

FOREST MANAGEMENT

Public Summary



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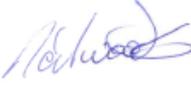
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Table of Contents

INTRODUCTION	5
OVERVIEW	6
THE COMPANY	6
CERTIFICATION COMMITMENT	6
HEALTH AND SAFETY	6
RESOURCE DESCRIPTION	7
Defined Forest Area	7
Environmental Limitations	8
CHAIN OF CUSTODY	10
FOREST MANAGEMENT SYSTEM	11
Forest Management Policy	11
Forest Management Plan	11
Implementation	11
Monitoring	12
Review	12
Research	13
FOREST PRODUCTIVITY	14
Identification of Forest Productive Capacity	14
Identification of Harvest Rates	14
Monitoring Growth and Dynamics	15
Spatial Information	16



Harvesting and Engineering Systems	16
Silviculture and Establishment Systems	17
Unplanned Fire	18
Non-wood Forest Benefits	18
MONITORING PROCESS	20
STAKEHOLDERS	21
Stakeholder Engagement	21
Dispute Resolution	21
Public Disclosures	22
SOCIO - ECONOMIC BENEFITS	22
Community & Regional Development.....	22
Illegal Activity and Security.....	23
Skills Development	23
Health and Safety	24
Workers' Rights	24
CULTURAL VALUES.....	25
FOREST VALUES - BIODIVERSITY	26
Biodiversity Priorities	26
Maintaining or Enhancing Biodiversity	27
Monitor Biodiversity.....	27
FOREST VALUES - SOIL AND WATER RESOURCES.....	28
Identification of Soil and Water Values.....	28
Water Quality	28
Water Quantity.....	28



Pollution 28

FOREST ECOSYSTEM HEALTH 29

Maintaining Forest Health 29

Environmental Safeguards 29

Weeds and Pests 30

Chemical Use 30

Salvage Operations 30

CARBON 31

CONTACT INFORMATION 31



INTRODUCTION

This document describes the way Aratu Forests Limited (AFL) adopts a sustainable approach to management of the AFL forest estate, while considering social, economic, cultural, environmental and safety implications.

This document supports certification compliance requirements and as such includes references to the associated AFL policies, processes and plans which form the basis of the AFL Forest Management System.

This document provides a high-level overview of the AFL sustainable forest management principles and is supported by the documents described in the following sections.

OVERVIEW

The Company

Aratu Forests Limited (AFL) is a medium sized forestry company based at Gisborne, the largest city in the Eastland province of New Zealand's North Island.

From an operational perspective, AFL manages a large mostly freehold forest estate and is involved in managing the full spectrum of operations from planting to harvesting and marketing. In addition to the 27 person Management team AFL also engages a large number of local contractors to undertake forest operations and support its business activities.

The key products from the forest are logs for both domestic and export markets but a number of local community members also gain benefits from the forest for recreation, hunting, firewood collecting and food gathering.

AFL is an equal opportunity employer that operates an active management system designed to assist in developing and applying best practice. It has an active and ongoing commitment Health and Safety and has various initiatives to manage what is inherently a high-risk environment. AFL also recognises the value and importance of environmental and social responsibilities has a dedicated Te Reo and Tikanga Maori fluent Community Liaison Manager and holds both FSC and PEFC environmental certifications.

Certification Commitment

Aratu Forests Limited (AFL) is committed to maintaining certification in its business and management practices on all lands and/or forest resources owned and/or managed by the Company. This commitment is included in the Forest Management Policy and displayed as Environmental Commitment alongside the Health and Safety Policy.

Certification is important for AFL as it allows for potential marketing and economic advantages for its forest products and more importantly ensures the management of its resources is carried out in an economic, social, cultural and environmentally sustainable manner.

Certification requires:

- Practising the guidelines and requirements set out by the certification standard.
- Developing a sound policy base derived from the core principles, ensuring they are communicated and followed in the workplace.
- Developing open lines of communication involving employees, stakeholders and indigenous peoples in the development of economically sustainable management practices.
- Using best practice guidelines in its management regimes. This includes the implementation and use of sound, proven and economically viable environmental, financial, and social practices that protect the future sustainability of its resources.

Health and Safety



Aratu Forests Limited is committed to ensuring the Health and Safety of all employees, contractors and their employees, sub-contractors and their employees, visitors and others to its operations and to eliminating all work-related injuries or illness.

Aratu Forests Limited is also committed to the principle that the safety and well-being of all personnel is a vital and integral part of its business operations. Monitoring is key to improvement and as such AFL uses the Incident Recording Information System (IRIS) as its primary monitoring tool. The system is used to monitor improvements in Health and Safety, to analyse and compare data against industry and is aligned with our system and goal of “Zero Harm”, as all incidents are preventable.

RESOURCE DESCRIPTION

Defined Forest Area

A map of the estate showing forest boundaries and location in relation to Gisborne, has been included on the AFL website and in the AFL Forest Management Plan.

Productive Forest Area

AFLs entire estate is defined within the GIS system and *Geomaster* Stand Record System. The defined forest area is consistently being updated and is reported using a system of Land use category (LUC) codes.

Table1: LUC codes

Land use category
Landbank
Native Reserves
Planned planting
Plantation
Protection planting willows/Amenity Riparian
Transport Roads Landings
Unplantable
Utility inclusive- Firestore & Optilog
Water Bodies
Give and Take Areas

Table 2: AFL Forest Tenure

Forest	Tenure
Findlay	Freehold

Hineroa	Freehold
Huanui	Freehold
Kopua	Freehold
Mahurangi	Forestry Right
Mangarara	Freehold
Okiwa	Freehold
Pohaturoa	Forestry Right
Ranganui	Forestry Right
Read	Forestry Right
Rimuroa 1C	Forestry Right
Te Marunga	Freehold
Te Puna	Forestry Right
Waimanu	Freehold
Wairangi *	Freehold
Wakaroa	Freehold
Whareongaonga	Leasehold



Management of Forest Operations

AFL has influence over the way operations are carried out through the following processes:

1. **Contractor Contracts** which include requirements around operational, environmental and health and safety performance
2. **Prequalification processes**
3. **Induction** prior to commencing work
4. **Operational Audits** carried out at regular periods to monitor conformance with requirements

Legal Titles

Copies of all forestry rights agreements, lease agreements and joint venture agreements are kept on file.

Environmental Limitations

Plantation forestry on the East Coast has several environmental limitations, but most are related to the steep slopes, young erodible soils, and propensity to be periodically subject to very intense sub-tropical storm events.

Slope Factors

The Eastland region is known for its long steep hill slopes and young soils which are highly prone to erosion under certain conditions. Collectively these factors mean access to some areas is difficult, especially during winter when carriageways can become wet, slippery and slip prone. Weather conditions can also become very adverse in the higher altitude area with high winds and snowfalls regular features of operating in these locations.

The original catalyst for the shift to forestry as a land-use on the East Coast, including much of the Aratu Forests Limited estate, was for stabilisation of these steep-land soils particularly after the impact of extreme weather events such as Cyclone Bola in 1988. Erosion of farmland resulting in loss of productivity and diminishing water quality in catchments and rivers led to the establishment of forests to help mitigate these effects.

The steep nature of the terrain and soft soils causes challenging conditions for road construction and forest harvesting. Much of the road construction needs to be ridge-top construction and a great deal of investment is made in road and landing design and layout, harvesting equipment selection and construction techniques. The steep terrain dictates that harvesting systems, are mainly cable based systems which can access the steep terrain and minimise the environmental impact during harvesting operations.

Localised weather conditions

The steep slopes and ridges give rise to well-defined catchments that often have localised weather conditions. Flash flooding can arise as a result of this although forest canopies have proven to have a positive effect on this as they serve as an intercept during major rainfall events and the tree roots bind the soil together.

Consideration of Environmental Impact

Environmental impacts are considered and assessed prior to any site disturbing activity such as harvesting or earthworks operations. This is undertaken in conjunction with harvest planning and resource consent



applications. Resource consents are required for any site disturbing activity and it is important that potential impacts and mitigation measures are addressed; AFL operations are undertaken using industry best practice and strictly follow the AFL Environmental Management System (EMS).

CHAIN OF CUSTODY

Aratu Forests Limited (AFL) recognises that there needs to be controls on the movement of forest products through the Chain of Custody or CoC process. This includes control of the product from the time of harvest and haulage through to the point of sale (e.g. mill gate) as well as identification and segregation of certified products.

CoC ends for AFL once delivery has been made to domestic customers however export consignments may have CoC obligations until logs are subject to one of the following two actions depending on the nature of the sale:

- Presentation at the wharf.
- Loading of a vessel.

It is important to ensure all sales are effectively monitored and reported correctly.

- All AFL log dockets will have the COC certification code and sale type at the top of the docket.
- All invoices for certified sales will also include the COC certification code and sale type; non-certified sales invoices will not include this code.
- All records and reporting of sales will be recorded as either certified or non-certified sales.
- All COC associated records will be kept for a period of 5 years from date on the record.

FOREST MANAGEMENT SYSTEM

Forest Management Policy

Aratu Forests Limited (AFL) aims to implement a forest management system of continual improvement that is environmentally, socially, culturally and economically sustainable. AFL also aims to produce a sustainable stream of top-quality logs from its plantation forest estate to support the manufacture of high-quality forest products.

AFL is also committed to maintaining Forest certification and to adhering to the requirements of the certification standard, this is outlined in the AFL Forest Management Plan.

This policy sets out the requirements for the overall Forest Management of the AFL estate. The Forest Management Policy is publicly available via the AFL Office.

Forest Management Plan

The AFL Forest Management Policy commitments are implemented through a high-level Forest Management Plan and a series of associated policies, procedures and associated documents.

AFL Forest Management Plan includes:

- Statutory Framework
- Forest Impacts
- Forest Management Objectives, Targets and Monitoring Processes
- Socio-economic context including Social Impact Assessments
- Forest Management Scope and Objectives
- Resource Description
- Forest Values
- Establishment, Silviculture and Harvesting Systems
- Health & Safety
- Monitoring
- Revision

Implementation

The policies, plans, procedures and documents below collectively form the overarching management system which is the mechanism to implement the commitments defined in the AFL Forest Management Policy.

Policies	<ul style="list-style-type: none"> ➤ Health and Safety Policies ➤ Environmental Policies
Procedures	<p>Operational Procedures - (Working guides to internal processes)</p> <ul style="list-style-type: none"> ➤ Procedures Manual - Planning ➤ Procedures Manual - Forest Operations ➤ Procedures Manual –_Harvest and Engineering ➤ Health and Safety - AFL Policy and Procedures\Current Procedures ➤ AFL Disputes Resolution Procedures ➤ AFL Chain of Custody Procedures
Plans	<ul style="list-style-type: none"> ➤ Environmental Management Plan, Incorporates impacts, controls, and monitoring. ➤ Health and Safety Management Plan – describes the processes that enact the AFL Health and Safety Policy ➤ AFL Forest Management Plan– Described above ➤ Integrated Pest Management Strategy – Describes processes to manage risk ➤ AFL Emergency Plan ➤ Indigenous Biodiversity Management Plan ➤ AFL Social Impact Assessment Framework ➤ AFL Chemical Management System
Other	<ul style="list-style-type: none"> ➤ Contractor Performance Standards- ➤ Contractor Environmental Field Guide ➤ Job prescriptions and harvest plans and associated maps - working documents provided to the contractor before commencing each new job. ➤ Contracts and Prescriptions ➤ Geographic Information System (GIS) ➤ Stand Records System ➤ Contractor Documents

Emergency Management

Emergency Plans and Procedures have been developed to describe the appropriate response to incidents and emergency situations (including natural events) for all workers associated with AFL. These include Emergency Plans for the Office, the Firestore, a Contractor FIRE EMERGENCY Handbook and FENZ - Specific forest fire response.

Monitoring

Monitoring ensures effective implementation of forest activities and associated procedures and is fundamental to ensure the most effective methods are adopted through continual improvement.

Refer to the section below on the AFL Monitoring Plan.

Review

Regular reviews and updates of the Forest Management Plans and associated documents are an important part of continual improvement, and will be achieved in the following situations:

- Annually



- Prior to any Certification audit
- After any major change to any areas covered by this Manual

The Review will include the following areas:

- **Review** of or **Changes** to policies, processes, procedures, manuals or other elements.
- **Response** to change in any area of new research, development or information
- **Audits** undertaken since previous review
- **Results** from operational, environmental and other monitoring including outages
- **Environmental incidents** or **Outstanding** hazard reports.
- **Statistical** analysis or monitoring undertaken.
- **Performance** of the system compared to previous version
- **Outcomes** from external expert advice, Investigations or reviews of effectiveness of monitoring.
- **Feedback** from online Stakeholder Feedback Form and Questionnaire or consultation
- **Regime** changes or amendments

The management system components will be reviewed periodically to ensure continued suitability, adequacy and effectiveness. Specific changes to documents will be recorded via a Document Control system for major plans, with a description of item changed, date and who by.

The Forest Planning Manager or nominee is responsible for leading review processes and updates to the Compliance Manual and associated Plans.

The CEO is required to approve any changes

Research

AFL maintain up to date knowledge and keep informed of developments in research and technology through association and investment in research organisations such as the Forest Owners Association and The Forest Growers Levy Trust. AFL have had a staff representative as a member of the harvesting research theme since its inception. AFL staff regularly attend forest industry conferences to keep up to date with what is out there and what other companies are doing.

FOREST PRODUCTIVITY

Identification of Forest Productive Capacity

There are several environmental limitations to plantation forestry on the East Coast, but most are related to the steep slopes and rugged nature of the topography. The original catalyst for the shift to forestry as a land-use on the East Coast, including much of the AFL estate, was for stabilisation of these steep-land soils particularly after the impact of extreme weather events such as Cyclone Bola in 1988. Erosion of farmland resulting in loss of productivity and diminishing water quality in catchments and rivers has led to the planting of forests to mitigate these effects.

Minimising Damage

The Environmental Management Plan was developed to aid staff in the management of operations in particular around potential damage to the forest e.g. damage to areas bordering operations (both internal and external). The document also covers emergency management and incident reporting.

Operational plans such as harvest plans, operational buffers, pre and post chemical operations checklists were all put in place to avoid or minimise potential damage.

Environmental Impact Assessment or Assessment of Environmental Effects (EAA)

In addition, environmental impacts are assessed prior to any site disturbing activity such as harvesting or earthworks operations. This is undertaken in conjunction with harvest planning, National Environment Standard for Plantation Forests (NES) and resource consent applications. Resource consents are required for any site disturbing activity not covered under the district plan or NES and it is important that potential impacts and mitigation measures are addressed; AFL operations are undertaken using industry best practice and strictly follow the AFL Environmental Management System (EMS).

Identification of Harvest Rates

Markets

The AFL resource is high quality with the vast majority having undergone intensive silvicultural regimes to produce high quality pruned butt-logs and large sawlogs.

Currently approximately 90% of logs are exported via Gisborne Port. The remaining being mostly high value pruned logs is sold to local (Gisborne and Hawkes Bay) processing plants.

Long term Harvest

Long term sustainable land use is one of the key focus of AFL's Shareholders and management team. The level of harvest is carefully derived with the use of modelling tools looking at projections of crop growth and market conditions well into the future over more than one growing cycle.

The AFL harvest derived from this modelling is designed to provide long term plans to achieve managerially workable harvest levels while providing sufficient early signals to communities and contractors that harvest levels might be adjusted either up or down and when that might occur. The current ideal annual cut (economically) shows significant highs and lows that reflects the level of establishment activity some 30 years ago.



Management is exploring options to smooth production but this needs to be done within constraints of the market appetite for younger trees and the toppling risk of older trees in this region.

Monitoring Growth and Dynamics

Permanent Sample Plots (PSP)

AFL actively participates in establishing, maintaining and measuring permanent sample plots (PSP) to monitor forest growth and dynamics. PSP data also provides a very important function in validating growth models used in planning processes.

Currently AFL has 51 active PSP plots scattered throughout the resource that are measured on a basis of strict measurement protocol. The protocol is based on the standard provided in New Zealand Forest Research Bulletin No186 “Field Guide for Sample Plots in New Zealand Forests”.

Inventory Operations

Aratu Forests Limited conducts a number of inventory operations at various times in the forest rotation.

Early in the rotation	<ul style="list-style-type: none"> ➤ During establishment and silvicultural tending, pre and post-assessment inventory is carried out to record base statistics for the calculation of targets and to monitor the quality of operations. ➤ This data provides start points required for input into the scheduling systems which determine timing of subsequent operations. ➤
Later in the rotation (MRI)	<ul style="list-style-type: none"> ➤ Many stands have a mid-rotation strategic inventory (MRI) which allows an accurate profile of the resource to be determined at around age 15-16. ➤ At a generic level, mid rotation inventory is used as start points to project potential yields, growth curves and product outturn at the end of the rotation. ➤ MRI data enables comparison to be made with data from final silvicultural operations in order to: <ul style="list-style-type: none"> ○ gauge accuracy of silvicultural data ○ to identify any problems that may have occurred within the crop since the time of final silvicultural measurement.
pre-harvest inventory	<ul style="list-style-type: none"> ➤ AFL aim to undertake an early inventory at approximate age of 20-22 and a later and final pre-harvest inventory at around 3-5 years prior to harvest ➤ Predicted yield and product outturn of stands at harvest are able to be calculated to a very detailed level. ➤ Pre-harvest inventory increases in both detail and intensity with each operation that occurs after the mid-rotation inventory. ➤ Inventory data is used to update yield tables, becoming the new start point to project potential yields, growth curves and product outturn at the end of the rotation.
Silvicultural data	<ul style="list-style-type: none"> ➤ Collected electronically with the Silvi Q.C program.



	➤ Mid-rotation and pre-harvest inventory data collected electronically using the ATLAS Cruiser Inventory System.
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Reconciliations

Reconciliation is an important part of AFL management practices. Accurate yield estimates for forest valuations and correct estimates of short and long-term sustainable cut and future log markets and production are critical. Numerous factors need consideration when reconciling actual versus estimated total recoverable volume (TRV) and grade distribution of any given area.

Spatial Information

AFL currently monitors and manages spatial information through an integrated GIS system that contains detailed spatial and stand information data layers for all forests in the resource. The current GIS allows AFL to produce a variety of high-quality maps with a large array of necessary information displayed including legal and stand boundaries, protected areas, land-use capabilities, tenure and related spatial information, such as contours, hydrology and transportation features, these are stored as an ESRI Spatial database. Harvest Planning is performed using an ESRI geo-database to store, edit and analyse spatially related planning processes. Data included within the harvest planning geo-databases are settings, landings and planned roads. All maps and mapping systems are generated from these GIS systems and will continue to be so into the foreseeable future.

AFL uses the ATLAS Technology Suite for our stand record system, forestry and harvesting management systems. Most operational summary information is stored in this database. GeoMaster is fully integrated with the company GIS. AFL uses numerous modules in the ATLAS suite namely Harvest Manager, SilviQC, Fieldman, Yield Table Manager, GeoMapper, Harvest Scheduler, PSP and Forecaster. To compliment this AFL maintains an extensive paper stand records system that records and stores information about the nature and operational treatment of each stand in a hard copy form.

Harvesting and Engineering Systems

Road and Landing Construction

AFL is harvesting the first rotation of forest thus there is a large amount of new forward road construction required. Harvesting the road line “corridors” to facilitate construction of roads is done primarily with ground-based harvesting systems (skidders and bulldozers).

Soils in the East Coast are geologically young and often highly erodible thus very sound road construction practices such as good compaction and drainage systems have to be observed.

The environmental guidelines for road construction and harvesting are covered in the *AFL Roding Manual and supported by the NZ Forest Road Engineering Manual, Planning Notes, and Resource Consents.*

Cable Systems

Due to the steep terrain and long slopes the primary clear fell harvest systems are skyline cable systems. Ground-based logging is often more cost effective and will be used on areas that are suitable (flat to undulating slope and not constrained by environmental conditions such as being prone to compaction, very wet or sensitive waterways).



Cable logging systems also provide:

- Minimal disturbance to steep erodible sites.
- They can be used from high vantage points minimising construction of road infrastructure (this maintains water quality and minimises site disturbance).
- They allow access to otherwise inaccessible areas.

Silviculture and Establishment Systems

The establishment and silvicultural regimes employed by AFL are well proven management practices that have been established over the history of plantation forestry in New Zealand. AFL is proactive in exploring and implementing new management practices or regime protocols if there is proven economic and implementation benefits to it.

To keep abreast of these changes AFL belongs to several key forest industry research cooperatives in conjunction with Scion in Rotorua. AFL also actively seeks audience with other forestry companies to determine their best practice guidelines and incorporate them into management practices. With the recent move towards establishing second rotation plantation instead of new land, AFL has spent field days with other forestry companies to observe their management practices in this regard.

AFL Regime Objective:

To expose stands to proven establishment and silviculture practices that add value to the standing crop and maximise return at the end of the rotation.

Species Choice

AFL forests have been established on relatively fertile ex-farm sites. This combined with a warm climate and moderate rainfall (1000-1500mm) provides ideal growing conditions for Radiata Pine (*Pinus radiata*) in most circumstances. Radiata pine is the most dominant species in the AFL resource. Short rotations (25 -30 years), established management practices and versatile end use potential are also positive influences on its choice.

Radiata pine continues to be the species selected for establishing most AFL sites. However, there are notable exceptions in the estate where radiata pine is not the ideal species of choice. Pruning is not undertaken within the estate.

The very large site class variation due to the steep terrain often mean that altitude is a major consideration in the choice of species. The north island altitudinal limit for radiata pine is considered to be around 700m above sea level, although in sheltered environments this can probably be increased slightly. Above this point AFL has chosen the species Douglas fir (*Pseudotsuga menziesii*) as it has a greater tolerance for higher altitudes (N.I. limit is around 1000m) and the weather extremes associated with these higher altitudes. Wairangi forest is where the majority of this high-altitude land exists and therefore contains all of the Douglas fir resource.

Although 98% of the AFL forest resource is Radiata Pine and Douglas fir, AFL also has a variety of other species growing. These are primarily Eucalyptus (*Eucalyptus regnans*, *Eucalyptus saligna*) and Cypress (*Cupressus lusitanica*, *Cupressus macrocarpa*) planted before the forests were sold by Fletcher Forests in 1997. Although for economic reasons none of these are considered primary species in current planting programs, the existing resource is tended and will eventually be targeted for sale as special purpose species suited to specific end-uses.



Radiata Pine: The value of the radiata pine resource will be maximised by:

Aiming to produce a well-spaced uniform crop that stands at a final crop stocking of approximately 500sph.

Douglas Fir: The value of the Douglas fir resource will be maximised by:

Aiming to produce a well-spaced uniform crop that stands at a final crop stocking of 450 sph, has small branching and good form for the production of top quality sawlogs.

Cypresses and Eucalypts: The value of the Eucalypt and Cypress resource will be maximised by:

Aiming to produce a well-spaced uniform crop that stands at a final crop stocking of approximately 350sph and has at least 90% of stems pruned to 6.0m or more.

Cypresses and Eucalypts have only been planted in low quantities throughout the resource. Some stands of these species have not received tending due to poor establishment or very small size but the majority have been tended. No establishment regime has been written for these species because they are no longer established as a matter of course.

Scheduling

AFL uses the Forest Research stand evaluation package Forecaster for its silvicultural scheduling. After silvicultural operations have been completed a rigorous post assessment process to determine outcomes of the operation and stand dynamics is completed.

Thinning schedules are derived by timing to balance achieving good branch size control with optimal tree diameter growth.

Alternative Regimes

AFL is not completely rigid in its approach to the use of a particular establishment or silvicultural regime. Although AFL has core regimes (discussed above) there is very much a “horses for courses” dynamic used at AFL and if a site warrants a different or more appropriate regime to be used then it will be used.

Moreover, AFL is committed to employing the best practice avenues for all its resource and is open to employing new innovation or ideas if they are appropriate or exceed the performance boundaries of currently accepted best practice.

Unplanned Fire

AFL have emergency plans and procedures in place for all workers associated with AFL. Emergency Plans have been prepared for all staff, including:

- AFL office
- AFL Firestore
- Contractors
- FENZ: Forest Fire Plan

All staff including contractors’ staff are trained in the use of the emergency plan, and relevant NZQA units in relation to fire.

Non-wood Forest Benefits

AFL recognises that in the interests of good public relations, the use of the forests for recreational and interest values is important. Many people in the community use the estate for activities or to procure not timber related resources. Some forests are open for both passive and active recreational activities.



The main recreational activity is hunting and permits are available for these activities. AFL have a tab on the AFL website enabling the public to easily apply for hunting permits within the AFL estate:

AFL also issues permit to allow access to gather traditional food and other resources. For example, permits have been issued from time to time to allow the gathering of watercress which is prevalent in many of the flowing streams through the forest estate.

Non-timber values in the AFL estate include:

Gathering	<ul style="list-style-type: none"> Plants for food, medicine, horticulture and other traditional uses such as Koura, watercress, Flax, Eel, Raupo Honey hives for food
Hunting and trapping	<ul style="list-style-type: none"> Animals for food Animals for skins or fur
Recreation	<ul style="list-style-type: none"> Walkway Trail bike riding Horseback riding Motorbike riding
Training	<ul style="list-style-type: none"> Hunting and fishing club teaching children rifle safety and how to shoot and hunt
Aesthetics	<ul style="list-style-type: none"> Scenic views
Environmental	<ul style="list-style-type: none"> Erosion Protection Habitat Protection Designated Reserve Areas Designated Protected Riparian Areas Endangered Species Protection

Regulating and Monitoring Forest Access

AFL allows the public or interest groups access to the forest estate under a permit system with conditions or access provisions outlined on the permit.

AFL views health and safety as essential to a successful forestry business, and as such recreational permits will only be granted in non-operational areas. Also, in the interests of safety and forest protection, all forests are closed to the public during the fire season which runs from 1 October to 30 April. Forests can become very dry and prone to fire during this period which is the main rationale behind this policy.

AFL has a selection of forest areas open to the public for passive recreation pursuits such as walking, mountain bike riding or horse riding. All of these forests contain characteristics such as walking tracks or easy access that lend themselves toward this kind of activity. They can be closed or used for active recreation at the discretion of AFL.

MONITORING PROCESS

AFL has implemented an active Monitoring Process increasingly using electronic data capture technology. Monitoring helps ensure the effective implementation of the AFL Forest Management Plan.

Monitoring and Evaluating Outcomes

Monitoring outcomes are reviewed in conjunction with relevant management processes and implemented and updated as required. Results from monitoring data provide input to management planning processes and are used to update documents and inform future planning operations. Monitoring processes include opportunity for review and feedback into systems and processes.

AFL actively monitors the following social, environmental and financial practices, some of which are described throughout this document. Monitoring is carried out in the following ways:

- | | |
|--|-------------------------------|
| ➤ Establishing Relevant Baseline Information | ➤ Forest Security |
| ➤ Establishment and Silviculture Regime | ➤ Health and safety |
| ➤ Growth | ➤ Environmental and Social |
| ➤ Stand Dynamics, Yield and Product Out Turn | ➤ Degraded Forests |
| ➤ Forest Health | ➤ Effectiveness of Monitoring |
| ➤ Access | ➤ Review and Feedback |
| ➤ Contract Workforce | ➤ Compliance |
| | ➤ Operational Activities |

Corrective Measures

The Corrective Action Request Form (CAR) can be used to record agreed remedial actions with a timeframe for completion.

Electronic monitoring tools (Survey 123) also have facility to record environmental incidents, audits and remedial actions required.

Monitoring Operational Performance

A number of procedures are implemented before, during and/or post operation to monitor contractor conformance. These are further detailed in the relevant Procedures manual and Environmental Management Plan and cover the following areas:

- Health and Safety - Prequalification
- Contractor Engagement requirements
- Contractor Operational Performance – Harvest, Engineering and Forest Operations
- Compliance Audits – internal and external
- Site Visits – checking conformance against plans

Ensuring methodologies consider Industry best practice.

STAKEHOLDERS

Stakeholder Engagement

Stakeholders include either affected or interested parties and are identified on the AFL Stakeholder List as a contractor, neighbour, Trust or joint venture representative or other.

AFL maintain a current list of all known stakeholders.

AFL recognises that both Social Impact and stakeholder engagement are important contributors to management decisions at all levels of the organisation.

Evaluation of Forestry Effects through Social Impact Assessment

Social Impact Assessment (SIA) is a management tool used to reduce business risk in a number of situations. AFL incorporates SIA in its management practices and as an on-going part of its operations.

The AFL Social Impact Assessment Framework describes the theory of SIA and outlines the AFL SIA process including how and when feedback will be sought, for example prior to the commencement of chemical application operations or harvesting and earthworks.

To create a benchmark for SIA and to align some of the thought processes about SIA, an initial high-level company SIA was performed in 2006. Results of this initial process were developed into an SIA matrix, which has been very useful in establishing baseline SIA information.

Stakeholder Feedback

Stakeholder views will be considered when reviewing plans and processes which form the management system. AFL consults with neighbours and other affected stakeholders as part of planning processes.

Dispute Resolution

AFL seeks to resolve external claims or disputes efficiently and amicably by addressing all disputes as soon as they arise. Any issues will be dealt with openly, respectfully and where possible within a suitable timeframe. AFL will determine the validity of the claim or dispute using the resources at its disposal. This includes investigating the forest and legal information surrounding the dispute.

Where no agreement can be reached from direct complaints or SIA registered concerns, the Disputes Resolution Process defines the procedures to be followed between AFL and other parties.

It is important to define the mechanisms of disputes resolution should they be required. The procedures are relevant for all AFL staff, contractors, stakeholders and the general public who may take issue with the management practices or activities of AFL.

AFL maintain all records of stakeholder communication including a log of all disputes. Ongoing dialogue between AFL and the claimant may continue during the course of any investigation. AFL will be sensitive and receptive to any information forthcoming from an investigation by the claimant.

The claimant will be informed of the outcomes of the investigation as soon as it is completed. The investigation will be completed within a reasonable and practical time frame and completion date will depend on the nature of the dispute and the readiness of information needed for its resolution.



If the claimant does not agree with the outcomes of the investigation, then the dispute may be referred to AFL's legal representative(s) to resolve with the claimant's legal representative(s).

Public Disclosures

The [AFL website](#) is used to post information for public viewing.

Information posted on the website includes:

- Summary of the Management Plan.
- List of Donations
- Opportunity for public feedback
- Certification audit reports summaries are available through the certification body links.

SOCIO - ECONOMIC BENEFITS

Community & Regional Development

AFL feel it is important to support the wider community of the region and/or supporting organisations as such AFL endeavour to undertake sponsorships, donations, memberships or other contributions. Refer to the AFL website for a list of AFL supported community projects for the past financial year.

Environmental - Erosion Control

Forests were planted in the East Coast region for erosion control and have proven effective to improve erosion and water quality for the majority of the rotation, there is a window of vulnerability of approximately 5 years during and post-harvest until forest cover is once again sufficient. In 2013, the Eastland Wood Council in which AFL is a member, completed an Economic Impact Assessment of the Forest industry in the Gisborne-Tairāwhiti Region ([EWC-EIA Forest Industry 2013.pdf](#)). This report shows that Forestry is a major contributor to the region for both economy and employment.

Economic - Employment

According to New Zealand Forest Industry Facts and Figures 2019 stocked forest area of the East Coast is 155,617 hectares. Aratu Forests Limited contributes about 25,000 hectares (or 16%) of this area. As at 30 June 2020, employed 27 full time staff across Planning, IT, Finance, Forestry, Harvesting, Engineering and subsidiary roles; AFL also employ numerous contract crews who employ approximately a further 290 people, however this figure varies seasonally. [AFL is an equal opportunity employer.](#)

Most of the forestry work at AFL is done on a contract basis and most contractors are based in the region and draw many staff from the smaller communities. This is beneficial for both AFL and the Contractors as smaller communities are supported and the logistical problems of arranging forestry operations across a wide geographical spread are addressed.

People from local Iwi make up a dominant component of the Aratu Forests Limited workforce both in the harvesting and forestry operations. As a medium sized forestry company AFL also use a large number of service industries in our day to day business. Some of the main service industries including engineering services, cartage services, rural suppliers, small engine services, nursery services and vehicle sales.



Social Impact Assessments

Social Impact Assessments (SIA) is an important management tool used to reduce business risk and maintain good relationships within the community, and as such has developed a Social Impact Assessment Framework. The framework outlines how the level of SIA undertaken will be determined by the scale of the operation, its location and the number of community members affected. Some AFL Operations have the potential for high social impacts, such as harvesting, earthworks and aerial spraying, and therefore may require a more detailed assessment.

Adjacent Lands

AFL forests were initially established primarily on degraded pastoral land. As a consequence, pastoral farms still make up a large proportion of the adjacent lands surrounding the AFL estate. The majority of the remaining boundaries are native and plantation forests. Other forestry companies on the East Coast have followed a similar mode of action to AFL, establishing and managing forests on ex-farm sites, meaning AFL shares many boundaries with other forestry companies. The boundary with other forest companies has been increasing as more land is getting converted to forestry. Where several forest owners exist in a particular locality there can be large tracts of contiguous forestry across the landscape.

AFL has no forestry immediately neighbouring suburban or residential development which is important for the consideration of aesthetic values and safety considerations during forest operations.

AFL strongly believe the maintenance of good neighbour relations is essential. Harvesting alongside neighbouring land requires good communication and cooperation to achieve successful harvesting and re-establishment operations. Developing and maintaining good relationships with neighbours can also be mutually beneficial, for example the protection of assets from fires or illegal activities.

Illegal Activity and Security

While AFL recognises good public relations, it is essential to ensure that recreational access does not come at the expense of protecting the forest estate from illegal activity, including illegal access.

Forest security and control of forest access is achieved through locking of gates, controlled and bonded key issue, and the permit system. All forest entry points have locked security gates and are sign posted with the forest name and contact details. Security is further enhanced by maintaining good relationships with neighbours and local authorities, who provide AFL with an extra set of eyes

Skills Development

AFL Employees

Competency is addressed through the following methods to ensure employees and contractors are suitably trained and competent to carry out the work required of them:

1. At engagement, new staff members undergo an induction which includes communication of required information and an assessment of training needs and development of a Training Plan
2. Training competency is recorded on the AFL Training Matrix

For Contractor Employees

Requirements are described in the Health and Safety System

1. Employee competency is checked at engagement via Records of Learning



2. Ongoing training is checked during operational checks and audits
3. Records of training for forest workers are maintained by department.
4. Training needs may be identified from outcomes from audit outcomes and incident investigations

Health and Safety

AFL is committed to ensuring the Health and Safety of all employees, contractors and their employees, sub-contractors and their employees, visitors and others to its operations and to eliminating all work-related injuries or illness, and to the principle that the safety and well-being of all personnel is a vital and integral part of its business operations.

Monitoring is key to improvement and as such AFL uses the Incident Recording Information System as its primary monitoring tool. The system is used to monitor improvements in Health and Safety, to analyse and compare data against industry and aligns with our system and goal of “Zero Harm”.

AFL run a comprehensive Health and Safety Management Plan which describes the way AFL complies with relevant Health and safety Legislation and Regulations, facilitates improvements in workplace health and safety, ensures safe workplaces and ensures employee representation and participation.

There is an active and ongoing commitment to a drug and alcohol policy to keep its workplaces productive and drug free. Employee participation is a vital component of continual improvement and engagement in safety systems and is also a vital component of the Health and Safety at Work Act (2015). Contractor's adherence to this is checked during audit processes.

Workers' Rights

It is important that it is relayed to all employees that they have a right to join a union or similar organisation of workers, participate in collective bargaining and associate freely. AFL include this right to join a union or similar organisation of workers as part of the annual Contractor Roadshow.

All AFL staff and contract employees are required to have current employment contracts consistent with the Employment Relations Act. Employees must be legally allowed to work as defined in the Employment Relations Act and Children at Work Policy among other requirements.

The safety and wellbeing of employees is managed through the AFL Health and Safety Plan, which enacts the Health and Safety at Work Act 2015.

Equal Employment Opportunity

AFL is an equal opportunity employer and treats all staff in fair and equitable manner using qualifications, skill, experience and merit as the basis for recruitment and advancement. A reminder of this is included in the Annual Contractor Roadshow.

CULTURAL VALUES

AFL recognise and respects cultural and historic sites, traditional uses, tangata whenua and the Treaty of Waitangi. While there are several culturally sensitive and/or historically significant sites identified and protected within the AFL Estate, there are no claims pending under the Treaty of Waitangi.

Recognition of Traditional Values

AFL acknowledges it has a responsibility to manage sites of traditional, cultural, historical or spiritual significance located within the estate. AFL also recognises indigenous values and the requests of indigenous people to access historical sites of traditional or cultural significance.

Identification of Known Values

AFL has already undertaken a rigorous program to identify and record historic sites on land it owns or manages in conjunction with local Iwi and the Heritage New Zealand. All new sites will be located properly using GPS and shown on any Company map produced for that area. Contract work forces are made aware of the sites and any significance it has to their operation(s). All sites identified from the initial survey have already been included on the company GIS mapping system and are clearly marked on all maps produced for work in the area. The AFL Environmental Field guide includes an information sheet on the field identification of Historic Sites. The Archaeological Sites Policy was implemented as AFL consider this to be of particular importance to Iwi stakeholders in the region.

Consultation

AFL are in regular consultation with representatives of the Iwi who have tangata whenua of the land on which the AFL owned forest estate lies. Iwi are consulted whenever a site disturbing activity is to occur on or near a historic site; All significant sites will be or are registered under Heritage New Zealand and when undertaking work around these sites an authority to do so is obtained from the associated Iwi and Heritage New Zealand. Where necessary a management protocol is agreed upon and signed. Post-harvest planting buffers are placed around all protected sites, to ensure protection through following rotations.

Iwi can approach AFL to visit sites and will be granted an access permit, unless for Health and Safety reasons access is temporarily restricted.

FOREST VALUES - Biodiversity

Biodiversity Priorities

The Management Plan recognises the obligation and commitment to incorporate into management practices the protocols for the identification and protection of biodiversity values in particular remaining areas of significant indigenous vegetation and rare, threatened and endangered species (RTE).

High Conservation Value Forests (HCVF)

The AFL resource contains a number of PMA's (Protected Management Areas), which are also considered as HCVF (High Conservation Value Forests). All PMAs are identified in the local government district plan, riparian and indigenous forest fragments which contain New Zealand's indigenous biodiversity (even though many of them are very small remnants left from land clearance dating back to the 1890's). AFL has no intention to undergo logging of indigenous species on its estate and further, has an interest in enhancing and protecting the remaining indigenous areas on the estate, allowing them to restore themselves as fully as possible. As a plantation forestry company, it also views its managed exotic plantations as a contributor to reducing pressures on the harvesting of native forests in New Zealand (and therefore globally) and as potential refuges and ecological corridors for rare, threatened or endangered species.

Management of Indigenous Biodiversity

AFL recognises the importance of indigenous biodiversity and the need to protect remaining areas of indigenous vegetation as much as possible. AFL will manage indigenous biodiversity including covenants, Forest Accord, riparian zones, PMAs, ecological / wildlife corridors and RTEs in the estate under the guidelines of the local government authority and the AFL Indigenous Biodiversity Management Plan. AFL have also developed management priorities for its indigenous biodiversity forest areas including increased pest and weed control.

Rare, Threatened and Endangered Species (RTE)

AFL recognises that if any new day to day recognition of rare, threatened or endangered species occurs it will most often be through the contract workforce as they cover large areas of the resource on a day to day basis and are most likely to come across them.

AFL has compiled an Environmental Field Guide to aid in the identification of species of interest and outline steps in the event of a sighting. The Field Guide includes an RTE Report Form. AFL believes that anyone associated with the company has to be associated with the process of identifying and protecting RTE species, therefore all staff and contractors are issued the Guide.

The main RTE species that are likely to be found within the AFL estate are

- NZ Falcon (*Falco novaeseelandiae*)
- Long tailed Bat (*Chalinolobus tuberculatus*)
- Kaka-beak (shrub) (*Clianthus puniceus*)



Maintaining or Enhancing Biodiversity

AFL has no intention to undergo logging of indigenous species and has an interest in enhancing and protecting the remaining indigenous areas on the estate, allowing them to restore themselves as fully as possible.

AFL liaise with experts (e.g. independent biodiversity specialist) on how best to manage remaining fragments of indigenous vegetation and any RTE species within its resource.

AFL has an Indigenous Biodiversity Management Plan, the plan describes the strategies adopted by AFL to achieve the outcomes of maintaining and enhancing significant biodiversity values. In addition, Environmental risk assessments are carried out as part of operational.

Pest and Weed Management

The Pest and weed management programs are essential for the protection, restoration and/or regeneration of indigenous species and areas, as such AFL ensure all reserve areas undergo annual pest and weed control, with some areas targeted for more intensive management.

Reserve areas and remnants are captured on the GIS and are subsequently displayed on all operational maps. Refer Integrated Pest Management Strategy.

Wilding Control

AFL acknowledges that it has a responsibility to control exotic animal and plant pests within its estate. This is a requirement of the Gisborne District Council's Regional Pest Management Plan.

Wildling conifers including *Douglas fir* and *Pinus radiata* have been identified as a plant pest by the GDC under the site led programme for pests in the regional and district plan or GDC Regional Pest Management Plan. In addition, natural regeneration has been identified as a plant pest within the AFL Integrated Pest Management Strategy. The Forest Operations Procedures Manual outlines how AFL manages wildlings that are likely to have spread from the AFL estate.

Monitor Biodiversity

Monitoring of RTE species in plantations is managed through:

- Native reserve monitoring
- Post operational surveys
- Contracting on biodiversity expertise - Ecoworks NZ - to undertake specialist surveys, such as presence or absence of RTE species, more detailed RTE surveys where required, pre-harvest planning ecological surveys and target species management plans.

Examples of Ecological Surveys include:

- Pre-harvest wetlands survey
- On-going bat surveys found to be present within one of our forests

FOREST VALUES - Soil and Water Resources

Identification of Soil and Water Values

AFL actively operates an Environmental Management Plan (EMP) which describes the ways environmental impacts are mitigated. This includes indigenous species soil and water resources. The EMP outlines methods to manage the potential environmental effects of operations, including road construction, harvesting and maintenance operations that change soil or landscape properties and affect the quality of water flowing in streams and rivers (as well as the downstream effects).

The identification and protection of environmental aspects primarily focusing on the protection of soil and water properties. The EMP describes the management processes including outlining the potential environmental effects by operation. Operational plans such as harvest plans, operational buffers, pre and post chemical operations checklists were all put in place to avoid or minimise potential damage. In addition, AFL have implemented Soil Structure, Fertility & Biological Activity policy and process.

The identification and management of potential environmental risks resulting from land disturbing activities is part of the NES requirements and resource consent application process.

Water Quality

The National Environmental Standard for Plantation Forestry describes maintenance of water values as a key priority. Controls around these site risks are interpreted through the local regional authority Resource Consent process. Identification of potential impacts and mitigation controls are described in the EMP and these provide an input to the consent application process.

AFL has installed a number of water monitoring points to gauge turbidity and flow levels from catchments containing different age class forest. Over time these monitoring points will be used to assess the effect of roading and harvesting operations in forested catchments managed by AFL and monitor these results in comparison with timing of operation and amount of rainfall as well as information from other water monitoring authorities. AFL aims to install additional water monitoring points when required as harvesting operations moves into new forests.

Water Quantity

AFL has installed a number of water monitoring points to gauge turbidity and flow levels from catchments containing different age class forest. Over time these monitoring points will be used to assess the effect of roading and harvesting operations in AFL managed catchment areas, and to monitor these results in comparison with timing of operation, amount of rainfall as well as information from other water monitoring authorities. AFL aims to install additional monitoring points as operations move into new forests.

Pollution

All staff and contractors are advised requirements for a spill kit onsite as part of the engagement process. In addition, annual refresher training in emergency procedures. All operations involving fuels or chemicals must have an appropriate spill kit on site and refresher training covers use of these. AFL also have processes in place for Empty Chemical Container Disposal.

FOREST ECOSYSTEM HEALTH

The following agents have the potential to impact negatively on forest ecosystem health and vitality. AFL has developed a number of processes targeting management to optimise forest health and viability.

Agent	Potential Impact	How Managed
Biological agent	<ul style="list-style-type: none"> • Diseased trees • Reduced growth rates 	<ul style="list-style-type: none"> • Aerial Survey • Foliage sampling
Plant pests	<ul style="list-style-type: none"> • Spread through estate reducing available forest growing area and competing with tree stock for nutrients 	<ul style="list-style-type: none"> • IPMS • Environmental Field Guide • Regional Authority Guidelines • Staff monitoring
Animal pests	<ul style="list-style-type: none"> • Destruction of young tree stock 	<ul style="list-style-type: none"> • IPMS • Hunting permits
Fire	<ul style="list-style-type: none"> • Destruction of resource • Damage to neighbouring properties 	<ul style="list-style-type: none"> • Identification of high-risk time of year • Fire Emergency Response Plans • Fire training for staff and contractors
Degraded Forest e.g. windthrow, slips, erosion	<ul style="list-style-type: none"> • Poor growth 	<ul style="list-style-type: none"> • Salvage operations where safe and practicable
Chemicals	<ul style="list-style-type: none"> • Reduction in soil biology activity 	<ul style="list-style-type: none"> • Use of accepted pesticides and herbicides, avoiding use of banned pesticides e.g. WHO Class 1a or 1b

Maintaining Forest Health

AFL is member of the NZ Forest Owners Association and contributes via the Forest Growers Levy. SPS Biosecurity regularly undertake forest surveys for forest health, damage agents and signs of pest control. The survey report identifies areas of concern and provided recommendations for the management.

AFL also undertake regular internal monitoring, as described in Section 3 of the AFL Planning Procedures Manual, and Sections 14.6 Forest Health and s 14.12 Monitoring of degraded Forests in the AFL Environmental Management Plan. Examples of forest health monitoring include staff reports of forest health seen while working in the forest, and foliage sampling.

Environmental Safeguards

AFL actively operates an Integrated Pest Management Strategy (IPMS), a Chemical Management System (CMS) and an Environmental Management System (EMS) to protect indigenous species and protect the soil and water resources within its estate.

The EMS outlines company procedure and policy on best practice guidelines in road construction, harvesting and maintenance operations that change soil or landscape properties and affect the quality of water flowing in streams and rivers (as well as the downstream effects).



Weeds and Pests

The AFL Integrated Pest Management Strategy (IPMS) is a strategy that allows for the containment and control of unwanted pest species which would have a direct effect on the welfare of remaining indigenous resources within the estate. For example, the pro-active control of goats under the IPMS helps to protect indigenous remnants and PMA's from the effects of browsing and bark damage by goats.

Forest Operations maintain records on pest and weed control undertaken by forest area and what was done using Forest Direct.

Chemical Use

AFL concedes that under current best forest management practice, chemical applications are necessary to procure even and quality tree-crops and prevent increment loss through the competitive effects of weeds. However, AFL will always actively seek management practices that reduce the amount of chemical entering the environment. This has dual benefits, a reduction in chemicals entering the environment, and reduced expenditure. As chemicals are expensive to procure and apply, reducing chemical usage has a substantial financial as well as environmental benefit to AFL.

AFL do not permit the use of chemicals that appear on any banned list such as the WHO 1A and 1B or the Stockholm Convention on Persistent Organic Pollutants.

The AFL chemical management system contains mechanisms for recording the type and quantity of chemicals used through the use of a chemical register and chemical reconciliation system. It also provides guidelines and protocols for the proper use of chemicals and environmental incidents.

Salvage Operations

AFL will consider salvage of damaged forest dependent on the results of health and safety risk assessment. Any planned salvage will be subject to an operation plan that also considers the reserves and significant biodiversity values in the area.

All reserve areas will be excluded from salvage operations except where required for safety, fire management, rehabilitation or other justified reasons. Plans will have conditions in place to recognise the values contained within the reserves.

Any salvage operations will ensure that remaining Significant Biodiversity Values are maintained through operational planning processes and recorded on Planning Notes.



CARBON

Plantation forestry plays a major role in reducing the effects of climate change and achieving greenhouse gas reduction targets through the effect of trees on carbon sequestration. Throughout the forest rotation from planting to harvest, a renewable carbon cycle occurs that sequesters carbon dioxide from the atmosphere and then releases it back into the atmosphere. When a forest area is harvested and then replanted the new trees uptake carbon and the cycle begins again.

Some Forestry Operations i.e harvesting and transport have high fuel consumption due to the machinery and transport requirements. AFL encourage the use of modern machinery, improved technology, efficiency in management, and regular maintenance of vehicles and machinery. All these things contribute to minimising fossil fuel use within the AFL estate.

AFL uses consultants to evaluate the feasibility of carbon trading and the Emissions Trading Scheme. AFLs sustainable forest management approach includes a commitment to replant all productive areas which ensures this carbon cycle will continue and AFL manage their forests sustainably into the future.

AFLs overall contribution to carbon storage is estimated using the methodology and calculators provided through the MPI website and Emissions Online Calculator.

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