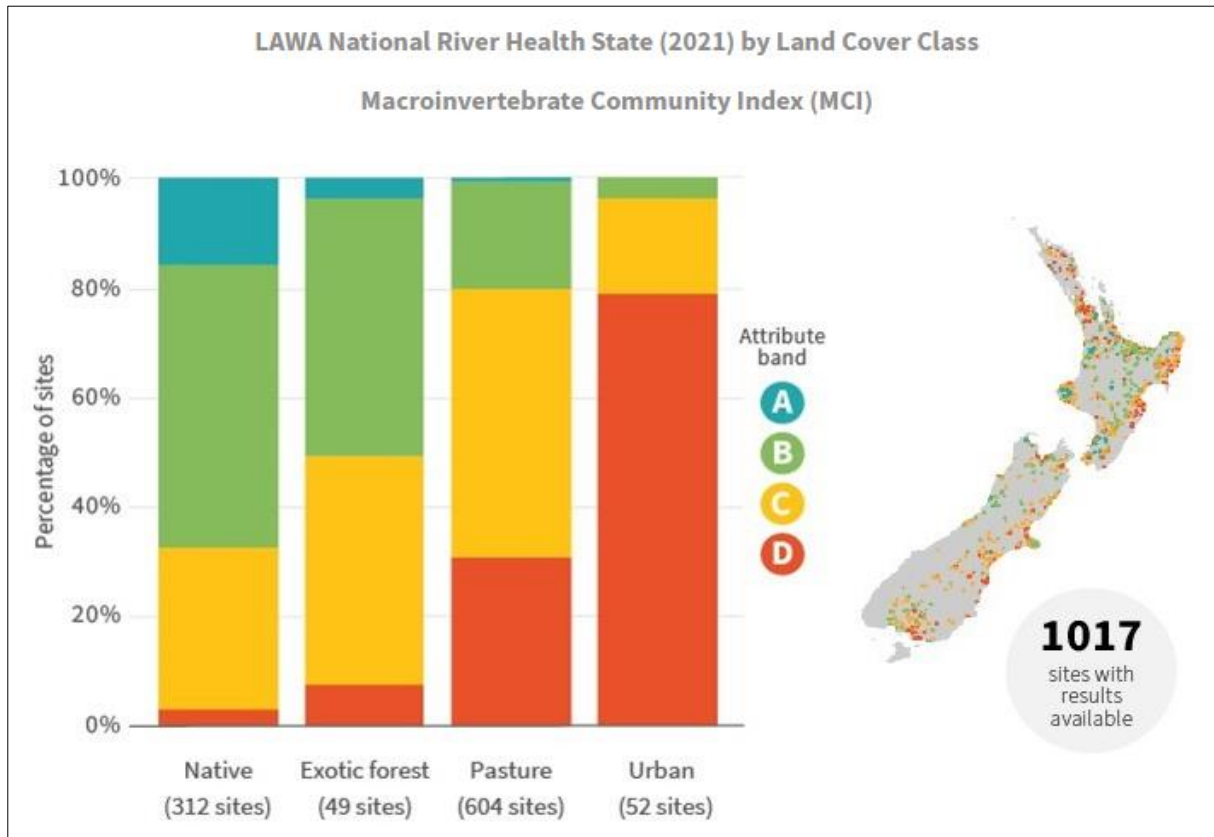
Regional and District Councils combine their environmental monitoring into the Land, Air, Water Aotearoa (LAWA) database. On the LAWA website, users can search for data by region, by survey point location, or gain a national perspective. The LAWA River Quality page presents the national river health summary.

The National Objectives Framework (NOF – National Policy Statement for Freshwater Management) bands are calculated for each land class type from median scores across a five-year period (1 July 2016 – 30 June 2021). The NOF bands range from Good (A grade) to Poor (D or E grade). The locations of the monitoring sites are shown in each map.

The current recorded state of NZ’s rivers and streams using MCI as the reportable attribute is shown in the LAWA graph below. Notable is the close correlation between indigenous (native) catchments and plantation (exotic) forest catchments.

This correlation is reflected in all attributes reported in LAWA (MCI, ammonia toxicity, nitrate toxicity, dissolved reactive phosphorus, clarity and E. coli) and there is a consistent pattern among the land cover categories for all four indicators covered by the national summary – with the better scoring streams located in areas of indigenous vegetation, followed by exotic forest and then pasture.

² Eyles, G. O., Fahey, B. D. (2006). *The Pakuratahi land use study: a 12-year paired catchment study of the environmental effects of Pinus Radiata forestry*. Hawkes Bay Regional Council, New Zealand. Note: this study is currently being re-activated to monitor the effects of second rotation forest harvesting.



Rivers and streams with catchments classified as being predominantly indigenous vegetation make up 48% of Aotearoa New Zealand’s channel length, while pasture is also common making up 45%. Exotic forestry streams (5% of channel length) and urban streams (1%) are less common. While urban streams generally have the worst water quality, they are relatively uncommon throughout New Zealand.

Proportionally, across all four indicators, monitoring sites within indigenous forests are under-represented (approximately 20% of the sample size), while pasture and urban sampling sites are over-represented (50 – 65% and 9% of the sample sizes respectively). Exotic forestry water monitoring sites are also under-represented for three of the four national indicators.

Although catchments in the indigenous vegetation land cover class are the least affected by our activities, they are not fully representative of natural conditions because, their definition allows them to include some urban, pasture, and exotic forest land cover in the upstream catchment, if the catchment is still predominantly in indigenous vegetation. This might explain why some “native vegetation” sites are in the “D” band. Geological differences among streams may also explain high concentrations for some parameters, for example, phosphorus concentrations tend to be naturally high in catchments draining volcanic soils.

Environmental DNA (eDNA)

Another tool for water monitoring is Environmental DNA (eDNA) testing. eDNA is genetic material that is shed by organisms through the loss of skin, hair, scales, fluids and faeces. The DNA can be isolated and used to monitor the likely presence and distribution of species through time and space. Using this simple method, eDNA tests can identify thousands of species of fish, birds, mammals, reptiles, amphibians, plants, fungi, protists, bacteria, and other organisms, in every water sample submitted.

The tests only indicate a species presence or absence within a catchment. eDNA results are uploaded into a [national dataset](#).

The table below shows eDNA results taken from three locations within a PF Olsen managed forest (waterbodies with indigenous riparian areas and then plantation forest), and one control site (indigenous forest only). The higher the count for a species, the more likely it is present at the site. Lower counts indicate that a species may be present, or (and more likely) the DNA for that species is present at the site through other means (e.g. insects having been eaten by a bird at another location, and then deposited at the sample site when the bird defecates). Despite the best attempts by all involved to collect and analyse a clean sample, human DNA will inevitably contaminate the samples, hence the high numbers of humans indicated in the results.

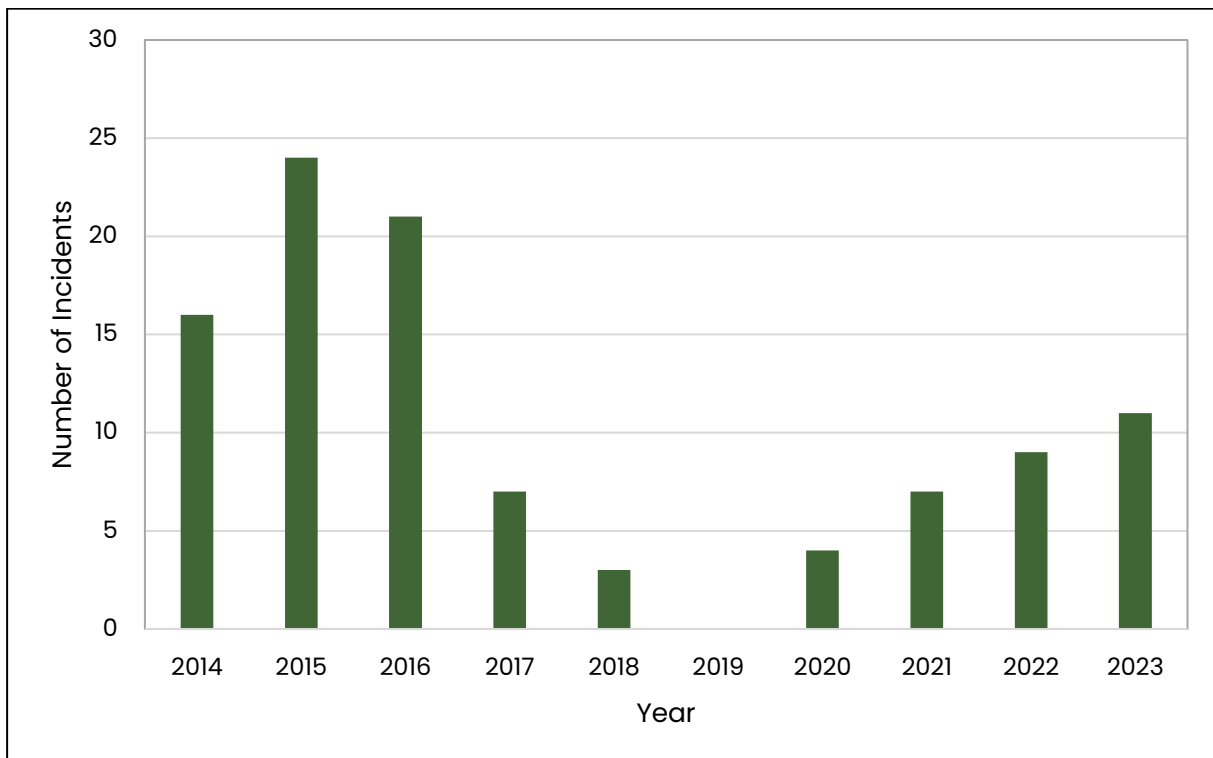
Species	Control (indigenous forest)	Indigenous riparian 1	Indigenous riparian 2	Plantation forest riparian
Aquatic Oligochaete Worm		391	42	377
Aquatic Snails				42
Bullies				1,920
Caddisfly		4		
Common Brushtail Possum	25	212	833	41
Common Chaffinch		33	24	
Common or Cran’s Bully				2,231
Endemic NZ Caddisfly		21		20
Endemic NZ Dobsonfly		24		37
Goat	61			
Hominids			30	86
Human	3,402	327	899	5,423
Hydra		18		35

Species	Control (indigenous forest)	Indigenous riparian 1	Indigenous riparian 2	Plantation forest riparian
Longfin Eel	40	287		163
Marsh Springtail			10	
Mayflies	44			
Micro Caddisfly		18		
Mud Snails		242	175	1,175
Oligochaete worm	21	1,413		350
Red Damselfly		4		
Sheep			26	
Shortfin Eel		721		15
Small Swimming Mayfly		325		

The variance of likely presence is moderated by replicated samples.

5. Environmental Incidents

All staff and contractors report and respond to environmental incidents. While most environmental incidents are generally weather-related (e.g. storm events causing damage), other incidents are a result of human activities (e.g. chemical spill). The graph below shows the number of recorded environmental incidents from 2014 – 2023 in PF Olsen’s Group Scheme FSC managed forests.



All incidents are reviewed by senior management to ensure that the incident is fully understood and has been appropriately controlled and mitigated.

6. Resource Consents and Archaeological Authorities

Archaeological Sites

Records of archaeological and historic places are maintained in the New Zealand Archaeological Association (NZAA) archaeological site recording scheme (<https://archsite.eaglegis.co.nz/NZAAPublic>).

If a site is found or suspected in any forest, PF Olsen's archaeological site management protocols are followed. Additionally, site specific management plans may also be developed in conjunction with Heritage New Zealand (HNZ), archaeologists, Iwi or other stakeholders.

Where there is the potential for disturbance or destruction of a site, an 'Authority to Modify or Destroy' will be sought from Heritage New Zealand under the Heritage New Zealand Pouhere Taonga Act 2014. Such authorities are similar to resource consents and, if granted, normally have conditions that must be met. In some cases, permission to modify an archaeological site may also be required from the appropriate District or Regional Council.

Checks for the presence of archaeological sites, and their exact locations and boundaries, are required before any harvesting or related earthworks commence.

Resource Consents

Forestry operations are regulated by the Resource Management Act 1991, including the National Environmental Standards for Commercial Forestry (NES-CF) and Regional and District Council rules.

When proposed forestry activities are unable to be undertaken as a permitted activity under the NES-CF and/or under the relevant regional or district plan, resource consent is obtained for the activity. Electronic copies are held, as well as accessible copies being on-site for the associated activity. Internal compliance with the conditions of consent is undertaken by operational staff.

Compliance Monitoring

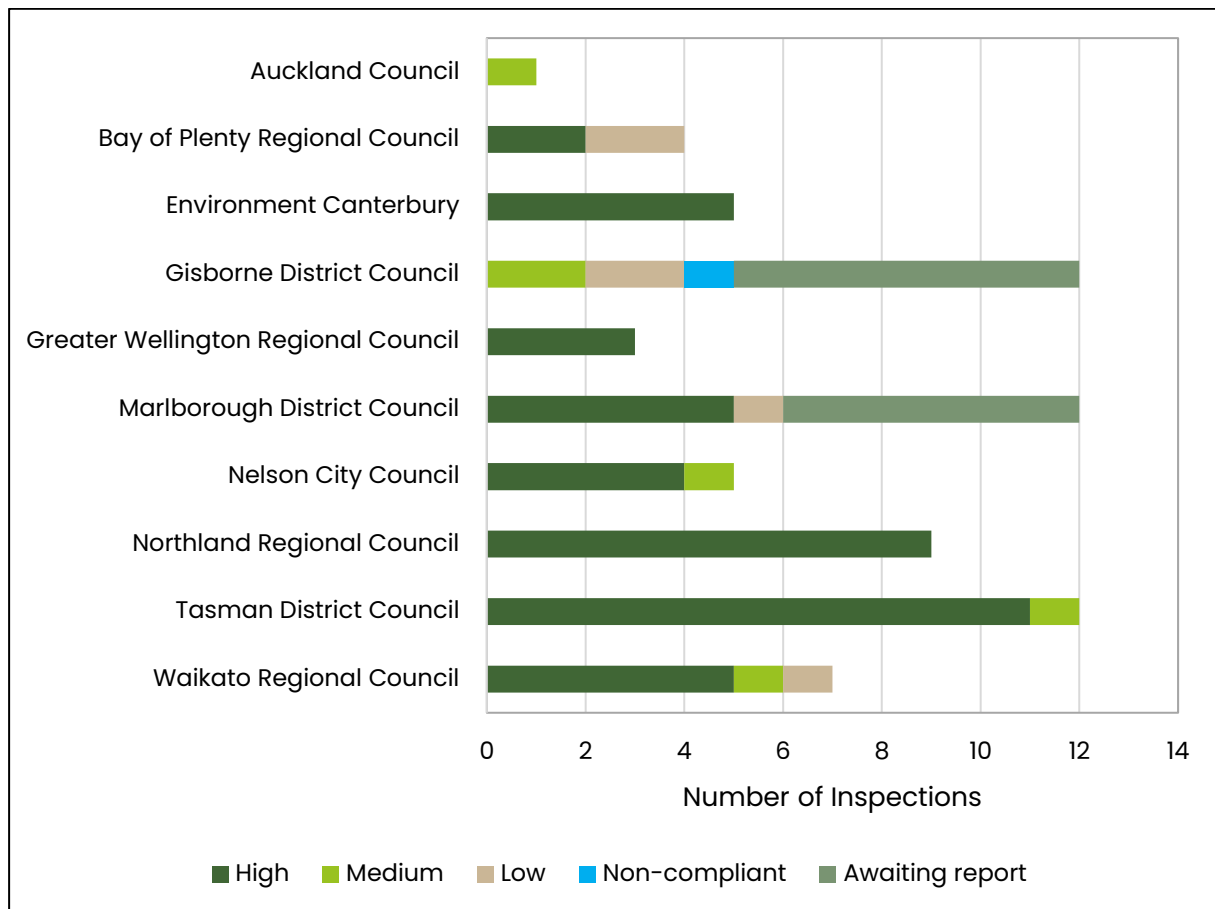
The 78 regional, unitary and district councils in New Zealand can audit operations to ensure compliance with consent conditions or permitted activity regulations. Compliance monitoring is commonly undertaken by regional and unitary councils.

Compliance monitoring of Archaeological Authorities may also be undertaken by Heritage NZ.

PF Olsen records the compliance outcomes of these audits. Regulatory authorities report their compliance inspections differently (requiring some interpretation of the compliance outcome to enable standardised reporting across PF Olsen). The data provides an independent assessment of compliance.

During 2023, 10 councils undertook compliance monitoring inspections of PF Olsen managed operations within our FSC managed forests. The cumulative results of the compliance monitoring for all PF Olsen managed forests are graphed below for the year, a total of 70 audits. Non-compliance is recognised as an environmental incident. There were six low and one non-compliant audits in this reporting period.

Compliance monitoring results by council for FSC managed forests in 2023



7. Chemicals

FSC Highly Hazardous Pesticides

FSC requires certificate holders to identify the best feasible approach to reduce the quantity and use of chemical pesticides in FSC certified forests and to prevent, minimise and mitigate any related environmental and social impacts.

FSC's pesticides policy is regularly updated to reflect changing global requirements and new technologies. The policy, which considers both global differences and social, environmental and economic needs, outlines FSC's commitment to ensuring that:

- the use of highly hazardous pesticides (HHP) in FSC certified forests is reduced and managed responsibly when there is no alternative
- the use of the most hazardous chemical pesticides is eliminated

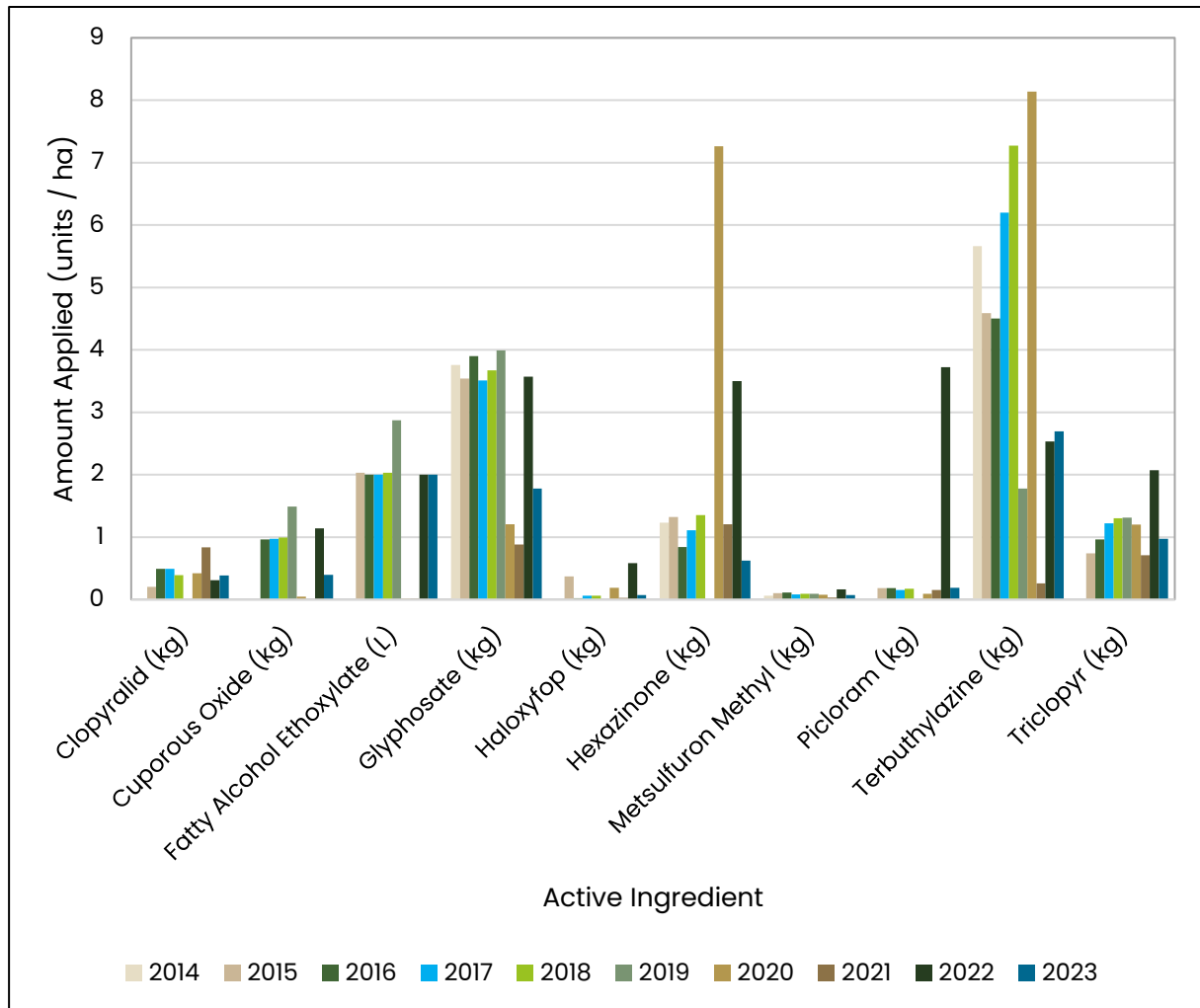
FSC maintains a list of highly hazardous pesticides; classified as prohibited (e.g. Arsenic, DDT), highly restricted (e.g. brodifacoum) and restricted (e.g. cuprous oxide). Forest owners / managers who wish to use the restricted substances must complete an Environmental and Social Risk Assessment (ESRA) for each chemical prior to use. The New Zealand forest industry has collectively produced ESRA's for many of the key chemicals used within New Zealand plantation forests.

Chemical use in PF Olsen FSC Group Scheme Forests

PF Olsen records chemical usage (total amount, area treated etc) for the PF Olsen FSC Group Scheme forests. The majority of the chemicals are used for weed control. Others are used for crop protection (e.g. cuprous oxide for Dothistroma control). The graph below shows the quantities of key plantation forest chemicals used by PF Olsen over time. What is evident is that there is significant variance in the amount of chemical used year to year. This reflects the changing area of forests in the PF Olsen FSC group Scheme, the type of treatment (i.e. aerial spraying versus spot spraying), as well as the need to respond to climatic conditions which affects weed types and vigour.

Pesticide application is also required to control noxious weeds in accordance with the requirements of Regional Council regional pest management plans.

Chemicals used in FSC managed forests (amount applied per hectare)



Research into Alternatives

PF Olsen has provided financial support to industry co-operative research programmes aiming to advance vegetation weed management efficacy and reduce chemical reliance, including the use of biological control.

Key focus of this work was:

- Chemical safety characteristics
- Alternative FSC compliant formulations and treatment
- 'Best Practice' tools

A number of alternative FSC compliant active ingredients have been tested against the main plantation forest establishment weeds. This resulted in a shortlist of alternatives,

with potential for further investigation, that formed part of the first year's field trial testing as part of an Industry / Sustainable Farming Fund (SFF) three-year programme ([project 12/038](#)) which started in 2012. The project tested a range of chemicals in operational field trials determined from the earlier research. Mixes include those free from either terbuthylazine or hexazinone, mixes with some terbuthylazine and a baseline standard practice control of Valzine (a terbuthylazine-hexazinone mix).

The completed project found that the industry standards for terbuthylazine and hexazinone use remained the most effective, although there were some alternative active ingredients offering efficacy under limited conditions, and others that may yet have potential subject to further research. The information has been published and may be accessed from the Sustainable Farming Fund website, Scion Research website and NZ Forest Owners Association website. The published reports can be accessed via the links below:

- [Minimising the environmental impact of weed management in New Zealand's planted forests](#)
- [Final report on field trials](#)

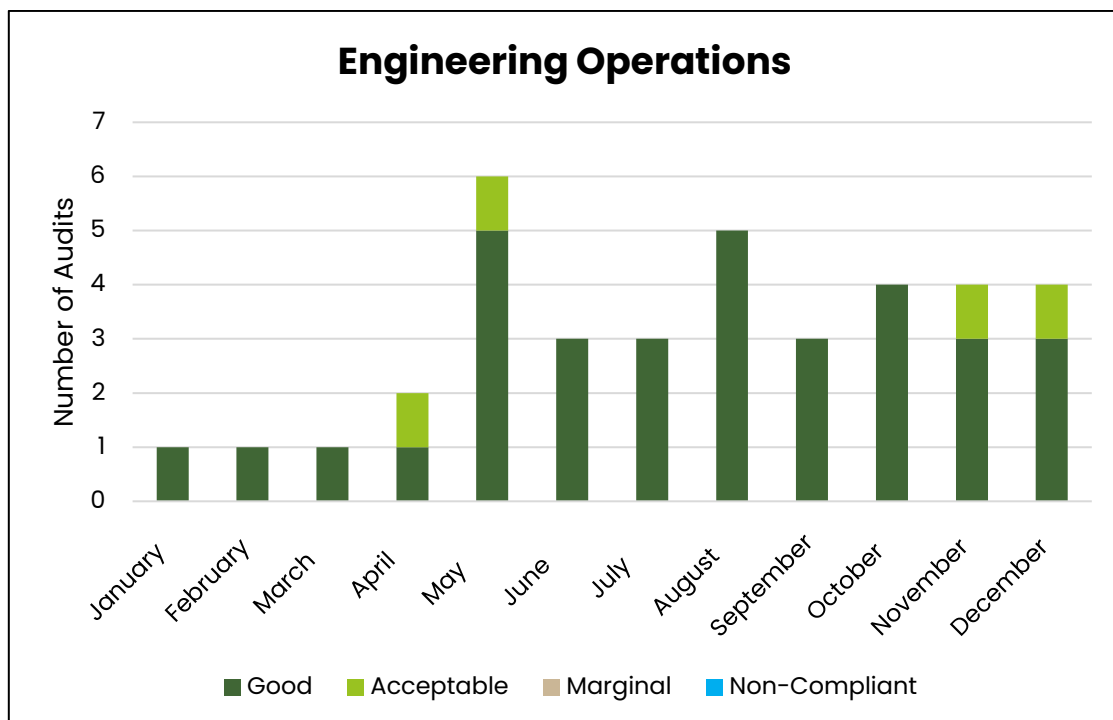
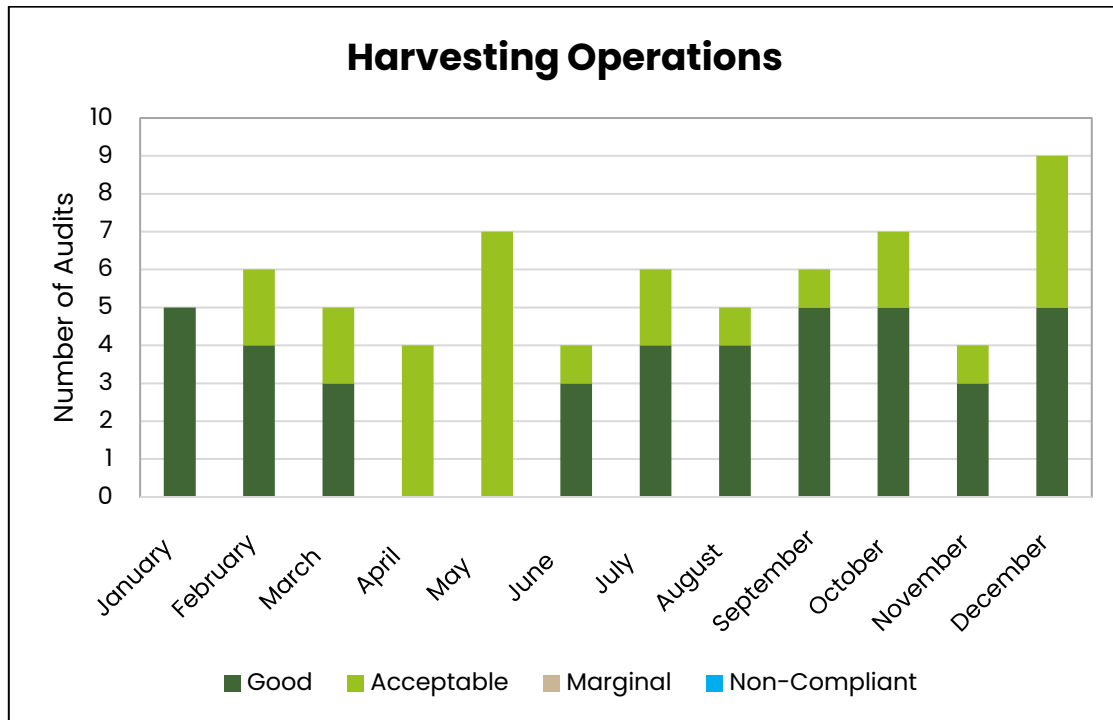
Research is now funded by way of a national levy on all forest growers with research programmes directed through the [Forest Growers Levy Trust](#). Work has subsequently focussed on the environmental fate aspects of herbicide use, with hexazinone and terbuthylazine tested in two of the soil groups most likely prone to leaching, followed in 2015 by similar trials for copper fungicide, recognising the new "highly hazardous" classification attributed to that active ingredient.

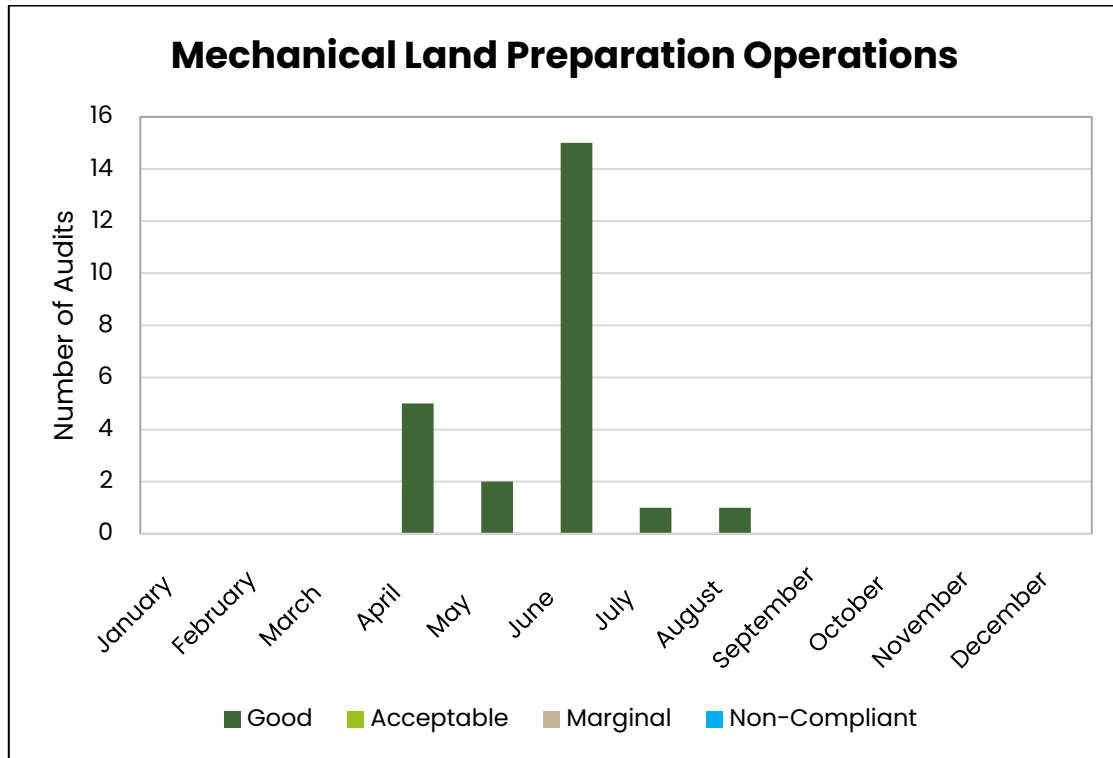
In all cases, the trials reflected standard operational procedure and, while there was an initial detectable spike in presence in water in the hours immediately after application, rates degraded very quickly. The results concluded that human health risks were very low, as were the risk of impacts on aquatic fauna. Specifically, for copper, the report conclusions were:

- Copper was only detected for a few hours on the day of application;
- NZ drinking water standards (2,000 ug L⁻¹) were not exceeded;
- FSC standard (LC50 18.9 ug L⁻¹ for 48 hours) – concentrations exceeded the level but for less than 2 hours; and
- ANZECC interim sediment quality guideline trigger values were not exceeded.

8. Operational Monitoring

PF Olsen staff carry out the monitoring of harvesting, engineering and mechanical land preparation operations on a fortnightly or monthly basis, depending on the risk level of the operation. Staff also carry out post-storm event checks as required. The below graphs show the monitoring results for operations in FSC managed forests.





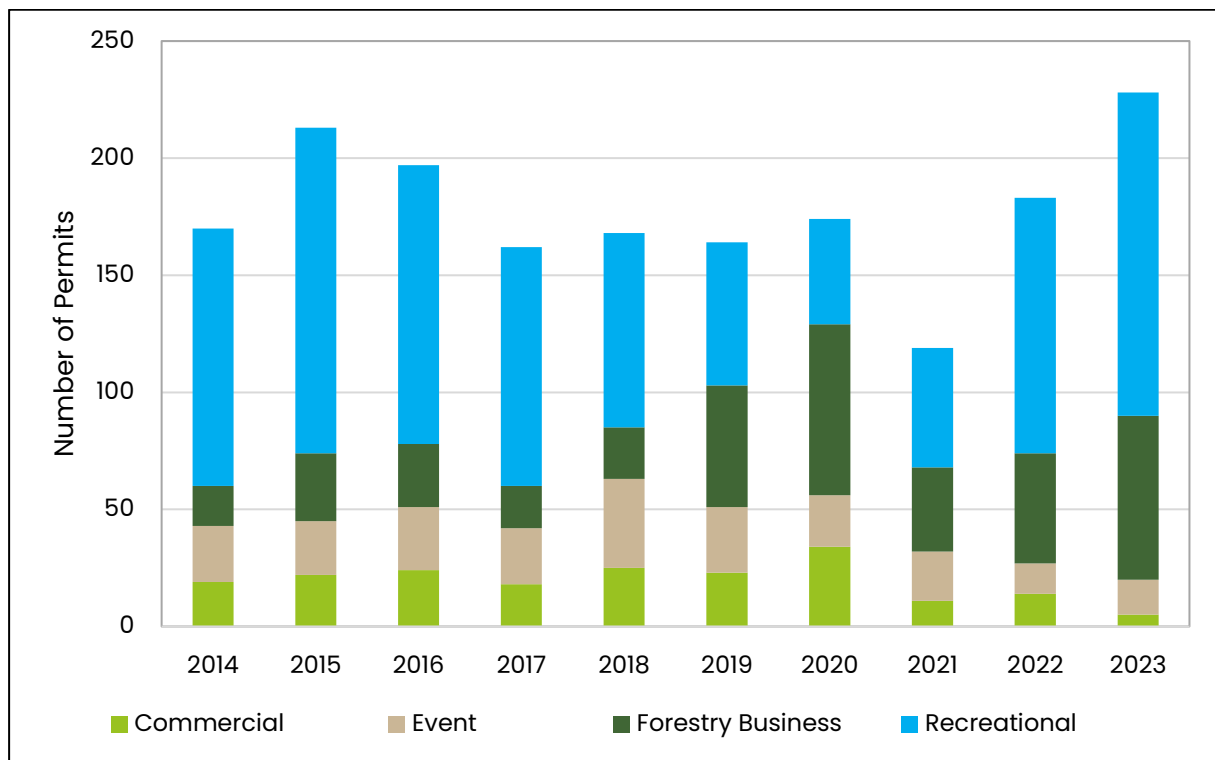
9. Recreational Use

Permits

Recreational use of the forests is permitted where it does not conflict with operational logistics and safety. Use can range from passive use to active hunting or vehicle-based activities.

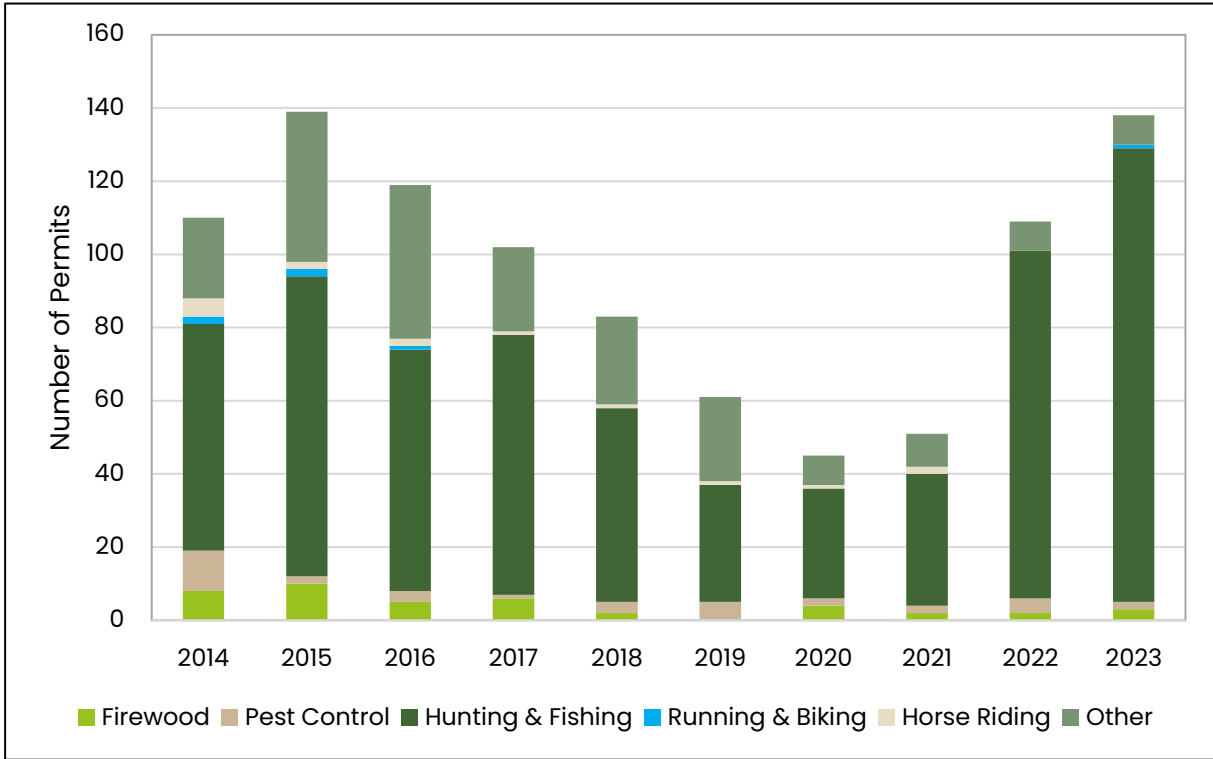
Recreational access is managed through a permit system. Permits for small group scheme members are either controlled directly by the member or through PF Olsen’s regional offices. All permit data is stored in PF Olsen’s databases.

The graph below illustrates the relative proportions of permit types issued over the last ten years within the FSC forests.



Permits issued for recreational use are the most common, followed by those issued to contractors and service providers for forestry business. Hunting permits make up the majority of recreational permits issued as shown in the graph below.

Recreational permits by type issued for FSC managed forests



10. 2024 Outlook

PF Olsen FSC Group Scheme

PF Olsen expects to certify into the PF Olsen Group Scheme, approximately 40 additional forests for three clients in the next twelve-month period.

Operating Environment

The 2023 adverse weather events have highlighted plantation forestry as a land use. FSC certification is more important than ever as a means to verify sustainable management of forests.

The national environmental standards for commercial forestry were updated in 2023, partly in response to the adverse weather events. These and evolving RMA plan changes make for a dynamic and challenging operating environment. We are well placed meet these challenges with a renewed Environmental Management System and focus on compliance and beyond.