

SOUTHLAND
PLANTATION FOREST
COMPANY OF
NEW ZEALAND
MANAGEMENT PLAN
SUMMARY

*Prepared by
Southwood Export
Limited*

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1. Introduction

This document is a summary of the SPFL Management Plan which is certified by Forest Stewardship Council (FSC).

FSC certification is an internationally recognised standard that demonstrates how a company's forests are managed in an environmentally sound, socially beneficial, and economically viable manner. SPFL certification was granted through measurement of its operations and practices against the Principles and Criteria developed by FSC which define well managed forests.

Principle 7 of FSC requires SPFL to develop a management plan.

Principle 10 of FSC requires SPFL to explicitly state in the management plan the management objectives of the plantation, including natural forest conservation and restoration objectives, and which are clearly demonstrated in the implementation of the plan.

The Principles state

Principle 7: Management Plan- A management plan- appropriate to the scale and intensity of operations-shall be written, implemented, and kept up to date. The long term objectives of the management, and the means of achieving them, shall be clearly stated"

Principle 10.1.1: Objectives of tree planting shall be explicit in the management plan, with clear statements regarding the relationship between tree planting and the silviculture, socioeconomic and environmental (i.e. forest conservation and restoration) realities in the region.

Principle 10.1.2: Management objectives for conservation of natural forest and restoration shall be described in the management plan.

Principle 10.1.5: Plantation management objectives, including explicit measures under Criteria 6.2, 6.3, 6.4, 6.9, 6.10, 10.2 and 10.5 intended to maintain and retain indigenous biodiversity, are identified in the management plan and implemented in a timely manner.

Principle 10.1.6: The management plan shall identify the boundaries of the area encompassed by the certificate, which includes the plantation forest plus any designated reserve areas.

This plan is in fulfilment of Principle 7 and the relevant criteria of Principle 10.

This document describes the higher level policies for the SPFL estate under the SPFL Certificate RA-FM/COC-1130.

2. Company Profile

Southland Plantation Forest Company of New Zealand Limited (SPFL) is a private company, registered in New Zealand, with its owners based in Japan. The company was formed in 1991 to establish Eucalypt forests in order to provide a hardwood fibre resource for Oji Paper Company of Japan. All forests are located within Otago /Southland, and forests are grown on a renewable and sustainable basis. To reduce impacts on any small rural area, the forests are scattered throughout the region. The company has its office based in Invercargill at the following address:

45 Kekeno Place
P O Box 7010
Invercargill 9844
Ph: (03) 214 1912
Fax: (03) 218 2066

3. Management Objectives

The primary purpose of the SPFL estate is to provide a sustainable supply of hardwood fibre to the pulp and paper mills of its shareholders in Japan. As such, the implementation of alternative species or growth regimes must compliment this purpose through providing a more secure or increased fibre supply, or by reducing cost or subsidizing the production of hardwood fibre production.

SPFL has appointed Southwood Export Limited (SWEL) to manage its Estate. The forest management plan is to provide for high yielding crops on the most economic basis and providing always that in doing so there are no serious adverse effects on the environment. Any adverse effects are to be prevented, remedied or mitigated.

Recently, SPFL has continuing looking at options to diversify the current regime in light of recent technological advances and new markets becoming available for other hardwood products.

4. Forest Resource

All of SPFL's forests are within 120km of Invercargill (Figure 1). A table of areas is provided to give a summary of the areas owned or occupied by SPFL, their tenure and land use (Table 1). The SPFL estate currently comprises forty two individual areas of mixed age forests totalling approximately 10,308 ha. The plantings are mostly *E.nitens* (99%); the remaining crop is made up of mixed conifers.

The land is mostly owned by the Southland Plantation Forest Company, three Properties are under a lease agreement. The majority of properties prior to being planted were ex-farmland, some include exotic plantation cutover sites. Significant areas of adjacent lands are still being farmed.

The lands are mostly located in the Plains Resource Area as described in the District plans. The management plan will ensure that all requirements of the District Plan/s are strictly adhered to.

Figure 1 Map of SPFL Forest Estate, Southland

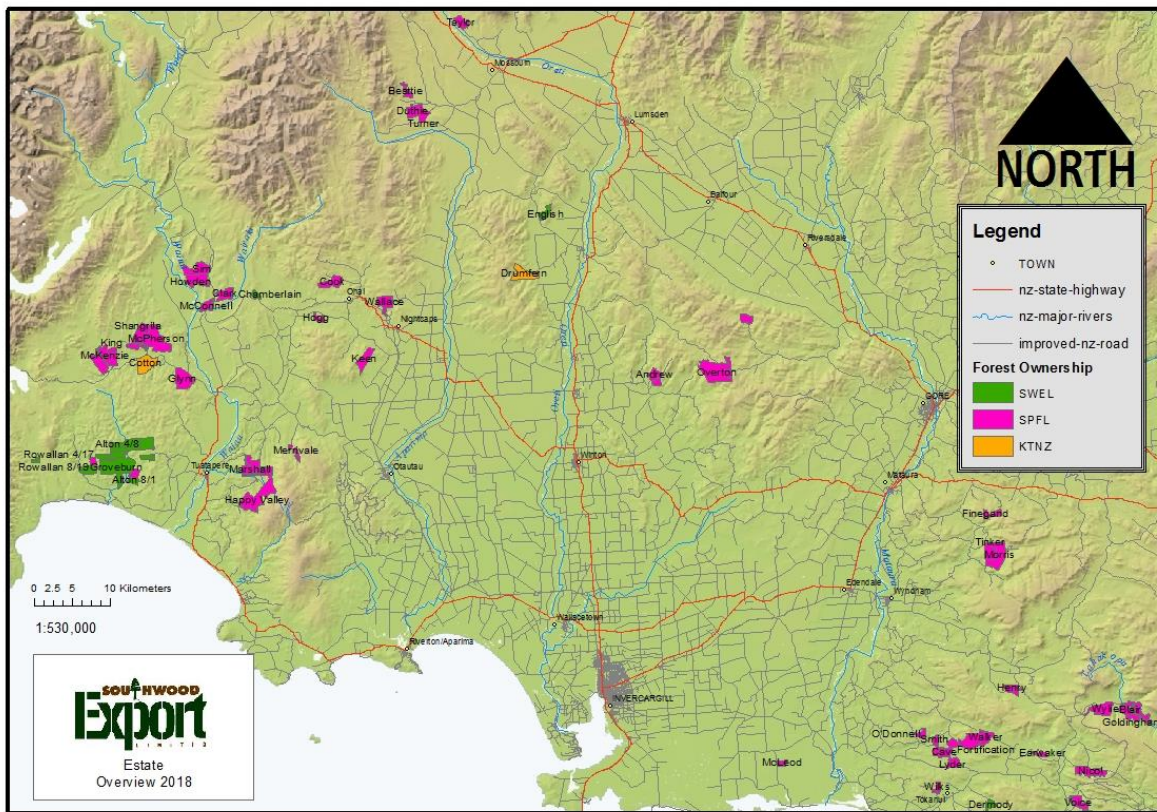


Table 1: SPFL Estate Area Summary as at 31-03-2018

Region	Tenure	Total Area (ha)	Stocked Area (ha)	Awaiting Planting (ha)	Indigenous Habitat (ha)	Utilities, Scrubby Gullies & Gaps (ha)
Otago	Freehold	1,050	591	189	120	150
Southland	Freehold	12,491	7,990	1,300	2,099	1,102
Southland	Leasehold	366	238		119	9
	Totals	13,907	8,819	1,489	2,338	1,261

5. Silviculture

The major determinates of tree growth are climate and soils. Some eucalyptus species have shown through research to have a high tolerance for colder conditions, with a liking for clays and moist loams and very good frost tolerance. The New Zealand forest service trialled many species of trees in Southland, species deemed to be appropriate for the conditions and the market requirements include *E. delegatensis*, *E. regnans* and *E. nitens*. Southlands mild summer temperatures, consistent summer rainfalls, and low to nil evapotranspiration are particularly ideal for growing *E. nitens*.

The forests are currently grown on a nominal 15 - 18 year rotation to supply one end user with woodchip. There is potential to expand the range of end user products and there is on-going investigation into this. This may require later changes to the silvicultural regime.

The typical regime for SPFL's forests is a plant-and-leave regime with a well-spaced and uniform crop which has an initial stocking of 800-1200 stems per hectare (varies with site). The most common stocking for each first rotation forest is 1050 stems per hectare with subsequent rotations typically stocked at 900 stems per hectare. Intensive land preparation is carried out during establishment including cultivation, weed removal and fertilising. The actual rotation age of each stand can vary on a variety of factors which include: market demand, total recoverable volume per hectare, mean piece size, topography and economics, and may exceed the target age. In the future, any different silviculture treatments are likely to influence the rotation length also. The net result will be a developing matrix of differing age classes over subsequent rotations, as areas of each forest are harvested at various times, dependent on the factors mentioned above.

SPFL is committed to ongoing research and development into improving forest genetics and growth through research providers such as Scion.

Table 2: SPFL Estate Silvicultural Operations Summary 2017

Operation	Total (ha)
Restocking	10
New Plantings	0
DAP Hand Fertilising	10
Urea Aerial Fertilising	367

6. Monitoring Forest Growth and Dynamics

Growth and yield information plays an important role in forest management. Growth is monitored for the first five years of the forests growth with PSP's established at age 5.

PSP's are established at a frequency of 1 plot per 50 ha and measured annually to bi-annually and are used to calibrate our Euc Growth Model. Across all PSP plots, current Mean Annual Increment (MAI growth is averaging 23 M³/ha/yr).

A range of trials have been carried out with regard to management practices and increased growth. Included in this are fertiliser field trials, thinning and species trials. Also monitored within the forest

are nutrient levels. This has been done by way of completing foliage sampling plots. This in conjunction with growth results can give a good indication of how effective management practices are. The management company in conjunction with other research providers has access to the latest growth and yield calculators and growth models.

SPFL operates a quality control system whereby all work that is carried out by Contractors is supervised and assessed to make sure that the company health and safety requirements as well as the quality requirements are being fulfilled.

7. Harvesting

The current level of harvesting has been kept to a similar level as the previous year of 311,000m³/year from mechanised clear-felling with an average clear-fell age of 21 years to meet market demand of 150,000 bone-dry tonnes (BDT) per year. However, future projections show our sustainable cut shall be reduced to a level of 240,000m³/year once the average age class has been pulled back to about 17 years. For the period April 2017 – March 2018 approximately 588 ha will be clear-felled consisting primarily of Eucalyptus nitens. This will be achieved through ground-based mechanised harvesting and forwarding techniques.

8. Employment Summary

SPFL currently employ either directly or on a contractual basis a largely local work force to carry out the day-to-day management operations within the SPFL forest estate. This includes local owner/operator contractors carrying out establishment, harvesting and processing and general management of SPFL's forest estate. The management company for SPFL, Southwood Export currently employ/contract approximately 108 workers within the forest estate with seasonal variability depending on the operations involved.

9. Environmental

SPFL is dedicated to protecting and enhancing where possible, biological diversity and ecosystem values. Regular monitoring of environmental parameters of SWEL managed forests will be undertaken where necessary to ensure that the effects of both natural and man-made events are minimised.

Mission Statement: To preserve and maintain the ecologically significant areas, while maintaining good economic management practices within SPFL's forests.

SPFL has an Environmental Management System (EMS) in place. It incorporates an Environmental Incident Procedure, Heritage Site Management, Riparian Management and Monitoring Strategy. The EMS covers consents and permits, both internal and external communication and incorporates an audit and review process. It is a comprehensive system that allows us to meet a high standard of environmental performance.

9.1 Wilding Control

There has been no evidence to show a wilding problem with Eucalyptus. The seed of E.nitens has a gravity dispersal system in that it falls directly down from the parent tree; its seed is not dispersed by wind or animals. However in the unlikely event that a wilding spread of E.nitens did occur, seedlings will be destroyed through either mechanical or chemical means and ongoing monitoring of the site will be worked in with forest visits. Wilding spread from neighboring forests into our own forest will also be noted and the company involved will be notified of the problem. However, SPFL forests are all on plains and hill resource areas, where more intensive land uses and easier access restrict wilding development to the point where a wilding problem is not likely. Should a problem occur it would be actioned by the methods described above.

There are small areas of other species of the conifer family which could have a wilding spread risk. These are small areas of P.radiata and D.fir. These would be assessed for treatment using the web base "Guidelines for minimizing the risk of unwanted wilding spread from new plantings of introduced conifers" N,J Ledgard & E.R Langer, Forest Research 1999 Also see the "Wildings" section in the Reserve Management folder.

9.2 Reserve Management

All areas of current reservation within SPFL's forests have been identified, mapped and their importance listed and any rare, threatened or endangered flora and fauna identified. There is more information about reserves available (entitled 'Reserve Management') in the SWEL office and a GIS mapping layer available on the GIS System.

The Reserve Areas have been selected after a coarse level survey was carried out on all unplanted areas within the current estate. From this, individual areas could then be matched to ecological types. Areas that are currently under some form of legal protection (e.g. covenant) have reserve status. Other reserve areas have been selected as a result of our company ecological survey, and interest or notification from stakeholders. Other areas may attain reserve status in future if it is determined they contain ecologically important species or for some other significant reason. Further surveys to monitor the health of selected indigenous reserve areas are carried out periodically.

9.3 Riparian Management

The objective of riparian management is to ensure that SPFL's forestry operations are not having a detrimental effect on riparian habitats/reserves or stream health. The management of riparian areas will be conducted along the guidelines set by the Southland District Plan, the New Zealand Environmental Code of Practice for Plantation Forestry and the Principles of FSC. The National Institute of Water and Atmospheric Research (NIWA) provide a stream health monitoring kit (SHMAK). This has been used at selected representative sites for field sampling and continually monitoring the health of our waterways. Fieldwork is carried out by SWEL staff using (SHMAK) and a stream health report is produced periodically. So far our SHMAK plots show healthy levels of turbidity and generally good stream health with turbidity levels hovering around the 80% clarity mark.

10. Identification and Protection of Rare, Threatened and Endangered Species

10.1 Rare, Threatened and Endangered Species

SPFL has identified the reserves in conjunction with local ecologist that has or is likely to have RTE species present and knows the species that it is likely to encounter. Focus of the RTE species management plan will be mainly targeted to these areas with the possibility of adding more forest reserves to the list in future if the need is identified. These selected reserve areas are monitored reassessed every 5 years for signs of degradation due to pests and weeds.

RTE species are important to SPFL and therefore they are always taken into consideration when planning and carrying out operational activities. A brochure is given to all staff and contractors highlighting several RTE species that may be found in the area. Should any further RTE species be discovered, the species is registered within our system and appropriate management plans are put in place. The most commonly recorded RTE species by staff and contractors is the NZ Falcon. From time to time, as required, forest harvesting or land disturbance operations are delayed to allow falcon to nest uninterrupted. Areas containing RTEs are demarcated on harvest planning maps, GIS, and on the ground, where necessary, for exclusion

10.2 Significant Conservation Areas

Within the SPFL estate there are three areas that can be classed as significant conservation areas. These are:

- Overton Forest: 206.6ha of QEII Covenant
- Happy Valley Forest: 190ha of DoC Covenant
- Blair Forest: Blair Fen, Regionally Significant Wetland (Otago Regional Council)

Located within Blair Forest is the Blair Swamp and Blair Fen. These wetlands are protected by the Resource Management Act and through the Otago Regional Council. Any modifications to this environment require a Resource Consent.

11. Pest and Weed Control

SPFL's policy in relation to Integrated Pest Management is the control/management of both animal and plant pests by using methods which have the desired effect in controlling the pest while also having regard to minimising any negative effect it may have on the environment.

It is essential that in the establishment of plantations that specific establishment methods relating to the specie's being grown are adopted. SPFL, are primarily involved in establishment of Eucalyptus nitens, which has associated pests, plant and animal which in some cases are selective to the specie's and need to be controlled to allow for effective establishment.

The aim is to obtain information on options available in controlling pests, selecting most appropriate option that can control the pest while taking due care in aiming to minimise the effect by selecting lower toxicity products and application rates being reduced to a point where they are at absolute minimum to achieve effective control.

SWEL/SPFL's policy is that all pest control, both agrichemical/non agrichemical be applied with careful consideration given to:

- Application effectiveness and accuracy
- Rates of product kept to minimum to perform task
- Safety aspects adhered to, prior,during and following the operation
- Is the product selected the best option considering effectiveness and environmental effect.
- Have all other alternatives been considered

SPFL aims to operate within the local authorities requirements and meet the standards set down in the Code of Practice for the Management of Agri Chemicals NZS 8409:2004.