# TE PIKI FOREST
# &
# PUKERIMU FOREST

## Owned by
## WAIKAWA LANDS TRUST

## Forest Management Plan

**For the period May 2017 – May 2023**

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# Introduction

**Foundation Principle**

Waikawa Lands Trust is committed to adopt the Forest Stewardship Council (FSC) Principles and to meet their Criteria and the FSC standards of good forest management. These standards include ecological, social and economic parameters.

Waikawa Lands Trust is committed to the PF Olsen FSC Group Scheme that is implemented through the Group Scheme Member Manual and associated documents.

**About this plan**

This Management Plan provides a summary of the Waikawa Lands Trust managed forest estate and intended management over the specified period, and contains:

- A description of the land and its landscape context;
- A description of the external operating environment;
- Management objectives;
- A description of the commercial plantation estate and its non-commercial elements and obligations;
- Forest management, harvesting, protection and land management intentions;
- Provisions for monitoring and protection and public usage;
- Maps showing plantation area, legal boundaries and protected areas.

This plan pertains to the management of the Waikawa Lands Trust managed estate and will be current for the next 5 years. The next major review date for this plan is **May 2023**. Minor annual revisions will be made to this plan in the interim are recorded in Section 18: Register of Plan Change and Review.

# The Landscape Context

## 1. The Forest Land

**Overview**

This section describes the legal and physical attributes of the land on which the forest is located. Included in this section are discussions of:

- Legal ownership and tenure;
- Location and access;
- Topography;
- Soils;
- Climate.

**Legal ownership**

The legal description of the land on which the forest is situated is:

**Te Piki:** Te Piki 13, 3, 2 Blocks II & III Whangaparoa North & Whangaparoa S.D.
**Pukerimu:** Tawaroa Topu Blks IX & X Whangaparoa S.D.

The tenure is freehold.

**Forests & location**

Te Piki forest is located off Ngarue Road approximately 15 kilometres east of Waihau Bay on State Highway 35 in the Opotiki District. Internal forest roads provide access to all parts of the forest.

Pukerimu forest is located on Tawaroa Station approximately 5 kilometres west of Waihau Bay on State Highway 35. access to the property is gained from State Highway 35 through Orete Forest Rd, (access through Orete forest). Internal tracks provide limited access to the forest. The overwhelming bulk of the forest resources as located in relation to potential markets is listed in the table below.

***Table 1. Distances from forests to nearby markets***

| Potential Market or Export Port | Minimum Distance from Forest (km) | Log market |
|---|---|---|
| Mount Maunganui | Approx. 230 | Export |
| Whakatane | Approx. 185 | Domestic |
| Kawerau | Approx. 250 | Pulp |

The geographic locations of the Forest blocks are shown in Map 1

**Topography**

**Te Piki**
The topography of the forestland is flat to rolling contour with a few steeper areas. The property drains into the Pacific Ocean via the Te Rereauira Stream. Slopes are broken and in the order of 0 to 25 degrees with the underlying land holding Land Use Capability classes 2 and predominantly 6. Almost the entire property will require logging by ground-based tractors.

Altitude ranges from 10 to 70 metres above sea level. The general aspect is north west.

**Pukerimu**
The topography of the forestland is rolling contour with a few steeper areas. The bulk of the property drains into the Pacific Ocean via the Waiokaha Stream.

The land is "Class 7" being subject to erosion and with severe limitations on pastoral use. Slopes are broken and in the order of 20 to 25. The forest is expected to be harvested by hauler or cable operations.

Altitude is from 40 to 210 metres above sea level.

**Soils**

**Te Piki**
Soils are characterised by yellow brown loams with the potential for slight earth slip. Theses soils have natural fertility but are suitable for production forestry.

**Pukerimu**
The soils on the property are Tinui silt loam, Waikura sandy loam and Maka sandy loam with the potential for moderate earth slip. These soils have low natural fertility but are suitable for production forestry.

**Climate**

**Rainfall**: The average rainfall at nearby East Cape is about 1,371 mm and is relatively evenly distributed during the year. Predominant winds are from the north.

**Temperature**: The mean annual temperature is around 15.2 degrees Celsius.

## Map 1 - Forest Location Map

# 2. The Broader Landscape

**Ecological Districts**

Te Piki and Pukerimu forests are in the Pukeamaru Ecological District. This district houses an enclave of highly modified ecosystems on the edge of a relatively intact mass of indigenous forest and associated catchments.

The area is defined by the steeply rising forested backbone of the Raukumaras and the narrow alluvial flats bordering a warm coastal climate. This combination leads to diverse vegetation associations in the warm moist coastal areas with more uniform types as altitude increases.

Lowland alluvial river environments where this forest abuts are also often associated with wetland and estuarine areas, many of which have been severely modified or depleted over time.

Past human activity has seen intensive modification and destruction of the lowland and foothills environments inclusive of those in which the forest sits. In the uplands, primary modifying influences have arisen from mammalian pests, particularly goats, stoats, and possums.

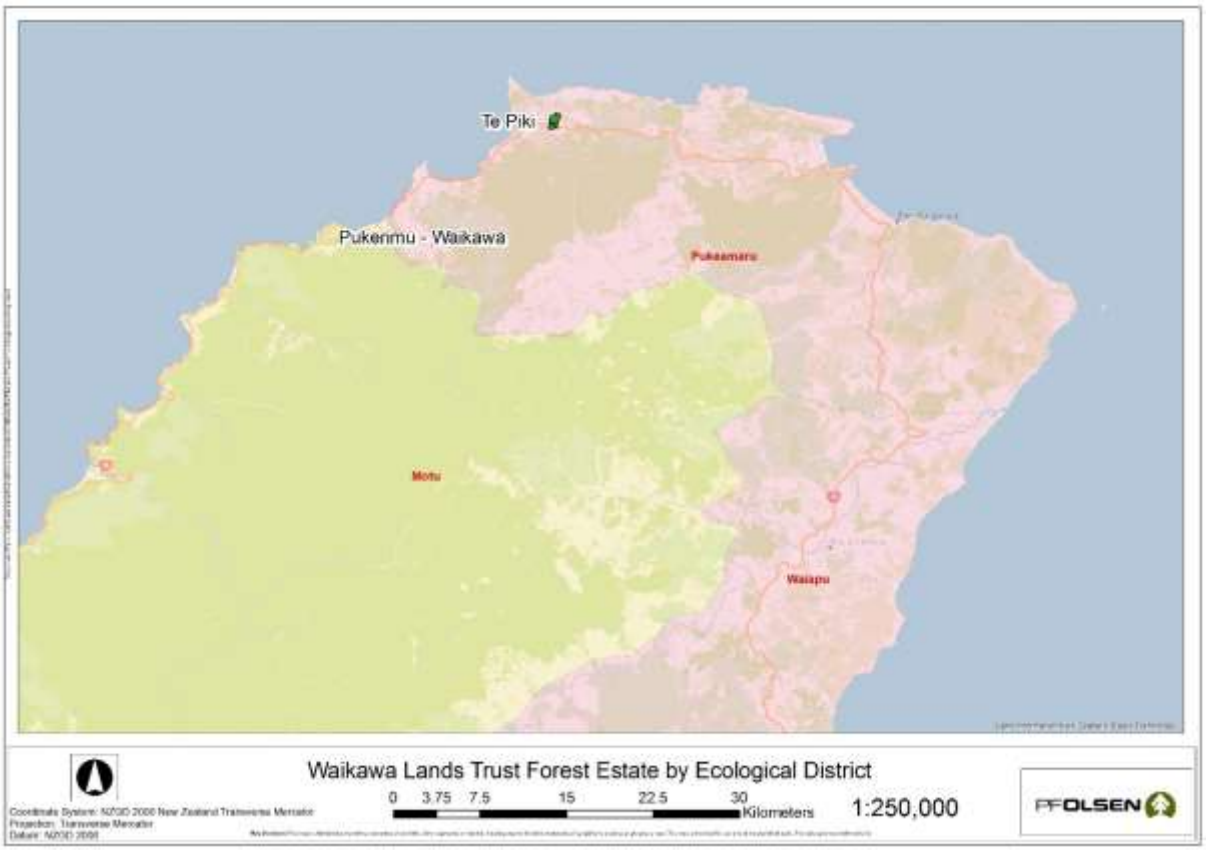


***Figure 1 Waikawa Lands Trust estate by Ecological District***

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**Te Piki forest** is located on a small series of uplifted hills surrounded by what was once coastal estuarine and freshwater wetlands. Current indigenous remnants on the hills occupy Land Environments NZ type D1.1, which are well represented and well protected in the greater regional and New Zealand context.

Remnants on the footslopes adjacent to alluvial soils and old wetlands conversely occupy environments such as A7.2 and A6.1 that have become severely depleted, lack significant formal protection and are probably vulnerable.

**Pukerimu forest** is located further inland, in the foothills separating the inland Waikura Valley from the coast. The indigenous reserves within Pukerimu forest fall under LENZ type D1.1.

Under the FSC National Standard for Plantation Forest Management in New Zealand revised in 2013, an area of reserves equivalent to 10% of the productive area should be reserved within each ED, inclusive of reservation of 5% of the productive area within large forests (> 1,000 ha).

The table below illustrates the percentage of area protected within the Waikawa Lands Trust estate, compared to the total area protected within the Pukeamaru Ecological District. Where this cannot be achieved a series of options to effect an equivalent level of 'ecological effort' are permissible under the standard.

***Table 2. Protective status of the ecological landscape***

| LENZ type | D1.1 | A7.2 | A6.1 |
|---|---|---|---|
| Original (pre-Māori) percentage of ecosystem type in Ecological District within land title: | 391,238 ha | 346,272 ha | 766,293 ha |
| Natural ecosystem area remaining | 301,253 ha | 13,504 ha | 226,056 ha |
| Proportion of remaining natural ecosystem under protection: | 141,588 ha | 1,931 ha | 36,847 ha |
| Protection by certificate holder | <3.9 ha<br>0.0027% | <0.3 ha<br>0.016% | <3 ha<br>0.008% |
| Protected areas as a % of Te Piki forest | 38.8 % | | |
| Protected areas as a % of Pukerimu forest | 43.1 % | | |

**Historic and archaeological sites**

Records of known archaeological and historical places are maintained in the NZ Archaeological Association (NZAA) Site Recording Scheme. The Archaeological Site Probability model published by the Department of Conservation[1] provides further guidance on the probability of pre-European archaeological evidence existing based on the geographical location of the forest and historical occupation of the local area.

If a site is found or suspected on any block, the protocols specified in PF Olsen's EMS, and any others specifically developed in conjunction with HPT and Iwi or other stakeholders, must be observed. Where such circumstances require, an 'Authority to Modify or Destroy' will be sought from HPT with the assistance of an archaeologist. Such authorities are similar in function to a resource consent and, if granted, normally come with conditions that must be met. The process to apply for authorities is documented in PF Olsen's EMS.

Note also that authorities to modify an archaeological site may sometimes be required from the local District Council and sites of cultural significance are often included in schedules of places and sites of significance in District Plans. Update checks for any sites will be required before any harvesting or related earthworks commences.

**Te Piki**

Checks of this website show no known recorded sites within the block but show many sites within 500 m of the block. On the opposite side of Ngarue Road is a Pa site with ditches, banks and pits. Other close sites are predominantly terraces and pits. As this forest is close to the coast and surrounded by other HPT sites it is reasonably likely there will be sites within the forest. An archaeologist will be required to inspect the forest before harvesting or earthwork operations, and will advise whether any further action is required.

**Pukerimu**

The closest recorded site to Pukerimu is approximately 2km away, towards the coast. Pukerimu forest is in a lower risk area for archaeological sites being further inland, however there is still the possibility that sites could exist within the forest. An archaeologist will be required to do at least a desktop-based review, or inspect the forest, before harvesting or earthwork operations and will advise whether any further action is required.

[1] Arnold, G.; Newsome, P.; Heke, H. 2004: Predicting archaeological sites in New Zealand. *DOC Science Internal Series 180*. Department of Conservation, Wellington. 24 p.

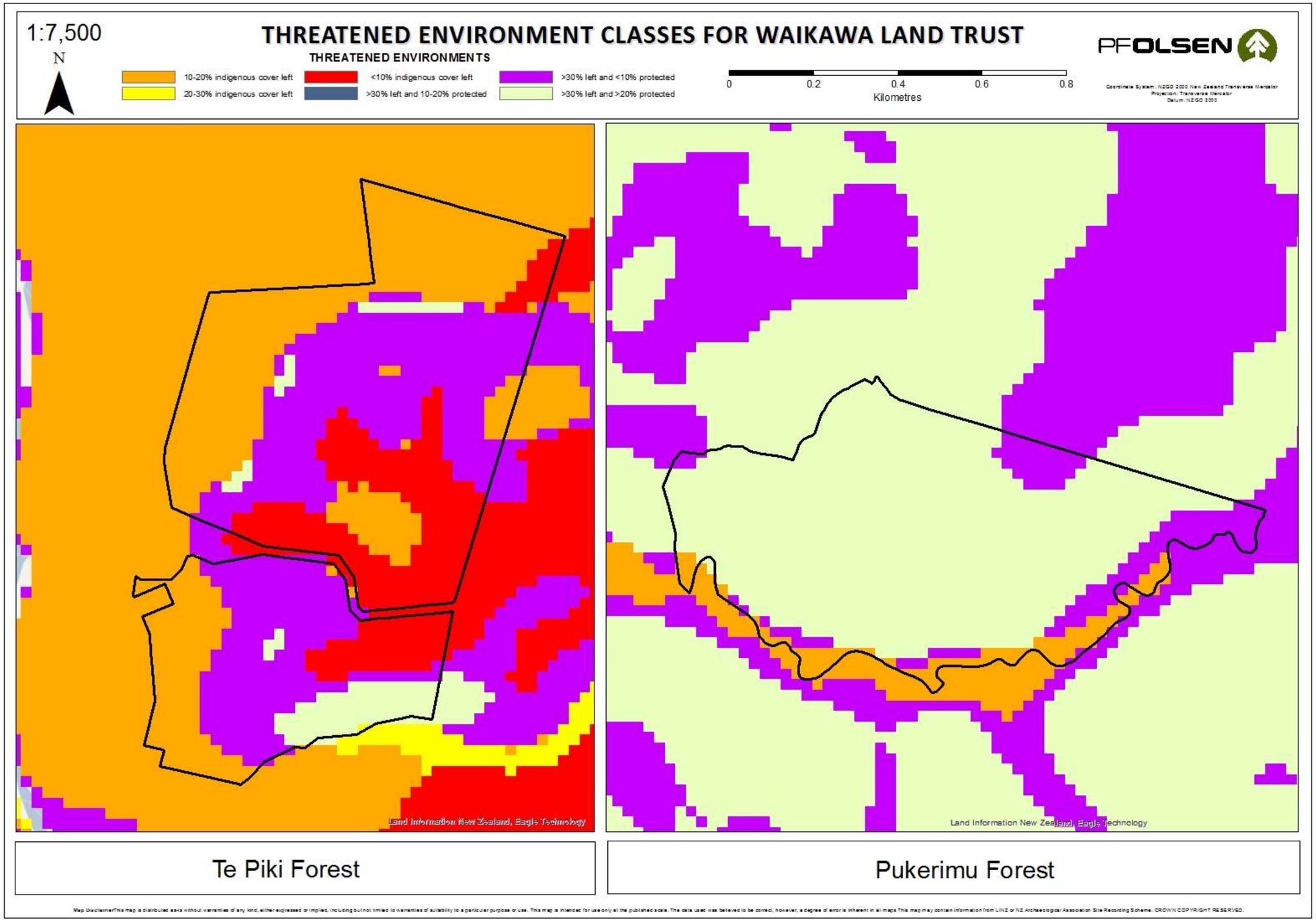
**Threatened Environments Classification**

The Threatened Environments Classification (TEC), as produced by Landcare Research, contextualises the remaining native areas within a region by its value. They use the concept of percentage of indigenous cover remaining versus the proportion of that remaining that is under formal protection- the less area remaining and the less under protection, then the more significant a particular indigenous remnant is considered.

Te Piki falls mostly in the second most significant category, with 10 to 20% indigenous cover left (orange; see Map 2). Pukerimu falls mostly in the least significant category, >30% left and >20% protected.

This is not surprising, as Te Piki forest is closer to the coast, and the surrounding land is correspondingly more modified than Pukerimu.

**Map 2 - Forest Ecological Context**



# 3. Socio-economic profile and adjacent land

**Forest history**

Prior to being established in plantation forestry the land was a mix of indigenous forest and pastoral farming.

The earliest planted forests of the region were established in the 1890s by settlers of the area. During the Great Depression of the 1930s the government expanded its forestry planting program for more employment.

The forests were established as a commercial venture on land previously under pasture and subsequently reverted to scrubland after farming became uneconomic on such lands.

Forestry has been proven to be a good economic use of this erosion prone, nutrient deficient land.

**Current social profile**

The forests are situated in a sparsely populated region where the permanent residents occupy a narrow coastal fringe in usually small communities often associated with traditional landholdings. There is no substantive forest processing or permanent forestry harvesting infrastructure. The forests were planted with the primary aim of providing financial return to the business owners via sale of logs to the nearest but distant market opportunities.

In the current market there is some uncertainty as to the financial returns from timber at harvest and other options related to carbon values may need to be considered.

***Table 3. Key statistics as summarised from Census[2] data***

| Census Category | Bay of Plenty | NZ |
|---|---|---|
| Ethnicity: European | 75.7% | 74% |
| Ethnicity: Māori | 25% | 14.9% |
| Formal qualifications | 75.5% | 79.1% |
| Unemployment | 9.0% | 7.1% |
| Dominant occupation | Professional | Professional |
| Median income | $26,200 | $28,500 |
| Family with children | 35.9% | 41.3% |
| Internet access | 72.6% | 76.8% |
| Home ownership | 64.7% | 64.8% |
| Employed in agriculture, fishing & forestry | 8.5% | 5.7% |

[2] http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=13853&tabname=Business#

**Associations with Tangata Whenua**

The land is entirely Māori owned land and the forest was planted as a commercial joint venture arrangement between the trustees of the Waikawa 2b & 3 and 3 Te Piki blocks. The joint venture partners are all part of Te Whanau a Apanui, in particular, the hapu of Kahurautao.

**Tenure & resource rights**

There are numerous Licences and agreements pertaining to existing uses with the forests that prevail through the 'Forestry Rights Agreements'.

**Neighbours**

Neighbours to the forest estate boundaries may have a special interest in the management of the forest. Activities within the forest may positively or negatively impact upon their quality of life or businesses in a number of ways, while inappropriately managed operations could create risks of adverse health, safety and environmental and biosecurity hazards. As such, neighbours are considered stakeholders with a potential interest in the management of the forests.

The following table lists the forest neighbours and their primary activities. Some or all of these parties should be consulted when operations are proposed in forest areas adjacent to their boundaries.

***Table 4. Current forest neighbours***

| Forest | Owner/Occupier | Contact # | Activities |
|---|---|---|---|
| Te Piki | | | Farming |
| Te Piki | | | Farming |
| Te Piki | | | Farming |
| Te Piki | | | |
| Te Piki | | | |
| Te Piki | | | Farming |
| Te Piki | | | |
| Te Piki | | | |
| Te Piki | | | |
| Te Piki | | | |
| Te Piki | | | |
| Pukerimu | | | Farming |
| Pukerimu | The Proprietors Of Orete No 2 and other blocks Incorporated | | Forestry |

# Regulatory Environment & Risk Management

## 4. The Regulatory Environment & Risk

**Regulatory considerations**

Forestry operations throughout New Zealand are undertaken within the context of a regulatory framework that aims to ensure wider economic, social and environmental goals are achieved for the populace as a whole.

Failure to meet regulatory requirements is a key business risk that must be managed. The following section summarise key regulatory requirements and risk management controls exercised over forestry operations in the forests.

**Health and Safety at Work Act 2015**

Leadership, a constant focus on health and safety, and the strong message that safety rates as the number one priority ahead of any other business driver are all highly important for PF Olsen management. The company also takes the following steps to ensure worker health and safety:

- Contractor selection process including emphasis on:
  - safety systems and track record;
  - worker skills and training; and
  - equipment type and standard.
- Work planning.
- Contractor induction.
- Monitoring, including random and reasonable cause drug testing, safe work practices and PPE.
- Incident investigation and reporting, including investing in software, training and processes development to enable good transparency on lag and lead indicators.
- Regular reporting to and interaction with the Client on matters related to safety.
- Regular (annual) review and update of the critical risks as identified in PF Olsen data sets and from Industry indicators. Such a review shall focus on incidents that have caused harm and/or loss, any known cause factors and mitigations and revised controls.

**Resource Management Act (RMA) 1991**

The RMA sets up a resource management system that promotes the sustainable management of natural and physical resources and is now the principal statute for the management of land, water, soil and other resources in New Zealand. The RMA effectively delegates much of the rule development and enforcement to local government organisations. The organisations relevant to the Waikawa Lands Trust estate are listed below:

***Table 5. Relevant Councils to Te Piki and Pukerimu Forests***

| Regional Council[3] | District Councils [4] |
|---|---|
| Bay of Plenty Regional Council | Opotiki District Council |

Under the RMA, each Council has its own planning documents and associated rules that have been developed through public process. Any forestry operations must comply with the rules relevant to the Council area in which the operations are to take place.

At the time of formulation of this Management Plan, it was just announced that many individual Council rules will be superseded by a new instrument under the RMA, the 'National Environmental Standard for Plantation Forestry' (NES-PF), designed explicitly to assist streamlining, efficiency and consistency in the application of environmental law to the forest industry (see next section). The contact details for the relevant councils can be seen in Appendix 1.

**Heritage New Zealand Pouhere Taonga Act 2014**

It is the landowner's responsibility to identify any historic sites on their land prior to undertaking any work which may disturb or destroy such sites.

If a site is found or suspected on any block, protocols specified in PF Olsen's EMS, and any others specifically developed in conjunction with Heritage NZ, archaeologists and Iwi or other stakeholders, will be observed and the necessary Archaeological Authorities obtained with Heritage NZ and if necessary the local Territorial Authority.

These responses may include, but are not limited to:

- Map and ground surveys to identify, mark and protect known heritage sites.
- Iwi consultation and surveys for unknown sites.
- Archaeological Authorities to modify sites if required.
- Accidental Discovery Protocols to stop work and engage experts if sites are discovered during operations.

[3] Regional Councils responsible for soil conservation and water and air quality issues
[4] District Councils responsible for land use and biodiversity issues

**National Environmental Standard for Plantation Forestry (NES-PF)**

Came into law on 1 May 2018, the NES-PF is a whole new rule hierarchy that applies the same rule set uniformly across most forestry operations in all parts of New Zealand. Operations come under the legal force of this RMA instrument, though local Councils retain the ability to regulate specific areas outside the NES-PF, e.g. Significant Natural Areas, Outstanding Landscapes, giving effect to the Coastal Policy Statement etc.

The underpinning the structure of the NES-PF is a rule hierarchy linked to the erosion susceptibility of the lands upon which forestry operations are to be conducted.

Work commissioned by the Ministry of Primary Industries led to the creation of a national spatial map, the 'Erosion Susceptibility Layer' (ESC) that classifies all of New Zealand into a series of four classes of erosion susceptibility from low (green) to very high (red).

The stringency of the rules hierarchy, i.e. whether consents are needed and the degree to which Councils can apply discretion to the conditions attached to a consent, is then tied closely to the recognised erosion susceptibility of the lands involved and the risks created by the operations.

In the case of the Waikawa Lands Trust Estate, the table below indicates the proportion of the estate by the respective ESC classes.

In broad terms, harvesting, roading (earthworks) and new afforestation operations will need consents in the red zone. Earthworks will need consents in orange, and in the green and yellow zones most operations will be permitted subject to conditions. The coverage of the erosion classes within the estate are illustrated in Map 5 and Map 6.

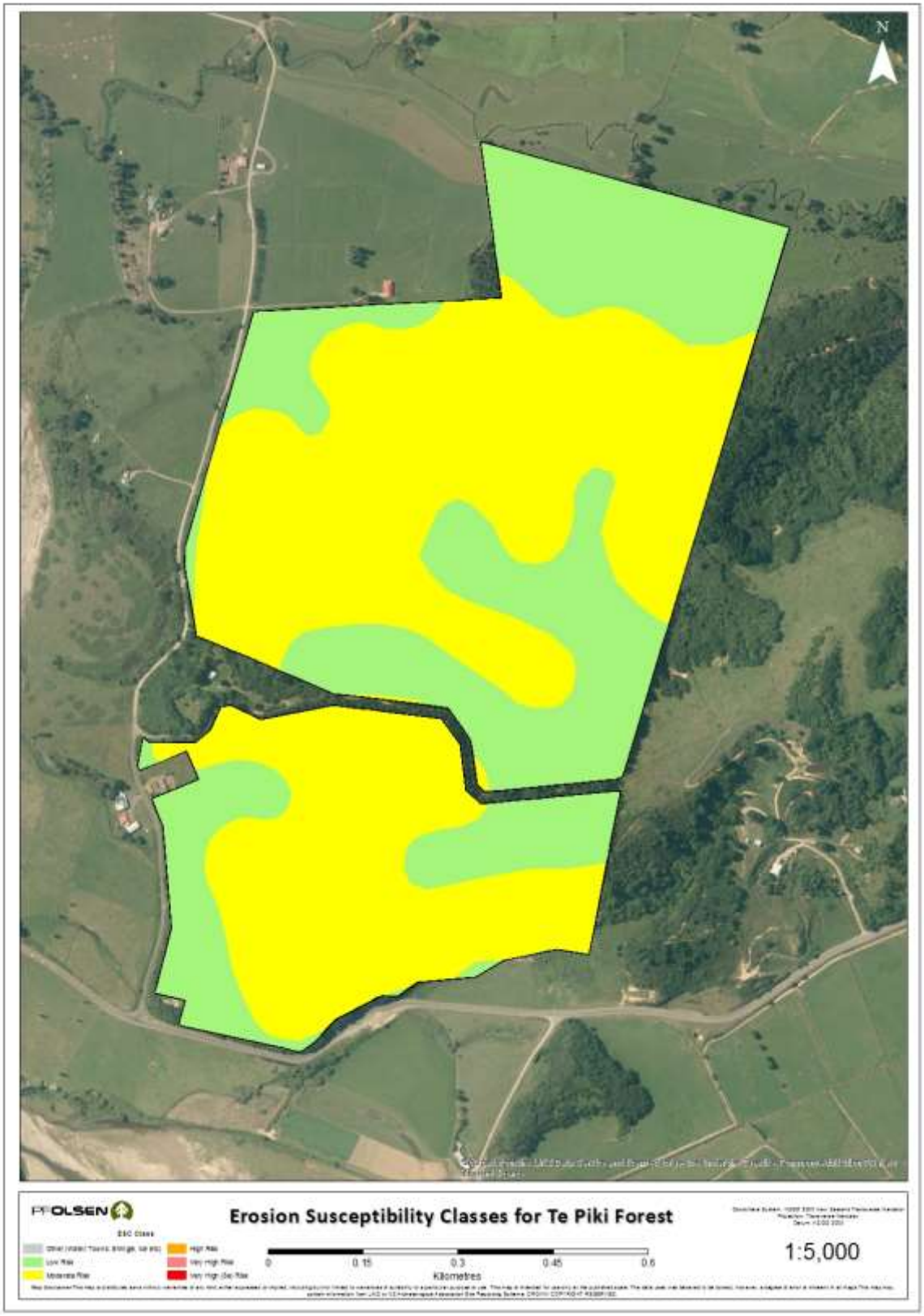
***Table 6. Area (ha) within each ESC Classes (Erosion Risk)***

| Forest | Low | Moderate | High | Very High | Very High (8e) | Undefined |
|---|---|---|---|---|---|---|
| Te Piki | 33.22 | 53.91 | | | | |
| Pukerimu | 3.93 | 1.89 | 43.62 | 4.06 | 6.51 | |

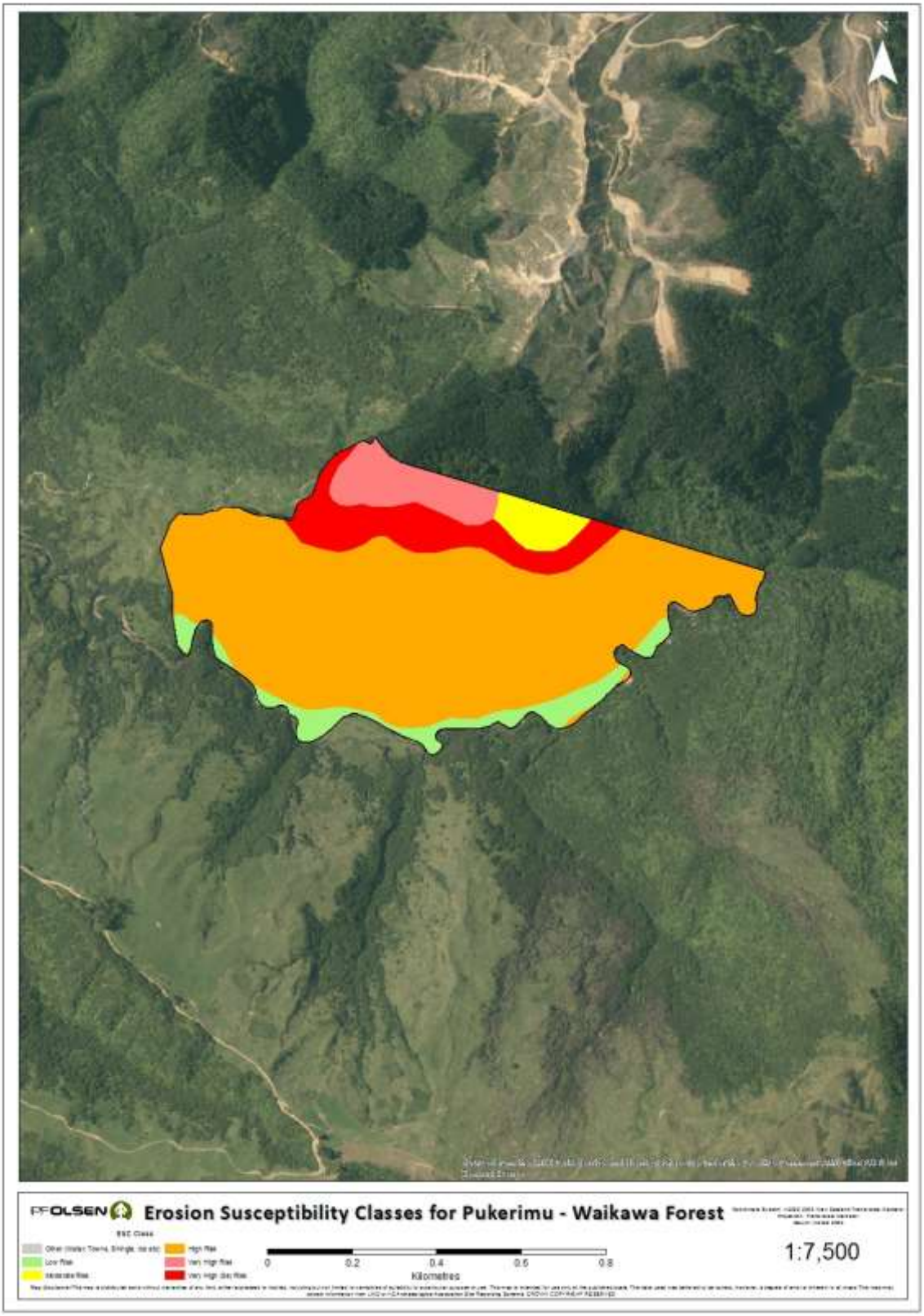
**Consents & authorities held**

There are currently no resource consents and Heritage NZ archaeological authorities that apply to the Waikawa Lands Trust estate.

## Map 5 - National Environmental Standard Erosion Susceptibility Classes in Te Piki Forest



## Map 6 - National Environmental Standard Erosion Susceptibility Classes in Pukerimu Forest



**Emissions Trading Scheme**

Forests in New Zealand are governed by rules related to New Zealand's Climate Change Response Act (CCRA) to reduce the nation's carbon footprint and contribution to associated climate change.

Te Piki forest contains 4.5 hectares of forest that was existing forest as at 31st December 1989. At the time of harvest, these stands will be subject to a deforestation tax equivalent to the tonnes of $CO_2$ projected to be released from decomposition of the forest at a unit financial value determined by the internationally traded emission units. This tax is payable if the forest is not replanted or, if left to regenerate naturally, does not achieve the regulated heights and stocking densities.

The balance of the forest was planted on 'Kyoto compliant' land that was vacant as at 31st December 1989. This 39.5 ha has not been registered to participate in the NZ Emissions Trading Scheme and will not be subject to the accrual of emissions credits and liabilities under that scheme

The land is deemed to be temporarily unstocked if in cutover at time of handback.

**Other relevant legislation**

There are numerous other statutes and regulations that impact on forest operations. Forest owners can be held liable for breaches of these Acts and may be held responsible for damage to third party property. Management processes seek to manage and minimise these risks.

Other relevant legislation is listed in Appendix 2.

# 5. Commercial Risk Management

**Market access retention**

It is a major focus of the Property Manager to ensure contracted products are delivered on time and in specification to ensure Waikawa Lands Trust retains credible access to its markets.

Waikawa Lands Trust maintains independent third party environmental certification for its estate under Forest Stewardship Council certification (FSC). PF Olsen Ltd acting under the instruction of its client will be responsible for the excecution and maintenance of the required FSC certification elements of which this management plan forms an important component.

**Log customer credit risk**

There have been a number of NZ sawmills fail in recent years leaving log customers unpaid for the last month's deliveries. The PF Olsen Investment Manager manages customer credit risk exposure and mitigation measures for export markets while PF Olsen manages these risks for domestic log customers.

**Infrastructure damage or service disruption**

The Waikawa Lands Trust estate has an over ground powerline within the southern section of Te Piki Forest. Risks around these are managed by:

- Identification on maps and on the ground any utilities at planning stage.
- Early engagement with utility owner to plan operations to minimise risks.
- Operational execution of agreed plans with parties specifically qualified for the tasks involved when working close to utilities.

**Fire**

Fire is always a risk to the forests. The Waikawa Lands Trust estate has some risk as it is located in the eastern parts of the North Island, where there are very dry conditions over summer.

Fire risk is managed through:

- Protocols to restrict work hours or to stop work in periods of extreme fire risk.
- Annual auditing and regular monitoring of contractors' fire prevention and first response equipment prior to fire season each year.
- Maintenance of trained personnel and fire suppression equipment.
- Protocols for pooling of resources as a first response to fires under the leadership of the relevant Rural Fire Authority.

| | |
|---|---|
| **Pests and diseases** | Pests and diseases are managed according to any statutory obligations and best practices as identified by scientific research and past experience, with the type and intensity of treatment (if any) subject to what is at risk and the age of trees (see Section 13). |

# 6. Environmental Risk Management

**Environmental risk**

Environmental risk is managed by PF Olsen as appointed property manager, through a cascade framework from high level 'intent' determined by the Forestry Rights owner, through PF Olsen's own environmental policies, thence through defined and documented processes constituting an Environmental Management System (EMS), supported by monitoring and reporting. PF Olsen's policies and Waikawa Lands Trust business objectives are considered to be well in alignment.

**Environmental policy**

***PF Olsen Limited is committed to:***

- ***Sustainable forest and land management;***
- ***Promoting high environmental performance standards that recognise the input of the community in which we operate;***
- ***Supporting an environment of continuous improvement in environmental performance;***
- ***Obtaining and retaining independent 3rd party forest certification in conformance with the Principles and Criteria of the Forest Stewardship Council and / or the Programme for Endorsement of Forest Certification as specified by forest owning clients, or in any case ISO:14001 Environmental Management Systems.***

In order to achieve these commitments **PF Olsen** (and PF Olsen Certification Scheme Members) will undertake the following:

- Where applicable to a particular forest, comply with the presiding **Certification Standards** as set out in any agreements between the forest owners and PF Olsen.
- **Planning** of operations to avoid, mitigate or remedy degradation of **ecological, heritage** and **amenity** values;
- Compliance with all relevant **legislation** and where appropriate exceed environmental statutory requirements;
- **Training** for all employees and contractors to ensure an understanding of certification member's commitments to high standards of environmental performance, their responsibilities under the environmental legislation and to assist the implementation of sound environmental practices;
- **Monitoring** environmental and socio-economic research and international agreements that may improve environmental and certification performance;
- Regular environmental performance **audits** of operations;
- Support for environmental **research**;
- Undertake forest management in accordance with the principles and ethics of the **NZ Forest Accord** the **Principles for Commercial Plantation Forest Management in NZ**, and other relevant agreements, conventions and accords.
- Promotion of the prevention of **waste** and **pollution** / efficient **energy** use;
- Due regard for the well-being of the **community.**

**Objectives, targets and monitoring**

PF Olsen's objectives, targets and monitoring categorised across five key aspects of the business:

1. Economic;
2. Legal;
3. Social;
4. Health & Safety; and
5. Environment

A systematic management approach ensures these objectives and targets remain the cornerstone of PF Olsen's business, backstopped by monitoring processes that form a regular review of practices.

**EMS framework**

The Environmental Management System (EMS) is an integrated set of cloud based, defined and documented policies, processes and activities that govern the physical implementation of forest management activities. The EMS applies a systematic approach certified to ISO:14001 standards to ensure that prevention of adverse and harmful impacts is effective.

The framework is reviewed annually with the input of an Environmental Management Group (EMG).

**Environmental Code of Practice**

As a member of the New Zealand Forest Owners Association, all operations carried out on the property should be undertaken in conformance to the NZ Forest Owners Association 'New Zealand Environmental Code of Practice for Plantation Forestry'. This publicly available document sets out guidelines that underpin the requirements for sound and practical environmental management.

**Forest Road Engineering Manual**

As a member of the New Zealand Forest Owners Association, roading and engineering techniques employed within the forest should conform to the industry best practice as outlined in the New Zealand Forest Owners Association publication, 'NZ Forest Road Engineering Manual', published 2012.

**Assessment of environmental risks**

Environmental risks arising from forest operations are assessed and managed on a site-by-site basis prior to execution. The relative probability and magnitude of adverse effect attributable to any particular operation on any particular site is highly variable.

As a broad assessment over the total Waikawa Lands Trust estate, the **potential** for adverse impacts across the range of operations and forest sites is indicated in the Environmental Assessment matrix below, which summarises the identified risks across 'key management aspects'. The level of potential risk has been evaluated in the matrix as high 'H', medium 'M' or low 'L', or not applicable 'NA' and is thus indicative of the level of care that might need to be applied to ensure the potential for adverse effects is minimised.

***Table 7. Risk assessment for key aspects involved in forest management activities***

| Forestry Operational Activities | ENVIRONMENTAL VALUES/ISSUES MATRIX | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Erosion& Sediment Control | Water Quality | Soil Conservation & Quality | Air Quality | Aquatic Life | Native Wildlife | Native Vegetation | Historical &Cultural Values | Landscape &Visual Values | Neighbours | Public Utilities | Recreation Values | Threatened Species |
| Harvesting | H | H | M | L | L | L | H | L | M | H | L | L | H |
| Earthworks | H | H | M | L | M | L | L | L | L | L | L | L | L-M |
| Slash Management | L | L | L | NA | L | L | L | NA | L | L | L | L | L |
| Stream Crossings | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | L |
| Mechanical Land Preparation | NA | NA | NA | NA | NA | NA | NA | L | NA | NA | NA | NA | M |
| Burning | L | L | L | H | L | L | H | NA | H | H | L | L | L-M |
| Planting | NA | NA | NA | NA | NA | L | L | L | L | L | L | NA | L |
| Tending | NA | NA | NA | NA | NA | NA | NA | NA | L | L | L | NA | L |
| Fertiliser Application | NA | H | NA | L | L | NA | NA | NA | NA | L | L | L | L |
| Agrichemical Use | L | M | L | L | L | L | H | NA | L | M | L | L | L-H |
| Oil & Fuel Management | NA | M | L | NA | H | L | L | NA | L | M | L | NA | L |
| Waste Management | NA | L | NA | NA | L | L | NA | NA | L | L | L | NA | L |
| Forest Protection | NA | NA | NA | NA | NA | NA | NA | NA | NA | L | L | L | L |

**Hazardous substances management**

Hazardous substances are any substances, which may cause adverse environmental impacts and/or injury or health problems if incorrectly handled or used. The permitted hazardous materials are:

- Pesticides
- Fuels and oils
- Fire retardants
- Surfactants

Transportation, storage and labelling of these hazardous materials must all comply with the provisions of legislative controls under the Environmental Protection Agency (EPA) and the NZS 8409:2004 Management of Agrichemicals code of practice.

During actual usage, the highest risks are associated with chemical trespass or bulk fuel spillages. These risks are managed by:

- Neighbour consultation over planned spray operations.
- Careful planning and timing of any aerial operations having regard to wind and spray drift.
- Unsprayed buffer strips on neighbour boundaries and riparian or other protected reserves.
- GPS flight path control and records.
- Monitoring and recording of weather conditions during the operation, including using smoke bombs and photos/video.
- Moving contractors into the use of double skinned bulk fuel storage tanks as the preferred method of containment for all larger capacity tanks.
- Tracking of all active ingredient usage within the estate.

Risk management includes active involvement in and review of technologies and research into alternative methods for the control of weeds, pests and diseases where these are effective and efficient.

Fuel use is directly related to the machinery used in forestry operations and the market locations. Using modern efficient machine technology is still the primary area where efficiency gains can be made. There is a steady programme to transfer chain bar oils to vegetable based low toxicity oils.

**Highly hazardous chemicals**

There are five agrichemicals that have been classified 'highly hazardous' (HH) by FSC that are used in forestry and conservation operations within PF Olsen group certified forests. All these five have recently been added to FSC's HH list. Special derogations to continue usage of these chemicals, subject to conditions, are being applied for by PF Olsen as FSC Group Manager in conjunction with the wider NZ certified industry. The derogation process is run according to specific policies put in place by FSC, including extensive canvassing of stakeholder views. These chemical pesticides are listed in the table below.

All the classes of formulations used are registered and legally approved for in use New Zealand by the NZ Environmental Protection Agency, subject to various controls, and for the purposes to which they are applied as listed below.

***Table 8. FSC Highly hazardous chemicals used or potentially used within Te Piki and Pukerimu forests***

| Active ingredient | Purpose | Common usage |
|---|---|---|
| Copper based products | Fungicide | Needle cast control |
| Picloram | Herbicide | Establishment weed control |
| Carbaryl | Insecticide | Localised wasp control |
| Cholecalciferol | Vertebrate pesticide | Localised possum control |
| Pindone | Vertebrate pesticide | Rabbit and hare control |
| *Use subject to Animal Health Board emergency provisions only* | | |
| Sodium cyanide | Vertebrate pesticide | Animal Health Board only, ground based possum control |
| Sodium Monofluoroacetate (1080) | Vertebrate pesticide | Animal Health Board only, extensive aerial possum control |

# The Managed Plantation Estate

## 7. Commercial Plantation Estate

**Productive capacity strategy**

Forest management is carried out to ensure the productive capacity of the Waikawa Lands Trust estate is not compromised. This encompasses multiple aspects that include:

- Pests and weeds and forest health - can reduce productivity,
- Inventory - to feed into growth estimation, a core step in timing silviculture and formulating the cutting strategy,
- Silviculture - to enhance the value of the resource,
- Harvesting - achieving a successful harvest in terms of the forest owner's health and safety, environmental and commercial objectives.

**Forest area**

The net stocked areas have been measured from a map produced by PF Olsen. The estimated net stocked areas of each stand are set out in the following table.

***Table 9. Waikawa Lands Trust estate area (ha)***

| Forest | Gross area (ha) | Net stocked area (ha) | Reserves (ha) |
|---|---|---|---|
| Te Piki | 71.9 | 44.0* | 27.9 |
| Pukerimu | 51.5 | 36.0** | 15.5 |

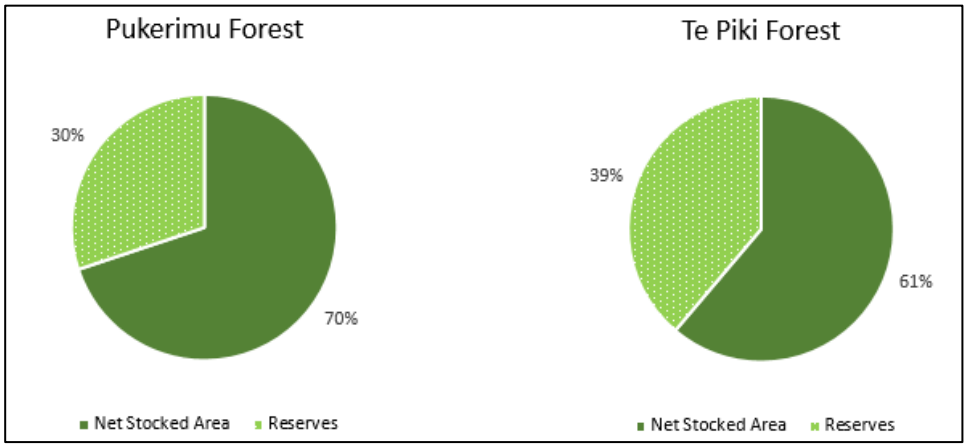



***Figure 2. Waikawa Lands Trust estate area (ha)***

**Current species**

The species grown at Te Piki and Pukerimu forests is *Pinus radiata* (radiata pine). This species has been chosen to best meet the management objectives set out above and in section 2 given the characteristics of the forest land as described in section 3.

Treestocks established in the forest are summarised in the table below:

***Table 10. Treestock seedlots and GF ratings***

| Forest | Stand | Treestock |
|---|---|---|
| Te Piki | 1/01 | Regen |
| Te Piki | 1/02 | GF 16, bareroot |
| Pukerimu | 1/01 | GF 16, bareroot |

**Age class distribution**

Apart from a few very small old-aged stands, the age-class distribution for Waikawa Lands Trust reveals that the vast majority (94%) of the two forests productive crops are older than 20 years in age. Only a small portion (6%) is greater than 30 years. The current age-class distribution for radiata pine in the Waikawa Lands Trust forests is summarised in the figure below.

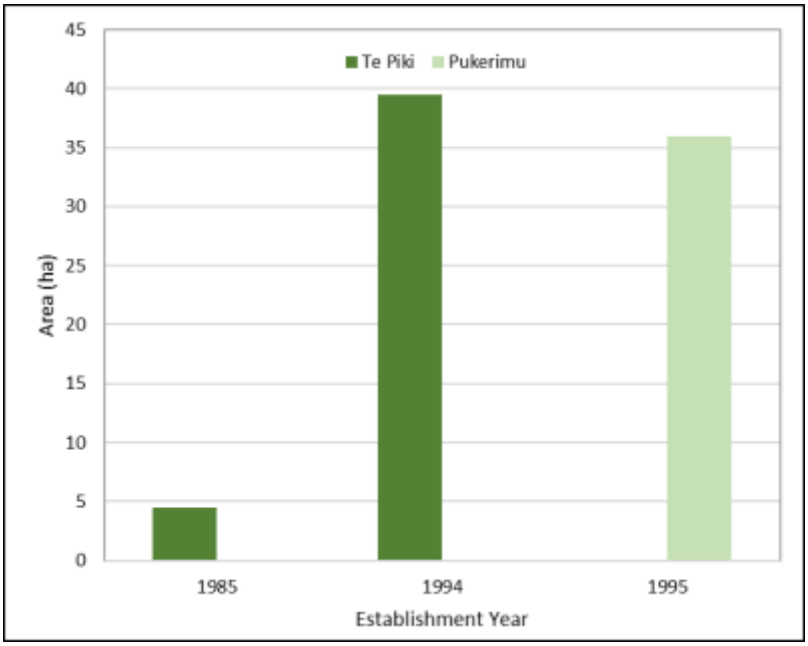



***Figure 3. Area / Age-class distribution in the Waikawa Lands Trust estate***

**Productivity indices**

The two most common estimators of the productivity of a site are the Site index and 300 index.

Site index is a measure of productivity of a site in terms of height growth of radiata pine. The parameter used is the mean height in metres of the largest 100 trees per hectare at age 20 years. Equations exist to predict this height given a measured height at any age.

The 300 index is a measure of productivity of a site based on stem volume growth (mean annual increment) of 300 stems per hectare.

**Te Piki**
The site index for stand 1/01 is 35 m and 1/02 is 32.6 m.
The 300 index for stand 1/01 is 34.1 m and 1/02 is 34.3 $m^3$/ha/yr.

**Pukerimu**
The site index for Pukerimu forest is 33 m.
The 300 index for Pukerimu forest is 29.7 to 30.5 $m^3$/ha/yr.

Both forests have above average site productivity compared to other forests in the region.

**Current crop status**

Measurement data from the most recent inventory is stored in PF Olsen databases and summarised in reports to provide the current status of the stands.

***Table 11. Current crop status for Te Piki and Pukerimu Forest Stands***

| Forest | Stand | Year planted | NSA (ha) | Total stocking (s/ha) | Basal area (m2/ha) | Mean crop Ht (m) | Mean DBH (cm) | Pruned stocking (s/ha) | Pruned height (m) |
|---|---|---|---|---|---|---|---|---|---|
| Te Piki | 1/01 | 1985 | 4.5 | 300 | | 13.0 | | | |
| Te Piki | 1/02 | 1994 | 20.8 | 495 | | 10.5 | | | |
| Pukerimu | 1/01 | 1995 | 36.0 | 606 | | 11.4 | | | |

**Infrastructure**

Forest infrastructure includes roads, tracks, landings, bridges and culverts. Design specifications for these are outlined in the 'PF Olsen Standard Specifications for Road and Landing Construction'.

There is currently no permanent forestry harvesting infrastructure.

# 8. Commercial Crop Establishment and Silviculture

**Introduction**

Forest operations are implemented to ensure a good quality crop and maximum growth. These operations include land preparation, establishment, weed control, pest and disease control, fire protection, pruning and thinning, and general property asset maintenance.

The choice of species is the most important issue in plantation forestry. The species has to be suitable for the site and meet the objectives of Waikawa Lands Trust. Also important is to ensure that the planting material is of good quality.

**Forest management goals**

The Waikawa Land Trust forest owners are committed to ensure that the Waikawa Land Trust forest estate will be managed to:

- Grow trees and produce logs for the manufacturing of different wood products in New Zealand and overseas with a focus on 'fit for purpose' log production;
- Ensure that the productivity of the land does not decline;
- Ensure that environmental values are identified and maintained;
- Ensure that historic sites are identified and protected;
- Ensure that other forest values and products are identified, protected and where possible enhanced;
- Ensure that the forest estate's contribution to carbon cycles is maintained or enhanced;
- Harvest the trees as close as possible to their economic optimum age and achieve the best possible financial returns to the owners;
- Replant following harvesting where agreements require;
- Meet all statutory requirements and comply with forest industry best practice;
- Provide recreational opportunities where practical;
- Act as a good corporate citizen and neighbour; and
- Ensure all forest management practices are consistent with the principles of the Forest Stewardship Council and NZS AS:4708:2014

These goals are further detailed in 'PF Olsen Key Aspects - Objectives, Targets and Monitoring'.

**Crop species**

Radiata pine, when intensively managed, will produce a range of different log types suitable for various processing options. The pruned butt log can be used to make knot-free veneer or decorative timber. The unpruned logs can be used for structural timber, for veneer or for feedstock for finger jointing. Small logs and those with defects and excessive knots can be used for pulp and paper, MDF and other reconstituted wood products such as tri-board and particle board. Radiata pine is the most common species processed in New Zealand and export markets are well developed for both finished products and logs.

In New Zealand radiata pine is also the main focus in terms of research and development. Past research and development has resulted in improvements in growth, form and wood characteristics as well as development of a range of finished products, building codes and timber standards.

**Other species**

Alternative species have been considered, but these did not meet the Waikawa Lands Trust objectives.

**Unwanted pine spread**

In these eastern forests where it is drier and windier, re-establishment programmes will include a spread risk assessment using the Wilding Spread Risk Calculator to inform decisions about replant boundaries and monitoring or other control strategies if required. There is no intention to plant or replant in other species with known high spread risk. The use of the Calculator is also a requirement under the NES-PF and this will be adhered to.

**Establishment methods**

Re-establishment where provided under the terms and conditions of the various agreements will aim to use high quality tree stocks suitable for the site and market. These will be investigated at the time of establishment.

Under the respective agreements that make up the Waikawa Lands Trust estate, the current re-establishment regime will take place after harvest and involves a combination of:

- Crushing or line raking felling debris/waste (where necessary) to enable planting access;
- Spot mounding in frost prone sites;
- Line ripping of compacted skid sites;
- Aerial desiccation spraying of weeds (including naturally regenerated pines);
- Oversowing with various species of legumes to facilitate nitrogen fixing, and temporary soil stability;

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- 'Planting with genetically improved radiata seedlings at 800-850 stems per hectare;
- Fertilising those sites where required at planting; and
- Spot releasing or aerial releasing where necessary to eliminate competition from weeds.

Replanting, which is important for maintaining soil stabilisation functions of the forests, will follow harvesting as it occurs with only minor deviation for seasonal or operational logistics reasons and boundary rationalisation.

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**Pre-establishment considerations**

Prior to re-establishment of the tree crop, a review will be conducted to identify whether there are any rare, threatened or endangered species of flora or fauna within the area to be planted and what, if any, adjustments in planning may be required. This may include the extension of an existing wildlife corridor or riparian area by increasing setbacks at the time of crop replanting. A plantation crop is likely to confer beneficial habitat buffering rather than cause adverse effects.

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**Tending**

Cost effective pruning and thinning operations are required to achieve the objectives of maximising forest value. The aim should be to have a final crop stocking of at least 350 stems per hectare pruned to at least 5.8 metres on average.

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**Tree nutrition**

The soils in Te Piki and Pukerimu forests are not likely to be deficient in nutrients for healthy tree growth. However, there are soils within New Zealand that are deficient in one or more nutrients. The most common nutrient deficiencies are likely to be:

- **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 seedlots are more predisposed to the deficiency than others.

Foliar samples are taken if nutrient deficiency symptoms are seen or expected. Fertiliser will only be applied if the health and the growth of the trees are significantly affected or where economic analysis demonstrates a benefit.

Site productivity and tree nutrition are actively researched components of industry research programmes in which PF Olsen is an active stakeholder and all harvesting entities are a financial contributor through the Forest Research Levy Fund.

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# 9. Harvesting Strategy and Operations

**Harvesting strategy**

The harvesting strategy employed at Te Piki and Pukerimu forests is to harvest the forest as close as possible to the optimum economic age as practical. This is the age at which the growth in volume and improvement in quality is offset by the cost to maintain the forest for another year. The optimum rotation length for radiata pine is expected to be within 25 to 30 years (this may be less for framing or unpruned stands).

Of importance in this assessment is the actual growth of the tree crop, the market for the wood at the time of the harvest and the outlook then for the near future. These factors, together with logistics such as the availability of suitable harvest contractors and the requirements of resource consents, will determine the actual harvest time.

Forward planning is essential when considering harvesting activities. Planning should commence 2 years before harvesting to enable roading infrastructure to be developed and any resource consents, archaeological surveys, etc. to be undertaken. This reduces the chance of hold-ups to the commencement of harvesting, which can be costly when log prices are fluctuating.

Harvesting is planned to occur over the duration of this plan.

**Infrastructure**

Forest infrastructure includes roads, tracks, landings, bridges and culverts. Design specifications for these are outlined in the 'PF Olsen Standard Specifications for Road and Landing Construction'.

Typically, infrastructure within an early- to mid-rotation age 'greenfields' forest is limited to access for a 4WD vehicle. During harvest planning, upgrades of existing roads/culverts/bridges and planning for new roads, landings and crossings will be identified and scheduled. The type of infrastructure designed and constructed is influenced by topography, harvest duration and intensity of use.

Once established, these require maintenance. The PF Olsen Asset Hazard Register is a GIS-linked database of forest assets that includes bridges, culverts and crossings under resource consent. This provides the framework for a record of the asset attributes, and its associated maintenance schedule, some of which are required under consent conditions.

**Contractor management**

Prior to engaging a new contractor, a comprehensive review of the contractor's safety systems, safety record, systems of work organisation and equipment is carried out. With regard to crew configuration, where topography and terrain allows, mechanised felling, extraction and processing is a mandatory requirement. PF Olsen as the Property Manager must be satisfied on this review, regardless of the tendered price.

Upon appointment all new contractor crews undergo a comprehensive safety and environmental induction, while PF Olsen Ltd, in conjunction with its contractors and NZQA training providers NorthTech, runs a comprehensive programme of training to ensure the workforce is competent for the work they are required to perform. The formal NZQA qualifications are supplemented periodically by internally run training courses including those on environmental matters.

All harvesting, engineering and silviculture contractors are subject to quarterly contractor monitoring audits and random drug testing. A full safety systems audit is scheduled and carried out annually. Full crew re-inductions take place every 5 years.

Weekly crew visits and monthly (or fortnightly according to risk) KPI assessments including environmental audits pick up corrective actions and follow-up on those.

WorkSafe undertakes audits on an unannounced basis from time to time.

# 10. Forest Inventory, Mapping and Forest Records

**Inventory**

Forest growth and development is monitored through forest inventory. Forest inventories providing stand information are required at different times and for different reasons throughout the life of the rotation:

- Pre-assessment: for silviculture rate setting and validating operational timing vs silvicultural targets;
- Quality control: to check contractor's performance and update stand records;
- Mid-crop: to collect measurement inputs for growth modelling;
- Pre-harvest inventory is scheduled for stands around age 24, to collect measurement data on the crop. This is used for harvest planning, marketing and revenue estimation.

New technologies may see some of this information gathered and analysed using remote sensing in the future.

**Pre-assessment**

Pre-assessment is the collection of stand parameters prior to a tending operation. It allows for:

- The calculation of contract rate for tending;
- A final check on the validity of the regime and timing of commencement of operations i.e. DOS targets can be achieved, or crop height is sufficient for pruning lift scheduled.

Sampling intensity is low but pre-assessment does provide good quality information on the work content involved in each tending operation and sets a base price for negotiation.

Pre-assessment was completed at Te Piki and Pukerimu forests prior to tending operations commencing.

**Quality control**

Quality control is carried out during and after a tending operation. The aims of the quality control system PF Olsen have established are to:

- Collect sufficient data to monitor a contractor's performance and correct this if necessary, with minimum delay;
- Collect sufficient quantitative data to provide reliable estimates of the crop state;
- Provide data as input for growth modelling; and
- Provide data for estimating timing of the next tending operation.

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PF Olsen's 'Tending Manual' details the procedures to follow for pre-assessment and quality control plotting.

Quality control was completed at Te Piki and Pukerimu forests at the completion of each tending operation.

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**Mid-crop inventory**

The principal aim for the mid-crop inventory is to collect stand data for inputs for growth modelling. Under current tending regimes mid-crop inventory is scheduled for between 11 and 15 years of age.

Sampling intensity is targeted to achieve 10% confidence limits on basal area on a stand-by-stand basis. Smaller stands may be aggregated into crop types to achieve this.

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**Pre-harvest inventory**

The principal aim for the pre-harvest inventory is to obtain estimates of recoverable volume by log grade. This information can then be used to develop marketing and harvesting strategies. Pre-harvest inventories will be undertaken when stands reach five years or less from harvesting.

Sampling intensity is targeted to achieve 10% confidence limits on basal area on a stand-by-stand basis. Smaller stands may be aggregated into crop types to achieve this as in mid-crop inventory.

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**Mapping**

All mapping within the Waikawa Lands Trust estate is in digital format and is constantly updated in a Geographic Information System (GIS) that is linked to FIPS. The GIS system spatially records a vast array of forest data, from stand and legal boundaries, to reserves, rivers, roads, infrastructure, topography and soils.

Accurate mapping also assists budgeting, planning, calculation of future revenue/tree crop value, calculation of payments, infrastructure location, and harvest planning.

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**Forest records**

Detailed records of each stand's silvicultural management history, productivity, inventory and other attribute data are compiled and maintained in a stand records database and Geographic Information System (GIS). These records form the basis for informing silvicultural scheduling, harvesting schedules and other management activity.

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# Non-commercial Estate Management & Protection

## 11. Protected Forests, Habitats, Ecosystems and Species

**Introduction**

Indigenous biodiversity management in or associated with exotic forests is a normal component of everyday forest management. Environmental certification systems place obligations upon the forest manager to be aware of and, where required, enact procedures to assist with the maintenance and protection of important biodiversity where they are able.

Exotic forests can and do provide a level of biodiversity, though this is often enhanced by natural forest ecosystem remnants embedded within the plantation matrix. These are often the most important contributor to the total of the productive landscape's biodiversity. However, rare and threatened species can also be found associated with exotic forests and may require special attention for management.

**Protected ecosystems**

The protected ecosystems are recorded and ranked on the basis of ecological criteria reflecting the stands representativeness, rarity of species, size and connectivity, function and landscape values. Relative value in terms of the 'ecological landscape' (Section 4) also informs that process.

Actions are prioritised according to the 'Protection Category' status allocated to the areas from the assessments and classifications undertaken. The management implications pertinent to each status are summarised in the table below. Prioritisation of work effort will also be based on the principle of ensuring successful and maintainable outcomes at limited scales as a priority over wide scale but marginally beneficial outcomes.

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***Table 12. Protected Ecosystems Management Categories***

| Protection Category | Primary Management Objective | Activity Level | Monitoring |
|---|---|---|---|
| Passive | Minimise non-essential damage, maintain area | Fire protection | - Area - with adjacent stand assessments |
| | Observe RPMS obligations | 3rd party arrangements regarding pests, apply RPMS | - Pests - to meet RPMS<br>- General forest health survey |
| Limited | Protect from non-essential damage, maintain area, maintain function (where practical) | Fire protection | - Sample forest condition monitoring |
| | Observe RPMS obligations | 3rd party arrangements regarding pests, apply RPMS. Associated maintenance pest control | - Low level pest monitoring where relevant<br>- Sample related fauna if relevant |
| Full | Protect from all controllable damage, maintain area & function | Fire protection | - Area monitoring |
| | Improve quality | Specific management | - Forest condition monitoring |
| | Observe RPMS obligations | Targeted pest control, 3rd party arrangements regarding pests | - Pest monitoring where relevant<br>- Related fauna monitoring if relevant |
| Special | Restoration if practical | As above, plus fencing, covenanting, co-management agreements & funding (where practical) | - As above, plus as defined in any restoration agreement |

The table below details the areas in the special protection category within the Waikawa Lands Trust estate, categorised by protective function.

***Table 13. Protected Ecosystems management categories by function and area***

| Protective Function | Protective Category | | | | Total Area |
|---|---|---|---|---|---|
| | Special | Full | Limited | Passive | |
| Erosion Control | | | | | |
| Landscape / Amenity | | | | | |
| Non-specific | | | | | |
| Rare Species | | | | | |
| Riparian Ecosystem | | | | 2.9 | 2.9 |
| Terrestrial Ecosystem | | | 7.5 | 30.3 | 37.8 |
| Wetland Ecosystem | | 2.7 | | | 2.7 |
| **Total Area (ha)** | | **2.7** | **7.5** | **33.2** | **43.4** |

**Management and riparian setbacks**

A standardised GIS-based stream classification system based on NIWA's River Environment Classification (REC) has been used to develop a rationale for defining riparian management with a set of rules in the EMS that apply to operations occurring near the riparian corresponding with each stream category. Categorisation of each stream reach is done by the physical characteristics of the particular reach, e.g. underlying geology, streambed slope, climate, and reach order.

It also provides the minimum set-backs upon establishment or reestablishment of forest after harvest where riparian setbacks had not existed before. The morphology of streams can mean that the minimum set back is wider in many instances.

The stream categories within the Waikawa Lands Trust estate are summarised below. The total length of waterways within the forest estate is 4.90 kilometres.

***Table 14. Length of stream by REC class***

| REC Class | Length (m) | Length (km) |
|---|---|---|
| Large, Low, Wet, Hard | 2,244.13 | 2.24 |
| Large, Low, Wet, Soft | 658.23 | 0.66 |
| Large, Mod, Wet, Hard | 217.68 | 0.22 |
| Small, Low, Wet, Hard | 1,116.35 | 1.12 |
| Small, Low, Wet, Soft | 665.51 | 0.67 |
| **Total** | **4,901.90 m** | **4.90 km** |

**Rare and threatened species**

As Te Piki and Pukerimu Forests are small young plantation forest blocks, planted into pasture and surrounded on two sides by pasture, one side by reverting farmland and one side by wetland environments, they are not known nor expected to provide habitat of any significance to rare or threatened species within the forest itself.

Records of sightings and locations are currently collected and reported in FIPS. Over time this has enabled the build-up of a spatial distribution picture of species within different geographical locations. Recorded sightings within the plantations and indigenous reserves are summarised in the table below. These records are made available to conservation authorities.

As of June 2018, PF Olsen will have transitioned into using the NatureWatch app for rare species reporting. This app contains a spatial database of the distribution for every rare species recorded within our plantation forests.

A listing of key species of interest is held by all contractors and staff along with species sighting forms and a request to report such information.

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***Table 15. Rare and threatened species reported in Waikawa Lands Trust estate***

| NZ Threat Classification System Category | Species |
|---|---|
| **Nationally Vulnerable** | Long Tailed Bat (North Is) |
| | New Zealand Falcon |
| | North Island Brown Kiwi |
| | North Island Kaka |
| **Declining** | Hochstetter's Frog |
| | Giant Kokopu |
| | Short Jawed Kokopu |
| **Not Threatened** | Kereru |

**Fish**

PF Olsen uses the Freshwater Environments of New Zealand (FWENZ) models to inform the potential for threatened fish species that may be present in streams affected by operations and if necessary any response to such a presence. The Fish Spawning Indicator published by NIWA to accompany the NES-PF is also used, particularly for works over/in stream beds.

Primary management actions in relation to fish, in addition to those already covered under water quality are:

- Development and maintenance of a register of crossings and an inspection routine to ensure fish passage,
- Sound design and construction of all new stream crossings,
- Timing of in bed crossing construction to avoid peak spawning period,
- Minimising damage to streamside environments and provision of setbacks where they were not originally present,
- Identification of, and avoidance and/or buffering of waterbodies during aerial spraying for replanting and *Dothistroma* control or aerial fertilisation if ever required,
- Protection of any wetlands identified within the plantation matrix.

**Avifauna**

While the local lists of threatened bird species are much more extensive, most of those species habitats are shore, sea, estuarine and river bed focussed.

Primary management actions in relation to avifauna are:

- Adherence to industry protocols developed for management of NZ falcon kiwi, bats and shortly, lizards.
- Inclusion of threatened species sightings into the PF Olsen sightings database, and subsequently into the NZ Forest Owners NatureWatch – Biodiversity in Plantations Project[5],
- Minimising damage to natural forest areas and any small wetlands and scrublands during harvest and reforestation, particularly any gully systems that already form natural corridors through the larger plantation areas,
- Promotion of the development of improved riparian corridors after harvest,
- Co-operation with neighbouring landowners undertaking vertebrate pest control within the wider area.

**Bats**

River systems, running within or adjacent to the Waikawa Lands Trust estate, that also have large well developed natural forest surrounds may provide potentially good feeding corridors for native bats. Research has also shown that large 'old man' radiata pine can provide good roost habitat.

Primary management actions in relation to bats are:

- The forest industry currently has draft protocols for management of bats in plantation forests. Once published, these will underpin management actions. In the interim, if bats are located in or near an operational area, expert advice will be obtained on how to avoid/mitigate any negative effects on the bats.
- Bat detection boxes will be deployed around the forests in a prioritised programme with the aim of establishing those parts (if any) of the plantation forests that may harbour bats. The immediate focus will be to get ahead of the future harvesting programme where bats may be present. Detections will be recorded in the NatureWatch database.

[5] http://naturewatch.org.nz/projects/biodiversity-in-plantations

**Herpetofauna**

Most NZ lizard species are now threatened, principally due to predation but also habitat loss. The eastern forests in the North Island have been known to be home to certain frog species, which suggests some preliminary work should be undertaken to assess the likelihood of their presence within at least some parts of the forests.

As a starting point, an initial desktop review of the likelihood of presence and distribution of native lizards and frogs within the Waikawa Lands Trust estate will be commissioned early in this plan duration to inform future strategies for management if any.

**CITES species**

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments.

Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species in the wild, and it accords varying degrees of protection to more than 34,000 species of animals and plants.

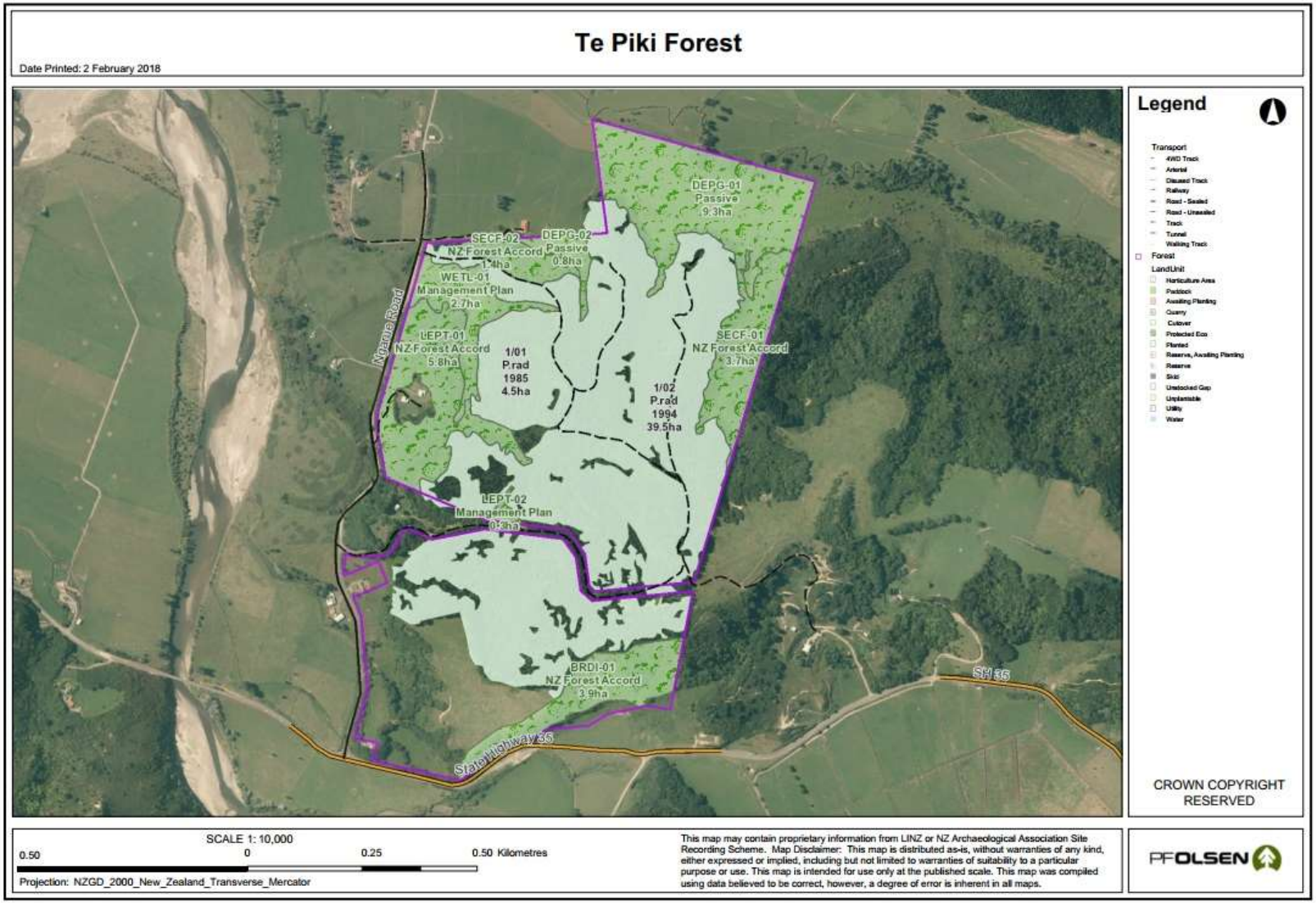
The full list of New Zealand CITES listed species are available in the EMS, or online at http://www.doc.govt.nz/about-doc/role/international/endangered-species/cites-species/nz-cites-listed-species/.

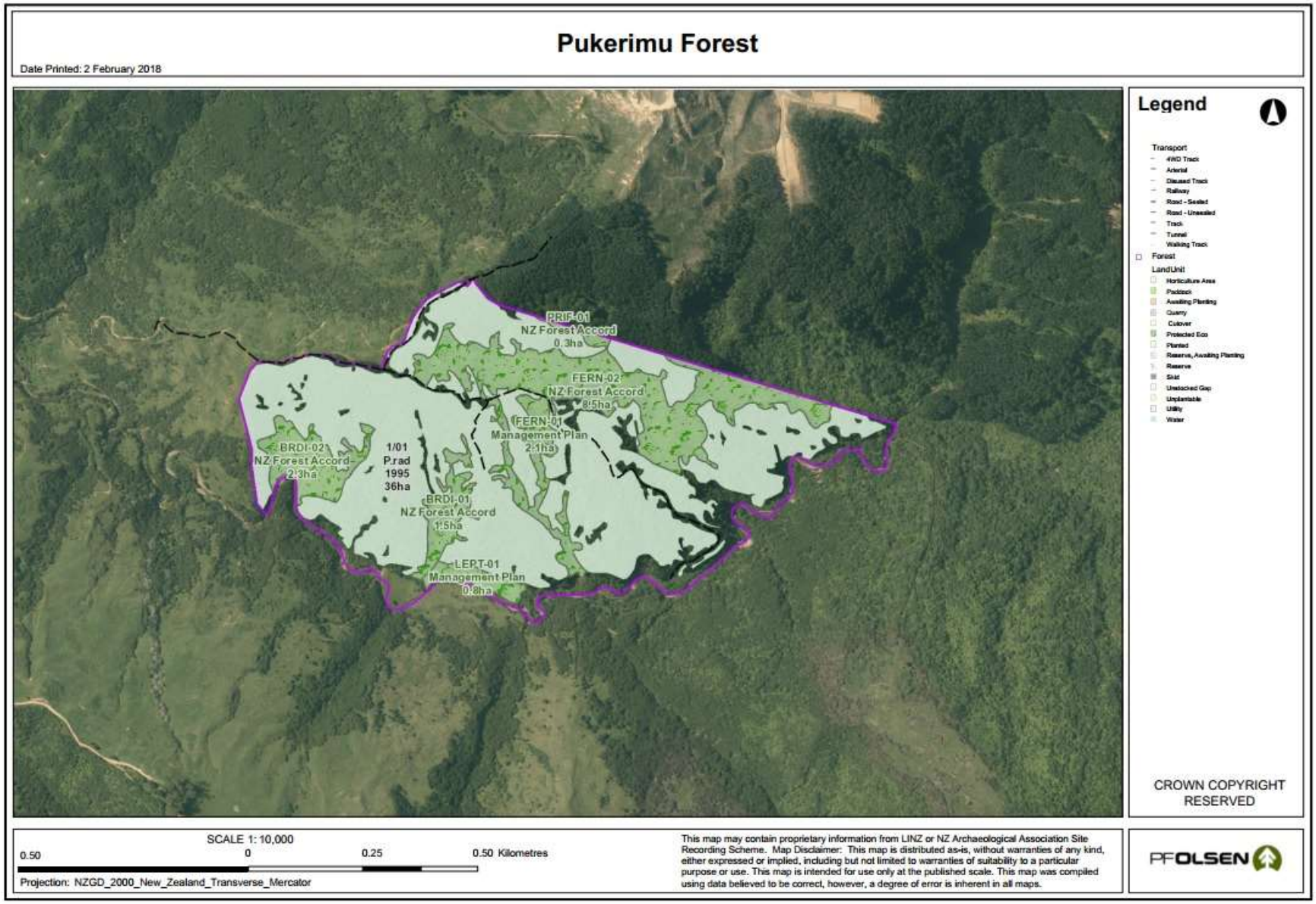
**Anticipated activities**

In line with the prioritisation approach described previously, key areas of work related to protected ecosystems within the Waikawa Lands Trust estate over the next 5 years are expected to be:

- Maintenance of long term photopoint monitoring sequence of the Te Piki wetland.
- Maintenance of threatened species records database and integration into industry Naturewatch 'Biodiversity in Plantations' project.

## Map 7 – Forest Stands Maps




Pukerimu Forest
Date Printed: 2 February 2018
PRIF-01
NZ Forest Accord
0.3ha
FERN-02
NZ Forest Accord
8.5ha
FERN-01
Management Plan
2.1ha
BRDI-02
NZ Forest Accord
2.3ha
1/01
P.rad
1995
36ha
BRDI-01
NZ Forest Accord
1.5ha
LEPT-01
Management Plan
0.8ha
Legend
Transport
4WD Track
Arterial
Disused Track
Railway
Road - Sealed
Road - Unsealed
Track
Tunnel
Walking Track
Forest
LandUnit
Horticulture Area
Paddock
Awaiting Planting
Quarry
Cutover
Protected Eco
Planted
Reserve, Awaiting Planting
Reserve
Skid
Unstocked Gap
Unplantable
Utility
Water
CROWN COPYRIGHT
RESERVED
SCALE 1: 10,000
0.50
0
0.25
0.50 Kilometres
Projection: NZGD_2000_New_Zealand_Transverse_Mercator
This map may contain proprietary information from LINZ or NZ Archaeological Association Site Recording Scheme. Map Disclaimer: This map is distributed as-is, without warranties of any kind, either expressed or implied, including but not limited to warranties of suitability to a particular purpose or use. This map is intended for use only at the published scale. This map was compiled using data believed to be correct, however, a degree of error is inherent in all maps.

# 12. Property Management and Protection

**Statutory pest obligations**

Pest management within the Waikawa Lands Trust estate is subject to statutory obligations under the Regional Pest Management Strategy administered by the Bay of Plenty Regional Council.

The strategy applies to both pest plants and animals and categorises them, in terms of management objectives. The categories, objectives and land owner obligations are summarised the Regional Pest Management Strategy Plan in Appendix 3. These plans are maintained online by the relevant Regional Council.

**Plant pests**

The overall objective in managing plant and animal pests is to:

- Meet statutory obligations under the Regional Pest Management Strategy,
- Reduce their direct impacts on both plantations and indigenous biodiversity values,
- Ensure that any impacts on neighbouring properties are promptly dealt with,
- Monitor the abundance and distribution of these species within the Waikawa Lands Trust forest estate.

**Animal pests**

The main animal pest in Te Piki and Pukerimu forests is the introduced possum. Possums attack the growing tips of both plantation and native trees, causing stem malformation and die back. Possums are also a threat to neighbouring property owners who are farmers as they can carry and spread tuberculosis to domestic stock.

Other pests include rabbits and hares at the time of establishment and wild goats and pigs during the first half of the crop rotation when bark is soft and palatable.

Animal pests in Te Piki and Pukerimu forests will be controlled using ground control methods as required. Because of the relative low ecological ranking status of the remnant patches, such operations will normally be ancillary to plantation management requirements, where direct regulatory compliance is required or where coordinated efforts are to be externally implemented.

**Insects and fungal disorders**

Diseases, which can affect the forest trees and adjacent native vegetation, are monitored throughout the year by the forest manager, and once a year by a professional independent forest health assessor. Most diseases cause little damage and do not require control.

The exception is *Dothistroma*, a fungus which attacks pine needles. This fungus is controlled using a copper-based fungicide, but only when the infection reaches a critical level. *Dothistroma* infection can also be controlled though silviculture by timely thinning and pruning operations, which increases air movement and lowers humidity levels.

**Pest control**

**Plant pests**

When controlling plant pests, chemicals are applied in keeping with all legislative and safety requirements and with industry best practice. Herbicides are used to desiccate most harvested areas prior to re-establishment or land handback to reduce weed competition. Re-established trees are also released with another chemical application where necessary during the first one to two years after establishment.

A bio-control weevil (*Cleopus japonicus*) that was being trialled in the previous plan period for efficacy against *Buddleia* has now widely established and is having some impact in some areas. Its full efficacy will not be known for some years.

**Animal pests**

Animal pests are controlled using shooting, trapping or toxins, especially prior to establishment and in the first few years of a tree's life. Only licensed operators are used for toxin control and all legal requirements are enforced. Permits are issued to private/recreational hunters on occasion and these permits require that kill returns be completed after hunting to provide information on animal densities, location and health.

The forest manager will co-ordinate operations with organisations such as the local Regional Council and Department of Conservation to achieve effective and efficient control within the forested area and on neighbouring land where required.

**Fungal pests**

*Dothistroma pini* is the most commonly occurring fungal disorder within the radiata pine plantation. This fungus is controlled using an aerially applied copper-based fungicide spray, but only when the infection reaches a critical level. *Dothistroma* can also be controlled through silviculture by timely thinning and pruning operations, which increases air movement and lowers humidity levels.No control is currently completed on the other fungal disorders.

**Chemical control**

All chemical applications are managed in accordance with PF Olsen EMS, the NZ Standard for agrichemical application, HSNO regulations and the obligations conferred by FSC to manage and minimise the use of chemicals including use of alternatives where available and to manage stakeholder expectations.

As part of the FSC commitments:

- All chemical usage is tracked by active ingredient and application area to enable reporting and monitoring of trends and is reported on an annual basis.
- PF Olsen is an active participant in research into chemical reduction, efficacy and safety issues related to the 'restricted use' derogations applied by FSC to various activities pursuing biological control agents.
- No chemicals classified by FSC as 'Highly Hazardous' are used other than under the terms of any derogations applied by FSC.

**Fire prevention and control**

With the weather patterns normally experienced in the Bay of Plenty region during the period late spring/summer, fire can be a real threat to the forests. This can be minimised by:

1. Having an effective fire plan and rural fire control organisation;
2. A close link with the relevant fire authorities, and an understanding of equipment and trained manpower requirements;
3. Active prevention measures which include restrictions on allowable access, fire prevention signage, publicity when fire danger prevails, access to adequate water sources, and if required constructing and maintaining firebreaks;
4. Effective fire reporting communications systems, mapping, and fire plan alert procedures;
5. Good forest management that recognises the influence of terrain, roading network and accessibility, and fuel build-up from silvicultural practice that will influence fire prevention and control measures.

**Fire authority responsibilities**

The legal responsibility for fighting forest fires lies with the respective territorial land authorities where the forest is situated. In the case of the Waikawa Lands Trust estate portfolio the relevant Rural Fire Authorities (RFAs) is Opotiki District Council.

In the event of a fire that starts within the forest, the RFA is responsible for attending and providing the resources to extinguish the fire. Where a fire starts outside the forested area and moves into the forest, the RFA has recourse to the Rural Fire Fighting Fund to compensate for fire-fighting costs.

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There is a close liaison with the RFA in terms of developing the 'fire plan' and the maintenance of good communication relative to potential risks and fire danger ratings.

In the event of a fire that starts within the forest, the RFA is responsible for attending and providing the resources to extinguish the fire. Where a fire starts outside the forested area and moves into the forest, the RFA has recourse to the Rural Fire Fighting Fund to compensate for firefighting costs.

Note: The rural fire fighting organisations and funding mechanisms are being restructured with a new organisation 'Fire Emergency New Zealand' (FENZ) coming into existence on the first of July 2017 ready for the 2017/18 fire season.

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**Public liability insurance**

It is normally recommended that a forest owner obtain public liability insurance cover with a firefighting extension, to indemnify against unforeseen adverse activity both within the forest area and adjoining land tenure. In the case of fire spreading from a Waikawa Lands Trust managed forest onto adjoining land, Waikawa Lands Trust would be liable for the fire-fighting costs and any damage to property.

There is public liability insurance currently held by Waikawa Lands Trust for each of Te Piki and Pukerimu forests.

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**Fire insurance**

With regard to the location of the forest and the high public activity around the fringes, there will always be the potential for fire. If a fire originates within the forest, the owners will ultimately be liable for suppression costs.

Insurance for the forests is held by Waikawa Lands Trust for both Te Piki and Pukerimu Forests. The current extent of cover is:

- Firefighting cover (the costs of fire suppression)
- Fire cover to crop value, reviewed on an annual basis
- Wind
- Re-establishment costs are retained

Waikawa Lands Trust should liaise closely with the forest manager at the time of fire insurance renewals and if necessary instruct the forest manager to keep premiums paid up.

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# Other Benefits from the Forest

## 13. Recreation, Forest Products and Other Special Values

**Introduction**

Forest plantations can provide non-timber forest products, recreational opportunities and special values that enhance the economic wellbeing of the owner or legitimate forest users. Non-timber products are an important means of maximising the production capacity of the forest whilst maintaining environmental and social values. The forest management plan provides procedures for developing and managing these resources.

**Environmental and social cost-benefit analysis**

Forests can deliver numerous social and environmental products and services, both positive and negative to varying degrees. These non-timber products can be difficult to quantify, unlike financial costs and benefits.

The table below rates the relative positivity and negativity of the more common social and environmental products produced relative to the most likely alternative primary production system, pastoral dry stock farming.

***Table 16. Environmental and social cost-benefit analysis of key non-timber products & services***

| Environmental or social product | Increasingly negative | | | | Neutral | | | Increasingly positive | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | -5 | -4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 | +4 | +5 |
| Soil stabilisation | | | | | | | HP | | | ✓ | |
| Erosion/soil loss | | | | | HP | | | | | | MR |
| Water quality | | | | HP | | | | | | | MR |
| Riparian shading | | | | | HP | | | | | MR | |
| Water quantity | | | HP | | MR | | | | | | |
| Carbon sequestration | | | HP | | | | | | | | MR |
| Native wildlife habitat | | | | | | | | | | ✓ | |
| Threatened fauna | | | | | | | | | ✓ | | |
| Native fish | | | | HP | | | | | | ✓ | |
| Air quality | | | | | HP | | MR | | | | |
| Native reserve protection | | | | | | | | | | ✓ | |
| Landscape/visual | | | HP | | | | | MR | | | |
| Recreation | | | | HP | | | | | | | MR |
| Commercial forest use | | | | | | | | | | ✓ | |
| Firewood | | | | | | M R | | | | | HP |
| Local employment | | | | MR | | | | | | | HP |

*NOTE: where the ratings differ throughout a rotation, 'MR' is used to indicate the mid rotation (growing) stage of the forest, and 'HP' refers to during or post-harvest.*

**Recreational usage**

**Te Piki forest** receives minimal recreational demand from the wider public. The Te Rereauira stream is used for fishing and the forest by its very existence will assist in providing habitat buffering to the stream. **Pukerimu forest** receives some minor recreational use mainly from pig hunters.

All access is controlled through a permit system; though this control is sometimes delegated to some (usually hunting) clubs with Iwi affiliations and customary right usage of their lands or otherwise strong controls over membership.

Primary requirements in management of such forest usage are:

- Access subject to non-conflict with current operations and any other safety requirements,
- Acceptable fire danger status,
- Access provided to defined areas other than those freely open to the public,
- Appropriate liability and fire insurance to be carried by permittees,
- Forest usage rules to be adhered to.

**Grazing**

Grazing of stock within some forest areas can be useful for partial weed control and reduction in fuel build up as well as assisting local farmers and earning a minor additional forest income.

Conversely uncontrolled grazing can lead to contamination of waterways, crushing and browsing of indigenous forest remnants, introduction of weeds and damage to streamside habitat.

At this point in time there is no grazing being carried out in the Waikawa Lands Trust estate, but this could change in the future. As such, any grazing would only be licensed subject to complete protection of waterways and indigenous ecosystems by 'reserve standard' fencing.

**Non-timber forest products**

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

- Sites for apiarists.
- Commercial firewood dealers who may be licensed to pick up low grade residues for resale to domestic households.
- Permitted collections of pine cones for community fundraising events.

None of these products hold any forest certification status. Currently none of these products are being produced or developed in Te Piki or Pukerimu Forest.

**Other special values**

In the regional landscape context, the Waikawa Lands Trust estate plantations and indigenous ecosystems in combination provide well-defined 'environmental services'. These include:

- Enhanced water quality, and buffering of regionally significant water bodies from agricultural and urban generated nitrification;
- Soil stabilisation and conservation;
- Providing a buffer against flooding during storms;
- Temperature moderation in waterways for maintenance of aquatic life including threatened native species and world-renowned sports fisheries;
- Enhance wildlife and plant habitat leading to increased biodiversity;
- Expanded habitat opportunities for some declining and or threatened fauna;
- Carbon sequestration and buffering of the effects from a nationally adverse carbon generation footprint.

In recent times some of these environmental services have acquired quantifiable and significant financial value (nitrogen and carbon in particular).

Over the term of this plan, the regulatory environment will continue to be actively monitored and where possible efforts made to secure the introduction of properly structured market mechanisms to ensure forestry is not dis-incentivised, relative to other land uses. Other environmental services will continue to be supplied or enhanced based on good corporate citizenship and responsible environmental management.

**Public access roads**

There are some roads and marginal strips that are within or adjacent to the boundaries of Te Piki Forest. These routes remain open to public, subject to any temporary closures, organised through the local Territorial Authority, required for safety such as during times of high fire risk or forestry operations. All signage must be followed and those using the routes will still require a permit if there is any intention to access the forest from the road routes.

These public road locations are publicly viewable in the Walking Access Commission website[6]. Any users are expected to abide by the Outdoor access code[7] published by the Walking Access Commission.

[6] https://www.wams.org.nz/wams_desktop/index.html
[7] http://www.walkingaccess.govt.nz/walkways-and-access/outdoor-access-code

# Looking Ahead

## 14. Monitoring

**Introduction**

To ensure that the management objectives identified in this plan are being achieved, various monitoring exercises outside normal operations management have been developed. Monitoring results are summarised and reported as and when required and are also, where appropriate, made publicly available through the PF Olsen webpage.

**Values monitored**

Management inspections are undertaken regularly. The direct forest monitoring framework implemented and applicable to Waikawa Lands Trust estate is tabulated below.

***Table 17. Environmental process monitoring framework***

| Monitored Element | Components | Data Source | Data medium | Reporting / Website Frequency |
|---|---|---|---|---|
| Chemical Usage | - A.I Usage<br>- Area Overuse | - Operational Supervisors | - FIPS<br>- Form | - On Demand<br>- Annual |
| Client Satisfaction | - Post-operation client survey | - Clients | - Survey Form | - Post-operational<br>- Annual |
| Consultation Activity | - Complaints<br>- Other Interactions | - Operational Supervisors<br>- Planners | - FIPS<br>- Form<br>- Meeting Minutes | - Annual<br>- Annual |
| Environmental Incidents | - Incident Number<br>- Categories | - Operational Supervisors | - FIPS<br>- Form | - On Demand<br>- Annual |
| Environmental Goals | - All | - Environmental Management Group | - Meeting Minutes | - Annual |
| Environmental Training | - Courses<br>- Numbers<br>- Names | - Staff | - FIPS<br>- NZQA | - Annual<br>- Individual |
| Flora & Fauna | - Species & Status Frequencies<br>- New Finds | - Operational Supervisors<br>- Public<br>- Crews | - FIPS<br>- Form<br>- Naturewatch | - On Demand<br>- Annual |
| Forest Estate Structure | - Area: Plantation & Protected Ecosystem<br>- Age-class<br>- Species<br>- Forest Type<br>- Protection Status | - Management Plans<br>- Stand Records | - FIPS Stand Records | - On Demand<br>- Annual |
| Forest Growth | - PSP Protocols<br>- Periodic Inventory<br>- ISO 9001 | - Contractors | - Volume Reconciliations<br>- Estate model | - Periodic-annual<br>- Not on web |

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| Monitored Element | Components | Data Source | Data medium | Reporting / Website Frequency |
|---|---|---|---|---|
| Forest Health | - Disease & health | - NFH Surveillance Program[8] | - Document | - Periodic-Annual<br>- Not on web |
| FSC Membership | - Block<br>- Location<br>- Name | - Certifying Body | - Certificate | - On Demand<br>- Annual |
| Health & Safety Statistics | - LTI / MTI / TIFR<br>- Accidents & Incidents<br>- Initiatives | - Operational Supervisors | - Noggin | - Monthly<br>- Annual |
| High Conservation Value Forests | - Condition Trends<br>- Photopoint Monitoring | - Contractors<br>- Supervisors | - Spreadsheet | - Annual |
| Internal Audit CAR Activity | - Frequency * Category | - Auditors(ees)<br>- Operational Supervisors | - Noggin | - Annual |
| Log Production | - Total Logs<br>- FSC Certification | - Log dockets at harvest | - Woodtrack | - On Demand<br>- Annual |
| Operational Monitoring | - Audit Trends<br>- Cause Analysis | - Operational Supervisors | - FIPS<br>- Form | - Monthly<br>- Annual |
| Pests | - RTC / RTI<br>- Kill Returns<br>- Other | - Contractors<br>- Supervisors<br>- Permitees | - FIPS<br>- Various | - Annual<br>- Where Relevant |
| Protected Ecosystem Condition | - Condition Trends<br>- Photopoint Monitoring | - Contractors<br>- Supervisors | - Spreadsheet | - Bi-annual if restoration initiated |
| Recreational & Non-Timber | - Permits Issued | - Branch Offices<br>- Forest Security | - FIPS | - Annual |
| Resource Consents | - Number<br>- Compliance | - Operational Planners | - FIPS | - Monthly<br>- Annual |
| Social Survey | - Demographics,<br>- Values<br>- Work Conditions | - Contractors | - Survey form | - 3 yearly |
| Stream Monitoring | - Clarity +/- other specific<br>- Full NOF | - Supervisors<br>- Contractors<br>- BOPRC | - Various | - Operational<br>- BOPRC S.o.E. |

[8] Forest health inspections are undertaken annually, by an independent specialist forest health assessor, through the NZ Forest Owners Association forest health scheme.

**Other monitoring**

Other operational standards are monitored through a variety of concurrent and post operational assessment procedures that cover all critical aspects of the business of the estate. This information which includes log manufacturing quality performance, safety performance, financial and budget performance as well as stakeholder feedback and client satisfaction surveys and other private or commercially sensitive is not made public.

## 15. Industry Participation and Research

**NZFOA and FGLT**

Waikawa Lands Trust primary means of participating as part of the forest owner community, and to gain industry intelligence and access to research findings is via:

- Membership of New Zealand Forest Owners' Association Inc. (NZFOA) http://www.nzfoa.org.nz/ and representation through its Property Manager on the Executive Board and working committees of NZFOA.
- Payment of a commodity levy to the Forest Growers' Levy Trust (FGLT). http://fglt.org.nz/ .The FGLT uses these funds to finance pan-industry good programmes and contracts NZFOA to carry out this work.

**Research**

A portion of the funds raised by FGLT are allocated to forestry research projects. These funds are supplemented by NZ Government research for industry funds that are bid for on a contestable basis every few years.

Application of the research is via knowledge gained in workshops, uptake by contractors, commercial providers and better genetics. PF Olsen's direct involvement with other research bodies such as FFR contributes to and benefits Waikawa Lands Trust through early application of good ideas and research findings.

**FISC**

The Forest Industry Safety Council (FISC) was set up in early 2016 following an independent review of safety in the forest industry. FISC is a forum for exchange of safety improvement initiatives, and to develop resources for forest managers and contractors. These resources are primarily delivered via the Safetree website http://safetree.nz/. FISC is financed jointly from FGLT and government, primarily Accident Compensation Corporation (ACC).

PF Olsen's continued support of FISC in the form of senior staff involvement in the OAG and TAG committees ensure Waikawa Lands Trust interests are considered and that outcomes are understood and applied in practice.

**Additional representation**

Other bodies that either or both the TIMO and Property Manager are active in, that bring benefit to Waikawa Lands Trust include:

- Wood Council of New Zealand (Woodco)
- Business Leaders' Health and Safety Forum
- NZ Forest Nursery Growers' Association
- Forest Health and Biosecurity Committee
- Log Transport Safety Council
- Port of Wellington Users Group
- NZ Institute of Forestry Inc.
- NZ International Business Forum
- NZ China Council
- Various organisations dealing with fresh water quality regulations
- Opotiki District Council Rural Fire Authorities
- National Environmental Standard for Plantation Forestry (setting new legislation).

# 16. Future Planning

**Introduction**

This plan pertains to the management of the Waikawa Lands Trust estate and will provide guidance for the next 5 years. Minor revisions will be made on at least an annual basis. Changes made will be documented in the following section. The next major review date for this plan is May 2023.

Deviations from this plan will be justified on the basis that the changes do not adversely affect the environment and are necessary or beneficial to achieving the management goals and objectives.

The forest management plan is used for both medium and long-term planning.

**Associated management plans**

Associated with this plan are forest agreement specific plans covering the descriptive and management detail pertinent to each forest. These plans contain primary descriptive data for the specific forest and details of planned silvicultural objectives. These plans are maintained by the investment manager for Waikawa Lands Trust.

**Operation plans**

Short term tactical planning is accomplished through development of annual operations plans in conjunction with detailed budgeting. These plans are prepared in accordance with this Management Plan. Harvesting operations are also planned on a block by block basis because of the level of detail required.

Such operational plans and associated budgets are subject to approval by the forest owners at the beginning of each financial year.

**Stakeholder consultation**

Consultation with key stakeholders has been enabled as part of the development of this plan which will be publicly available on the PF Olsen Certification website. Feedback from stakeholders (and others as they become apparent) is monitored, including actions undertaken to resolve disputes and issues and may inform changes in operational practice or future plan reviews.

# 17. Register of Plan Change and Review

**Introduction**

This plan pertains to the management of the Waikawa Lands Trust estate and will be reviewed on an annual basis. This section documents specific changes made during each review.

| Change | Date | Section/Page |
|---|---|---|
| | | |
| | | |
| | | |

# Appendix 1 - Contact details for Regional and District Councils with jurisdiction over the Waikawa Lands Trust estate

| Council | Phone | Fax | Email | Website |
|---|---|---|---|---|
| Bay of Plenty Regional Council | 0800 884 880 | 0800 884 882 | info@boprc.govt.nz | https://www.boprc.govt.nz/ |
| Opotiki District Council | 07 315 3030 | 07 315 7050 | info@odc.govt.nz | http://www.odc.govt.nz/ |

# Appendix 2 -Other Relevant Legislation

| Commercially relevant statutes & regulations |
|---|
| Accident Compensation Act 2001 #49 |
| Animal Welfare Act 1999 |
| Biosecurity Act 1993 |
| Climate Change Response Act 2002 |
| Conservation Act 1987 |
| Crown Forest Assets Act 1989 |
| Fencing Act 1978 |
| Fire and Emergency New Zealand Act 2017 |
| Forestry Rights Registrations Act 1983 |
| Forests Act 1949 |
| Freshwater Fisheries Regulations 1983 |
| Hazardous Substances and New Organisms Act 1996 |
| Health and Safety at Work Act 2015 |
| Heritage New Zealand Pouhere Taonga Act 2014 |
| Protected Objects Act 1975 |
| Reserves Act 1977 |
| Resource Management Act 1991 regulations |
| Soil Conservation and Rivers Control Act 1941 |
| The Treaty of Waitangi Act 1975 |
| Trespass Act 1980 |
| Wildlife Act 1953 |

Relevant regulations to the above legislation also apply as well as various industry Accords, Codes of Practice as listed below.

| Industry Accords & Codes |
|---|
| New Zealand Forest Accord |
| Principles of Commercial Plantation Forest Management |
| New Zealand Environmental Forestry Code of Practice |
| New Zealand Code of Practice for the Management of Agrichemicals. |
| Climate Change Accord |
| NZ Log Transport Safety Accord |
| Eliminating Illegal Forest Products in New Zealand |
| MoU Federated Farmers and Forest Owners Association and Farm Forestry Association |
| New Zealand Forest Road Engineering Manual |

# Appendix 3 - Regional Pest Management Plan for the Bay of Plenty 2011 – 2016

Species managed in the Regional Pest Management Plan

| Agency pests | Eradication/ Exclusion pests | Containment pests | Restricted pests | |
|---|---|---|---|---|
| Cape tulip* | Alligator weed* | African feather grass | Agapanthus | Parrot's feather* |
| Didymo | Horse nettle | Apple of Sodom | Aluminium plant* | Periwinkle |
| Hydrilla | Kudzu vine | Asiatic knotweed* | Arum lily | Plectranthus |
| Johnson grass | Marshwort* | Blackberry (defined areas) | Banana passionfruit* | Prickly pear cactus |
| Manchurian wild rice* | Nassella tussock* | Boneseed* | Blue morning glory* | Privet* |
| Phragmites* | Noogoora bur | Chilean rhubarb* | Bushy asparagus* | Purple nutsedge |
| Pyp grass* | Purple loosestrife* | Climbing spindle berry* | Californian rush* | Rum cherry* |
| Phytophthora taxon agathis (PTA) | Senegal tea* | Coast tea tree | Cathedral bells* | Saltwater paspalum |
| Salvinia* | Spartina | Darwin's barberry* | Cestrum species (four) | Selaginella * |
| Water hyacinth* | Water poppy* | *Egeria densa** | Chilean flame creeper* | Shield pennywort |
| White bryony | White edged nightshade* | Gorse (defined areas) | Chinese fan palm | Smilax* |
| Rainbow lorikeet | Brown bullhead catfish | Green goddess lily* | Climbing asparagus* | Snow poppy* |
| Feral sika deer | Koi carp | Hornwort * | Climbing dock | Strawberry dogwood |
| | Perch | Italian buckthorn | Coastal banksia | Sydney golden wattle |
| | Rooks | Lagarosiphon | Crack willow* | Tree of heaven* |
| | | Lantana* | Elaeagnus | Taiwan cherry |
| | | Lodgepole pine* | Elephant's ear | Thistle species other than variegated thistle |
| | | Old man's beard* | *Elodea canadensis* | Tradescantia |
| | | Ragwort (defined areas) | English ivy | Tuber ladder fern* |
| | | Royal fern* | Firethorn* | Velvet groundsel |
| | | Variegated thistle | German ivy | Wilding conifers (excluding Lodgepole pine) |
| | | Wild ginger – yellow and kahili* | Grey willow* | Wonder tree |
| | | Wild kiwifruit | Heather* | Argentine and Darwin ants |
| | | Woolly nightshade (defined areas)* | Himalayan balsam | Eastern Rosella |
| | | Yellow flag iris* | Houttuynia | Hedgehog |
| | | Feral Goats | Japanese honeysuckle* | Ferrets |
| | | Rudd | Japanese spindle tree* | Wild cats |
| | | Tench | Japanese walnut | Gambusia |
| | | Wallabies | Jasmine | Magpies |
| | | | *Lilium formosanum* | Wild mice |
| | | | Mexican feather grass | Possums |
| | | | Mexican waterlily* | Feral rabbits |
| | | | Mignonette vine | Rainbow skinks |
| | | | Mile-a-minute* | Rats (Ship and Norway) |
| | | | Mistflower | Stoats |
| | | | Monkey apple* | Wasps (common wasp, German wasp, Asian paper wasp, Australian paper wasp) |
| | | | Moth plant* | |
| | | | Pampas* | Weasels |

* These species are listed in the National Pest Plant Accord. The full list of species on the Accord is available on the Ministry of Agriculture and Forestry's website (www.maf.govt.nz).