



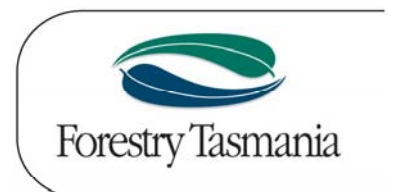
**Australian Government**  
**Department of Agriculture, Fisheries and Forestry**

# Final Science Panel Reports to Forestry Tasmania

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**April 2008**



**FORESTRY TASMANIA**

**COMMENTS ON THE PROGRAM OF REDUCED  
RELIANCE ON CLEARFELLING IN OLD GROWTH FORESTS  
AND OTHER ASPECTS**

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## **1- INTRODUCTON**

During the first week of September 2007 the consultant visited Tasmania as part of a scientific panel of experts, in forest conservation and forest industry activity, convened to provide advice to Forestry Tasmania and its governing Board, on the program of reduced reliance on clearfelling in oldgrowth forests.

The scientific panel was created by Forestry Tasmania as part of the efforts of the company to improve forest practices following Tasmanian Government's request for advice, in September 2003, on the feasibility of a phase out clearfelling within oldgrowth forests on public land by 2010. The request takes into consideration an area of 60,000 ha of oldgrowth forests where clearfelling would be the traditional silviculture, out of a total area of 1.24 million ha in the state.

During the week in Tasmania the consultant worked in close cooperation with other members of the Panel (Professor Jürgen Bauhus and Dr. Thomas Spies) and received relevant information on implementation of variable retention (VR) silviculture and the research program at the Warra Long-Term Ecological Research (LTER) site as well as silvicultural and ecological research on operational VR coupes. Also during the week it was possible to review several background documents made available.

As part of the program, on September 4<sup>th</sup> the panel visited the Styx Valley, including oldgrowth and older regrowth forests, and discussed harvesting operations and fire management in recently harvested VR coupes. On September 6<sup>th</sup> the panel visited the Southern Forests and discussed fire ecology, silviculture, regrowth thinning and industrial operations (Southwood). During both field visits the consultant profited from the discussions held with foresters and other professionals directly involved in the field operations.

In February 2008, between 17<sup>th</sup> and 22<sup>nd</sup>, the consultant made a second visit to Tasmania. During the second visit the consultant participated and made a presentation at the Old Forest New Management Conference held in Hobart between the 17<sup>th</sup> and 21<sup>st</sup>. The scientific conference was organized by Forestry Tasmania together with the Cooperative Research Centre for Forestry and the International Union of Forest Research Organisations. Taking advantage of the visit the Science Panel had a meeting with FT Board on the 22<sup>nd</sup>.

This document presents comments on the issues found to be relevant to Forestry Tasmania, and is largely based on the discussions held and impressions collected during the one week visit held in September 2007, and participation in the Conference. As time was limited for the collection and analysis of information, and also for the preparation of the report, this document should be taken as a summary of impressions rather than a scientific or technical report.

## **2- UNDERSTANDING THE PROBLEM AND DEFINING CONCEPTS**

Forestry Tasmania is a timberland management company, having its business largely, but not exclusively, associated with timber trade in the domestic and international market. In managing the State Forests the company focus is not just on the production of goods but also on services. Some of the goods and services are traded in the local and international markets, while others are not exchanged in the market but nevertheless are important as they affect social welfare.

In general terms it can be said that production and consumption of goods and services create externalities, which can be defined as changes in a third party's welfare (at local or global level). When these result in an increase in the third party's welfare, it is said that a positive externality or external benefit has been generated. When there is a decrease in the third party's welfare, it is said that a negative externality or external cost has been produced.

Forestry Tasmania produces timber from managed forests and is paid for it. The company operations and the timber produced generate employment and revenue to the Tasmanian population, and these are examples of positive externalities.

On the other hand by managing forests sustainably, especially when managing natural forests, Forestry Tasmania also contributes to soil and water conservation, and this creates local benefits by increasing or maintaining land productivity, water bodies and production of goods and services such as clean water for domestic or industrial consumption. There are also some other local benefits, such as the aesthetic values that enhance tourism, that have positive local social and economic impacts.

Furthermore Forestry Tasmania operations also create conditions to increase carbon sequestration and storage, and contribute to biodiversity preservation. These are positive externalities that affect the welfare on a global scale. Carbon sequestration or storage services are provided by old growth natural forests as well as the other types of forest, such as plantations and regrowth, regardless of the site's particular features. On the other hand biodiversity preservation, to be effective, requires almost pristine forests in relatively large areas to assure the full benefits of their preservation over time. This might not be the case for all the forest areas managed by Forestry Tasmania, but certainly there are extensive and representative areas that the company maintains that make an important contribution to biodiversity conservation.

The perception of the consultant is that the efforts and investments made by Forestry Tasmania to generate local and global positive externalities resulting from services provided by well managed forests are not marketed and the company is not compensated for the services provided.

It should be recognized that this is not a particularity of Forestry Tasmania. In dealing with biodiversity, for instance, although most of the goods produced based on genetic resources are private and their prices reflect their relative scarcity, the genetic resources that allowed

them to be produced usually do not have market prices and are externalities for which the landowner, in whose lands the resources are found, is rarely compensated.

In general terms the concept is that forest management and operations in production forests can be continuously improved. The review of documents, field observations and the discussions held during the visit clearly indicated that Forestry Tasmania has continuously invested to improve forest management practices, and this will contribute to further mitigate negative externalities and enhance positive externalities over time.

In spite of its efforts it seems that Forestry Tasmania has not been fully recognized for the services provided to the society and for its contribution to improve social welfare at local and global levels. In fact the company has been criticized and has been forced to increase investments in research and reduce wood removals. So far wood is the only significant good that the company trades in the market and reduction on wood removals above certain levels can put at risk the economic sustainability of the business.

In reality the pressure on the forest industry has been a global trend. It is growing over time in all parts of the world, especially for industry operating in natural forests. The forest industry has been asked to increase its contribution to welfare at local and global levels, and this is continuously reducing profitability, and this tends to make wood less competitive in the market.

Forestry Tasmania manages State Forests, including natural forests with important aesthetic and cultural values for the local society. These aspects, combined with the fact that local society has achieved a high cultural, socio and economic development stage, tend to increase the demand for the contribution to the local and global social welfare. Within this context the Forestry Tasmania Board seeks to respond to society demands, while at the same time find ways to mitigate impacts of new demands on the business, and keep operations profitable to ensure the company's sustainability.

### **3- NEW SILVICULTURE APPLIED TO OLD GROWTH FORESTS**

The new silviculture applied by Forestry Tasmania to manage old growth forests was presented to the consultant based on documents, presentations made by the staff and field visits. The new silviculture is in response to the local society demands and, at the same time, maintains timber production in the old growth forests.

In developing alternatives to the clearfell, burn and sow (CBS) practice in old growth forests, Forestry Tasmania has considered a set of performance criteria agreed with the Government of Tasmania when the request for advice on management of old growth forest was made. The set of criteria included the following:

- i. Maintenance of a minimum supply level of 300 thousand cubic meters per year of high quality eucalypt veneer and sawlog material;
- ii. Maintenance of contracted commitments;

- iii. Maintenance and enhancement of occupational health and safety in forest operations;
- iv. Safe processing and removal of forest harvesting residues;
- v. Regeneration which meets stocking standards for sustainable forest management;
- vi. Maintenance of jobs of Tasmanian timber workers.

Among the alternatives to clearfell, burn and sow (CBS) tested by Forestry Tasmania are CBS with understorey islands, stripfell, dispersed retention, aggregated retention and single tree/ small group selection. During the visit particular attention was given to aggregated retention coupes (ARN), although other silvicultural systems were also discussed and visited in the field.

The VR coupes visited during the two field trips had areas of around 20 ha. The coupes were felled leaving undisturbed forest patches of around 1-2 hectares within the harvested area for the purposes of maintaining habitat for biodiversity, to ensure seed supply for regeneration and also for aesthetic reasons. Retention varied between 20-30% of the coupe area, and this means that in principle the wood removals are lower by the same proportion.

From the observations made it seems that the VR coupes represent an option to demonstrate to the public that Forestry Tasmania is making efforts to reduce the impacts of harvesting in old growth forests. The new system can, and will be improved over time, as experience will be gained on different aspects involved, especially on fire management. In developing the new system Forestry Tasmania might also want to consider the potential to develop alternatives to make gains by taking into account other aspects, especially that relate to the large quantity of biomass left on the ground.

Based on information made available and observations during the field visits, between 200 to 300 tonnes of biomass per hectare (some information refers up to 500 tonnes) is left on the ground when harvesting is completed. The reasons mentioned to justify this practice were:

- i. The quality of the material (wood) is not adequate for industrial consumption;
- ii. There is no other economic/ market alternatives (such as fuel wood);
- iii. The biomass left in harvested areas is important to produce an ash bed and facilitate regeneration;
- iv. Biomass, especially coarse woody debris, left on the ground plays an important role in the maintenance of biodiversity.

Discussions on the amount of the wood residues left on the ground during harvesting operations are not a new issue for Forestry Tasmania. In spite of the fact that several studies

were carried out in the past (CSIRO studied the option of the use of the material for energy generation), it seems that this matter should be revisited as the volumes left are very high and new opportunities/ options should be identified and adopted.

In doing so a broader perspective should be considered and this could be done by revisiting/ improving information on several issues, in order to critically analyze the following aspects:

- i. Quantity and quality of residues left after harvesting by forest type (this should cover harvesting operations in old growth forests and also other forest types);
- ii. Products standards (particularly products for fiber) and implications on the sales contracts;
- iii. Ways to combine harvesting of sawlogs, pulpwood and fuel wood in order to minimize costs, and at the same time avoid to returning to the coupe (that could increase environmental impacts due to soil disturbance);
- iv. Impact of biomass left in the ground on economic, environmental and public perception aspects, particularly on forest regeneration, fire management (especially when burning VR coupes) and biodiversity.

The economic equation and other aspects involved in a feasibility study involving collection and transport of harvesting residues for power generation is complex as other aspects, not directly involved in the actual operation, might be important. An example of these other aspects is the impact that removal of wood residues may have on fire break costs and fire management.

At the moment the area of fire breaks in VR coupes is quite significant (around 30 percent of the total area), and the costs involved (especially using excavators) is probably quite high. A reduction on the wood residues might facilitate fire management, and as a result the fire break width could, in principle, be reduced with positive impacts on costs.

Reductions in costs are always desirable, but there are other aspects that might be important to consider in dealing with increasing removals from harvesting areas. Some of the aspects might have a positive contribution, while others not.

For instance if the reduction in the amount of biomass left on the ground facilitates fire management, patches left in VR coupes can be better protected from fire. As a result, public perception of advances made by Forestry Tasmania by the adoption of VR will be improved (a positive contribution). On the other hand, the impacts on regeneration should also be measured, and to increase the removals might have a negative impact.

In spite of the fact that seems to be important to assess the real impact resulting from increased wood removals on regeneration and biodiversity, it seems logical that higher levels of removal can be achieved without having significant collateral impacts.

The positive economic impact of increasing removals will be important to offset the reductions on harvesting area (and consequently in volume and revenues) resulting from the adoption of the new silviculture, and therefore the issue deserves to be fully investigated. The investigation should cover, among others, the following relevant steps/ activities:

i. To improve knowledge on the material available

Taking into consideration the reported amount of wood left on the ground (quite significant), and also from field observations, it seems to be reasonable to assess the quality of the material left on the ground. The investigation should cover the criteria used in defining material as appropriate for pulp wood, based on the product standard adopted in the sales agreement;

ii. To define the new level of removal and review product standard

Information obtained from the assessment of the product quality will inform the possibility of increasing removals based on the current uses of the wood, particularly the pulp wood. The objective would be to create elements for a possible discussion and review of standards established in the sales agreement.

iii. To assess the feasibility of harvesting wood for energy

A large portion of the biomass left in the ground at the moment would not be adequate for pulp, but can be used as fuel wood. An investigation on the feasibility of removing this material (basically harvesting and transport costs) is needed as a first stage. The study should consider different levels of removal and also test harvesting alternatives. The ultimate objective is to estimate costs to analyze the attractiveness of investments in energy generation based on biomass.

iv. Other aspects involved

If harvesting of fuel wood is considered a feasible option from the economic point of view, a further study should be carried out on other implications. As previously mentioned, removing more biomass from the coupes might have negative implications for soil, regeneration and biodiversity, but it can also contribute to reducing the width of fire breaks (and therefore reduce costs making fuelwood harvesting more attractive).

Also by reducing biomass on the ground fire management is expected to be facilitated and this may avoid fire damage to the forest patches retained after VR harvesting. This should improve biodiversity conservation and improve public perception on advances made by Forestry Tasmania in adopting the new silviculture.

Besides the above listed steps there are also other options that Forestry Tasmania might want to test in VR coupes. It seems for instance that the use of retained 'peninsulas' could be a better option than the retention of isolated forest patches inside the harvested area.

Increased use of peninsulas would drive the silviculture system towards a similar condition as the stripfell treatment, but design of the peninsulas should be changed to improve aesthetic values. On the other hand peninsulas might create difficulties for harvesting operations (creating additional costs) and the risk for workers needs to be better assessed.

It is important to have in mind that a few years more of field observations will be necessary to have scientific evidence of other potential benefits from VR silviculture for biodiversity, soil protection and seed supply for regeneration of the harvested areas. The perception of the consultant is that gains in biodiversity by using the new silvicultural system might be important when analyzing a micro location (retained areas within the coupe and for coarse woody debris left in the ground). However, given the size of the operations and the long forest rotations adopted, its differential contribution over time in terms of maintenance of the biodiversity of the Tasmania forests as a whole is most probably negligible.

It might not be desirable for Forestry Tasmania to enter into this discussion. The local gains in biodiversity of the new system, as compared with the traditional CBS system, can be important in dealing with public perception, and this is what needs to be explored by Forestry Tasmania. Also the variable retention system seems to be an adequate alternative to the traditional CBS silvicultural system when dealing with aesthetic values, which has a strong impact on public perception, and this is important to maintain Forestry Tasmania's operations at the moment.

#### **4- MANAGEMENT OF REGROWTH FORESTS**

Regrowth forests are currently managed on relatively long rotations (80 – 100 years). Based on the discussions, the reasons for such long rotations are associated with economic and environment aspects, but no clear evidence to support these were made available.

Longer rotations allow a forest area to be left undisturbed for a longer period, and this probably creates environment benefits. On the other hand longer rotations allow larger logs for the industry, and this is more a tradition in the local forest industry than a technical and economic matter.

Observation made in regrowth forests recently thinned (with an approximate age of 40 years) indicate that most of the logs could be used for sawnwood and veneer production using current available processing technology, and most probably would benefit the industry. Practically all logs used in the Southwood industrial complex (involving a sawmill and a veneer mill) are small to medium diameter logs that could be produced in rotations of 50 years (or less).

Forestry Tasmania has probably already studied the economic implications of reducing the management rotation of regrowth forests, but it seems that for several reasons this option has not been fully explored. In principle, in economic terms, the reduction in rotation would be a first alternative to be explored to maintain wood output at current levels if harvesting in oldgrowth forests has to be reduced.

Forestry Tasmania might want to revisit this matter and in doing so the following steps and activities should be considered:

i. Evaluate the economic impact on wood production

Existing information should be valuable to develop a model to assess the impact of shorter rotations for the company business. Aspects to be covered are yields, products to be made available to market, silviculture costs, harvesting costs and other costs involved under different rotations and management treatments. The ultimate objective is to analyze returns considering shorter cutting cycles and using different management systems.

ii. Assess market implications

Processors will react to the new option (shorter rotation and smaller diameter logs), and will tend to seek compensations (via lower prices). Forestry Tasmania should not enter into this discussion without a full understanding of the reasons behind the market reaction, include cultural aspects that may be based on perceptions and unsound technical information.

The reduction of the rotation can affect wood quality but, within certain rotation limits, is not expected to be as significant as one would first expect. The processing industry will probably use arguments based on comparisons made between the traditional raw material (from old growth forests or from long rotation regrowth forests) and wood from growing plantation timber (produced in very short rotations (such as 15 years), but this is not valid when dealing with 40-60 years rotation.

Therefore it will be important for Forestry Tasmania to have a sound technical basis to support the discussion, and this includes not just the implications for wood properties, but also the implications for the industrial process, for production costs and in the end-product properties and performance. Industrial trials using the new material will be required to gather this information.

iii. Evaluate environmental and other aspects

The reduction of the rotation in regrowth forest can have environmental implications, and also tends to create an adverse public perception. Again in this case Forestry Tasmania should gather sound scientific evidence on the environmental impacts to serve as a basis for discussions.

iv. Compare with other alternatives

So far the alternative to mitigate impacts of reduction in volumes due to limitations on harvesting old growth forests is to expand plantations (as proposed in the scenarios analyzed by Forestry Tasmania for the Government of Tasmania). Reduction in the rotation of the regrowth forests is an alternative to the plantations, and therefore it is important to compare the two options.

The comparison between adopting a shorter rotation for regrowth forests and plantations should not be based only on financial and economic terms. Other issues such as differences in wood properties, market implications, environmental impacts and public perception are also of outstanding importance.

## **5- FOREST PLANTATIONS**

The adoption of a shorter rotation for regrowth forest does not exclude the possibility of investments in plantations. Plantations will be important to produce low cost fiber and also lower cost solid wood logs for certain uses. This is a worldwide trend that can not be neglected in dealing with investments in forests. Forestry Tasmania should consider possibilities to invest in alternative plantation management options.

One option to be considered is to focus on plantations that maximize solid wood log production. Experience gained in other countries in dealing with eucalyptus plantations indicate that using less trees per hectare (as few as 500), and intensive management can reduce the rotation and increase average diameter of the trees, producing logs of higher value. Even if stand volume is reduced, this results in positive impacts on the economic returns.

Wood produced in intensively managed fast growing plantations has a lower density, but pruned logs from these plantations has been found to be a good alternative for the production of plywood, mouldings, furniture components and other value added products.

## **6- BIOFUELS IN HARVESTING AREAS**

As previously discussed, biomass for energy generation is an alternative that should be further studied. Large volumes are left in coupes when harvesting old growth forests, but volumes are also significant when thinning regrowth forests areas. As a matter of fact this issue has been under discussion for quite a long time, and significant amount of information on the impacts of increasing the removals is available in the CSIRO report submitted to Forestry Tasmania in May 2002.

The CSIRO report confirms the observations made by the consultant on the volume available at the harvesting areas. The report has a strong focus on old growth forests and the potential risks associated with impacts on soil and biodiversity. Particular attention was given, for example, on the role of coarse woody debris.

It seems to be important to revisit the issue, and consider implications in a broader perspective (as earlier suggested in this report) and covering in more detail the financial and economic aspects and their implications on forest operations.

For instance, the volume of biomass left on the ground when harvesting old growth forests is significant, but the area harvested annually in this type of forest is relatively small and will tend to decrease in the future. Investing in energy generation based on biomass is a long term investment and therefore it is important to ensure that supply will be maintained

over a longer time. Therefore it is quite important to consider supply from other areas (particularly regrowth forests).

Besides the fact that the areas of available regrowth forests are larger (and therefore represents a major potential), it seems that the operations involved in harvesting biomass for energy from these areas would be easier. During the field visit it was observed that in recently thinned regrowth forests large volumes of biomass are concentrated on timber landings, and this means that the material is easily accessible, can be locally processed and transported to a power plant. In principle this indicates that fuelwood produced from biomass left in thinned regrowth forests would have a lower cost.

In spite of the large quantities available and indications that generation of energy from biomass is an option, the decision will largely depend on the economics of the operation. In places such as Tasmania, where energy costs are relatively low (and a surplus exists), it might be difficult to make generation of energy based on biomass a feasible option, unless incentives are made available or new and more efficient technologies are developed.

## **7- OLD FORESTS NEW MANAGEMENT CONFERENCE**

The Conference organized by FT together with the Cooperative Research Centre for Forestry and the International Union of Forest Research Organisations and held in Hobart in February brought together national and international researchers from a range of disciplines, and focussed mainly on sustainable management and use of old-growth forests. At the Conference the consultant made a presentation on the option of combining old-growth, regrowth and plantation timber to promote sustainable trade, a trading system that does not harm the environment or deteriorate social conditions while promoting economical growth.

At the meeting held on February 22<sup>nd</sup> with FT board the Panel members expressed their views on the Conference. The general impression was that the Conference was very well organized, and presentations provided a good summary of the 'State of the Art' on management of old growth forests and on benefits of VR in addressing biodiversity issues.

The Panel members also considered that the Conference helped to identify several aspects that can drive the FT research program in the future. It was noticed, for example, that it might be important to increase the knowledge on the importance of old growth forests for carbon sequestration and water conservation.

The consultant suggested that FT should consider global perspectives and global interactions when making decisions related to forest management in Tasmania. It should take in account that global wood supply is limited and consumption is expected to continue increase for the next decades. If wood supply from Tasmania is, for some reason significantly reduced in the future, other sources will need to be identified and this can have implications in the sustainability of forests in other parts of the world.

## **8- CONCLUSIONS AND RECOMMENDATIONS**

All over the world the forest industry has been asked to increase its contribution to welfare at local and global levels. Forestry Tasmania's efforts to respond to the society demands, while at the same time finding ways to mitigate impacts of the new demands on the business, are indeed important to maintain operations and ensure the company's sustainability.

Tasmania Forestry has been working to respond to the society demands, and has effectively contributed to the request for advice made by the Government of Tasmania to find alternatives to clearfelling for management of old growth forests for timber production.

Considering that Forestry Tasmania is a company, the investments made on research and development are high. Although results are still not conclusive, there are indications that it is possible to adopt new alternatives to mitigate impacts of harvesting in old growth forests, and accommodate to some extent, public concerns.

Efficiency and effectiveness of the actions taken are still to be measured, nevertheless it seems that it will be difficult (and costly) to convince society that harvesting operations in old growth can be maintained without creating negative externalities, and that it will not have a significant effect on local and global welfare.

Being pragmatic on this issue: in the best situation Forestry Tasmania will be able to postpone the decision on banning harvesting in old growth forests, but will need to accept the fact that costs will continue to increase over time. Based on this premise it should consider the following aspects in defining a long term strategy:

- i. Continue the current research program focusing on extending life of operations in old growth forests;
- ii. Create a more consistent strategy to improve communication with society, focusing on gains (positive externalities) rather than problems and impacts;
- iii. Carry out studies to assess the feasibility of increasing removals when harvesting old growth forest. This should cover and in depth analysis of biomass quality to assess possibilities for increased volumes of pulp wood harvesting (including the need to change standards in sales contracts) and the option of harvesting biomass for energy;
- iv. Consider the feasibility of also harvesting biomass for energy from other operations, particularly from thinning operations in regrowth forests;
- v. Study alternatives and the implications of adopting a shorter rotation in regrowth forests as a potential alternative (or complementary) strategy to the plantations within the scenarios presented to the Government of Tasmania;
- vi. Analyze the option to invest in plantations managed to increase the production of logs for the solid wood products industry;

- vii. Work together with the local timber industry, and seek the support of the government, to change local culture and invest in technology to process smaller diameter logs from shorter rotation regrowth forests and also from plantations.

There is no doubt that wood produced from the old growth forest is special. On the other hand old growth forest will not be the main supply in the future. The future supply will come from regrowth forests and plantations, and therefore investments to increase competitiveness and ensure the sustainability of the operations should be gradually moved in this direction.

This does not mean that Forestry Tasmania should radically change, and have a new approach in the ongoing research program or in the current forest operations. The investments made in the research program are of outstanding importance and should be kept to help extend time over which old growth forests can be harvested. However the Board needs to have in mind that times will change, and that investments will need to be made in areas that can create the best competitive advantages to maintain future operations. Furthermore, in defining its strategy, Forestry Tasmania might also want to consider global perspectives and the possible impacts of its decisions on forests in other parts of the world.

#### **Acknowledgments:**

The consultant would like to acknowledge all support received from the Forest Tasmania staff, especially from John Hickey for the visit coordination. The effort of the staff to summarize, and make available relevant information over such a short time, was of outstanding importance to facilitate the understanding of the problem involved.

## **ANNEX**

### **ITINERARY OF THE VR SCIENCE PANEL MEMBERS (August 31 to September 8, 2007)**

#### **September 3, Monday**

- 9:00- Briefing on Forestry Tasmania transition to mixed silviculture**
- 10:00 - Overview of research program at Warra silvicultural systems trial**
- 12:00- Presentation by Ivan Tomaselli: Bioenergy Opportunities: Overview and Trends in Brazil;**
- 13:00- Discussions**

#### **September 4, Tuesday**

- 8:00- Travel to Styx Valley/ field visits**
- 10:00- TN065B- CBS/ Overview**
- 10:30- TN063D- 50 years old regrowth**
- 11:00- SX020A- VR harvesting**
- 12:00- SX019E TCFA**
- 12:30- SX018E VR burning feasibility**
- 13:30- Big Tree Reserve**
- 14:30- Tim Shea Landscape**
- 18:00- Arrive in Hobart**

#### **September 5, Wednesday**

- 9:00- Silvicultural and ecological research for operational VR coupes**
- 10:00- CRC- OFNM Conference Media Announcement (at CRC)**
- 12:00- Presentation by Tomas Spies: Comparison of Oldgrowth Management approaches in Pacific North-West and Australia**
- 13:00- Reading documents/ discussions**

#### **September 6, Thursday**

- 8:00- Travel to Southern Forests/ field visits**
- 10:00- Fire ecology/ Warra LTER site, silvicultural trial/ regrowth thinning**
- 14:00- Southern site: merchandiser yard, regrowth sawmill, rotary-peeled veneer mill.**
- 18:00- Arrive in Hobart**

#### **September 7, Friday**

- 8:30- Reading/ preparation of report**
- 13:00- Public Lunchtime Talk : Future markets for plantation wood: experiences from Brazil (by Ivan Tomaselli)**
- 14:30- Presentation of preliminary ideas to FT**