Field Day Notes

‘Money does grow on trees’

Wednesday 3rd April 2019

‘Woorak’ – Epping Forest
‘View Point’ – Campbell Town
‘Lake Leake’ – Lake Leake

Your MC for the day is Dr. Martin Moroni,
Business Development Manager, Private Forests Tasmania.
About Private Forests Tasmania (PFT)

Private Forests Tasmania was established in 1994 as a statutory authority under the *Private Forests Act (1994)*. PFT has a Board consisting of Directors who are appointed for their practical knowledge, industry, commercial and technical expertise in forestry and reports to the Minister for Energy and Resources.

PFT is the only government-funded authority established in Australia to specifically promote, foster and assist the private forestry sector on forestry matters. We provide strategic and policy advice to Government on private forestry issues and represent Tasmanian private forest owners’ interests nationally.

PFT works to facilitate and expand the development of the private forest resource in Tasmania in a manner which is consistent with sound forest and land management practices. This includes advising and assisting private landowners in the management of native forests and the establishment and management of plantations on private land. We work closely with private landowners and major stakeholders to develop and deliver a wide range of services to ensure sustainable forest use.

**Launceston:** State Government Offices, 171 Westbury Road, Prospect 7250  
Ph: (03) 6777 2720

**Hobart:** 30 Patrick Street, Hobart 7000  
Ph: (03) 6165 4073

**Burnie:** The Harris Building, State Growth Offices, Level 2, 49 Cattley Street, Burnie 7320  
Ph: (03) 6477 7389

**Email:** admin@pft.tas.gov.au  
**Web:** www.pft.tas.gov.au

About Institute of Foresters of Australia (IFA)

Going strong since 1935, the Institute of Foresters of Australia is a professional body of over 2,000 members engaged in all branches of forest management and conservation in Australia.

The Institute of Foresters of Australia recently welcomed members of the Australian Forest Growers via a merger of the two organisations and is currently settling into new formal arrangements in Tasmania. At a local level this merger follows a long and rewarding informal relationship of collaboration, such as this field day. There is much optimism in Tasmania as to the benefits of the merger.

**Contact:** Level 1, 148-152 Miller Street, West Melbourne VIC 3003  
Ph: (03) 9695 8940

**Email:** admin@forestry.org.au  
**Web:** www.forestry.org.au
About Forest Practices Authority (FPA)

The Forest Practices Authority is an independent statutory body responsible for administering the Tasmanian forest practices system. The system regulates the management of forest and threatened non-forest vegetation on both public and private land.

The FPA, as an independent advisor, researcher and regulator, has a key role to play in the search for a sustainable future for Tasmania’s forests. Set up in 1985 by the Tasmanian Parliament, it has more than 25 years’ expertise and experience in developing and implementing the forest practices system.

The FPA is also involved in the implementation of other forest-related legislation and policies.

The FPA is funded by the Tasmanian Government and fees charged for forest practices plans. See the FPA’s annual report for more information.

Contact: 30 Patrick Street, Hobart 7000
Ph: (03) 6165 4090
Email: info@fpa.tas.gov.au
Web: www.fpa.tas.gov.au

About Tasmanian Farmers and Graziers Association (TFGA)

The Tasmanian Farmers and Graziers Association (TFGA) is the peak body representing the interests of Tasmanian farmers at a state and national level. Our purpose is to provide a united voice to communicate with governments at all levels, along with other industry stakeholders. We have a proud history of successful advocacy, fighting for the needs of Tasmanian farmers for over fifty years.

The farming community is often confronted by natural challenges such as droughts, bushfires, and floods, it is also under constant threat from regulation, legislation and special interest groups. We are committed to ensuring that the Tasmanian agriculture sector is sustainable. We achieve this by promoting the vital contribution agriculture makes to Tasmania’s environmental, social and economic fabric.

We aim to:

- Ensure long term viability, profitability and a sustainable future for agriculture in Tasmania.
- Lead positive change and innovation in Tasmanian agriculture.
- To promote farming’s modern role, value and contribution in the Tasmanian community.
- Protect the needs of farm businesses and families across Tasmania.

Contact: 56a Charles Street, Launceston 7250
Ph: (03) 6332 1800
Email: reception@tfga.com.au
Web: www.tfga.com.au
Thank you and Acknowledgments

Thank you to our field day property owners for allowing us access to your properties and plantations.

Daniel Fish – ‘Woorak’
David Gatenby – ‘View Point’
Howard Calvert – ‘Lake Leake’

Thank you to Bracknell Primary School, Parents and friends Association for catering of lunch. Please contact the President, Olivia Shelton on 0409 214 918 for any additional information on their services.

Thank you to David and Leonie Jack of ‘Jack’s Coaches’, Longford for providing the bus service. Please phone 6391 1739 for additional information on their services.

Thank you to Epping Forest Roadhouse for allowing us to park within your facilities.
Runsheet

Your MC for the day will be Dr Martin Moroni, Manager Business Development, Private Forests Tasmania

9:30am  Meet at Epping Forest Roadhouse (Midland Highway, Epping Forest)
   ▪  Registration
   ▪  PLEASE ENSURE YOU HAVE REGISTERED WITH TRACEY
   ▪  Morning tea available at Roadhouse at own expense

10:00am  DEPART Roadhouse for ‘Woorak’ property

10:15am  Arrive ‘Woorak’
         Property owner: Daniel Fish – 13265 Woorak Road, Epping Forest

   Martin Moroni (PFT)
   Agroforestry Project and Project report

   David Bower (PFT)
   Best Plantation establishment practices – Trees alive, do the five

11:15am  Depart ‘Woorak’ for ‘View Point’

12:00pm  Arrive ‘View Point’
         Property owner: David Gatenby – 640 Isis Road, Campbell Town

         LUNCH

12:45pm  Anne Chuter (FPA)
         Biodiversity Landscape Planning

         Peter Volker (FPA) and David Gatenby
         Integrated farming and forestry operation

         David Bower (PFT)
         Ex MIS Plantation

1:30pm  Depart ‘View Point’ for ‘Lake Leake’

2:30pm  Arrive ‘Lake Leake’
         Property owner: Howard Calvert – Lake Leake Road, Lake Leake

         Peter Voker (FPA) and Howard Calvert
         Management options for E. nitens plantations

3:30pm  Depart ‘Lake Leake’ for return to Epping Forest

4:30pm  Arrive Epping Forest – Close
Stop 1 – ‘Woorak’
Daniel Fish, 13265 Woorak Road, Epping Forest

Martin Moroni, PFT
Agroforestry project at ‘Woorak’

Private Forests Tasmania, the CSIRO and University of Tasmania, collected data from four Tasmanian farms.

We measured pasture growth, crop growth and climate variables in unsheltered areas of paddocks.

Property locations:
- Quamby Plains, Hagley
- Formosa, Cressy
- Woorak, Epping Forest
- Mt Vernon, Kempton

A good shelterbelt
- Oriented perpendicular to prevailing or damaging winds
- Is long, tall, no gaps.
- Has a porosity of ~40-60%
The Experimental design

Example: Formosa property, Cressy

- ~25ha paddock
- Tree row on the western boundary ~1ha
- Pasture established across the whole paddock Autumn 2016
• Whole-paddock assessed spring of 2017.

• The sheltered western half of the paddock had 30% more biomass (3.3 t/ha) than the unsheltered eastern half (2.6 t/ha).

• The 25 ha paddock (including 1 ha of trees) is effectively growing the same quantity of pasture as a 28 ha unsheltered paddock.

Shelter improves Lucerne yield – Woorak property

• 300% increase in Lucerne hay yield.

• Increased income by $1,133 (~$147/ha) across the sheltered 7.7ha paddock area.
The average wind speed was halved by shelter at Woorak

Effect of shelter at each transect

Net effect of shelter over full transect
• Shelter is effective on both high and low wind days.
• On a high wind day, the average wind speed in the sheltered zone is similar to that in the open area of a low wind speed day.
• Most sheltered zone is 75 and 120 m from trees (5-12 tree heights).

Low wind day (10\textsuperscript{th} percentile, 35 km wind run)

High wind day (90\textsuperscript{th} percentile, 153 km wind run)

**Impact of shelter on evaporation**

Over the whole 300m transect, shelter reduced evaporation by 15-20\%, irrespective of season.
Potential water savings

Total measured evaporation was:
• 1,778 mm at Formosa; 1382 mm at Woorak.
• Shelter from the tree belt reduced evaporation across the whole transect:
  • Formosa: 240 mm; Woorak: 106 mm.
• Across the whole sheltered area of the paddocks, this equated to:
  • Formosa: 35.9 ML; Woorak: 21 ML.
• Note that evaporation only occurs in practice when water is in the system, so actual evaporation will be lower

![Reduced potential evaporation from paddock (ML)](image)

Image Model

Welcome to Imagine!

Imagine is a tool designed to simulate the growth of crops on a paddock over time. Factors affecting the outcome of profitability can be set up as probabilistic distributions and while there may be complex interactions between the random variables, a Monte Carlo simulation environment has been set up so that the distribution of outcomes can be assessed.

Crops grow according to the model set up by the user. We have a rental based growth model that is appropriate for annual crops, and a Compost based growth model that grows above ground and below ground biomass in tandem, which is suitable for trees.

Developers:
Nara Ahadi, Quentin Thomas and John Bartle

• Imagine is a bio economic model.
• Account for costs and benefits of incorporating trees into agricultural systems.
• We have adapted it to commercial agroforestry systems in Tasmania.
• Estimate benefit of agroforestry to farm income.
• 4 products/benefits from the trees are accounted for:
  1. Timber (including thinning’s).
  2. Shelter effect on agriculture.
  3. Carbon.
  4. Amenity.
• Costs include fencing, planting, site preparation and weed control.
• Knotty sawlogs (no pruning).
• 25 year rotation modelled.

Modelled cumulative returns from a 1ha Pinus radiata shelterbelt in a 25ha pasture at Cressy

![Graph showing cumulative net returns from shelter belt]

Conclusions
• Planting trees in shelterbelts is profitable, diversifies farm income, increases non-tree production while producing a crop of trees.
• To realise the benefits trees must be planted in appropriate locations and be done properly.
Shelter improves Lucerne yield

'Woorak' - Epping Forest, Northern Midlands

Introduction
Round bales of Lucerne hay that had been dropped in a paddock in the Northern Midlands in the lee and outside of the lee of a N/S belt of *pinus radiata* were measured. The baling started close to the tree line and followed a zig-zag pattern from tree line to furthest part of the paddock away from the tree line. Thus the bales are likely to be close to the point where their hay was grown, especially in relation to the trees.

At a Glance
- Owner: Daniel Fish
- Study Size: 12.5 hectare paddock
- Enterprise: Livestock (sheep) and cropping
- Rainfall: 550 mm (long term annual rainfall)
- Soil types: Brown Chromosol: sandy loam over heavy clay

Summary
Lucerne hay yields were estimated to have increased by up to 300% due to reduced wind speeds in the lee of a pine shelter belt. This equated to over $1,000 of additional benefit across the sheltered area of the paddock (about $147/ha).

Bale density in the sheltered verses unsheltered area

Wind
The wind at the site for Spring 2017 (the growing season for Lucerne) was measured in a nearby paddock, where the agroforestry research project has an automatic continuously monitoring weather station. The results from the wind monitoring clearly show that the vast majority of the wind comes from the NW and NNW (50% of all wind), another 9% of the wind originated from the north, and 7% from the WNW. All other directions contributed to 5% or less of the total wind over this time period.
The 30+ year old, unmanaged, multi-row, pine shelterbelt

Viewed from the South. The net paddock area is around 12ha (420 x 290 metres) and the belt is 420 metres in length.

Locations of the hay bales as dropped

Dropped 16 November 2017. The red arrow represents the average predominant wind direction (between NW and NNW), in relation to the top end of the belt. Bales to the south of the line are in the portion of the paddock.

Wind rose at ‘Woorak’ for most of Spring 2017, up to the week before harvest (Sept 1st to Nov 9th)

Hay bale locations

The locations of each bale were assessed and plotted. An arrow showing the sheltered and unsheltered parts of the paddock is drawn with approximately 7.7ha in the sheltered zone (84% of paddock area), and 5.3ha (36%) in the unsheltered zone, to the north of the shelter line. A total of 20 bales were in the sheltered zone (17% of the hay). This equates to 2.6 bales of hay/ha in the sheltered zone and 0.75 bales of hay/ha in the unsheltered zone, or more than 3-fold the hay production (on an area basis) in the sheltered zone.

Conclusions

There was a much greater bale density in the sheltered area compared to the unsheltered area of the paddock with a 3-fold increase in bale density in the sheltered area, and an estimated value of the shelter to the hay production of over $1,000.

The results are an indication of the benefits of shelter but do not form a definitive assessment of the shelter effect on hay production. This is because it was a one-off measure and uncontrolled factors such as bale path and how far the hay was moved from the point of growing to the point of bale drop introduce uncertainty. In the more productive areas, the bales would be dropped close to the point of hay production, but in the sparse areas, bales may be some distance from their hay source.

Contact Us
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*CSIRO Land and Water (email: Daniel.Mendham@csiro.au),
*Private Forests Tasmania (email: Martin.Moroni@pft.tas.gov.au)

Disclaimer: Every reasonable endeavour has been used to ensure that the material was accurate at the time of publication. No legal responsibility can or will be accepted by Private Forests Tasmania for the accuracy, completeness, or relevance of such information to the user’s purpose. Before undertaking any significant forestry project it is recommended that you seek personal professional advice from Private Forests Tasmania on the particular matter.

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1. Order stock and fence the block

Protect your trees, control the game

...sheep and cattle just the same

This is about planning ahead, allocating resources, assessing risks and risk management

- Allocate resources (time and money) for tree establishment project in farm budget. Consider appointing a project manager (professional or anointed family member).
- Plan ahead and order seedlings 1 year ahead of time. Select appropriate species for the site.
- Calculate the area and number of seedlings required and tell the nursery when you expect to collect your seedlings.
- Use a GPS if available.
- Fence the area to exclude livestock and other browsing animals. Shooting or poisoning may also be necessary.

Most nurseries grow to order. Your trees will take at least 6 - 8 months to germinate and grow to size.

Order seedlings 10 – 12 months ahead of planting.
2. Spray before you cultivate

Then spray again, use simazine and glyphosate

Four of the most important operations...weed control, weed control, weed control & cultivation

Weed control 101 - Pre cultivation

Spray weeds in the spring before the year of planting or keep site grazed to prevent seed set in weeds.

Ensure weeds are sprayed at least 3 months prior to ploughing to allow root release. This is essential on ex-pasture sites.

Weed control 201 – Pre plant

Before planting, knock down any newly germinated weed seedlings and apply residual herbicide in order to prevent weed seeds germinating in the season after planting.

Rip, or rip and mound the site if possible, whilst soil is dry (Summer or Autumn).
Allow soil to ‘settle’ prior to planting. Note, some sites will be better spot cultivated or not cultivated if soil and water conservation measures dictate.

In order to protect soils and water, some areas require spot cultivation or no cultivation at all.

Smudging cloddy mounds and applying residual herbicide in one operation.

Smudging creates good tilth, makes planting easier and improves effectiveness of herbicides.
3. **In moist soil plant your trees**  
   **Late in winter, to avoid the freeze**  
   Plant seedlings in late winter or early spring when soil is moist.

4. **Monitor, control each weed**  
   **....Two years’ freedom is what trees need**  
   Management of the plantation in the period after planting often determines the success or failure of a project. Ongoing management of weeds and browsing damage is often neglected.
Weed control 301- Post Plant

Control weeds around the seedlings for at least 2 years after planting, mulching or spot spraying with appropriate herbicide can be effective.

Some 40% growth loss in first year due to weed competition.

Leaving site preparation to the last minute.
- A problem arising 2 months after planting
5. **Manage, and measure growth**

**Commit to this, just take the oath**

- Fill in misses as soon as practical.
- Manage pests.
- Measure tree growth on a regular basis.
- Prune and thin to produce high value timber products.
- Seek advice.

**Manage to avoid browsing damage**

**Measure and manage to produce high value products......crops, livestock or wood products**
### Calendar of Events for Tree Establishment Projects in 2019

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**Note:** Ideally, operations such as seed collection, ordering of either seed or seedlings, and even initial weed control and cultivation, may be better undertaken prior to January in the year of establishment.
Trees to Thrive, Just do the Five

1. Order stock and fence the block
   Protect your trees, control the game
   ...Sheep and cattle just the same

2. Spray before you cultivate
   ...Then spray again; with simazine and glyphosate

3. In moist soil plant the trees
   ...Late in winter to avoid the freeze

4. Monitor, and control each weed
   ....Two years’ freedom is what they need

5. Manage, and measure growth
   ...Commit to this, Just take the oath
Anne Chuter – FPA
Biodiversity Landscape Planning

In 2018 the FPA instigated a project to develop a property-based vegetation management plan for Viewpoint. The outputs of the project include:

- Assessment of the biodiversity values including vegetation communities, threatened flora and fauna localities and habitat, and freshwater systems.
- Assessment of the forest practices planned for the property over a 5-10 year period.
- Development of landscape scale management actions.
- Development of a monitoring and reporting program.
- Assessment of the costs/benefits associated with undertaking a property based biodiversity evaluation.
- Advice on implications including savings in planning assessments for future FPPs on the property.

The desktop assessment has begun. Information from spatial data will be used to identify the biodiversity values (e.g., threatened species locations, threatened native vegetation communities), and the areas already contributing to maintaining biodiversity values (e.g., reserves).

Field data gathered to date:
A riparian and platypus survey by an Honours student has found that a dam on Lymestone Creek on Viewpoint is the only place in the Midlands region that has platypus.

The next steps:
On-ground assessment of biodiversity values on Viewpoint and consultation with the landowner.
LANDSCAPE SCALE
BIODIVERSITY
MANAGEMENT

A property wide assessment of biodiversity values to assist with meeting threatened species management at the landscape scale.

Understanding biodiversity assets across a whole property can assist with finding a balanced approach that manages both economic and environmental values.

Some of the benefits are:
- Recognition of biodiversity assets
- Decrease time and costs in FPP planning
- Manage complex biodiversity values

Some of the costs are:
- More time in up front planning

More information
- Biodiversity Landscape Planning Guideline
- Biodiversity program at the FPA
  www.fpa.tas.gov.au
  info@fpa.tas.gov.

Upscaling management from the individual species or tree to the landscape.
Summary – Landscape scale biodiversity management

Under the Forest Practices System landscape-level prescriptions for biodiversity have incrementally improved since the introduction of the Forest Practices Code. Section D3 of the Code explicitly states the need for landscape-level planning for flora and fauna conservation ‘Planning for flora and fauna conservation should initially be carried out at a regional level (e.g., whole property, forest block or district forest management plan...’

There is a need for greater emphasis on landscape level planning for biodiversity conservation, specifically the development of a landscape approach to managing biodiversity in areas regulated under the forest practices system. The FPA have developed an approach for considering biodiversity values and the landscape scale.

Landscape planning for forest biodiversity is important to ensure forest management systems cater for the diverse requirements of species, including those with large home ranges, migratory and territorial species. Planning for some values at the landscape scale also has the potential to streamline planning processes. The FPA developed a practical approach that facilitates the application of landscape management ecological principles in on-ground practice, called the Biodiversity Landscape Planning Guideline (BLPG).

The BLPG is a framework for managing biodiversity values at the landscape scale in areas regulated under the Tasmanian forest practices system. The BLPG framework helps provide guidance for longer-term forest planning to meet landscape-scale goals for biodiversity.

The landscape-scale goals are:

- **Goal 1** Maintain an extensive and permanent native forest estate and avoid or minimise any forest loss
- **Goal 2** Maintain structural complexity and landscape heterogeneity required for the long-term persistence of RFA priority species and their habitats
- **Goal 3** Maintain connectivity of habitat
- **Goal 4** Maintain the resilience of freshwater ecosystems within the range of natural variation over time
- **Goal 5** Maintain or improve the health of native habitats
- **Goal 6** Maintain or improve the conservation status of forest species, natural levels of genetic diversity and the capacity for adaptability

The BLPG breaks down these high level goals into actions that can be applied on-ground to meet the goals. The BLPG also recognises the contribution of the current landscape, such as streamside reserves or areas of connected vegetation, to meeting the landscape-scale goals.

The theory is that if the goals are achieved the landscape will be more resilient to change and this will reduce the need for complex biodiversity management at a fine scale.

Further reading
Forest Practices Authority 2017, Biodiversity Landscape Planning Guideline: a framework for taking account of biodiversity values at a landscape scale in areas regulated by the Tasmanian forest practices system, Forest Practices Authority.

Accessible on the FPA website  www.fpa.tas.gov.au
Peter Volker, FPA and David Gatenby
Integrated farming and forestry operation

- Sheep grazing, dryland and irrigated cropping.
- Native forest on foothills of mountain with selective harvesting over many years.
- Pine plantations established under MIS, now under management control of landowner.
- Conservation Covenant on the property.
- Over the years there have been a number of “evaluations” of the natural values of the property. The vegetation management plan seeks to bring all this information together so the forestry operations can be managed at the property scale and not as isolated individual operations. The plan can also contribute to the agricultural aspects of the farm enterprise by identifying areas which may be important for biodiversity, soil and water values.
David Bower, PFT
Ex MIS Plantation

- Approximately 300 ha Radiata pine established 2007-2008 with initial stocking of 1650 sph through MIS lease agreement with Gunns – a typical MIS stocking and approach.
- MAR: 650 to 750 mm
- Geology: Quaternary Sediments and Triassic sedimentary sequences.
- With collapse of MIS – David purchased trees for $1.
- Consequences:
  - No regular income.
  - Now owner of 300 ha of plantation.

The burning question is “What do I do with it now?”

P. radiata is suited to this site and with good management can provide good returns.
Productivity

- Productivity varies across the property with MAR, soil type and drainage
  - better areas have MAI 17.5 m³ha⁻¹yr⁻¹ at age 12 years (Figure 1).
  - This equates to Class 2 (MAI 15 to 20 m³ha⁻¹yr⁻¹).
- Other areas may struggle to make Class 3 (MAI of 10 to 15 m³ha⁻¹yr⁻¹).
  - This is still above the economic threshold of 10 m³ha⁻¹yr⁻¹.

Management issues – for discussion

To fertilize or not to fertilize?

- With Radiata Pine there are often visual clues to stand health and nutrient status. However, analysis of needles sampled in winter is best method to evaluate nutrient status.
- Fertilise the better sites where there is likely to be a better response to fertilizer application.
  Areas of the stand limited by factors other than nutrition (soil texture, moisture availability, drainage etc.) may not respond significantly to additional fertilizer being applied.
- Expect to add at least 100kg per ha of phosphorous (340 kg/ha of triple super@ approx. 30% P= 102 tonnes over 300 ha), There may be a need to include N, K and trace Elements?

Thinning and competition?

- High stem density is causing strong competition within the stand reducing stem diameters (Figure 1).
- On less productive sites, maybe an initial stocking of 1,000 to 1,200 sph would be appropriate.
- Thinning will release residual trees from competition and improve diameter growth.
- **As an estimate, 100 ha (1/3) could potentially be commercially thinned now** using a 3rd row outrow system suited to high stocking density and prevalent low branches. Leave around 600 sph.
  - First thinning will produce pulpwod and some P12 logs (>12cm SED straight export log).
  - Pulpwood sales are only really viable where there is a back cart arrangement to the south of the state.
- **Second thinning?** With strong markets for smaller diameter export sawlogs, and staged thinning as a (wind) risk management strategy, conducting a 2 thinning regime is generally preferred.
  - A second thinning of small sawlogs is likely to have a positive effect on the economic bottom line.
  - Unlike pulpwod, royalties or stumpages paid for sawlogs (per tonne or per cubic metre) vary. Log length, straightness, branch size (alive or dead) and log diameter all impact on log grade, and hence, stumpage.
  - A possible management option could involve combining the second thinning of the best 1/3 of the plantation with first thinning of other 2/3 in say 5 to 7 years’ time?
  - Areas with Class 3 productivity may be better suited to a single thinning regime? In Class 3 areas other site limitations may restrict the plantation’s response to thinning?
Pruning?

- Pruning is a major investment, and may be advisable on sites with few limitations (MAI >20 m³ha⁻¹yr⁻¹).
  - Pruning Cost = $2 per lift x 300 sph x 300 ha x 3 lifts = $ 540,000 over 300 ha.
  - Easier to grow a 45 cm un-pruned butt log than a 60 cm pruned butt log, particularly on sites limited by MAR, drainage or soil issues.
  - However, more recently, premiums have been paid for pruned logs >40 cm SED.
- Probably focus future management on fertilizer application?

Markets

- Demand for wood is expected to quadruple over the next 2 to 3 decades.
  (Timber brokers in the audience may discuss domestic and export market options.)
Figure 1: Plot statistics from single plot in a more productive part of the plantation

<table>
<thead>
<tr>
<th>Plot Report</th>
<th>ExMIS</th>
<th>Species Report</th>
<th>Pine</th>
<th>Total</th>
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<tbody>
<tr>
<td>Plot Area</td>
<td>8.650 ha</td>
<td>No in Plot</td>
<td>83</td>
<td>83</td>
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<tr>
<td>Age</td>
<td>12 years</td>
<td>Stocking 1850 t/ha</td>
<td>1658 t/ha</td>
<td></td>
</tr>
<tr>
<td>Trees in Plot</td>
<td>83</td>
<td>% of the plot</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Stand Density</td>
<td>1658 t/ha</td>
<td>Mean DBH/B</td>
<td>10.4 cm</td>
<td></td>
</tr>
<tr>
<td>Basal Area</td>
<td>47.0 m²</td>
<td>Mean Height</td>
<td>13.4 m</td>
<td></td>
</tr>
<tr>
<td>Plot Volume (Cone)</td>
<td>10.5 m³</td>
<td>Mean Pr Ht</td>
<td>0.0 m</td>
<td></td>
</tr>
<tr>
<td>Total Volume (Cone)</td>
<td>200.5 m³/ha</td>
<td>Form 1</td>
<td>1658 t/ha</td>
<td></td>
</tr>
<tr>
<td>Mean Annual Inc (Cone)</td>
<td>17.5 m³/ha/yr</td>
<td>Form 2</td>
<td>0 t/ha</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Form 3</td>
<td>0 t/ha</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crop</th>
<th>Leave</th>
<th>Thin</th>
<th>Totals</th>
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<tbody>
<tr>
<td>Number</td>
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<td>0</td>
</tr>
<tr>
<td>Vol/plot</td>
<td>10.5 m³</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Av DBH</td>
<td>16.4 cm</td>
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<td>0.0</td>
</tr>
<tr>
<td>Stocking</td>
<td>1850 t/ha</td>
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<td>0</td>
</tr>
<tr>
<td>Vol/ha</td>
<td>299.5 m³/ha</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Basal A</td>
<td>47.0 m²</td>
<td>0.0 m²</td>
<td>0.0 m²</td>
</tr>
</tbody>
</table>

DBH Distribution in Plot

- Thin
- Leave
- Crop
STOP 3 – ‘Lake Leake’

Howard Calvert, Lake Leake Road, Lake Leake

Peter Volker, FPA and Howard Calvert
Management options for E. nitens plantations

- Landowner has a long history in the forestry sector, owns and operates a number of forestry assets in Tasmania.
- Properties are run as a commercial enterprise with a view to maximising value in the long term and maintaining cash flow in the short term.
- Integrated eucalypt plantation and native forest operation.
- Eucalypt plantations have been managed to provide multiple products.
  - Unpruned and thinned – first thinning mostly provide pulpwood.
  - Later thinning or clearfall will provide logs suitable for peeler market (export or domestic).
- Native forests have been selectively harvested under a variety of regimes with a view to production of high quality logs.

Property owned and managed by Highland Forest Products (Howard Calvert and Adrian Calder) as part of a portfolio of native forest and plantation pine and eucalypt properties throughout Tasmania.

2,000 ha of mostly E. delegatensis native forest bought in 1989. Further 1,100 ha bought in 1991. 4 km of frontage onto Lake Leake. A 300 metre reserve has been established on the lake frontage.

Pulp was sold to TPFH in the late 80’s from clearfall regimes. When HFP took over the property silviculture was changed to thinning of the native forest. 80% of the property was thinned by 94/95.

Due to lack of regular income from the native forest operations and the advent of MIS which offered prospect of a regular income through leasing land, 600 ha of the native forest was converted to E. nitens plantation from 2003 to 2008. This was a major decision for the owners as they would prefer to have continued the native forest thinning program.

Initial leases were with Gunns and then later with FEA.

Collapse of the MIS schemes meant that ownership issues needed to be resolved before any further silvicultural operations could be carried out.

The plantation thinning commenced in 2015. Primary considerations for the thinning program were:
- Good husbandry of the forests – keeping them vigorous and healthy;
- Getting the tree size and quantity of logs to make it economic.

Due to experience with native forest thinning initially the regime was to take the stands down to a residual basal area of about 14 m²/ha at about age 12 years. This translated into a residual stocking of 450 stems per ha (initial stocking was 1,100 stems per ha). After some experience the first thinning regime takes the stand to 400 stems per ha.

The thinned plantations have been fertilised and this has lifted productivity by 20%.

The gap between 1st and 2nd thinning will be 6 to 7 years. Residual stocking after 2nd thinning will be 150 to 200 stems per hectare. Clear fall will be 5 to 7 years after that, giving a total rotation length of 25 to 29 years.
The average log size for the first thinning operation is 0.175 m$^3$ per tree and the 2$^{nd}$ thinning yield is about 0.31 m$^3$ per tree. The tree size at clear fall is expected to be greater than 1 m$^3$ per tree. The first thinning logs are mostly destined for woodchip market due to small diameters. The 2nd thinning market will be predominantly for rotary peelers (domestic or export) and woodchips. Markets for the clearfall logs are yet to be determined, but will include the rotary peeler and export material.

Other considerations:
- Road maintenance;
- Security of the property – wood hookers, vandals, fire;
- Fire management in an integrated forestry operation – prescribed burning and protection from wildfire;
- Management of pests and diseases

Stops:
1. Plantation thinned to residual stocking of 450 sph and 400 sph.
2. Plantation 2$^{nd}$ thinned to 200 sph.
3. Plantation thinned 3 years ago.

Notes: .................................................................

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INFORMATION FOR LANDOWNERS

Primary Processor Directory

Private Forests Tasmania has a comprehensive list of Primary Processors operating within Tasmania. The directory has been primarily developed to help private forest owners with logs for sale to identify potential buyers. As well as enabling the forest owner to more easily locate and contact primary wood processors, it also identifies the log types purchased by them. The directory also helps the listed primary wood processors to source logs from the Tasmanian private forest estate. This directory is available from the Private Forests Tasmania website www.pft.tas.gov.au under the PUBLICATIONS > MARKET INFORMATION tab.

Selling Wood from Private Forests

If you are looking to sell the wood from your forests, you will find a useful information sheet on Private Forests Tasmania’s website to assist you. Please visit www.pft.tas.gov.au under the PUBLICATIONS > MARKET INFORMATION tab.

Establishing & managing your plantations

Private Forests Tasmania’s website provides extensive information sheets on establishing, pruning, thinning your plantations as well as selecting species & site, farm shelter, weed control, tree planting plans and much more. Select the Farm Forestry Information Sheets, or Private Forests Information Sheets drop down tabs on the PFT home page.

Nurseries

You will need to order your seedlings at least 12 months in advance.

- **Woodlea Nursery** - 49 Wish Wilson Road, SCOTTSDALE TAS 7260  
  Ph: (03) 6352 7262  Email: info@woodleanursery.com.au  
  Web: www.woodleanursery.com.au

- **Sustainable Timer Tasmania** – 15960 Midland Highway, PERTH TAS 7300  
  Ph: (03) 6398 7000  Email: peter.moore@sttas.com.au  
  Web: www.sttas.com.au

- **Habitat Plants** – 240 Jones Road, LIFFEY TAS 7301  
  Ph: (03) 6397 3400  Email: info@habitatplants.com.au  
  Web: www.habitatplants.com.au

- **Todd & Kelly Rayner** – Rock Hill Estate, 80 Quinns Road, ELENDALE TAS 7140  
  Ph: 0418 881 124  Email: trayner@activ8.net.au  
  Web: NA

- **Forico Nursery** - 20 McKays Road, SOMERSET 7322  
  Ph: (03) 6435 0755  Email: forico@forico.com.au

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