

Tasmanian Private Property



Wood Flow Estimates 2002 to 2031

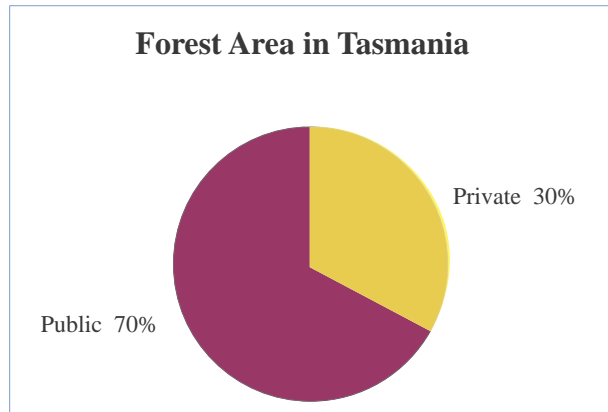


Private Forests Tasmania

Tasmanian Private Property Wood Flow Estimates 2002 to 2031

OVERVIEW

Private forests play an important role in Tasmania – making up about 30% of the forested area and contributing substantially to the State’s sustainable Natural Resource Management outcomes through wood production, conservation, recreation and aesthetics.



Tasmania is unique amongst the States of Australia in providing an estimate of potential wood flow from private forests. Private Forests Tasmania (PFT) co-ordinates the update process about every 5 years, using a range of assumptions about expected plantation development, rates of native forest harvest and regeneration and owner intention to harvest.

In Tasmania there is a wide range of private owners including large industrial forest companies owning and managing thousands of hectares, extensive farming enterprises incorporating managed forests with other agricultural activity and many individual owners with less than 40 hectares of forest.

It is a challenging task to estimate the potential wood flow from such different potential sources of forest products, especially as many landowners are uncertain when, if at all, they may want to harvest part or all of their forests. The market price a grower receives for the forest products plays an influential role in helping to determine when harvesting will occur. Consequently, the wood flow estimates produced in this report should be viewed as a likely scenario, with many alternative options possible if different assumptions are made.

The wood flow estimates are summarized in tables and graphs below - see *Fast Facts*. The information is aggregated at the state level, with key assumptions and other important information detailed in *Key Assumptions & Things You Should Know* below and the body of the report.



Key Points

- Native forest harvest on private land will decline from 2,410,000 tonnes in current five years to 660,000 tonnes in 2027-2031.
- Plantation hardwood harvest will increase 450% to 3.68 million tonnes in 2027-31.
- Plantation softwood harvest for sawlog and veneer will increase 225% to 340,000 tonnes in 2027-31 and current ratio of softwood pulpwood to sawlog harvest will effectively reverse between now and 2027-31.
- Hardwood sawlog and veneer harvest will decline significantly from 330,000 tonnes in 2002-06 to 130,000 tonnes in 2027-31.
- Hardwood sawlog and veneer harvest will fall from 360,000 tonnes to 80,000 tonnes (-450%) between 2012-16 and 2017-21 periods.

FAST FACTS

Tasmanian Private Property - Predicted Resource Woodflows

source - Private Forests Tasmania, 2004, figures rounded and based on a range of assumptions

5 Year Averages

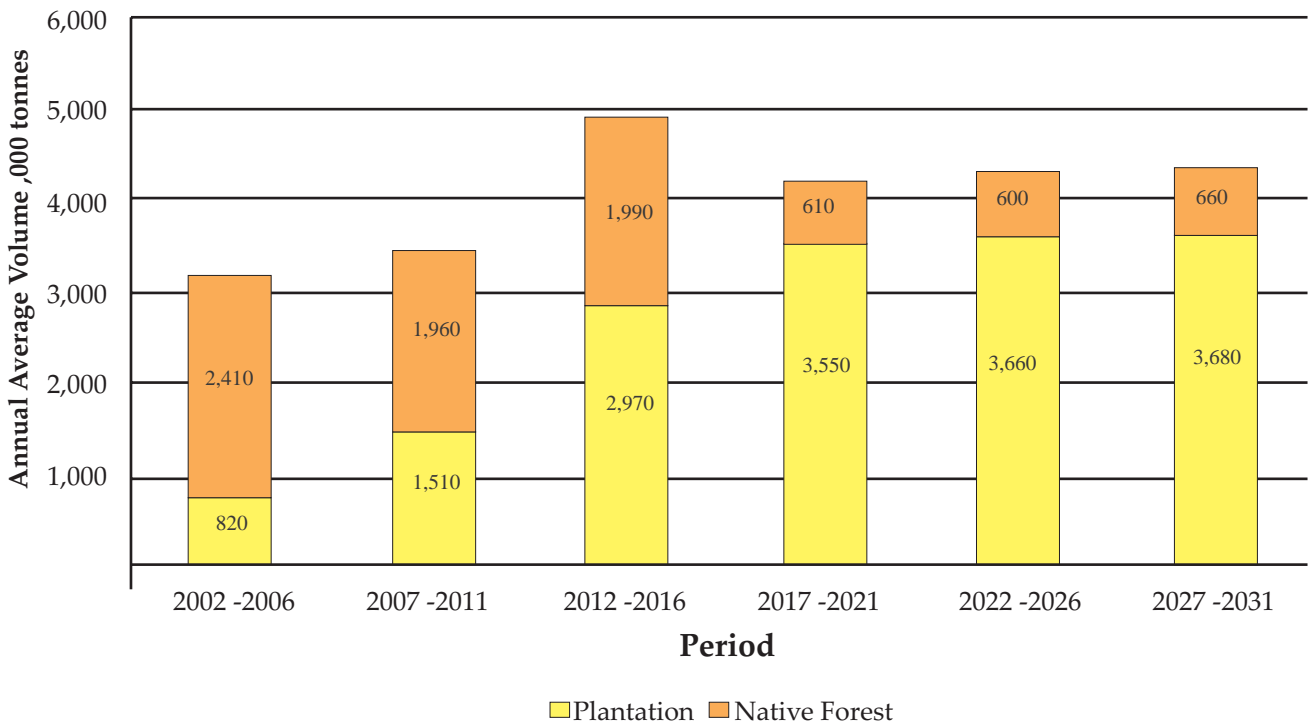
Annual amount shown for each year in the period

Start Year	2002	2007	2012	2017	2022	2027
Finish Year	2006	2011	2016	2021	2026	2031
HARDWOOD						
Native Forest						
Sawlog and Veneer	330,000	250,000	290,000	60,000	70,000	80,000
Pulpwood	2,080,000	1,710,000	1,700,000	550,000	530,000	580,000
Plantation						
Sawlog and Veneer	0	20,000	70,000	20,000	50,000	50,000
Pulpwood	820,000	1,490,000	2,900,000	3,530,000	3,610,000	3,630,000
TOTAL HARDWOOD	3,230,000	3,470,000	4,960,000	4,160,000	4,260,000	4,340,000
SOFTWOOD						
Plantation						
Sawlog and Veneer	150,000	160,000	270,000	280,000	210,000	340,000
Pulpwood	360,000	180,000	230,000	210,000	170,000	200,000
TOTAL SOFTWOOD	510,000	340,000	500,000	490,000	380,000	540,000

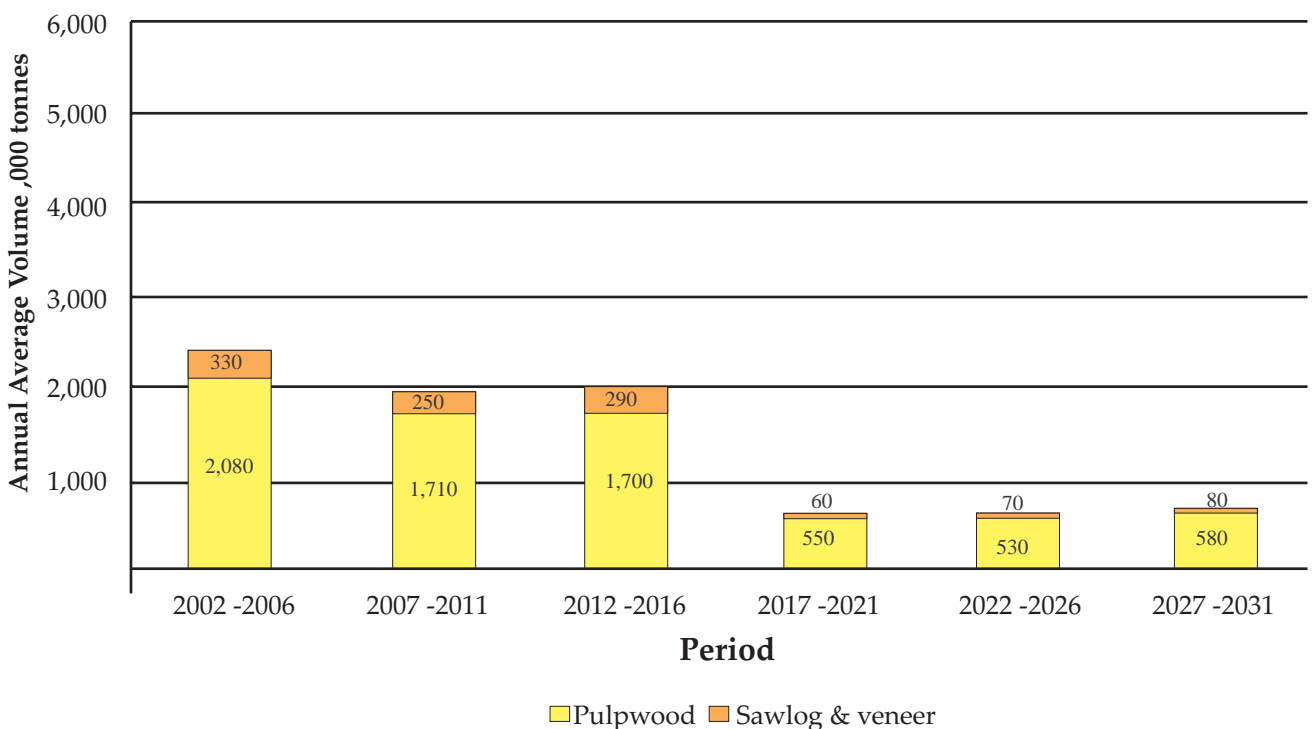


Important Note: The information contained in the graphs below is based on and should be read in conjunction with some important assumptions - see *Key Assumptions & Things You Should Know* below and the body of the report for more details.

Hardwood- all Tasmanian private property



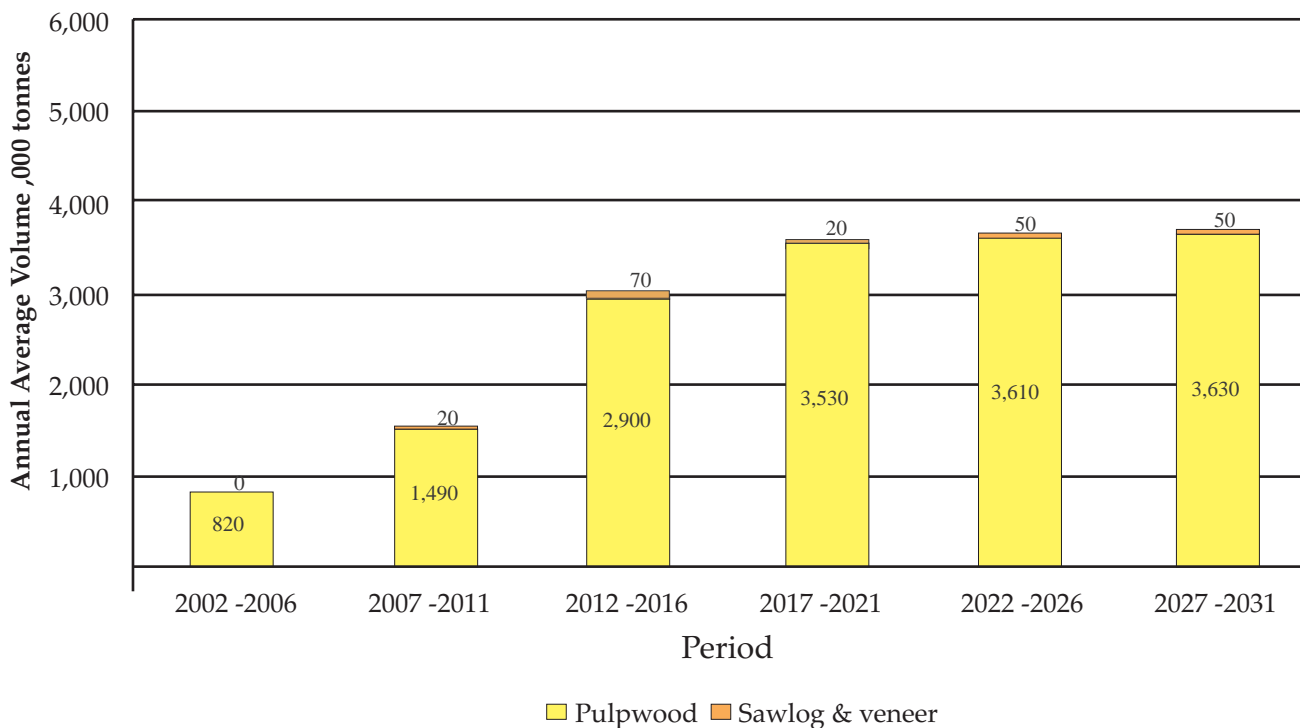
Native forest hardwood wood flow estimates- all private property



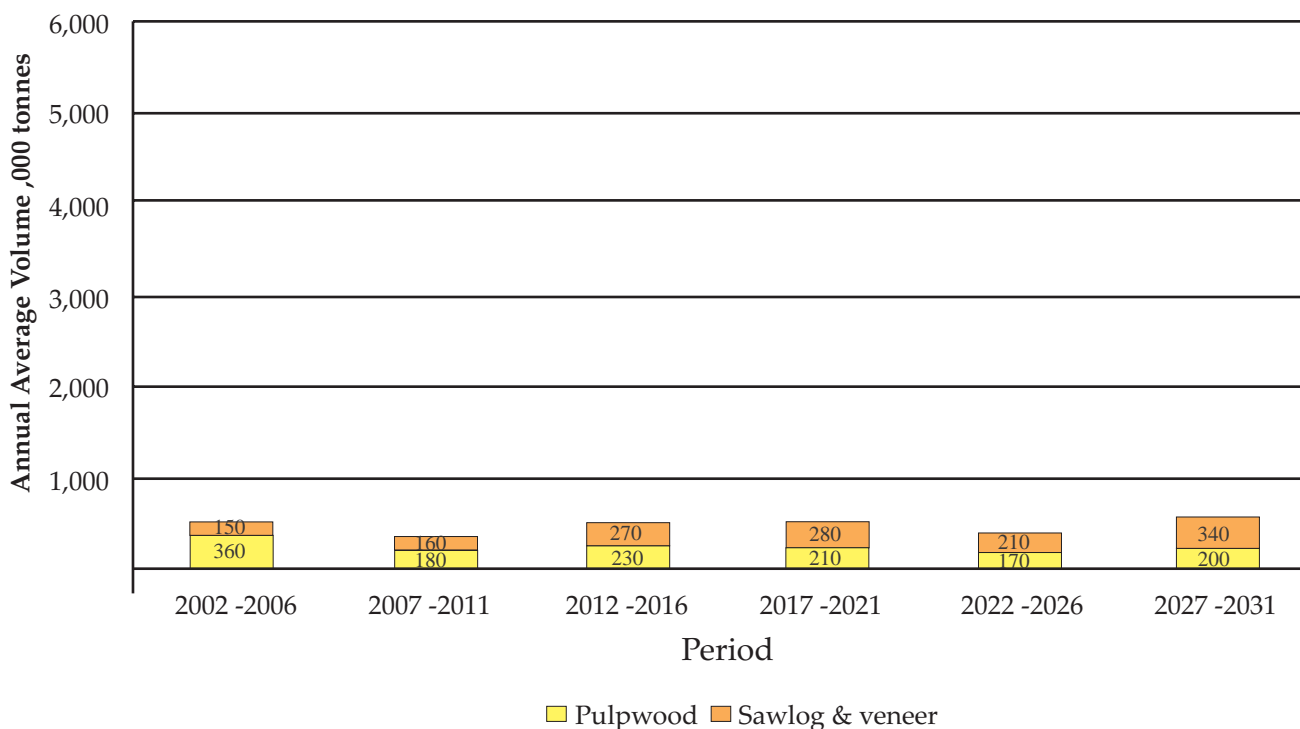
FAST FACTS

Important Note: The information contained in the graphs below is based on and should be read in conjunction with some important assumptions - see *Key Assumptions & Things You Should Know* below and the body of the report for more details.

Hardwood plantation wood flow estimates- all private property



Softwood plantation wood flow estimates- all private property



KEY ASSUMPTIONS & THINGS YOU SHOULD KNOW

The wood flows are estimated at the State level - The wood flow estimates are not able to be broken into regional or specific product wood flows, as historically wood products are not necessarily delivered to the nearest processing plant due to a combination of factors including ownership, wood quality, marketing commitments and species characteristics.

A general scenario was adopted - that was considered to reflect possible market demands and activity levels following some general industry discussion. This assumed:

- The majority of private native forest clearfall would occur in the next (ie by 2016) 15 years. This was consistent with earlier wood flow work; reflected the need for revenue generation to private landowners as a priority to assist to convert unmanaged forests to regimes that allowed for more active future management of regrowth and regeneration; and recognised not all private native forest harvested could compete regarding quality with increasing amounts of hardwood plantation.
- The total pulp cut for partial harvesting was constrained to be relatively even in each period.
- Rainforest and secondary species harvest was constrained to less than 100,000 tonnes per annum.
- Hardwood plantation pulpwood was constrained to increase during the run to promote a steady wood flow.

Only broad product classes are provided – To aggregate data provided from different private growers, only broad product classes have been used – sawlog and veneer are aggregated, pulpwood includes both domestic and export grades.

Not all private wood is assumed to be available - Not all private owners wish to harvest their trees, so the total possible wood flow has to be discounted for this using the results of an owner's intent survey – detailed in the report below.

Some forest areas are excluded for environmental reasons - There are further discounts to the area that can be harvested due to environmental and planning constraints imposed through legislation such as the Forest Practices Act – detailed in the report below.

No individual landowner data is provided - The data is aggregated to maintain the confidentiality of data contributors, whose voluntary provision of private information on their expected wood flows forms the basis for the estimates.

New plantings on non forest areas have been predicted – Some private land currently not forested is converted into forest, especially as plantation, often in conjunction with industrial forestry activity, but also due to private landowners diversifying their crop mix, especially on steeper land – see Appendix 1.

A range of plantation growth rates is used for plantations – Geology, altitude and rainfall can influence the growth rate for a specific species, so a range of growth rates has been assumed for future plantings. Some data providers use complex models based on their extensive plantation datasets to predict future yields – see Appendix 1.

Conversion to non forest following harvesting – Some private land is not reforested following harvesting due to conversion to pasture, grazing, roads, dams or power lines – see Appendix 1.

Many private forests will be selectively harvested rather than clearfelled – Forest Practices Code and silvicultural requirements dictate that much of the higher elevation private forests and drier east coast private forests will only be selectively harvested rather than clearfelled – see Appendix 1.

Much of the data was based on estimates of plantation and native forest areas collated during 2002, with the most recent owners intent survey also carried out at that time.

INTRODUCTION TO THE PROCESS

Private Forests Tasmania (PFT) is a state government authority with functions and responsibilities defined in the Private Forests Act 1994 as amended.

These functions include “to maintain and update an inventory of private forests, prepare five-yearly reviews of private forests ...”(Section 6.1 (f)). An output of these processes is the wood flow estimates in graphical and tabular format with the accompanying explanatory information.

RESULTS

The estimated wood flows for all private forest taking into account the relevant discounts for forest practices and owners intent discount for the non industrial private forests are provided in the *Fast Facts* section above.

OBJECTIVE OF THE REVIEW

The review aims to provide a general strategic overview of the availability of wood products by general categories for the private forests in Tasmania over the next 30 years. The review process is repeated by PFT about every 5 years and this provides an opportunity for changes to land use, regimes or market opportunities to be incorporated.

OUTLINE OF THE REVIEW PROCESS

The Wood Flow Review process consists of four main activities:

1. Updating the forest area statement - to provide best estimates on forest areas, accounting where possible for changes due to harvesting and planting as well as normal growth.
2. Discounting the area statement - to take into account the fact that not all standing forest areas can or even may be harvested.
3. Allocating regimes and product yields to aggregated forest classes – to best reflect the general picture at a State wide level as there is incomplete data to quantify wood flows at a regional level.
4. Determining the potential wood flow – to provide an indication of longer term wood flow by general product classes under a scenario that provides some consistency in supply as a result of harvesting and regenerating the discounted area over time according to the predefined regimes and yields.

UPDATING THE FOREST AREA STATEMENT

The resource estimation process was applied to the private non industrial forests, as the large industrial companies provided wood flow data for 2002 onwards for the private areas they owned or had harvesting control over. The large industrial forest areas were removed from the spatial dataset used as the basis for the wood flow estimates process. The large industrial companies provided statewide wood flows consistent with the final reporting format shown below.

This information has been aggregated as part of the agreement to maintain confidentiality of individual datasets, especially for the large industrial forest companies. Without their co-operation, it would not have been possible to provide statewide estimates as PFT has neither the growth nor demand data to model the large industrial wood flows.

Table 1 Total area of private forests in Tasmania by broad forest type, 2002.

Broad Forest Type	Area (hectares)
Eucalypt Native Forest	850,000
Other Native forest	50,000
Hardwood Plantation	100,000
Softwood Plantation	25,000
TOTAL Private Forest	1,025,000

Note that the area review process is not exhaustive due to constraints on imagery and skilled interpretative resources, but it is the best available information and is part of an ongoing updating process. Tasmania leads the other Australian states in this field with respect to mapping changes to private forest area.

DISCOUNTING THE AREA STATEMENT

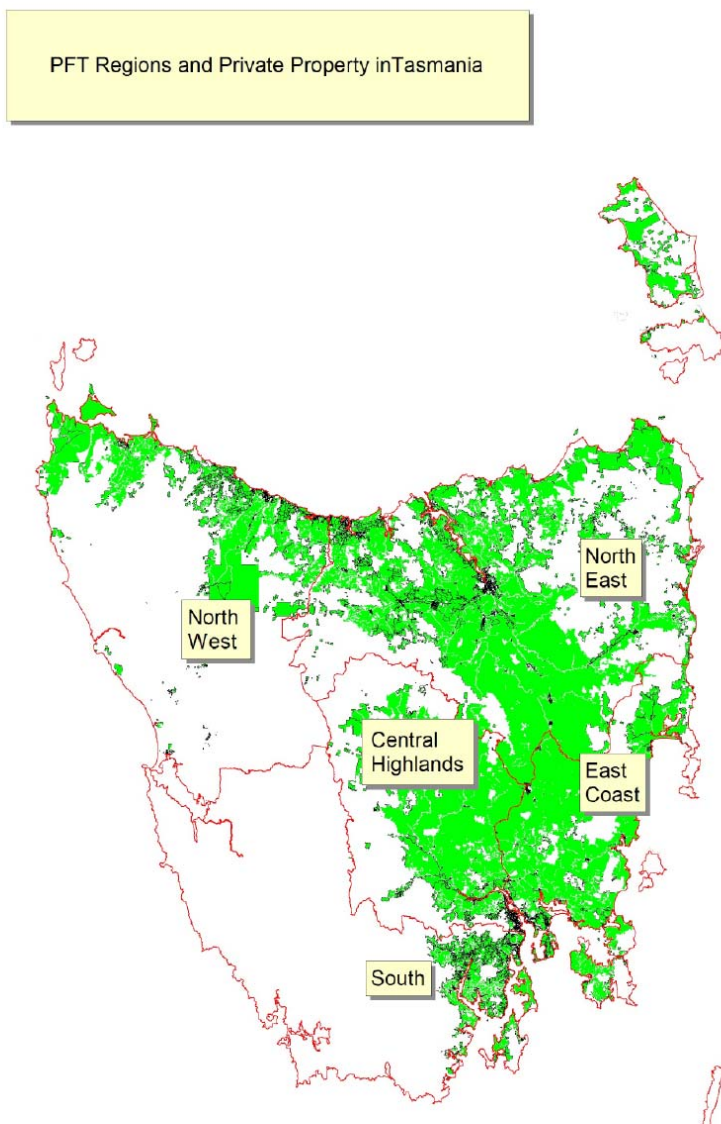
‘Discount’ is a term that is commonly applied in forest resource and inventory management to reduce either area or yield data due to management or technical limitations on harvesting.

The increased use of Geographic Information Systems (GIS) to monitor and report on changes to spatial information, especially vegetation, has assisted in quantifying constraints on harvesting at an operational level including those associated with the mandatory adherence to the *Forest Practices Act (1985)* as amended.

The area review process has applied discounts to the area statement using a combination of spatial and non spatial procedures. The general resource level nature of the review and the limitation on being able to accurately reflect individual landowner activities necessitated applying the discounts only at a regional or Statewide level. Regions are those used in previous reviews and are based on broad geographical and forest community boundaries (see Map 1).

Discounts to the area statement were applied to account for:

1. Environmental discounts – attributes of the landscape that restrict harvesting or regeneration activity.
2. Owners Intent Survey discounts - reflecting the different land management intentions of current owners.



Map 1 (right) shows the 5 PFT regions (red borders) and private property(green) in Tasmania.

ENVIRONMENTAL DISCOUNTS

Discount categories that related to static elements of the environment have remained unchanged from the previous Review, as no justification was identified that warranted change.

Slope, whilst a relatively small discount, has been determined from point sampling procedures used in the last review and takes into account the steeper proportion of private property in the south.

Stream buffers are required for water quality, with the size of the buffer dependent on regular water flow and the catchment area upstream of each point along a watercourse. The Forest Practices Code requires mandatory harvesting reserve widths for Class 1 to 3 streams as defined in the Code, resulting in applying a State wide discount based on previous sampling procedures.

Other Forest Practices Code discounts may be applied on a coupe basis to account for cultural heritage, fauna and flora conservation, landscape and geomorphological values. The duty of care conditions associated with the application of the Forest Practices Code assume a threshold 5% of private land that may be excluded from harvest without access to some compensation procedures. Consequently this threshold figure has been adopted for this review and is an increase from the 3% figure used in the previous review.

There are substantial up-front costs associated with the successful establishment of a plantation and so landowners very rarely plant areas that are precluded by environmental constraints from being harvested. Consequently, the plantation areas used for the review were assumed to be net of any environmental discount.

Table 2 Summary of the % Environmental Area Discounts

	North West	North East	East Coast	Central Highlands	South
Slope	0.8	2.4	2.2	4.6	11.2
Streams	7	7	7	7	7
Forest Practices	5	5	5	5	5
Totals	12.8	14.4	14.2	16.6	23.2

The statewide environmental area discount when weighted by the area of the relevant private forest in each PFT region is 15%.

Owner Intent Survey Discounts

These discounts were added to the Environmental discounts for each region. The statewide Owners Intent Survey discount weighted by the relevant private forest in each PFT region is 31%.

The Owners Intent Survey discounts were not applied to:

- any areas within a Private Timber Reserve
- plantations
- any land owned or managed by the large industrial forest companies who provided future harvest estimates for this land which were then aggregated into the non industrial wood flows.

Table 3 Summary of % Owners Intent Survey Area Discounts

	North West	North East	East Coast	Central Highlands	South
Current Review Discounts	26	38	29	21	43

The level of harvest and market activity can influence the owner intent. The market conditions prior to the current survey were more positive than prior to the 1995 review and this may be a factor reflected in the reduction in the discount levels.

The survey was carried out by the University of Tasmania as part of a broader research project, with the responses analysed so that owners who thought they may harvest their trees at some time in the future for any reason were not included in the discount factor.

The survey data was analysed at a regional level for preliminary resource calculations involving reducing the area of forest available for resource modeling. The regional discounted areas were then aggregated, with the wood flow modelling based on a whole of state catchment.

Private Timber Reserves (PTRs) were created by Parliament in 1985 to enable landowners to have their land dedicated to long term forest management. Forest within a PTR was assumed to be available for harvest and so was excluded from the Owners Intent discount process. As at April 2005, about 386,000 hectares were reported as being included in PTRs.

ALLOCATING REGIMES AND PRODUCT YIELDS TO AGGREGATED FOREST CLASSES

The large industrial companies provided statewide wood flows consistent with the final reporting format shown below. They did not provide information on their regimes or product yields.

The experience and knowledge of a range of forest managers from the large industrial companies, forestry consultants and processors was collated by PFT to develop regimes and product yields for both the plantation and native forest harvesting.

DETERMINING THE POTENTIAL WOOD FLOW

The resource wood flow was modeled by a consultant using a commercially available linear programming optimisation tool called "Woodstock". There were three types of forest modeled within Woodstock:

1. Native forest managed on a clearcut regime.
2. Native forest managed on a partial harvesting regime.
3. Plantations (hardwood and softwood) managed under a variety of thinning and clearcut regimes.

Native Forest Managed on a Clearcut Regime

Allocation of yields to native forest managed on a clearcut regime drew on the methodology and yield tables developed for previous private forest reviews. Sawlog and pulpwood yields were allocated according to PFT Region and also the PFT Forest Class that aggregates the standard photo interpretation of forest types by height and density. Some further detail is in Appendix 1.

Native Forest Managed on a Partial Logging Regime

Allocation of yields to native forest managed on a partially logged regime was derived from discussions with consultants and senior planning and supervisory staff in the large industrial companies in several regions of the State. Some further detail is in Appendix 1.

Plantations

Allocation of yields to plantations was derived from discussions with PFT regional staff based on local experience. The regimes developed were generalised to represent the major components of the non industrial plantation resource and provided differentiation between actively managed stands and those where little or no management had occurred.

The PFT Woodstock model includes a number of transitions from one forest type to another:

- New cleared land is planted to hardwood and softwood plantation;
- Existing plantation is replanted following harvesting to new plantations under a variety of regimes;
- Existing plantations are returned to native forest or non forest;
- Existing native forest is converted to a variety of hardwood and softwood plantation regimes;
- Existing plantation is re-seeded to native forest.

Transitions were also specified for forest treated in partial harvesting regimes.

Assumptions on the transitions, on a PFT Region basis, were developed by PFT and are derived from discussions with a range of regional staff based on their local experience. The transitions developed were generalised to represent the major components of the non industrial plantation resource.

Yield Table used for non industrial private native forest modeling

The process used yields from earlier modeling, unless there was evidence to support a change. The updates to the yields for partial harvest were based on expert opinion – PFT discussed options and likely harvest yields and products with a range of experienced harvesting supervisors and planners. Some further detail is in Appendix 1.

Industrial Wood Flows

All industrial company data was aggregated with the non industrial wood flows for final reporting to maintain confidentiality.

Observations

Aggregated woodflow is the sole output from the process, as data was not provided at a level to allow for regional flows.

The expected wood flows represent an estimate that will vary depending to a considerable extent on the stumpage paid to landowners – if a higher price is paid, then it is likely, or can be reasonably assumed, that there will be more private landowners willing to sell. An expectation that prices may increase or that harvesting options for native forest may become more restricted could also influence the total amount and the rate of supply from private non industrial forests.

The increased focus on plantations since the previous 1995 review is reflected in the greater total volume available and the increased amount of hardwood plantation wood. More recent developments that suggest the evolution of a clearwood and/or a knotty sawlog market for hardwood plantation will influence the amount of clearwood (for sawlog/veneer) and knotty sawlog available in future resource reviews.

ACKNOWLEDGEMENTS

PFT acknowledges the assistance from the large industrial forest companies, other statutory authorities and their inventory staff, as well as the co-operation of private landowners in the compilation of area, yield and wood flow data used in this Review.

Softwood Plantations – a range of regimes was used that reflected the expected focus on both knotty and clearwood production. Site variability was incorporated by using a range of yield tables with a Mean Annual Increment (MAI in cubic metres per hectare per annum) from 12 in drier, poorer soil areas (where environmental and shelterbelt benefits play an important role in plantation management), to 31 in high rainfall, high quality basalt soil types.

Hardwood Plantations - a range of regimes was used that reflected the interest in pure pulp as well some interest in clearwood production. Site variability was incorporated by using a range of yield tables with a Mean Annual Increment (MAI in cubic metres per hectare per annum) from 10 in drier, poorer soil areas (where environmental and shelterbelt benefits play an important role in plantation management), to 28 in high rainfall, high quality basalt soil types.

Native Forest Managed on a Partial Logging Regime – a range of regimes involving some selection harvesting every 30 to 40 years was combined with expected growth rates with a Mean Annual Increment (MAI in cubic metres per hectare per annum) of 2 to 3.

New Plantings and Conversion to Non forest – though this is difficult to predict, some future non forest areas were assumed to be planted with some harvested forest not being replanted. The overall change involved an increase of about 4,000 hectares per annum. Some 5% of existing non industrially owned plantations were assumed to be converted to non forest at clearfall, with about 10% of native forest clearfelled not returned to forest.

