

**FOREST INVESTMENT TRUST
TASMANIA
FOREST ESTATE**

Regional Management Plan

**For the period
July 2016 to June 2021**

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Version No	Reason for Review
1.0	Original Plan
1.1	Update Defined Forest Area and include results of HCVF Assessments.
1.2	Update in preparation for AFS certification
1.3	Update areas, HCVF and minor edits
2.0	Preparation for FSC certification
2.1	Update to remove references to IFarm

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Reviewed and recommended by	David Bennett
Authorised by	Stephen Rymer
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1. Introduction

Purpose

The purpose of this management plan is to ensure that the unencumbered forest assets owned by the forest owner in Tasmania are managed in the most consistent, efficient and sensitive manner through a greater understanding of the:

- environment
- silvicultural treatments
- legislative constraints.

The purpose of this Management Plan is to:

- Describe the physical features of the FIT Tasmania Forest Estate
- Clarify the management goals of the FIT Tasmania Forest Estate
- Outline the scope and objectives of management
- Outline the relevant constraints for forest management in this region
- Provide a silvicultural prescription covering:
 - Rationale for prescription
 - Future operations
 - Rationale for expected yields where appropriate.

Implementing this Management Plan will ensure that the Tasmanian Forest Estate is sustainably managed to achieve the goals of the forest owner within the legislative framework of the region.

Sustainable forest management

PF Olsen Australia is committed to ensuring the implementation of best practice in sustainable forest management on behalf of the FIT Tasmania Forest Estate. All forests are managed in accordance with our Sustainable Forest Management System, which is designed to be compliant with the requirements of the internationally recognised standards of the Forest Stewardship Council¹ and the Australian Forestry Standard².

Forest Owner

The forest and surrounding estate are owned by The Trust Company Australia Ltd as trustee for the Forest Investment Trust.

¹ PF Olsen (Aus) Pty Ltd uses the FSC[®] trademarks in accordance with the terms and conditions of its license from the Forest Stewardship Council[®]. PF Olsen (Aus) Pty Ltd.'s trademark license code is FSC-C111011.

² All references in this document to "internationally recognised standards of forest management" are inclusive references to both the principles and criteria of Forest Stewardship Council[®] and the Australian Forestry Standard.

Forest Manager The forest and surrounding estate is managed by PF Olsen (Aus) Pty Ltd (PF Olsen Australia) as agent for The Trust Company Australia Ltd as Trustee for the Forest Investment Trust.

2. Management Scope and Objectives

Environmental and economic services

The forests provide a range of benefits, including:

- Enhanced water quality
 - Soil stabilisation and conservation
 - Improved aquatic habitat
 - Enhanced wildlife and plant habitat leading to increased biodiversity
 - A reduction in greenhouse gases
 - Local and regional employment opportunities; and
 - Other economic and social benefits to the community.
-

Scope

This management plan covers all forest management activities within Tasmania Forest Estate. Such activities include:

- Forest establishment
 - Silvicultural activities
 - Forest protection
 - Monitoring
 - Infrastructure maintenance (including roads, bridges, buildings etc.)
 - Harvesting; and
 - Fire Management.
-

Objectives

The forest management objectives for the Tasmania Forest Estate are to:

- Grow trees for the production of hardwood chip and other emerging market opportunities such as biomass, veneer and sawn timber.
- 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.

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- Ensure that other forest values and products are identified, protected and, where possible, enhanced.
- Optimise the economic return to the forest owner.
- Replant or ensure regeneration following harvesting in the core region where it is economically viable to replant or regenerate.
- Avoid permanent damage to native vegetation.

PF Olsen Australia is committed to ensuring that the management of the forest estate is sustainable, from an environmental, social, cultural and economic perspective. These objectives underpin the company’s management culture and its commitment to independent third party forest certification, in particular conformance with the principles and criteria of the Forest Stewardship Council® and the Australia Forestry Standard. Table 1 identifies some of the management involved with these perspectives.

Table 1: Management aims related to listed perspectives

Perspective	Management Aims (<i>not finite</i>)
Environmental	<ul style="list-style-type: none"> • Identification and protection of rare, threatened and endangered species and ecosystems. • Control of noxious pests. • Protection of waterways and reserves.
Social	<ul style="list-style-type: none"> • Adherence to occupational health and safety standards. • Adherence to international employment conventions as they have been legislated in Australian state and federal law.
Cultural	<ul style="list-style-type: none"> • Identification and protection of historic and archaeological sites. • Consultation with interested parties.
Economic	<ul style="list-style-type: none"> • Suitable species selection. • Appropriate management and harvesting techniques. • Protection of assets. • Providing a reasonable return on investment while minimising the risks of this investment.

Implementation

The forest management objectives described above are implemented by the Forest Manager, PF Olsen Australia. PF Olsen Australia applies recognised best forestry management practice within a quality management framework to plan for and deliver the required forest management objectives.

The Quality management framework includes:

- The PF Olsen Australia forest management system, ensuring that the forest management planning is up to date and operations are scheduled and undertaken according to the plan.
 - The PF Olsen Australia environmental management system, ensuring that high standards of environmental management are recognised and integrated into every facet of the forest planning and management.
 - Certification of compliance with the principles and criteria of the Forest Stewardship Council® and the Australia Forestry Standard to ensure management principles and practice adhere to internationally recognised and locally adopted standards for well managed forests.
-

**Forest
Information
Planning System**

PF Olsen Australia resources a Forest Information Planning System (FIPS) to assist in ensuring regulatory and certification compliance, including:

- transparent management accounting
 - efficient data capture
 - effective use of resource information.
-

3. Property and Assets

Overview

Given the complexity of the region, the Regional Management Plan is to be used in conjunction with Property Management Plan data base. Details relating to an individual property will be identified in the relevant Property Management Plan. Such detail will include:

- Location and access
 - Infrastructure
 - Geology and soils
 - Topography
 - Climate; and
 - Legal ownership and tenure.
-

Location and access

FIT Tasmania Forest Estate is located in the local government areas of:

- Circular Head
- Kentish
- Meander Valley
- George Town
- Launceston
- Dorset; and
- Break O’Day

There are deep water chip export facilities located at Bell Bay and Burnie. Maps on the PF Olsen Australia website show the physical location of properties and their proximity to the ports. Each properties distance from the relevant port or domestic market is listed in each individual Property Management Plan.

Infrastructure

Infrastructure located on properties is detailed in the Property Management Plan database. Plantations are serviced by a mix of state, shire and private roads.

Geology and soils

Details of the soils found on individual properties is included in the Property Management Plans. Where soils have particular issues such as high erosivity, this is also included in the Property Management Plan, and will be considered in operational planning.

Topography

As the Forest Estate is broadly distributed across the northern side of Tasmania, topography varies greatly. The topography of specific properties is described in property maps used when planning operations.

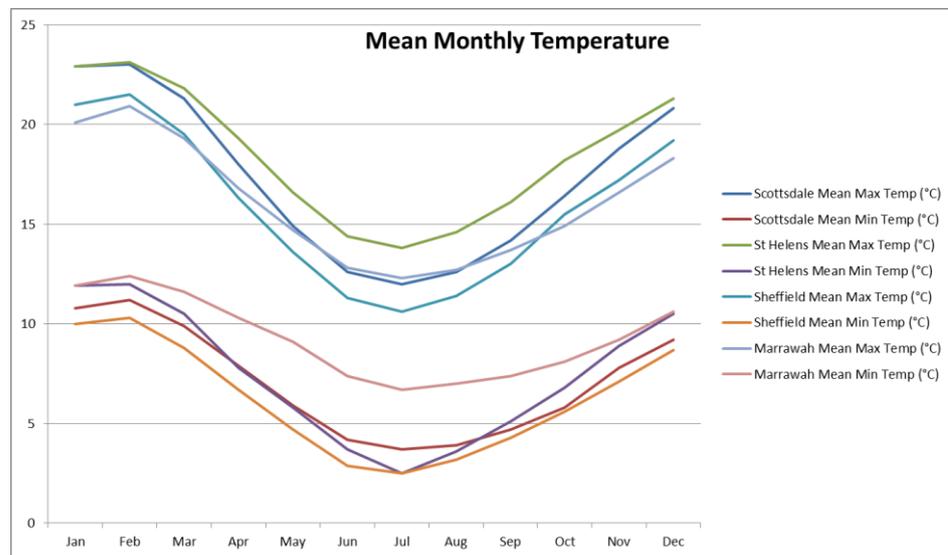
Climate

Climatic data was sourced from weather stations, maintained by the Bureau of Meteorology, within the vicinity of the FIT Tasmanian Forest Estate to provide a guide to general climatic conditions.

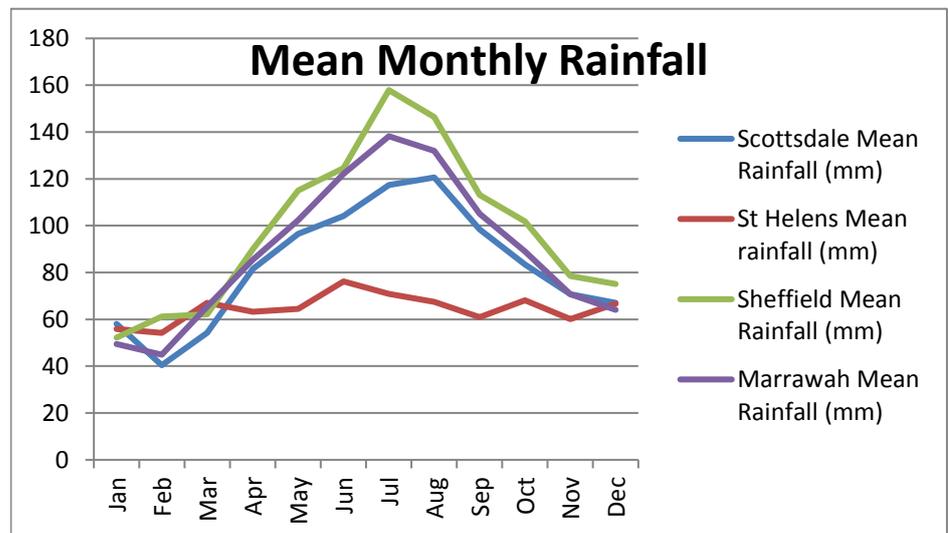
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The graph below (Mean Monthly Temperature) shows the variation in temperature across the year.



Mean Annual Rainfall ranges from 775 mm at St Helens to 1068 mm at Marrawah. St Helens, unlike the other locations shown, has significantly reduced rainfall with low variability in mean monthly rainfall.



Legal ownership

The legal description of the land on which the forest is situated is identified in the property management plan database. All forests in the defined forest area are on land that is owned or leased by The Trust Company as responsible entity for the Forest Investment Trust. PF Olsen Australia is contracted as an agent to manage properties for The Trust Company.

The ecological landscape

As the FIT Tasmanian Forest Estate is broadly distributed across the northern side of Tasmania, there are a variety of ecological landscapes encountered. The ecology of specific properties is described in the specific Property Management Plan.

4. Socio-economic profile and adjacent land

Previous management

Properties were purchased by Great Southern Plantations between 2006 and 2008 for the establishment of hardwood plantations under Managed Investment Schemes.

Prior to purchase for plantation establishments, properties were used for a range of agricultural enterprises such as beef production, dairying and cropping.

Current social profile

The main industries in the northern region of Tasmania are tourism, agriculture, mining and forestry. In the north of the region, the main form of agriculture is beef and dairy farming, as well as vegetable production.

Plantation forestry is a major industry in the region. Across Tasmania, there are over 300,000 hectares of hardwood and softwood plantations. Over one-third of the plantations in Tasmania are privately owned. There is high concentration of plantation forests located to the south of Burnie.

Mining is another industry in the region, with the active extraction of base metals, coal, iron, gold and silver. Five of the six mineral processors are located in the northern region of Tasmania.

Neighbours

Contact details for neighbours can be accessed as required through Land Information System Tasmania (LIST). Contact will be made with neighbours on behalf of the Forest Owner in accordance with the PF Olsen Australia Stakeholder engagement policy and procedures.

5. Stakeholder engagement and social responsibility

Stakeholder engagement system

PF Olsen Australia has developed a Stakeholder Engagement System which provides a framework for identifying and engaging with different levels of stakeholders for the FIT Estate.

Objective

Our objectives with stakeholder engagement are to:

- Build a relationship of trust and partnership with stakeholder interests.
 - Assist in the fair assessment and avoidance, remediation or mitigation of adverse effects upon stakeholders who may have an interest in or be affected by impacts resulting from management decisions.
 - Avoid or minimise the risks of misunderstandings between forest managers and forest stakeholders or the development of obstructive or conflict oriented behaviours between the parties.
-

Key stakeholders

Key stakeholders³ include, but are not limited to:

- Major customers
 - Contractors and suppliers
 - Relevant federal government departments
 - Industry representative bodies
 - Conservation groups and advocates
 - Indigenous communities
 - Relevant state government agencies
 - Local government authorities
 - Neighbours
 - Property level lessees (grazing, house tenants)
 - Harvest and haul contractors
 - Local communities and community groups
 - Local fire agencies.
-

Social impact assessment

A key component of successful stakeholder engagement is social impact assessment in relation to our activities. This undertaken by PF Olsen Australia at three levels of management:

- This plan identifies and considers regional impacts like road use.
 - Property Management Plans consider impacts at a local level like landscape impacts.
 - Best Practise Management Guidelines consider possible social impacts of particular activities and outline necessary steps to minimise such impacts and ensure affected stakeholders are consulted prior to conducting high impact activities.
-

³ For the purposes of AFS Clause 2.2 key stakeholders are regarded as affected stakeholders and any other person who engages with the organisation will be regarded as an interested stakeholder.

Local procurement

PF Olsen Australia strives to procure contractors and services from within the local region wherever possible and feasible.

6. Indigenous Community Engagement

Objective

To provide a meaningful framework for:

- Engagement with recognised Indigenous community representatives in relation to existing legal rights and traditional indigenous uses of forests under management by PF Olsen Australia.
- Effective engagement with Indigenous communities in the identification and management of heritage sites of cultural significance within forests managed by PF Olsen Australia.

Recognising and protecting significant values

PF Olsen Australia will:

- determine the legal status of any existing rights in forests managed on behalf of the forest owner.
- Search relevant government databases and records for identified sites of significance.
- Consult with the Tasmanian Aboriginal Land and Sea Council in relation to existing legal rights and customary or traditional use rights.
- Actively seek to identify existing Indigenous peoples with customary or traditional use rights to forest resources in forests managed on behalf of the forest owner.
- Incorporate the results of consultation into Property Management Plans and relevant operations plans

Further consultation is underway to identify areas of cultural significance. Future versions of this management plan will summarise any significant values that are identified.

7. The Regulatory Environment

Regulatory considerations

In order to minimise the risk to forest owners, managers and contractors, it is important that relevant legislation and agreements are identified, and appropriate measures put in place to ensure that breaches of legislation are avoided.

The laws that currently regulate our forest operations are listed in the PF Olsen Australia Legal Register. Where specific permission has been obtained to conduct forest operations, details are kept in relevant property files.

Where possible the core obligations of relevant laws and their effective intent are summarised in our Policies and Standards. These are available on our website⁴.

Land Use Rights / Forest Code of Practice

Forestry in Tasmania is regulated through two systems:

- Forest practices system (state government level) – forest practices standards defined through the *Forest Practices Code*.
 - Individual planning schemes (LGA level) – vary from council to council to reflect local conditions.
-

8. Environmental Policy and Practices

Introduction

Environmental policy and practices are an integral part of every operation that takes place in the forest. Regular monitoring of key environmental parameters will be undertaken where necessary to ensure that the impact on the forest environment from environmental factors is minimised.

Such environmental factors include:

- wind
- flooding
- erosion
- fire
- pests
- disease.

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⁴ PF Olsen (Aus) Pty Ltd Policies and Standards are publicly available online at https://pfolsen.blob.core.windows.net/productionmedia/1967/policies_final.pdf.

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The management of the forest recognises the importance of the natural and social environment for the future of its business. The people employed in the forest and processing plants, the neighbouring land owners and the community at large are all recognised as stakeholders.

All activities within the Tasmania Forest Estate are subject to management within a framework set by PF Olsen Australia's environmental policies and Management System.

Policy

PF Olsen Australia Environmental Policy:

PF Olsen Australia is committed to:

- Sustainable forest and land management.
- Promoting high environmental performance standards that recognise the input from the community in which we operate.
- Supporting an environment of continuous improvement in environmental performance.
- Applying the principles and requirements associated with good forest management especially those described within:
 - the Principles and Criteria of the Forest Stewardship Council®
 - the Australian Forestry Standard (AS4708).

Substantial additional detailed policies are contained within PF Olsen Australia's Policies and Standards⁵.

Environmental management goals

The Management System implemented by PF Olsen Australia has the following objectives:

- Achieve a greater understanding and ownership of environmental responsibilities and performance by all PF Olsen Australia's personnel and contractors.
- Complete compliance with environmental legislative requirements and non-legislative environmental commitments of the company.

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⁵ PF Olsen (Aus) Pty Ltd Policies and Standards are publicly available online at https://pfolsen.blob.core.windows.net/productionmedia/1967/policies_final.pdf.

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- Establishment and maintenance of sound working relationships with the relevant governing bodies.
- Establishment and maintenance of sound working relationships with appropriate contractors, neighbours, community groups, infrastructure authorities and other stakeholders which our activities may affect.
- Increase awareness of environmental effects of operations among staff and contractors.
- Use energy effectively and efficiently, and reduce waste and pollution.
- Promote and undertake sound environmental stewardship of land and other natural resources on or adjacent to this land.

To achieve the objectives listed above, PF Olsen Australia set specific environmental targets against which progress is being measured. These environmental targets are reviewed on an annual basis.

The Management System framework

The Management System is a core document defining the policies, processes and procedures that govern the physical implementation of forest management activities. The Management System applies a holistic and systematic approach to ensure that prevention of adverse and harmful impacts is effective.

Key elements comprising the Management System are:

- An operational implementation framework that follows the well-recognised management process of planning, doing, monitoring, reviewing and adjustment.
- Practicable access to:
 - Processes and procedures
 - Internal and external resources
 - Monitoring and auditing references.
- Procedures for managing emergency situations.

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- Procedures and resources for managing and minimising the use of chemicals including compliance with FSC® policies related to Hazardous Chemicals.
- Periodic internal and external auditing. Audits are an integral part of the Management System. The purpose of these audits is:
 - To check compliance with agreed procedures; and
 - Discuss ways to improve the Management System to better achieve its targets and objectives.

The Manager – Forest Systems is responsible for ensuring that the Management System is maintained and compliant with AS4801, ISO 14001 and ISO 9002 standards.

Internal audits to ensure compliance with the Management System and to improve the procedures of the Management System are reviewed at least once every two years.

**Management
System overview**



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 hazardous materials which may be used on Tasmania Forest Estate are:

- Pesticides
- Fertiliser
- Fuels
- Oil
- Fire retardants
- Adjuvants.

Transportation, storage and labelling of these hazardous materials must all comply with the provisions of PF Olsen Australia’s management system which is designed to be compliant to AS4801, ISO14001 and ISO 9002.

Furthermore, PF Olsen Australia is committed to reducing the use of hazardous substances as much as possible. This involves use of alternative methods for the control of weeds, pests and diseases where these are effective and efficient. The use of fuels and oils is minimised where possible. Fire retardants are only used when required and surfactants are only used to make more efficient use of specific herbicides.

If chemicals which are important to successful plantation establishment and management are restricted for use by the Forest Stewardship Council® formal applications will be made to obtain permission for their use. Relevant stakeholders will be consulted as a part of this process.

Currently, PF Olsen holds derogations to use:

- Alpha-cypermethrin
- Sodium mono-fluoroacetate (1080)

The use of these chemicals are subject to strict conditions which include consultation with neighbours.

9. Plantation Forest Estate Description

Plantation area

Land use of the estate, including the net stocked areas have been determined through spatial analysis. These areas are shown in property maps produced by PF Olsen Australia and included in the Property Management Plans.

Defined Forest Area

Details of the Defined Forest Area for our Forest Stewardship Council® and Australian Forestry Standard certificates are described in more detail on our website. These area statements are updated each quarter. It is expected that over the period of this management plan the Defined Forest Area will reduce significantly.

There are four reasons that the total forest area may be reduced. They may be:

- Sale of freehold title.
- Expiry of a lease.
- Change of defined management purpose.
- Reversion of planted forest to a previous non-forest use.

Details how each of these reasons will be treated are detailed below.

Sale of freehold title

Once a property is sold then the property is removed from the defined forest area. To enable our certification body to do a year on year comparison the date of sale will be tracked and reported in the annual summary update. This area will not be included in the calculated area of reversion.

Expiry of a lease

Currently a small percentage of the defined forest area is planted on land that is leased from the owner. The lease expires when the current crop of trees are harvested. Therefore, once the trees are harvested our authority to manage the forest is rescinded and the property will be removed from the defined forest area. As for sales of freehold, the date that the lease expires will be recorded in the annual summary update and reported to our certification body. This area will not be included in the calculated area of reversion.

Change of defined management purpose

Our current management practice is to re-evaluate the economic viability of each property to meet the defined investment hurdles expected by our clients following the harvest of merchantable plantations. The data recorded from the harvest is used to validate growth predictions and confirm economic models. If we are unable to meet the investment hurdles for the property then we will notify our client that we intend to change the management purpose of the land from plantation forest back to its former land-use.

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Once this decision has been made it will be clear that our authority to manage the property as a planted forest has been revoked and the certificate label indicating the property is part of the certified area will be removed from the property record in FIPS and the entire property area will be removed from the defined forest area. The date that the certificate label is removed from the property will be recorded and reported in the annual summary report to our certification body. This area will not be included in the calculated area of reversion.

Reversion of planted forest

On properties with multi-age plantings, once older age classes plantations are harvested economic models are validated using the recovered harvested volumes. If these models clearly indicate that investment hurdle rates cannot be achieved in a subsequent rotation of plantation forestry this finding will be advised to our clients and we will seek their consent to revert the planted forest to its former agricultural use. Areas reverted under these circumstances will be regarded as forest conversion under current FSC® definitions and shall not exceed 0.5% of the area of a Forest Management Unit in any one year and cannot exceed 5% of the area of a Forest Management Unit in total. Areas of younger age classes shall be eligible to be harvested and sold FM certified FSC® logs or wood

Current plantation species

The main plantation species are Shining Gum (*Eucalyptus nitens*) and Tasmanian Blue Gum (*E. globulus*).

These species have been chosen to best meet the management objectives, given the characteristics of the forest land as described in Section 3.

Re-establishment will involve either coppicing from the existing crop's stumps or replanting with high quality treestocks suitable for the site and market. These will be investigated during establishment planning.

Current crop status

Pre-harvest inventory and mid-rotation inventory is undertaken on an ongoing basis, across the estate. Data is stored in our Resource Planning folder and analysed through an Access database.

The resource is mapped and stored in PF Olsen's GIS to show the extent and current status of the crop and associated property features. Updates are made on a monthly basis.

10. Conservation areas and significant species

Introduction

Indigenous biodiversity management in or associated with plantations is an essential component of PF Olsen Australia’s forest management. Although plantations can provide a level of biodiversity, the areas of native forest are usually the source of most indigenous biodiversity. Rare and threatened species may also be found within planted areas and require special attention for management. This section details protected ecosystems and rare and threatened species found in the Tasmania Forest Estate.

Protected Ecosystems

Areas of remnant native vegetation are located throughout the Tasmania Forest Estate.

PF Olsen Australia has a strict exclusion zone policy for areas of remnant native vegetation. This means that areas of remnant native vegetation are not to be damaged or disturbed by forest operation and where possible steps will be taken to enhance the quality of these areas of vegetation by weed management and the exclusion of stock.

As a last resort if an existing track through remnant vegetation is required to be upgraded for safe access to or egress from the planted areas, the specific patch of remnant vegetation will be assessed for any high conservation or significant biological diversity values by a relevant expert prior to any work beginning. Records of vegetation condition before and after shall be maintained on file.

Areas of protected ecosystems are identified on Property Maps and details of their type, rarity and quality are recorded on in FIPS and on the Property Management Plan.

Monitoring of native vegetation is undertaken using a series of permanent photo points and the PF Olsen Australia Bio-physical Natural Assessment methodology⁶.

Rare and threatened species

PF Olsen Australia has engaged independent ecologists to check all properties in the FIT Tasmania Forest estate for possible rare and threatened species.

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⁶ Knight, R.I. (2013). Rapid assessment method for surveying and mapping biophysical naturalness. A report to PF Olsen Australia Pty Ltd. Natural Resource Planning, Hobart, Tasmania.

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This process involved checking Commonwealth, State and local government databases, where available, for records of the presence of rare and threatened species, along with ground-truthing where required. As the possible presence of rare and threatened species is identified, they will be listed in the Property Management Plan and management requirements developed.

During the management of the plantations our trained staff also record sightings of rare and threatened species that they observe directly or are brought to their attention by other stakeholders.

Details of the rare and threatened species sighted within plantations managed by PF Olsen Australia on behalf of the Trust Company are available on request

**High
Conservation
Values**

Each property, PF Olsen Australia becomes responsible for, a process is followed to identify high conservation values that may be present. The process involves:

- Checking government databases for the presence of rare or threatened species or ecosystems and associated ground truthing by suitably qualified professionals⁷
- Checking government databases for the presence of registered Aboriginal sites and where necessary, the development of Cultural Heritage Management Plans in conjunction with the relevant Aboriginal groups
- Identifying properties, or parts of properties that are within Special Water Supply Catchments
- Undertake consultation with stakeholders and or experts in regard to the high conservation values identified.

Details of the properties with identified High Conservation Values for the properties managed by PF Olsen Australia on behalf of the Trust Company are provided separately on our website. Full details of the methodology, evaluation reports and the values identified are available on request.

Management plans have been developed to address each of these values in consultation with appropriate parties.

⁷ PF Olsen Australia employs professional foresters. However, local external ecologists are engaged to independently assess the member properties and identify any sites with actual or possible High Conservation Value Forests.

11. Non-Timber Forest Products and Other Special Values

Introduction

Forest plantations may also provide for non-timber forest products 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.

Forests can also provide many other special values, which are also provided for and managed through the forest management plan.

Non-timber forest products

The following non-timber products are currently being produced or may be produced or developed in the Tasmanian Forest Estate:

- building rentals
 - grazing and hay cutting
 - apiary
-

Building rental

A number of properties have houses or sheds that are rented out. Local real estate agents manage the leases of these assets, with PF Olsen Australia responsible for approving maintenance as necessary on the properties.

Details of the infrastructure on the properties that are leased out and which Agent is responsible for them is maintained

Grazing & Hay Cutting

Grazing is an effective method of fuel reduction and is conducted (under agreement between the agistee and PF Olsen) throughout the estate area. Grass levels and stocking rates are to be monitored by the agistee and the forest manager. Hay cutting is also used for fuel reduction on unplanted areas.

Consideration of other values on a property, such as native vegetation, and the effect that grazing will have on them will be considered prior to agistment being allowed.

Apiary

Bee-keeping is another potential source of seasonal income. Apiary permits are managed by PF Olsen Australia.

12. Commercial Crop Establishment

Introduction

Crop establishment is a critical sequence of operations that can set up a plantation to achieve its potential. The chosen species has to be suitable for the site and meet the objectives of the FIT Tasmania Forest Estate. It is also important to ensure that the planting material is of a high quality.

Crop species

The crop species chosen for establishment within the Forest Estate is Shining Gum (*Eucalyptus nitens*) and Tasmanian Blue Gum (*E. globulus*).

The Tasmanian Blue Gum is endemic to Tasmania and parts of southern Victoria, including the Otway Ranges. Shining gum is endemic to eastern and southern Victoria and NSW as well as small areas in Tasmania.

A range of genetic material has been used in the FIT Tasmanian Forest Estate. This ranges from wild seed, particularly in the earlier plantings to improved seed.

Blue Gum plantations managed as coppice use the genetics of the original trees planted by Great Southern Plantations.

Shining Gum and Tasmanian Blue Gum are recognised as excellent species for production of high quality chemical pulp that is used in the production of printing papers, due to the whiteness of the wood and short fibre length. Tasmanian Blue Gum has superior pulp yields to Shining Gum. *Eucalyptus globulus* is the preferred species on most sites. *Eucalyptus nitens* is suited to high quality high rainfall sites where there is a high risk of frost damage to young seedlings.

Wildings

Eucalyptus globulus seed is one of the largest eucalypt seeds while *Eucalyptus nitens* has tiny seed. In general seed from these trees does not fall far from the parent tree. Wilding establishment is quite rare. Annual perimeter inspections of planted areas will identify any wildings in adjacent fire breaks or native vegetation and recommend appropriate control measures.

Research Trials

PF Olsen Australia has developed a research program to improve management and productivity of the blue gum estate. The program will include silviculture, maintenance of site productivity, pest control and slash management.

A Research Strategy and Research Register are in place to provide direction on objectives and monitor progress of trials.

Establishment

The operations involved in plantation establishment may include:

- **Site preparation** – this may include controlled burning, spraying or limited machine-based clearing to remove vegetative material.
- **Ripping** – using a long single tyne (sometimes with a wing at the base) attached to a suitably powered tractor, the planting rows are ripped to break up any sub-surface layers that may be compacted from historic land management activities. This improves root penetration.
- **Secondary cultivation** – depending on the soil type, secondary cultivation breaks up large soil clods along the planting rows and provides a good micro-site for planting.
- **Coppice Assessment** – assessing quantity and quality of coppice to determine if it is adequate for the next rotation or if replanting is required.
- **Coppice Management** – thinning coppice from 1st rotation stumps to one or two stems for on-going management as a plantation crop.
- **Pre-plant weed control** – usually conducted only along the cultivated rows to ensure the planted seedlings have minimal competition for site resources.
- **Planting** – either by hand or machine depending on site conditions. Planting is closely monitored through Quality Assessment plotting during the operation.
- **Fertilising** – High-analysis inorganic fertiliser can be applied mechanically or by hand during the planting process, or earlier by machine during second cultivation, or post planting mechanically. This is required to replace nutrients harvested during the first rotation or address specific nutrient deficiencies associated with the particular site.
- **Prophylactic insect control** – a systematic insecticide is applied to young seedlings following planting this treatment enables PF Olsen Australia to minimise the use of FSC® highly hazardous herbicides later in the rotation.
- **Post-plant weed control** – conducted on an ‘as needed’ basis following site surveys indicating lower than targeted growth rates. When necessary post-plant weed control will be achieved through boom spraying over the planted seedlings, depending on species and chemical options. More than one post-plant weed control operation may be necessary.

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- **Insect control** - conducted on an 'as needed' basis following site surveys indicating lower than targeted growth rates. When necessary insect control will be achieved through boom spraying over the planted seedlings, depending on species and chemical options. More than treatment may be necessary.
- **Survival Assessment** – a survival count is conducted through the planted area to achieve a minimum survival.

PF Olsen Australia Best Practice Guidelines are in place for each of these operations to ensure operations are based on the best available research, environmental impacts and health and safety risks are minimised and all legal and other obligations are met.

13. Silvicultural Operations

Introduction

Silvicultural operations are implemented to ensure a good quality forest and maximum growth. All operations require a suitable plan that documents the operation, the expected outcomes, and how these outcomes will be measured (i.e. through quality assessment). The operation plans include:

- a written prescription
- a map detailing the area to be treated and special values to be protected
- a site safety plan

This ensures:

- safety of staff and contractors
 - activities are undertaken consistent with internal and external requirements
 - a documented history of activity.
-

Getting ready

Before silvicultural operations commence a plan is prepared. This plan will be based on the following considerations:

- Terrain - what method can be used that is safe for the operators
- Soil and water – the impact on soil and water will be minimised and/or mitigated
- Safety – to ensure forest operations are carried out safely and comply with all legal requirements

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- Compliance – all relevant legislation and codes of practice must be complied with.
- Wildlife habitat and ecosystems – these will be maintained where possible or the impact on such habitats will be minimised and/or mitigated.
- Other forest values – to ensure that other forest values such as recreation and non-timber products are recognised and where practical protected.
- Offsite impacts – to identify and minimise the adverse impacts of forest operations on people and the environment.
- Financial – to ensure forest operations are carried out in an efficient and effective manner and consider both short and long term implications.

Operations will be undertaken by contractors and supervised by the forest manager.

Silvicultural operations

The following table details the intended silvicultural regimes for each crop type and likely timelines associated. There is likely to be some variability to these intended timelines due to the unique nature of the sites, as well as variable market forces. Major variances from these plans shall be detailed in specific Property Management Plans.

Crop or Forest Type	Silvicultural Operation	Age or Year
2R Coppiced Blue Gum Plantation	Coppice Assessment	6 - 12 months
	Weed Control	When required
	Insect Control	When required
	Coppice Thinning	2 – 3 years
	Fertilising	Post Coppice Thinning
	Harvest – cut-stump treatment	10-12 years
2R Replant Blue Gum Plantation	Site preparation	Immediately post-harvest
	Hand planting	When required
	Fertilising	2 years & when required
	Weed Control	When required
	Insect Control	When required
	Harvest	10 – 12 years

Site Preparation In order to prepare a site for a second rotation crop, where the area is of sufficient size, the soil shall be mechanically disturbed in a means appropriate to the soil profile and its physical properties so that root penetration shall be optimised to maximise growth and crop stability. Mechanical disturbance will involve either ripping harder soils or mounding lighter soils that may be prone to water logging.

Weed Control Pre-plant weed control is typically a strip-spray application over mounds to ensure a weed-free environment for planting. In some locations follow-up overspray operations are required when the pre-plant weed control has not been effective.
Post establishment and 2nd year weed control may be required where there is persistent grass or broadleaf species, such as *Phalaris*, which are not suppressed by canopy closure. Control of these weeds will improve crop growth due to better water and nutrient availability.

Where chemicals are restricted for use by the Forest Stewardship Council® and specific derogations are held by PF Olsen Australia special efforts will be taken to ensure compliance with all relevant conditions.

Hand Planting Seedlings meeting PF Olsen Australia’s requirements shall be planted by hand once soil moisture conditions are suitable, Post plant survival counts and site assessments shall be undertaken to determine future required silvicultural operations.

Coppice Thinning Excess stems identified during coppice assessment shall be removed once they reach a target height. The stems shall be removed manually using a brush-cutter or chainsaw.

Insect Control For establishment operations steps are taken during planting to protect against Chrysomelid beetle, African black beetle and Spring beetle, which may involve chemical control or the use of planting socks.

PF Olsen Australia is an active participant on the IPMG (Industry Pest Management Group) which monitors insect populations and provides guidance and recommendation on methods of control and critical intervention levels.

Where chemicals are restricted for use by the Forest Stewardship Council®, specific derogations are held by PF Olsen Australia and special efforts to minimise the use of these chemicals through integrated pest management strategies and careful adherence to all relevant conditions.

Fertilising Mid rotation fertilising may help to increase growth on the retained stems. Research and literature reviews are currently being conducted to identify most appropriate fertiliser response for identified nutritional deficiencies and crop growth targets.

Harvest Harvest scheduling takes into account a range of factors including:

- Estate planning considerations
- Wood flow and contractual requirements
- Harvest readiness of specific stands and properties
- Seasonality requirements
- Market demand

A harvesting plan is prepared for all harvest operations.

14. Forest Inventory, Mapping and Forest Records

Inventory Type Forest growth and development is monitored through regular forest inventory. Forest inventories providing stand information are required at different times and for different reasons throughout the life of the rotation. PF Olsen Australia have developed procedures for each of the following four types of inventory to be applied on the Tasmania Forest Estate:

- Coppice assessment
 - pre-assessment
 - quality control
 - mid crop
 - YT Gen (Yield Table Generator)
-

Coppice Assessment Once an unencumbered harvested site is selected for future management an assessment of the quality of the coppice crop shall be conducted. The assessment shall determine whether sufficient viable stems are present to enable a further crop to achieve targeted growth and yield values. Where insufficient stems are available new seedlings shall be planted. Where too many stems are present excess stems shall be removed manually.

Sampling intensity is targeted to achieve an acceptable precision on a stand by stand basis. Smaller stands may be aggregated into crop types to achieve this.

Pre-assessment

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

- The calculation of contract rate for the operation.
- A final check on the validity of the regime and timing of commencement of operations e.g. stocking can be achieved or crop height is sufficient for scheduled coppice thinning.

Sampling intensity is low with a minimum of five randomly located plots per stand and data is collected from only six trees per plot. Data collected is then used with the time standards set out in the relevant Best Practice Guideline to calculate a man-day target and hence a contract rate per hectare. Contract rates are often set by tender or negotiation, reducing the need to pre-assess each and every block. Pre-assessment however does provide good quality information on the work content involved in each silvicultural operation and sets a base price for negotiation.

Remote assessments

In 2014 PF Olsen Australia started using of UAVs (unmanned aerial vehicles) for the purpose of coppice stocking counts, and better planning of proposed re-establishment areas. This method has been successful for re-establishment planning but cannot be relied on for coppice counts. Ground based assessments are still required.

Quality control

Quality control is carried out during and after a silvicultural operation. The aims of the quality control system PF Olsen Australia 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 state of the crop.
- Provide data as input for growth modelling.
- Provide data for estimating timing of the next silvicultural operation.

All sampling and measurement is completed in line with procedures developed by PF Olsen Australia.

Data is summarised by forest compartment or stand prior to being entered into FIPS – Land Information Module where it is retained as a permanent record. The records can then be directly accessed for growth model and Computer Growth Simulation Programmes, annual reports and valuations.

PF Olsen Australia's "Best Practice Guidelines" detail the procedures to follow pre-assessment and quality control assessments.

Mid-crop inventory

The principal aim for the mid-crop inventory is to collect stand data for inputs for growth modelling. Under current silvicultural regimes mid-crop inventory is scheduled for between 4 and 5 years of age.

Sampling intensity is targeted to achieve an acceptable precision on a stand by stand basis. Smaller stands may be aggregated into crop types to achieve this.

Pre-Harvest Inventory (PHI)

The principal aim for the PHI is to obtain estimates of recoverable volume. This information can then be used to develop marketing and harvesting strategies. A PHI will be undertaken when stands reach two years or less from harvesting.

Sampling intensity is targeted to achieve 15% confidence limits on volume on a stand by stand basis. Smaller stands may be aggregated into crop types to achieve this, as in mid-crop inventory.

Mapping

Mapping will be required from time to time to account for:

- silvicultural operations
- maintenance
- infrastructure
- high conservation values and cultural heritage sites
- harvesting and roading
- research trials
- monitoring
- site hazards and special values.

This will occur on an ongoing basis and all relevant data will be stored digitally. The digital data is retained, processed and managed on PF Olsen Australia's GIS (Geographic Information System).

Silvicultural contractors are commonly paid on an area basis and accurate mapping prevents overpayment and avoids disputes regarding the area actually completed.

Accurate mapping also assists with budgeting, planning and calculation of future revenue/forest value, infrastructure and harvesting.

Forest records

Forest records are essential in monitoring the forest operations by providing an historic perspective to the physical condition of each stand. Forest records should include the following information:

- An historic record of forest operations for each stand including a summary of quality control data indicating the results and quality of the operation.
- A forest map showing the location, stand boundaries and net stocked area of each stand.
- Inventory results.
- Yields achieved from each stand at production thinning or final harvest.
- Costs incurred for each operation.

Tasmania Forest Estate records are maintained on a computerised Land Information database. This customised database is part of PF Olsen Australia’s FIPS system (Forest Information and Planning System).

Forest records:

- assist with planning and control of forest operations, and
- provide a means of measuring the performance of the Forest Manager.

In a management audit, forest records can be verified against the status of the tree crop and unit costs derived for each operation.

15. Harvesting Strategy and Operations

Harvesting strategy & Allowable Cut

The optimum timing of harvesting of properties is dependent on a range of factors including:

- Plantation growth;
- Market conditions;
- Contractor and port access availability; and
- Seasonal constraints.

Woodstock⁸ is used to determine the allowable cut and to maximise the financial return of harvesting in the FIT Tasmania Forest Estate, based on the above constraints.

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⁸ A forest estate modelling and optimisation program developed by Remsoft.

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A number of different harvesting systems can be used to harvest blue gum plantations for woodchip. These are:

- Infield Chipping where trees are felled, skidded to roadside and processed using a flail and chipper;
- Cut to Length at Stump where trees are felled, delimbed and forwarded to roadside where they are loaded into trucks and transported to a static chipper; and
- Cut to Length at Roadside where trees are felled, skidded to roadside where they are processed into logs which are loaded into trucks and transported to a static chipper.

The actual harvesting method utilised for each plantation will be dependent on:

- Plantation yield and form;
- Future land use;
- Impact on future site productivity;
- Safety;
- Contractual availability;
- Contractual Obligations; and
- Access to port facilities and chippers.

Getting harvest ready

Before harvesting commences a harvest plan is prepared. This plan will describe the harvesting method to be used based on the following considerations:

- **Terrain** - what method can be used that is safe for the operators.
- **Soil and water** – the impact on soil and water will be minimised and/or mitigated.
- **Safety** – to ensure forest operations are carried out safely and comply with all legal requirements.
- **Compliance** – all relevant legislation and codes of practice must be complied with.
- **Wildlife habitat and ecosystems** – these will be maintained where possible or the impact on such habitats will be minimised and/or mitigated.
- **Other forest values** – to ensure that other forest values such as recreation and non-timber products are recognised and where practical protected.

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- **Future site productivity** – to maximise future site productivity.
- **Offsite impacts** – to identify and minimise the adverse impacts of forest operations on people and the environment.
- **Financial** – to ensure forest operations are carried out in an efficient and effective manner and consider both short and long term implications.

Harvesting operations will be undertaken by contractors and supervised by the forest manager.

16. Property Management and Protection

Introduction

General property maintenance is an important factor in forest management and can include maintenance of roads and tracks and other assets such as buildings, fences and water systems.

Protection of the forest from a number of elements are also important. Such elements are:

- animal and plant pests
 - diseases
 - fire.
-

Access

The FIT properties shall have locked gates to limit access by unauthorised persons. Permits will be provided to all authorised persons requiring access to The forest owner's estate, where no formal agreement, defining the responsibilities of such persons, is already in place.

Statutory pest obligations

There are specific requirements for landowners to manage and control various pests, at the national, state and local level. Measures specific to the pests found on the FIT Tasmania Forest Estate are listed below.

Animal pests

Rabbits are present in parts of the FIT Tasmanian Forest Estate. Rabbit populations will be controlled as part of the establishment phase of plantation management.

Plant pests

A number of declared weeds are found in the Tasmania Forest Estate. PF Olsen Australia aims to prevent spread of all declared weeds in and from the FIT Tasmania Forest Estate, and where possible, control and eradicate weeds. The location of declared weeds will be recorded during regular property inspections. The presence of declared weeds on a property that may be inadvertently spread will be indicated to contractors on Works Prescriptions. All people leaving properties with declared weeds on them are responsible for ensuring all plant and equipment are free of weed seeds and vegetative material. Contractors are responsible for ensuring that plant and equipment moved onto the FIT properties are free from weed seeds and vegetative material.

Disease control

Diseases and fungal infections, which can affect the forest trees and adjacent native vegetation are monitored throughout the year as part of regular plantation inspections.

PF Olsen Australia will prevent spread of diseases and fungal infections into and within the FIT Tasmania Forest Estate. The location of disease outbreaks will be recorded during regular property inspections. The presence of disease outbreaks on a property will be indicated to contractors on Works Prescriptions.

All people leaving properties with disease outbreaks on them are responsible for ensuring all plant and equipment are free of excessive soil. Where necessary wash down facilities shall be established. Contractors are responsible for ensuring that plant and equipment moved onto FIT properties are free from excessive soil.

Insect control

PF Olsen Australia has an integrated pest management strategy that aims to minimise the use of harmful chemicals. However, climatic conditions sometime lead to large scale insect outbreaks that should be quickly controlled to reduce the likelihood of further outbreaks and minimise damage to the tree crop.

Monitoring of insect levels will be carried out as part of regular plantation inspections. Monitoring for chrysomelids is undertaken on high risk properties during summer.

Insect control will only be carried out where it is believed that there will be an economic benefit.

Fire prevention and control

Fire within forests is generally one of the highest risks to the forest asset. This risk can be minimised by:

- Having an effective fire management plan.
- Active prevention measures which include; restrictions on allowable access, fire prevention signage, publicity when fire danger prevails, access to adequate water sources, and selective forest grazing to reduce fuel within stands.
- Effective detection systems which includes; co-operation with neighbours and local authorities, good communication systems, mapping, and fire alert and response procedures.
- A close link with the relevant fire authorities, and an understanding of available resources.
- 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.

Forest management requirements

The following forest management practices may be employed to assist fire prevention measures:

- Develop suitable internal access systems, predominantly firebreaks, with road construction at a later stage closer to harvest.
- Maintain existing firebreaks and develop others as the need arises.
- Time silvicultural operations to minimise the potential of fuel build-up and for better control of work activity.
- Have forest areas grazed where fuel build-up can be reduced.
- Endeavour to control access, and limit only to legitimate land users.
- Develop a fire management plan that encompasses prevention, detection and control procedures.

Fire authority responsibilities

According to the *Tasmanian Fire Service Act (1979)*, the occupier of the land is responsible for ‘taking diligent steps’ to extinguish a fire or to prevent it from spreading (if there was no authority to light the fire). The occupier of the land must also report the fire.

The Tasmania Fire Service is the local authority for fire management.

Fire management arrangements for the Tasmania Forest Estate are described in the FIT Tasmanian Fire Management Plan.

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. Insurance for the Tasmanian Forest Estate is held by the Forest owner. The current extent of cover is:

- Cover for the crop value and re-establishment costs be retained based on a recognised crop valuation, but reviewed on an annual basis.

The forest owners liaise with PF Olsen Australia at the time of fire insurance renewals to determine the appropriate level of cover.

Public liability insurance

The forest owner and PF Olsen Australia maintain public liability insurance cover, to indemnify against unforeseen adverse activity both within the forest area and adjoining land tenure.

17. Monitoring

Introduction

To ensure that the management objectives identified in this plan are being achieved, various monitoring protocols are being developed.

Monitoring may include assessing:

- conditions
- pressures on identified values
- effectiveness of management responses.
- Results of monitoring programs may be made publicly available, subject to approval of the forest owner. Future versions of this plan will include summaries of past monitoring and actions taken to address trends.

Values monitored

Monitoring includes, but is not limited to:

Aspect	Values monitored
Chemical usage	<ul style="list-style-type: none"> • quantity used • impact on water quality • effectiveness

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Consultation activities	<ul style="list-style-type: none"> • number of complaints
Flora & fauna	<ul style="list-style-type: none"> • biophysical naturalness • photo points • species counts • presence and condition of rare and threatened species
Forest growth	<ul style="list-style-type: none"> • rate • standing volume • future crop value
Site productivity	<ul style="list-style-type: none"> • long term trends
Forest health	<ul style="list-style-type: none"> • damage levels
OH&S	<ul style="list-style-type: none"> • contractor monitoring • review of records and procedures
Operations	<ul style="list-style-type: none"> • compliance with plans
Pests	<ul style="list-style-type: none"> • population levels
Recreational and non-timber activities	<ul style="list-style-type: none"> • value
Watercourses	<ul style="list-style-type: none"> • integrity of protective buffers • presence of chemical residues
Infrastructure	<ul style="list-style-type: none"> • condition • value

Financial

Budgeted versus actual expenditure is monitored through PF Olsen Australia’s FIPS system and presented to NFAM as fund managers for the Forest Owner when requested. This information is not made public.

Social

Consultation with stakeholders has been undertaken and feedback from these stakeholders (and others as they become apparent) is monitored. This includes actions taken to resolves disputes and issues.

Compliance with laws and other requirements

Periodic audits and inspections will be conducted to assess compliance with laws and other requirements.

Non-conformances

Incidents, injuries, unplanned impacts and other non-conformances shall be recorded and trends noted. Rigorous investigations shall be conducted and findings developed to reduce the risk of future re-occurrences.

18. Review and Future Plans

Introduction

This plan pertains to the management of the Tasmania Forest Estate and will be adhered to for the next 5 years. Any deviation from this plan will be justified only on the basis that the changes do not adversely affect the environment or forest owner’s interests. Any changes, which are contrary to the policies contained in this management plan, require a full review of this plan. This plan will be reviewed annually of following external audits.

The next review date for this plan is: February 2018.

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

Hold/Sell analysis

As currently encumbered properties are harvested and become unencumbered parts of the Tasmania Forest Estate, a detailed hold-sell analysis is completed on each property to determine future economic viability of a second rotation on the land.

Decisions to revert properties to previous land uses shall also be made in line with relevant FSC® Principles and Criteria and may consider the alternate crop species like *Pinus radiata* or the potential for development of carbon projects under the Carbon Farming Initiative or other environmental market opportunities.

Annual plans

For short term planning we use annual budgets. These budgets are prepared in accordance with this Management Plan. This annual budget is subject to approval by NFAM at the beginning of each financial year (July-June).

Quarterly review

The forest manager is required to report its performance against these plans and budgets each quarter.