

Esperance 74D (EPO74D)

Logging Coupe Inventory

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Abstract

This study was undertaken in order to assess the volumes and species of timber remaining in an old growth coupe following clearfell logging. Timber assessments were undertaken in sample plots (quadrats) from representative locations throughout a coupe in Tasmania's southern forests. Timber volumes determined from the quadrats were then used to calculate timber volumes for the whole coupe. The study demonstrated that only 26% of the timber volume of the forest was removed during clearfelling and just 1% of the combined special species timbers was removed by the harvesting contractors. As at April 2002, an estimated 97,800 tonnes of timber (at an average 998 tonnes/hectare) was remaining on the ground in the coupe following logging and salvage. Myrtle was the most commonly documented timber remaining followed by eucalypt, celery-top pine and sassafrass.

The logging operation at EP074D represents the loss of significant present and potential economic opportunity for the State of Tasmania. The minimum estimated value of the timber remaining in the coupe is \$685,000 in royalties. This value would be significantly higher if the timber were downstream processed in the State.

In terms of special species timbers, the logging operation at EP074D is clearly not ecologically sustainable. Fire sensitive species are eventually eliminated in subsequent logging rotations (maximum 90 years) thereby diminishing the diversity of the forest and the potential supply of quality timbers in the future.

Recommendations from this study are:

- *The coupe EP074D must not be burned until all valuable timber has been retrieved. This will entail reopening access to all areas of the coupe and dismantling the windrowed timber.*
- *During and following each native forest logging operation there needs to be an independent assessment of forest operations and the timber left behind to ensure Forestry Tasmania and contractors maximise their logging efficiency to ensure no valuable timber is wasted and that practices are ecologically sustainable.*
- *Market agreements need to be in place for each piece of timber sourced from native forest coupes before logging in order to minimise waste and to create maximum opportunities for Tasmanians.*
- *There must be an immediate moratorium on the clearfelling of old-growth forests until a more suitable management approach is developed for areas of high quality native forest in the timber production zones of Tasmania.*

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Introduction

The practice of clear-felling and burning Tasmania's wet mature mixed forests is a contentious issue. Forestry Tasmania (the State's largest forest manager) justifies the practice by saying it is the only effective way to safely log and regenerate the forest and that wastage of timber is minimal. Forestry Tasmania argues that the practice is 'sustainable' because the forest is regenerated and that neighboring forest exists in which displaced wildlife can find new homes. Opponents of the practice say that the clear-fell and burn forest management style is wasteful of timber, destructive to forest ecology, is woodchip driven, un-economical, non site specific and that it squanders the opportunity for future supply of special species timbers which are mostly destroyed in the regeneration burns. It is well established that the autumn regeneration burns adversely affect the wellbeing of many Tasmanians and also tarnishes Tasmania's reputation as an excellent tourist destination centred upon natural and wilderness values.

This study was conducted to assess the volumes, species and economic value of timber left behind following a logging operation in a wet mature mixed forest logging coupe in Tasmania's southern forests.

Study site details

Location

The study was conducted at coupe Esperance 74D (EP074D) which is in Forestry Tasmania's Huon District and is located 20 km from Geeveston with access *via* the Arve and Bennetts Roads.

Map reference: Tasmap 1:25 000 series, Waterloo 4821, Edition 1, 1985. The coupe is centred approximately at map coordinates 486564mE, 5273184mN. The total area of the coupe is 127 hectares.

Vegetation

Prior to clearfelling EPO74D largely comprised old-growth forest with some regrowth along the northern boundary. The coupe was clearfelled between 6/2000 and 6/2001 and is due for burning and re-sowing in 2003. The coupe comprised several vegetation communities as shown in Table 1.

Table 1: Generalised vegetation communities of EP074D

Vegetation community	Total	Logged	Remaining
Tall <i>Eucalyptus delegatensis</i> (gum-topped stringybark) forest	74 ha	74 ha	0 ha
Tall <i>Eucalyptus nitida</i> (Smithton peppermint) forest	48 ha	24 ha	24 ha
<i>Melaleuca</i> (tea tree) / rainforest community	5 ha	0 ha	5 ha

Approximately 29 hectares (22%) of the 127 hectare coupe remains un-logged. The tea tree swamp community is of no commercial value and the remaining *E. nitida* community is located over the steepest slopes in the coupe and would be difficult to log.

The understorey vegetation throughout the coupe was dominated by Tasmanian rainforest vegetation of myrtle (*Nothofagus cunninghamii*), celery-top pine (*Phyllocladus asplenifolius*), sassafrass (*Atherospermum moschatum*), leatherwood (*Eucryphia lucida*), horizontal (*Anodopetalum biglandulosum*), and blackwood (*Acacia melanoxylon*). Other common species throughout the coupe included pandani (*Richea pandanifolia*), native laurel (*Anopteris glandulosus*), climbing heath (*Prionotes cerinthoides*), waratah (*Telopea truncata*) and native pepper (*Tasmannia lanceolata*). Tree ferns (*Dicksonia antarctica*) were locally common. Most of the mature trees in the coupe were between 300 and 450 years old.

Topography

Altitude range of the coupe is 520-610 m asl. Features of the coupe are a low ridge-line running nw-se through the south of the coupe with an extensive flat area in the north of the coupe.

Geology and soils

Red to brown clay soils over Jurassic dolerite - waterlogged over flat areas of the coupe.

Timber harvested to date

The timber harvested from EP074D is shown in Table 2. It should also be noted that salvage contractors have been active in the coupe since the completion of logging and timber volumes taken by them are not included.

Table 2: Timber extracted from EP074D by contractors¹.

<i>Product</i>	<i>Amount (tonnes)</i>	<i>%</i>
Export pulpwood	28,755	85%
Eucalypt sawlog	3,755	11%
Domestic pulpwood	827	2%
Craftwood	423	1%
Celery top pine sawlog	257	
Myrtle sawlog	73	
Blackwood sawlog	3	
Burls	1	
<i>Total</i>	<i>34,094</i>	

Forestry Tasmania's expected timber volumes from the coupe are shown in Table 3.

Table 3: Forestry Tasmania's expected timber volumes from EP074D²

<i>Product</i>	<i>Amount</i>
Pulpwood	43,100
Sawlog	9,380
Veneer	120
<i>Total</i>	<i>52,600</i>

The information in Table 3 demonstrates that the forest manager has a Eucalypt focus only. Forestry Tasmania's target is to have zero commercial wood remaining in a coupe following harvesting³. Commercial wood is defined as any wood that has a current market agreement in place during harvesting. Forestry Tasmania will accept up to 5 tonnes per hectare of commercial wood remaining before imposing penalties on the principal logging company³.

Forestry Tasmania are conducting an assessment of 'fuel wood' volumes left in the coupe to ascertain volumes available to burn at the Southwood power station following future old-growth and re-growth forest logging operations³.

¹ Letter from Paul Lennon (Minister for Forestry) to John Maddock, 15/11/2001.

² Forest Practices Plan for EPO74D.

³ Letter from Huon District Forest Manager to John Maddock, 24/12/2001. "For the coupe 74D, an ocular assessment has been completed and it has been determined that less than 5 tonnes per hectare is remaining of commercial wood. It must also be noted, however, that harvesting of the entire coupe is not completed. Another section is planned for harvesting in 2002. It is during this operation that the small amount of timber that was located during the assessment will be recovered." D. Robson for R. Gouck.

Study Methodology

The coupe was sampled in small plots referred to as quadrats measuring 10 x 10m in March-April 2002. Seven quadrats were studied in the coupe (**Table 4**). Quadrat sites were chosen at ‘random’ throughout the coupe and were selected in order to give representative coverage of different aspects and slopes. Quadrat selection was also made in order to avoid possible bias, for example, sites that had “heaped / piled” logs were avoided as it is impossible to access and assess all timber in large piles. Similarly, areas that were totally bare (e.g. snig tracks) were avoided.

Table 4: Sample quadrat details

<i>Quadrat #</i>	<i>Easting</i>	<i>Northing</i>	<i>Aspect</i>
1	486745	5213150	East-north-east
2	486610	5213630	North east
3	486610	5213585	North east
4	486880	5211310	East
5	486900	5211320	East-north-east
6	486875	5213360	East-north-east
7	486595	5252900	South east

The corners of each quadrat were staked and the boundaries clearly marked with tape. All timber >100mm diameter within the boundary of each quadrat was identified and recorded. Methods of identifying timber included: cutting into the log and observing and/or smelling the timber; identifying bark; identifying any remaining foliage. In some cases it was difficult to distinguish between leatherwood and sassafras so the two species were combined and recorded as one item. The volume of each piece of timber was calculated from its length and average diameter (measured at the centre of each piece). Logs thought to have already been on the forest floor prior to the coupe being logged (e.g. covered in moss), or of obvious no commercial value were not recorded.

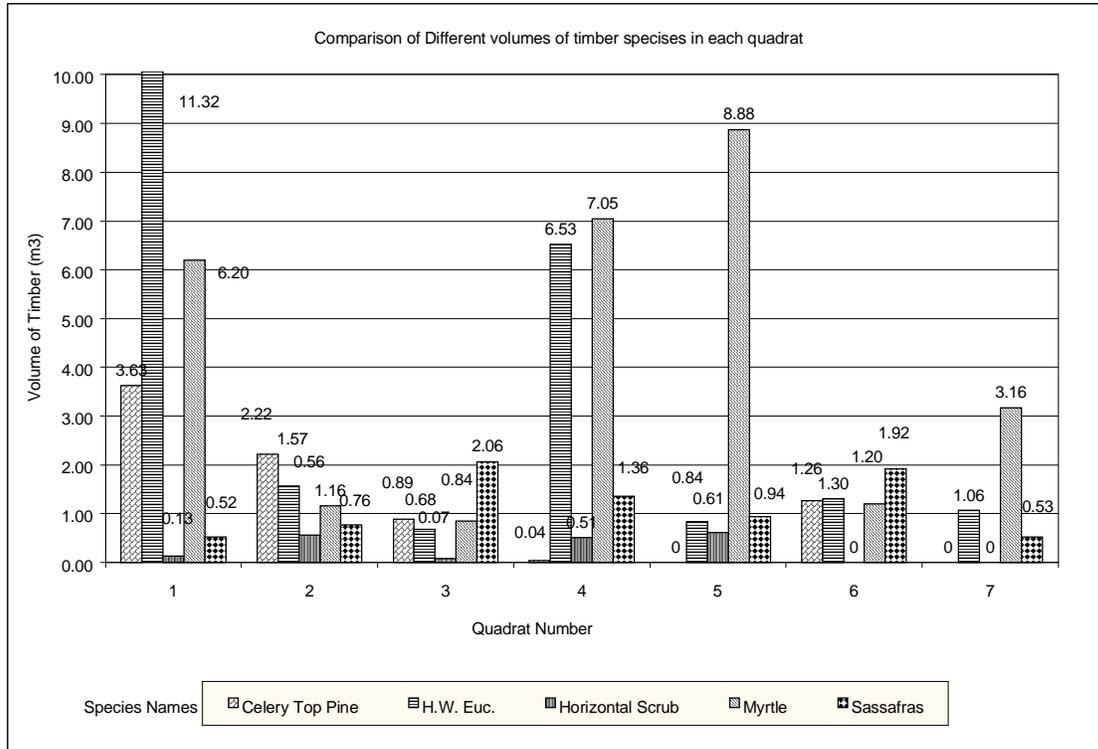
Results and discussion

A summary of the wood volumes recorded in each quadrat is given in Table 5 and represented in Figure 1.

Table 5: Summary of wood volumes recorded in each quadrat (m³)

	<i>Quadrat 1</i>	<i>Quadrat 2</i>	<i>Quadrat 3</i>	<i>Quadrat 4</i>	<i>Quadrat 5</i>	<i>Quadrat 6</i>	<i>Quadrat 7</i>	<i>Average</i>
Celery Top Pine	3.63	2.22	0.89	0.04	0	1.26	0	1.15
Eucalypt	11.32	1.57	0.68	6.53	0.84	1.30	1.06	3.33
Horizontal Scrub	0.13	0.56	0.07	0.51	0.61	0	0	0.27
Myrtle	6.20	1.16	0.84	7.05	8.88	1.20	3.16	4.07
Sassafras & Leatherwood	0.52	0.76	2.06	1.36	0.94	1.92	0.53	1.16
Total	21.80	6.27	4.54	15.49	11.27	5.68	4.76	9.97

Figure 1: Representation of timber by species found in each quadrat



The average timber volume recorded in the quadrats was 9.97 m³. The timber found in greatest volume was myrtle (4.07 m³), followed by Eucalypt (3.33 m³), sassafras and leatherwood (1.16 m³), celery-top pine (1.15 m³) and horizontal (0.27 m³). These figures were used to calculate volumes per hectare (100 x quadrat area) and volumes per coupe logged (area 98 hectares) – refer to **Table 6**.

Table 6: Calculated timber volumes remaining in coupe EP 074D

	<i>Volume/quadrat (m³ average)</i>	<i>Volume/hectare (m³ average)</i>	<i>Volume calculated for 98 ha logged (m³)</i>
Myrtle	4.07	407	39,886
Eucalypt	3.33	333	32,364
Sassafras/leatherwood	1.16	116	11,368
Celery-top pine	1.15	115	11,270
Horizontal	0.27	27	2,646
	9.97	998	97,804

The figures in **Table 6** demonstrate that there is an estimated 998 m³ (tonnes) per hectare of felled timber remaining unharvested in the coupe and an estimated total 97,804 m³ (tonnes) total over the clearfelled area.

The figures in **Table 7** demonstrate that 26% of the total timber in the coupe was harvested during clearfelling. 51% of the eucalypt timber in the coupe was extracted by contractors and just 1% of the special species timbers.

Table 7: Timber harvested *versus* timber remaining in coupe EP 074D.

<i>Category</i>	<i>Timber remaining in coupe (m³)</i>	<i>Timber removed by contractors (m³)</i>	<i>% timber removed by contractors</i>	<i>Total timber (m³)</i>
Eucalypt	32,364	33,337	(51%)	65,701
Combined special species	65,440	757	(1%)	66,197
	97,804	34,094	(26%)	131,898

Economic loss

The logging operation at EP074D represents the loss of significant economic opportunity to the State of Tasmania. The kind of logging operation at Esperance 074D wastes in the order of 998 tonnes of timber per hectare (equivalent to 100 tonnes per ¼ acre block) which anywhere else in the world would be used, much of it value added. It is unfortunate under the current management regime that if there is no market for the timber at the time of harvesting the timber is burned, thereby destroying the potential for jobs, economic gain to the local community, and a future supply of quality timber. The trees felled and left in EP074D would have provided a constant resource flow into the future if managed under a selective harvesting regime.

A large proportion of the timber left behind in the coupe has commercial value as shown by the fact that a number of local people have found it worth their while to pay for a licence to salvage wood. Much of the best timber remaining lies beneath piles of wood in windrows which makes accessing it too difficult or time consuming to be worthwhile. It would have been much easier for salvage operators to access timber under a selective harvesting regime particularly as many of the snig tracks have now been ripped up making access to most areas of the coupe very difficult. While the public is still able, for a fee, to salvage timber in this coupe before it is burnt, the practice of piling the timber up after clear felling makes scavenging unlikely to result in maximum recovery, inefficient, time-consuming and discouraging, because large quantities of high quality timber are buried.

At a minimum, the estimated 97,800 tonnes of timber remaining in EP074D would have been worth \$7/tonne in royalties to the State if market agreements for the timber had been in place at the time of harvesting and if the timber had been harvested with care. The potential economic shortfall from the logging operation at EP074D is an estimated \$685,000 (minimum) in royalties to the State. If downstream processed in Tasmania the value of the wasted timber would be significantly higher. For example, timbers such as myrtle are worth in the order of \$3,000/tonne, depending upon quality and depending upon use.

The timber in coupe EP074D should never have been felled without prior assessment of its maximum value and potential prior to harvesting and then should only have been harvested if there was a very good reason to do so. Forestry Tasmania's solution for coupe 'waste' to be used

as fuel to generate electricity⁴ at Southwood is an inadequate attempt to 'value add' wood that has already had its value largely destroyed by the clearfelling operation.

Sustainability?

In terms of special species timbers the logging operation at EP074D is clearly not sustainable. However, Forestry Tasmania scientists do point out that the notion of sustainable yield relies on the identification of what is to be sustained⁵. In coupes such as EP074D it is clear that Forestry Tasmania is managing for eucalypts only with future logging rotations at a maximum of 90 years. Management of special species timber trees is not viable in coupes managed as EP074D because they require 250-400 years, depending upon the species, to reach maturity and to be of a size to use commercially. The current management regime in Tasmania's mixed wet forests of using hot burning for regeneration does not replace the original forest as fire sensitive species are eventually eliminated in subsequent logging rotations thereby diminishing the diversity of the forest.

Conclusion and recommendations

Conclusion

The logging coupe EP074D which comprised largely old-growth forest was clear-felled for the primary objective of obtaining timber for the export woodchip market (85% of the timber logged). This study demonstrated that only 26% of the timber volume of the forest has been removed and used for some purpose. Approximately 51% of the Eucalypt timber volume of the coupe and just 1% of the combined special species timbers was removed by the harvesting contractors. The remainder of the timber in the coupe, largely myrtle, celery top pine and sassafras, has either been: felled and left behind; or piled into windrows awaiting to be burned in the regeneration fire planned for March 2003. The special species timber remaining in the coupe as at April 2002 covered a full spectrum of size and age classes from immature saplings through to fully mature timber up to 450 years old.

As at April 2002, approximately 97,800 tonnes of timber (at an average 998 tonnes/hectare) was remaining on the ground in the coupe following logging and salvage. Forestry Tasmania is misrepresenting the amount of timber left in the coupe EP074D by claiming that there is less than 5 tonnes per hectare of commercial wood remaining⁶ and by claiming that remaining timber is 'un-commercial' despite the fact that salvage operators have been active in the coupe following harvesting.

The forest management style witnessed at EP074D is locking Tasmania's timber industry into a future based upon genetically homogenous eucalypts grown on short rotations specifically to

⁴ Letter from Huon District Forest Manager to John Maddock, 24/12/2001. "Forestry Tasmania is currently undertaking further investigations into fuelwood to determine the range of suitable fuels and the volumes available..." D. Robson for R. Gouck.

⁵ Whiteley, S. (1999). Calculating the sustainable yield of Tasmania's State Forests. *Tasforests* Volume 11, Dec. 1999, p28.

⁶ Letter from Huon District Forest Manager to John Maddock, 24/12/2001. "For the coupe 74D, an ocular assessment has been completed and it has been determined that less than 5 tonnes per hectare is remaining of commercial wood. It must also be noted, however, that harvesting of the entire coupe is not completed. Another section is planned for harvesting in 2002. It is during this operation that the small amount of timber that was located during the assessment will be recovered." D. Robson for R. Gouck.

supply the international wood fibre market. With each old-growth forest coupe clearfelled the opportunity is reduced for Tasmania to develop a timber industry that focuses on its unique special species timbers for low volume high quality products. There is an estimated 10 years of old-growth forest left in the multiple use areas of the southern forests at present rates of clearfelling, up to 400ha/annum⁷. Tasmania will have difficulty gaining a marketing or quality edge in the international pulp market because Eucalypt regrowth is a globally available commodity. However, the special qualities of those timbers which are unique to Tasmania give it a sustainable market advantage that cannot be challenged. Tasmania will never have a marketing or quality edge because it can produce eucalypt regrowth but only because it grows unique timbers that grow nowhere else.

Recommendations

The coupe EP074D must not be burned until all valuable timber has been retrieved. This will entail reopening access to all areas of the coupe and dismantling the windrowed timber.

During and following each native forest logging operation there needs to be an independent assessment of forest operations and the timber left behind to ensure Forestry Tasmania and contractors maximise their logging efficiency to ensure no valuable timber is wasted and that practices are ecologically sustainable. Independent assessment must come from either the internationally recognised Forest Stewardship Council or a representative organisation set up within Tasmania.

Market agreements need to be in place for each piece of timber sourced from native forest coupes before logging in order to minimise waste and to create maximum opportunities for Tasmanians. Each piece of timber from native forest coupes needs to be assessed for its maximum potential for local job creation and local downstream processing.

There must be an immediate moratorium on the clearfelling of old-growth forests until a more suitable management approach is developed for areas of high quality native forest in the timber production zones of Tasmania. An alternative method of logging the "interest", without reduction of the "natural capital" of the coupe would be no less dangerous, less time consuming per cubic metre recovered and would retain all the values of the forest for the future.

Glossary

Clearfelling	Felling all or nearly all trees from a specific area in one operation. Some of the trees may be used following clearfelling.
Climax forest	Forest community that maintains its structure and diversity in the absence of major disturbance e.g. Tasmanian rainforest.
Coupe	A unit of forest for harvesting and regeneration. Coupe sizes are currently in the order of 100 hectares.

⁷ Forestry Tasmania information on predicted rates varies between 200ha/yr to 400ha/yr.

Forest Practices Plan	A plan for forest practices, specified in Section 18 of the <i>Forest Practices Act 1985</i> .
Gondwana vegetation	Relic Tasmanian vegetation (e.g. <i>Nothofagus</i> spp.) having a genetic lineage to the vegetation present on the Gondwana super-continent 60 million years ago.
Old-growth forest	Ecologically mature forest that has never been unnaturally disturbed, harvested, or has not been harvested for more than 80 years (Forestry Tasmania).
Native forest	Forests, other than plantations that contain trees that are native to Tasmania. Native forests include old-growth and regrowth forests.
Rainforest	Forests dominated by the <i>special species timbers</i> (listed below) in which eucalypts comprise less than 5% of the crown cover.
Re-growth forest	Native eucalypt forests regenerated after wildfire or other disturbances since 1890 where there is no deliberate site preparation or seed sowing. Regrowth forest may contain individuals or stands of ecologically mature trees (Forestry Tasmania).
Southwood	Proposed industrial complex in the Huon Valley for 'downstream processing' of timber. If developed Southwood's main output will be woodchips (75%) followed by sawn timber, medium density fibre-board and veneer.
Special species timber	Tasmanian rainforest timbers such as myrtle, celery-top pine, sassafrass, leatherwood and horizontal.
Wet mature mixed forest	Similar to <i>rainforest</i> although >5% Eucalypt, <95% rainforest species.
Windrow	An elongated heap of timber awaiting burning and containing smashed up remains of a forest following harvesting.