

Rototuna Forest Management Plan

Managed by NZ Forestry, Owner China Forestry Group Corporation NZ

Period 2022-2027

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1. Introduction

This management plan has been produced in accordance with our commitment to the FSC Principles and Criteria. It contains details of NZ Forestry's general procedures and approach to forest management applied to certified forests under our management.

Our management of Rototuna Forest is covered in this plan.

2. Legal Rights and tenure

Rototuna Forest is Freehold land owned by China Forestry Group Corporation and Managed by NZ Forestry Ltd. Te Uri o Hou is the Iwi of the Whenua

3. Management Objectives

The primary management objective of China Forestry Group Corporation in Rototuna Forest is to maximise investment returns by increasing the net present value of the estate.

This will be achieved by progressing the following secondary objectives:

- Optimising biological growth to maximise value,
- Minimising tree crop expenses to maximise value,
- Maximising residual stumping,
- Managing legal, commercial, and physical risks,
- Ensuring that the forest asset is accurately described and modelled,
- Operating in a sustainable and ethically responsible manner.

4. Related Documents and Systems

1. NZF Environmental Management System
2. NZF Health and Safety Manual
3. Monitoring Plan
4. High Conservation Value Assessment and Management Plan
5. Complaints and disputes process
6. Contracts and Prescriptions
7. Geographic Information System (GIS)
8. Stand Records System (Geomaster)
9. Forest stewardship council / NZF policies and procedures.

5. Forest Stewardship Council (FSC)

NZF is committed to forest management in accordance with the FSC Principles and Criteria. FSC certification is an international forest product labelling scheme, which provides independent and credible verification that the product comes from forests that have been managed in accordance with the FSC Principles and Criteria.

Founded in 1993 FSC is an international non-profit organisation that promotes good forest management through an independent forest certification system.

The FSC is divided into three chambers.

1. Economic,
2. Social and
3. Environmental
4. in New Zealand a fourth chamber for Māori has been established.

FSC is controlled by an elected board from the three chambers and is administered from Bonn in Germany. FSC is supported and promoted by prominent international environmental and social advocacy groups such as WWF, Greenpeace and Friends of the Earth.

The FSC Mission Statement is: “The Forest Stewardship Council shall promote environmentally appropriate, socially beneficial and economically viable management of the world’s forests”. FSC has 10 Principles, each of which include Criteria which need to be achieved to obtain and retain FSC certification.

The 10 FSC Principles and Criteria ES202 can be found on the FSC website (www.fsc.org) or FSC NZ website <https://nz.fsc.org/en-nz/about-fsc>.

The National Standard for Certification of Plantation Forest Management in New Zealand provides local interpretations of the FSC Principles and Criteria and can be found at the FSC NZ website.

6. Forest Description

The Northland region's climate, topography, historic vegetation, and mixed geology have combined to form a complex pattern of soils across the region resulting in more than 220 soil types in Northland. Much of Northland is undulating to moderately steep hill country that has been weathered by the subtropical climate over a long period of time. As a result, most of the soils contain a lot of clay resulting in clays or clay loams.

On the eastern side of Rototuna Forest, the soils are predominantly strongly weathered and well structured. On the western side however, sandy or loamy sands predominate, with weakly developed topsoils.

7. Forest Statistics

Some 99 % of the planted area is established in radiata pine, with Douglas fir and Tasmanian Blackwood making up the balance. After almost a hundred years of trial planting, radiata has proven to be the species that grows most economically in the soil and conditions of New Zealand.

The table below outlines the total area of forest and the land use classification.

Area Type	Area (ha)
Stocked	5,571.6
Native (including eco systems)	524.0
Non-Productive	641.9
Land Bank	85.8

Age Class	Area (ha)
0-5	1025.6
6-10	401.7
11-15	609.8
16-20	1026.7
21-25	1892.5
25+	615.3
Total	5571.6

ESC Zone	% of Forest in Each Zone
Green	7%

Yellow	68%
Orange	8%
Red	17%

*as of ESC March 2018

8. Socio Economic Conditions

Prior to being established in plantation forestry the land was a mix of indigenous forest, scrubland and pastoral farming. The Northland Region has approximately 160,000 ha of plantation forests (MPI 2012). Forestry has been proven to be a good economic use of this erosion prone, nutrient deficient land. Due to the favourable soils, topography and climate the trees grow well in this region.

Figures from the 2018 census show the total population of Northland stands at 175,400, an increase of 6% over the 2013 census figure. Northlands population accounts for 6% of New Zealand's total population. The Northland Region has large areas of high socioeconomic deprivation¹, primarily due the small populations living in rural areas as well as the lower opportunities for employment and education within those areas. The small rural based communities located near the forests are very dependent on rural primary production activities (principally agriculture but also forestry) for employment opportunities.

Rototuna forest is 44 km south of Dargaville, and all the products from the forest pass through this small town. Growth opportunities in Forestry and Logging are evident and there has been a 3.7% increase in employment since 2005 and the 2013 Census employing 615 people with sawmilling employing 560 people². Forestry is an important industry within the northern region.

The percentage of Māori within the region stands at 32.4%. Approximately 7.5% of New Zealand's total Māori population live in Northland. Te Uri O Hau is the iwi for the Whenua of Rototuna Forest.

	Northland Region	NZ
European	75.7%	74%
Maori	32.4%	14.9%
Formal qualifications	72.6%	79.1%
Unemployment	9.7%	7.1%
Dominant occupation	Managers	Professional
Median income	\$23,400	\$28,500
Family w children	35.9%	41.3%
Internet	68%	76.8%
Home ownership	66.2%	64.8%
Employed in agriculture, fishing & forestry	8.9%	5.7%

9. Environmental Management

¹ *Atlas of Socioeconomic Deprivation in New Zealand NZDep2006.*

² Regional Economic Activity Report MBIE 2015

All NZF forest operations are undertaken in accordance with the Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017, relevant Regional Plans and National legislation and other voluntary requirements, including certification obligations for Forest Stewardship Council.

NZF is committed to maintaining a high standard of environmental and social performance throughout its forest plantation activities. The company recognises the importance of the environment and society for the future of its business, for the future of its people and for the future of the communities in which it operates.

NZF operate an environmental management system (EMS) primarily designed to comply with the Resource Management Act, NZ Environmental Code of Practice for Plantation Forestry, and the National Environmental Standards (NES). Environmental management also includes the identification and management of important values such as rare, threatened and endangered species, protection of reserve areas and waterways, carbon management and the control of pests and weeds.

The social perspective includes ensuring that contractors and their workers adhere to health and safety standards, and that engagement and consultation with neighbours and stakeholders in respect of operations on the forest is undertaken.

The cultural perspective includes consultation with the appropriate iwi and ensuring that cultural and historic sites and values are identified and protected.

The economic perspective refers to the selection of a species, management and harvesting regime, which provides an adequate return on investment while minimising the risks of investment.

The Pest Management plan allows for the containment and control of unwanted pest species which has a direct effect on the welfare of remaining indigenous resources within the estate. For example, the pro-active control of possums helps to protect indigenous native birds. It outlines the types of operations where chemicals are used and the mechanisms for recording the type and quantity of chemicals used in forest operations with a chemical register and chemical reconciliation system.

The Environmental Management System also provides guidelines and protocols for the proper use of chemicals and environmental incidents. NZF concedes that under current best practice, chemical applications are necessary to procure even and quality tree-crops as well as prevent increment loss through the competitive effects of weeds and the destructive effects of animal pests such as possums.

However, NZF will always actively seek management practices that reduce the amount of chemical entering the environment in its estate. This is of benefit not only to the environment but also NZF as chemicals are expensive to procure and apply so reducing these activities would have a substantial financial as well as environmental benefit to the FMU.

10. Environmental limitations

There are a number of environmental limitations to plantation forestry on the Poutu peninsular, the soil is sand based and, in some cases, just sand, it lacks nutrients which restricts the ability to grow very higher quality pruned logs. The proximity to the ocean means salt burn from the westerly winds can stunt the growth of the trees. It's also a highly valued cultural site for Local Māori having served as a stop in for waka going from the Kaipara harbour to the Tasman sea, it was quicker by land. The logs from Rototuna are prized for their stiffness in the northland domestic market.

11. 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 management. Well-managed forests can:

- Enhance water quality
- Stabilise and conserve soil
- Provide a buffer against flood flows during storms,
- Shade waterways for fish life
- Contribute to biodiversity and wildlife habitats
- Manage carbon appropriately
- Provide recreational, economic, and social benefits to the community.

On the other hand, poorly managed forestry activities can have harmful impacts NZ Forestry aims to identify the potential adverse impacts that its activities may have, and to institute environmental safeguards to prevent or to minimise the adverse impact from its operations. In general, our approach to environmental management falls into two inter-connected categories:

- Compliance where NZ Forestry work to ensure rules are met and values are protected from our operations.
- Active management of environmental values, specifically:
 - Biodiversity, including of:
 - Rare and threatened species management
 - Management of conservation areas
 - Integrated pest management
 - Waterways and land management
 - Carbon
 - Herbicide management
 - Cultural and historical sites.

12. Compliance

Compliance is focused on meeting Regional Council rules and industry best practices. Operational compliance is managed by the designated NZF staff member and contractor from planning through to post operation remediation. Compliance is then audited by NZF staff members and territorial authorities.

The Harvest Forester provides an overview of operational environmental management and in particular plans audits for high-risk operations and council resource consent conditions.

NZ Forestry also operate a system to identify any site-specific environmental risks such as streams, adjacent natural vegetation, archaeological sites, etc., which may not be covered by following the generic BEPs.

Depending on the operation this is completed in the harvest planning stage and requires the Harvest Forester to identify environmental or social risks and then implement measures to minimise potential adverse effects.

For establishment operations this is completed as part of the site assessment. Furthermore, there are safeguards should an environmental risk be discovered during the operation such as archaeological sites.

13. Risk Management

At the beginning of the planning phase of operations staff determine what values may be at risk from an activity.

This is undertaken through our Harvest Plan production or Establishment Plan where the operation planner considers if the following values may be affected, and if so, how management can take these into account:

- If a Resource consent required
- Archaeological sites present.
- Adjacent to Native areas - rare species are present.
- Adjacent to (within 10m – i.e., the Riparian Zone) a perennial stream, river, lake or wetland.
- Harvesting undertaken by hauler.
- Adjacent landowners.
- Public utilities such as powerlines, public roads, etc.
- Registered easements
- Māori or cultural issues.
- People are likely to be adversely affected by the proposed operation.
- Landscape sensitivity or other restriction indicated in the GIS.
- Covenants or easements.

The consequent action will depend on the values and risks identified and may include engagement with affected stakeholders, a change of operation or approach, protection measures, monitoring or following one of our Best Management Practices.

A Prescription is developed prior to the commencement of all operations which details the work requirements and standards to operators. Any conditions for the activity, details about the site terrain, stand data, a description of the job, specific environmental, health and safety requirements, as well as any specific reporting requirements are incorporated into the prescription. Reference is also made, where necessary, to the company's Geographic Information System (GIS) or other key document or procedure.

Environmental hazard identification is completed, and control measures are documented and communicated to the operator along with the management plan. During operations, operators are required to follow the management plan. Where there is potential for soil loss or sediment discharge onto sensitive environmental sites, the operator is required to implement correct water control procedures.

14. Environmental Impacts and Safeguards

To manage Environmental impacts NZF undertakes environmental assessments on a site or operational specific basis.

It is recognised that environmental components such as soil, water and underlying geomorphology are an essential part of the forest and broader ecosystem and need sensitive management and safeguarding.

Environmental safeguards have been developed into management prescriptions and operational procedures, based on a combination of company assessments, external assessments and operational experience.

Each operation is individually assessed and a plan produced detailing site specific management prescription. Compliance with legal and other regulatory frameworks is monitored both internally and externally through Council Compliance Officers.

Rototuna Forest has numerous operational constraints that arise from environmental compliance.

NZF maintains a Geographic Information System (GIS) which records spatial information relevant to the protection and maintenance of production, environmental and cultural values. The GIS delineates exclusion and reserve areas and contains environmental information such as known localities of threatened species and additional biodiversity values, NZF also store information about RTS in INaturalist

Erosion Susceptibility Classification, stream catchments and visual landscape features. This information is used during operational planning primarily in the development of site-specific operational management plans.

Sedimentation is a key component that forest operations must manage and limitations around operations are directed by the Erosion Susceptibility Classification, which is legislated under the Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017. This legislation also sets out key requirements forest managers must meet when managing operations during fish spawning and nesting periods for protected bids.

15. Enhancement of Forest Services

Forests provide several services that enhance our environment. These include biodiversity, waterway management, soil conservation and historical sites.

16. Biodiversity

Wetlands

Wetlands support processes which provide environmental services like water storage and flood control, nutrient removal, erosion control and water table maintenance. As an endangered habitat they are of significant value, so steps have been taken to enhance the wetlands through wilding and weed control, increasing setbacks and planting a buffer of native seedlings.

Waterways and Land

Our attention to waterways is ingrained into our forest management practices, in particular Best Environmental Practices. These take into account both national and regional rules and regulations that cover water quality, erosion, compaction and other mechanisms to protect land and water values.

Some key factors or process NZF use to protect land and water values include:

- As best practical having a well spread age classes that minimise effects of forest operations. This includes reestablishment and high-level planning for catchment areas.
- Through application of BEPs that, for example, prescribes re-plant setbacks and water controls or end hauling material away from waterways.
- Operational planning so high-risk activities are avoided.

- Operational audits that focus on soil and water values.
- Retaining and enhancing riparian strips that filter sediment before it enters the waterways.
- Engagement with regional authorities to ensure compliance with rules and permitted standards and advise on appropriate activities in high-risk areas.

17. Forest Management & Operations

NZF manages Rototuna Forest in the Northland Region of New Zealand to provide logs for its customers derived from fast growing, sustainable *Pinus radiata* forestry plantations. The extent to which the forest will prosper in the future depends greatly on the quality of the natural and physical resources that allow us to function.

NZF is committed to sustaining the natural resource base, not only for the future of the company, but also for the future of the communities in which NZF operates.

The forest estates are managed consistent with industry best practise and to meet the five-Year and annual plan, to ensure that the management of the forest is sustainable, from an environmental, social, cultural and economic perspective. NZF aims to manage the forest estate to supply a range of log products. The evaluation and selection of a silvicultural system for the forest, is based on recognised forest practices and guidelines, taking into account management objectives for the specific site & input from the client as to how they want the forest to perform.

The primary objective in selecting a silvicultural system is to maximise the value of wood products grown and harvested from the land whilst maintaining the long-term productivity of the land and other environmental values. In determining the appropriate silvicultural system, several factors need to be considered. These include, but are not limited to:

- Plantation management objectives.
- Species and regime selection.
- Rotation length.
- Site environmental factors.
- Natural and cultural values.
- Fire management requirements.
- Commercial / marketing factors.
- Plantation Owners investment requirements.
- Operational constraints; and
- Wider community obligations.

Species Selection

Pinus radiata is the forest species selected over decades of trials in New Zealand and is grown primarily as a sawn timber resource and provides logs to local mills. It is frost resistant, tolerant of dry sites and capable of satisfactory rates of growth on less fertile sites.

18. Establishment and Silviculture

The regime in Rototuna forest is a structural one – establishment is at 1000 stems per hectare (sph), followed by one thinning of the stand to a final stocking of 500 sph. Stands are thinned to provide the optimum growing space for selected crop trees enabling us to maximise their economic return. The aim is to thin out the smaller or poorly formed trees, leaving the bigger, better formed trees to grow on. Thinning to waste operations results in the thinned stems being

left on the forest floor to decompose. Due to the type of terrain the forests occupy Production thinning is not a viable option.

Year	Operation	Description
-1	Land preparation	Weed control
0	Planting	1,000 stems per hectare <i>Pinus radiata</i>
1	1st Release	Undertaken to release from weed competition. Usually with a mix of hexazinone and terbuthylazine applied by aerially, sometimes this could be knapsack but very rarely.
10	Thin to waste	10 m mean crop height
25-27	Clearfell	Dependant on stand characteristics. See harvesting for more detail.

The establishment phase is crucial to obtaining a quality future crop. We aim for high seedling survival in order to compete with other on-site vegetation. Key objectives at establishment to ensure a good crop are:

- High quality and healthy tree stock properly chilled and delivered to the site.
- Cultivation of the soil.
- Correct planting technique to establish root structure.

Herbicides are used for weed control and are scheduled only for the year of planting. Successful establishment means that herbicides are only required to be used up to twice per rotation. Areas that pose risks to the health and safety of our contractors are release sprayed aerially. Herbicides are selected based on their ability to desiccate and/or kill the target weed species at the same time as being safe to use (i.e., non-toxic to non-target species, such as animals and humans) and break down quickly in soil and water to a safe organic substance. spray plans include strategies to protect watercourses, wildlife habitats and areas of native forest.

19. Tree Health

The clay rich soils in other areas of the Northland region are generally deficient in phosphorus which is essential for healthy tree growth. Other common nutrient deficiencies are likely to be:

- Boron – Boron deficient trees can suffer dieback from the terminal buds and this symptom is closely associated with moisture stress and drought. Trees growing on the drier East Coast of both Islands and on the pumice soils of the Central North Island are prone to boron deficiency.
- Magnesium – Magnesium deficiency is a particular problem of the Central North Island and is associated with the phenomenon known as mid crown yellowing where the middle of the tree crown turns a yellow colour. Heavily pruned trees and some seed lots are more predisposed to this deficiency than others.
- Nitrogen – usually lacking in coastal sand forests.

Fertiliser will only be applied if the health and the growth of the trees are significantly affected or where economic analysis demonstrates a benefit.

Pests in the forest estate include wild goats which eat young trees and ring bark older trees while scratching their horns. Possums, which can attack the growing tips of trees causing stem malformation and die-back. Possums will also eat native tree species and predate upon native

wildlife in conservation reserves and parks. Rabbits and hares can also be a pest in the first two years after planting, as they can eat the tops of young trees. Pigs and possums are the main pest of concern in Rototuna forest, and a large amount of pest control is required annually to achieve an economic crop.

20. Monitoring of Silvicultural Systems

The plantation monitoring program, carried out to ensure acceptable stocking, performance, and quality, involves surveying and assessment of the recently established planted area up until age 3 to ensure successful reforestation has been achieved at these critical early stages of the plantation life cycle.

Monitoring includes:

- Site preparation quality control.
- Planting quality control.
- A survival assessment scheduled for February after the planting is completed to check stocking levels have been achieved; and
- Annual plantation health assessments.

Plantation assessments and monitoring occur throughout the rotation (not simply restricted to the early operational phases). For example, PSP or Mid Rotation inventory as agreed by the client.

21. Harvesting

NZF in conjunction with CFGCNZ contract out the estate planning function of the forest & woodflow generation to a third-party consultant as this is done to include CFGCNZ forests NZF does not manage. NZF is involved in the consultation and development of the long term & 5-year plan. From this a 5-year harvest plan is developed, and then translated into an annual harvest plan. The rate of Harvest NZF & CFGC endeavours to harvest its forest resource as closely as possible to the optimum tree age for each stand.

A major determinant on the level of harvest is the age class distribution. Our aim is to harvest close to optimum tree age rather than maintain a set yield. An uneven age class distribution, (with different areas of trees in each age class) is a consequence of the amount of forest established & harvested each year. The table below shows the age class distribution: being first rotation, this forest was established in stages to somewhat normalise the harvest.

Age	Area	Percentage
0 - 10 years	1427.3	26
11 – 20 years	1636.5	29
21 - 25 years	1892.5	34
25 + years	615.3	11
	5571.6	100

The ability to alter the harvest to respond to market demand fluctuations from year to year does exist. Harvesting is usually scheduled at around 25 for radiata pine Actual timing depends on stand and market conditions.

Possible destinations for the harvested products include.

Destination	Kms
Kaihu Valley Sawmill	69
Marsden Point	132
CHH LVL	132
Northpine	137
Mt Pokaka Pine	150
Rosvalls	115

22. Harvesting Criteria

NZF uses three basic criteria to ensure the right harvesting methods are employed:

1. **Health and Safety:** the method is the most appropriate for the topography and nature of land so that the potential for injury is minimised.
2. **Environmental:** the method, which creates the least impact on the environment.
3. **Economic:** the method, which is the most cost-effective for the area, taking safety and environmental considerations into account.

23. Conventional Harvesting

Conventional harvesting is characterised by log making on local skid sites. Various methods are used, including ground based, tethered, swing yarder and hauler tower on steeper areas and selection of these will depend primarily on the terrain.

24. Harvesting and Slope Decisions

NZF is committed to adopting harvesting techniques and technology that minimises the impact on the environment and reduce the risk of accidents and injuries. To meet these objectives, land is assessed based on the slope map in the GIS. The correct configuration is then decided using best practise guidelines and the experience of the harvest planner.

The land in Rototuna forest is all flat or rolling (under 45 degrees) which means it can be mechanically harvested with Ground based equipment such as rubber tyred skidders or tethered skidders.

25. Monitoring Plan

The purpose of a monitoring program is to assess the condition of the overall forest, yields of forest products, chain of custody, management activities and any social and environmental impacts. Those elements to be monitored and the frequency and intensity of the monitoring is set out in the Monitoring Plan.

26. Monitoring Forest Growth and Dynamics

A critical component of management planning and continuous improvement is understanding the available forest resource. A key component of this is through forest measurement and

mapping. In order to accurately determine the area of net stocked area, reserves, infrastructure and riparian areas these must first be mapped using aerial photography. Data collected early in the rotation during establishment and silvicultural tending quality control assessments is captured in Geomaster and provides base data for future operations. Preharvest inventory is undertaken at around 3 years prior to harvest to determine, to at least a 2% sample level, the predicted yield and product outturn of stands at harvest. This data is then used post-harvest to reconcile the actual yields to those predicted. The PHI & reconciliation are done by CFG but implemented by NZF.

The forest growth and dynamics is monitored at several stages of forest development, including:

- QC Following planting, pruning and thinning.
- Survival surveys
- Foliage sampling
- Forest health surveys
- Pre-harvest inventory
- Post-harvest reconciliation.

27. Social impact assessments

NZF understand that forestry operations we undertake can affect our neighbours in a variety of ways. The social impacts of Harvesting and cartage operations are assessed during the harvest planning operation.

Due to the size of the estates managed & NZFs local presence NZF can communicate directly with those neighbours who have the potential to be affected by operations. This is done either face to face or verbally over the phone.

Harvest Plans, Prestart induction audits or prescriptions are updated with any requirements the neighbours have requested, such as calling them when working close to the boundary or if there are trucking restrictions.

Feedback from neighbours during the harvesting operations is generally by phone, face to face or email. Historically most concerns from neighbours' area regarding cartage times, dust and working along boundaries where there are fences or animals present. Any concerns from the neighbours are acted upon in a timely manner. Mud: Most of the complaints are due to mud being dragged out onto public roads or the level of trucking effecting the road. NZF monitor these impacts on a weekly level with our site inspection notice and tidy them up in a timely manner. Prior to any spray operations NZF contact neighbours on the boundary with the affected forest to notify them of the operation.

The Forester will discuss the operation and address any concerns they may have. Where there are concerns that need to be addressed these will be added to the prescription.

The Forester remains present during the spraying of sensitive boundaries to ensure NZF are present to mitigate any neighbour concerns.

A database of social impacts is kept and details the steps taken to manage the impacts of operations.

28. Spatial Information and Decision Support Systems

NZF currently has an integrated GIS system that contains detailed spatial and stand information data layers for all forests in the resource. The current GIS allows NZF to produce a variety of high-quality maps with a large array of necessary information displayed including legal and stand boundaries, protected areas, land-use capabilities, tenure and related spatial information, such as contours, hydrology and transportation features, these are stored as an ESRI Spatial database. The GIS is used to plan harvesting operations, storing locations of landings and

planned roads. All maps and mapping systems are generated from these GIS systems and will continue to be so into the foreseeable future.

NZF in conjunction with CFGCNZ uses the ATLAS Technology Suite (e.g., ATLAS Geomaster) for our stand record system, forestry and harvesting management systems. Atlas is the leading provider of forestry software within New Zealand and was developed by Scion Research, formerly known as Forest Research Institute. Health, safety and environmental auditing is managed with NZF's own H&S System. All audits and checklists are available electronically and available without data coverage. Corrective actions are monitored in line with NZF's H&S System and procedures.

29. Forest Protection

Pest management within Rototuna is subject to statutory obligations under the Northland Regional Council's Northland Regional Pest and Marine Pathway Management Plan 2017-2027. This plan applies to both plant and animal pests and categorises them in terms of management objectives.

The overall objective in managing plant and animal pests is to

- Meet statutory obligations under the Northland Regional Pest and Marine Pathway Management Plan 2017-2027
- Reduce their impacts on plantation and indigenous biodiversity values.
- Ensure that any impacts from pest species originating in the forest boundaries are promptly dealt with.
- Monitor the abundance and distribution of these species within Rototuna.

Pest control in Rototuna will be managed through the processes laid out in detail in the NZ Forestry Integrated Pest Management Plan - Northland

30. Fire Management

There is a genuine fire risk in Rototuna with the potential for dry summers in the Northland region. NZF in conjunction with FENZ communicate and develop plans to reduce the risks as per our EMS, including, maintaining roads so emergency response can access the forest. Having up to date neighbour contacts so we can communicate with the community, planning operations outside of the largest fire risk & maintaining security from the forest.

31. Security Access, Permits and Events

NZF has tight control of access through a thorough permitting system where applications are made on a purpose designed form. All drivers and their vehicles must obtain access permits which are only approved when the following is provided:

- Valid reason for entry.
- Valid full drivers' licence.
- Vehicle insurance (can be from the contractor's company)
- Public liability (minimum \$5 million), firefighting (minimum \$1 million) and vehicle liability insurance (minimum \$5 million).

These processes ensure NZF approves only qualified access and can pass on safety and behavioural information. Permits enable NZF to determine if the person is appropriate to enter the forest (i.e.: checking driver license, firearms license, previous history - trespass, etc) and to pass on behavioural information such as safety messages, road rules, closed areas (i.e.: where harvesting activities are happening), hazards etc.

Recreational access is generally managed through the NZF permit system. The key feature of the permit allows the public to hunt within specified forests it manages and access fishing rivers by vehicle, during daylight hours on weekends when the fire danger is low. It also prioritises mana whenua rights and access agreements.

32. Forest Communications

There is cellular coverage in certain areas of the forest and most of these are sign posted, most of the communication is done within the forest via NZF 66 & 64 radio channels. When working alone in the forest staff carry personal locators have a check procedure to ensure safety.

33. High Conservation Value (HCV) Areas

Whilst NZF protect and manage all conservation areas, in particular those that meet the NZ Forest Accord we prioritise active management to those with special or particular values, such as those that meet the FSC high conservation values (HSV) criteria. Each site has specific management aimed at their identified or significant values. NZF will progressively assess new areas adjacent to harvest sites for HCV values with the objective to protect and enhance these areas using detailed in the Reserves Management Plan. The following sections provide definitions of HCV and how they are assessed and managed. High Conservation Values Principle 9 of the Forest Stewardship Council deals with High Conservation Values and places significance on the maintenance and protection of areas identified with these values.

NZF recognises the importance of High Conservation Value areas and are committed to identifying, protecting and where practical enhancing forest that is recognised as having high conservation value. High Conservation Value is identified using the FSC definition (below). Native areas are assessed through reviews of existing relevant assessments, consultation with stakeholders and undertaking assessments in forest areas that may contain high conservation values. High Conservation Value (HCV) are areas that possess one or more of the following attributes:

HCV1. Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia).

HCV2. Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.

HCV3. Forest areas that are in or contain rare, threatened or endangered ecosystems.

HCV4. Forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control).

HCV5. Forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health).

HCV6. Forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

34. Indigenous Biodiversity

Within the forest NZF & CFGCNZ actively consulted with DOC, Northland Regional Council and a qualified Ecologist for the management, restoration and conservation of Native areas which is detailed in the Rototuna management areas for HCNZ. Identification of high biodiversity values are determined by analysis of the following criteria:

- They contain rare, endangered or threatened ecosystems.

- They contain biodiversity values that are globally, nationally or regionally significant as described by the NZ National Policy Statement on Biodiversity.
- The high biodiversity values are either viable populations or ecosystems.
- Are crucial to the survival of category one endangered species.

35. Significant Natural Resources

Significant natural resources within the forest estate are identified through the relevant regulatory authority plan as either a municipal water supply catchments or as critical for erosion control.

36. Community and Cultural Value

Areas of high community or cultural value are identified as having the either of the following characteristics:

- Having high archaeological significance that is of national or regional significance.
- Having community values or significance that is essential to the identity of the wider community in which it exists.

While HCV are determined through this process the identification and management of FSC HCV also includes engagement.

37. Stakeholder Engagement

Should new areas be identified, or reviews of plans undertaken, NZF engages and where relevant inspects these areas with stakeholders (such as DOC, iwi and local experts) to determine if the identified values meet the FSC definition of HCV.

The following steps shall be taken.

- stakeholders with interests in High Conservation Values will be invited to participate in consultation via email or phone with sufficient notice.
- records of these invitations and subsequent consultation will be maintained in a stakeholder engagement register.
- the consultation process will be open to parties claiming an interest in or affected by the implementation of this plan.
- all identified stakeholders will be provided access to sufficient information; and
- Stakeholders will be provided copies of the final plan.
- NZF will use the discussions with these stakeholders to develop management and monitoring procedures for any areas that are agreed to have HCV.

These areas in forest boundaries that are listed under legislation or are a priority for conservation or considered to be of high significance under Government policy.

Rototuna Forest has wetlands which have been identified by the regional council as being significant. In addition, the New Zealand government has set out four national priorities for biodiversity protection have which specifically includes the protection of indigenous vegetation associated with wetlands. New Zealand wetlands have declined significantly since European settlement, with only 9.4% remaining and those that remain are under severe threat from human activities. The wetlands in Rototuna Forest are assessed HCV2, 3 or 4.

HCV2: 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: Forest areas that are in or contain rare, threatened or endangered ecosystems habitats or refugia.

HCV4: Forest areas that provide basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.

Appendix 1. contains summaries of the 379 ha HCV areas ROTO1, ROTO2, ROTO3, ROTO4, ROTO9 and ROTO11 that have been assessed as having HCV status.

38. Management objectives

To maintain and where possible enhance the viability of threatened species populations that occur within the FMU.

Threats to the High Conservation Values

- Loss of habitat due to operational activity.
- Introduction of weeds, diseases and pests.

39. Management Strategies

- In order to achieve sustainable forest management goals, forest operations comply with the Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017.
- Operations that have the greatest potential to affect the environment, such as Harvesting, earthworks, quarrying and stream crossings, require detailed management plans for managing environmental risks and preventing damage to native forests.
- Undertake training and awareness of staff in the identification and management of threatened species.
- Consultation with the Department of Conservation, Ecologist and local council, as to best undertake restoration operations where required.
- Ensure plantation operational activities do not impact on natural forest or other non-productive areas within the FMU.
- Undertake active management works e.g., wilding, weed and pest control, as required and identified through monitoring activities.
- Continue to undertake threatened species management in Underwood Farms, in consultation with relevant authorities and experts.
- Implement measures to ensure protection of HCV areas (Precautionary approach, setbacks, etc.), where plantation harvesting or management activities are undertaken in close proximity.
- Protecting biodiversity values, retention of natural forest across the landscape; retention of streamside reserves; management of risks from weeds and diseases.
- Comply with plantation operational procedures and identified thresholds, within the Environmental Manual.
- Where applicable and appropriate develop site specific Management Plans for HCV sites.

40. Other Conservation Reserve Areas

Managing conservation areas (natural areas or reserves) is a key component of FSC certification which is primarily undertaken through the GIS & EMS. FSC certification requires a minimum of 10% of the management unit to be set aside as conservation areas, currently this is at 8.4%, all within the Kaipara Ecological District. This equates to a shortfall of 76.1 ha. Issues with the original mapping of the forest have been identified; therefore, the priority is the remapping of the forest area and set aside reserves. There is approximately 642 ha identified as 'non-productive'. Part of this area may in fact be suitable to include in the calculation of the reserve area. This assessment will be undertaken by an ecologist as a matter of priority. Where there is an area shortfall, FSC standards provide a checklist of options through which 'ecological equivalence' can be achieved. If this is needed to be pursued, then areas suitable for enhancement will be identified by the ecologist and timelines and management plans for those areas created.

In general reserve management is relatively simple where pest control and wilding removal produce the best biodiversity results. Pest control is mostly achieved through hunting and trapping. Wilding control will be undertaken within identified reserves.

41. Monitoring

Monitoring is undertaken by NZ Forestry or at times by engaging an expert. The method of monitoring will depend on the high conservation values and the outcome of consultation with stakeholders. Monitoring is undertaken by visual inspection, for degradation, pest damage, unauthorised activity and wilding pine presence. 5 yearly desktop assessments will be carried out to determine the likely presence and distribution of rare, threatened and endangered species. Marlborough district council monitor the SNA areas and provide reports. Any areas that are covenanted will also be monitored by the QEII trust every two years.

- Complete monitoring activities throughout the FMU in accordance with NZ Forestry's commitments to managing wilding pines and weed species in HCVF.
- Monitor operations to ensure compliance with the requirements specified in Harvest Management Plan or Earthworks Management plan. Monitoring results are recorded through the Vault Environmental Checklists for operations.
- Where species change category through legislation, NZ Forestry will ensure any impacts on the FMU are considered.
- Harvesting and Earthworks are subject to external checks by the Regional Council to demonstrate compliance. Auditing results will be included in Annual Monitoring Report.
- Effective monitoring, management, and research of HCVs is collated and summarised annually within the HCV Monitoring Report.

42. Responsibility

- Harvest forester
- Regional Manager

43. Non-production benefits from the forest

The primary commercial non- timber (timber and pulp) uses arising from the forests are:

- Use by apiarists.
- Hunting, and indigenous land uses
- Access to public walkways.

At present, such requests for access are quite low and are managed through a permitting system.

Public usage of the Rototuna Forest, as organised groups and clubs, as commercial or non-commercial events or as individuals, is provided for subject to operational and safety constraints, landowner requirements, and Iwi controls in respect of existing customary rights and existing public access rights. Where other public use requests of Rototuna forest arise, the extent and conditions of these rights will be determined through consultation with stakeholders and the public.

44. Culturally and Historically Significant Sites

Rototuna is located on the northern side of the Kaipara Harbour in Northland and has 483 identified Historical sites and in the event that a new site is found or for known sites in other forests under NZF management our approach to such sites or values is to:

- Protect historic sites and features in accordance with the Heritage New Zealand Pouhere Taonga Act 2014
- Known sites (specific and landscape level) are registered in our GIS system for recognition when planning is undertaken.
- Educate employees and contractors to follow best practices to prevent damage (particularly by earthworks) to archaeological sites.
- Consult with appropriate stakeholders, most critically iwi representatives and where necessary an archaeologist, to develop management options for the protection of significant archaeological sites before commencing operations.
- Delineate known sites in the forest by inserting painted marker posts on the site's perimeter and including in the forest wide GIS system. The system will flag the site to NZ Forestry staff when operations are being planned
- Train employees and contractors to identify and report newly discovered sites of significance.

45. Revisions

Upon the identification of any technological, scientific or any other benefit to the forest, the forest manager will

- Discuss the potential benefits or negative impacts with the wider NZF team
- Contact another FM who has dealt with the new technology to undertake a peer review.
- Trial the new benefit on a sample of the forest
- If the benefit is found, revise the management plan, and incorporate the new system into the management plan.