Midlands Forest Management Area

Sustainable Sawlog Yield Model

Analysis & Critique

Wombat Forest Society

Author: Tim Anderson



May 1999

EXECUTIVE SUMMARY

The Forests of the Midlands Forest Management Area are valuable for a number of reasons. As well as producing timber, they are important catchments, mineral springs, tourism, recreation and of course bio-diversity.

When mankind decides that a particular forest is available for timber production, the Agency entrusted to manage these forests is obligated to ensure that the timber harvesting rates are sustainable, that they do not unreasonably impact on non-timber values and that future generations are assured of equal access to these forests and their values.

This Report proves that the projected Modeling for the Midlands is flawed. The model is predicting average volumes from the forests that have no chance of being met.

The Areas projected to be harvested are unrealistic. The model needs more clearfall area than is in existence and the past twenty years of over-harvesting the Wombat means that the shelterwood component will fail.

The other values are of a much greater social, environmental and economic value than the timber. The timber industry does have the right to use our forests.

The local timber industry has demonstrated that it does care about the forest. The sawmillers have relied on the Department of Natural Resources and Environment to sustainably manage our forests. DNRE appears to have let the sawmillers and timber workers down.

With the Regional Forest Agreements assessment currently taking place in Western Victoria, an opportunity to expose the disastrous state of the Midlands exists.

Attached to the RFA's is money to enable any restructuring or downsizing to take place. When the RFAs are finished so is the compensation money.

The Wombat Forest Society and the community need top see that our forests are being managed sustainably and to stand up for our workers.

These forests of the Midlands are public forests and we do care about them.

The time has come to '*come clean*'.

The timber industry as we know it will be gone in less than fifteen years at the present rate of harvesting.

This is not 'ecologically sustainable forest Management.

"The midlands FMA is currently heading for disaster. The tall forests will be all but gone within fifteen years.

One thing is for sure, ...all the trees that have been cut down before today, have been cut down.

What we all have to do, is be honest with the situation, take an honest look at what trees we still have left, and decide the fairest way of managing that resource that we have left, for this generation, and more importantly those coming after us. Careers and egos cannot be more important than our forests.

What if it can be shown that through no fault of their own, that this generation has already used ITS allocation of the forest of the Midlands?"

Tim Anderson. May 19 1999.

Wombat Forest Society
Midlands FMA Model Analysis
And Sustainability Critique

Contents

Executive Summary 2
Contents 3
Midlands FMA Model Analysis 4
Introduction 4
More Than just Timber 7
Catchments 7
Lerderderg Report 8
Mineral Springs 10
Timber 12
Logging History 12
Regeneration 14
Shelterwood 15
Critique of Sustainability Model 14
The Spreadsheet 15
Shelterwood Model Projections 19
Clearfall Model Projections 21
DNRE Midlands Sawlog Model Totals 23
Over-harvesting 24
Too much Forest Cut 25
Conclusion 27
Federal Government/ Sustainability 28
Wombat Forest Society/Sawmillers Letter 29
In Closing 30
Midlands Forests Future? 30

Maps

Map 1. Midlands Forest Management Area 5
Map 2. Wombat Catchment Boundaries 7
Map 3. Spring Recharge Map 10
Map 4. Wombat Logging History Map 13

Graphs

Graph 1. Net Area to be Harvested 16
Graph 2. Sawlog Volume to be Harvested ..... .16
Graph 3. Grouped Forest/Area to be Harvested 17
Graph 4. Shelterwood Area/Volume 20
Graph 5. Clearfall Area/Volume 22
Graph 6. Clearfall Cumulative Area 22

Figures

Figure 1 Midlands Model Spreadsheet 18
Figure 3 Area and Volume Chart 21
Figure 4 Total Area and Volume Chart 23
Figure 5 Midlands Actuals 1988-98 26

Appendix

Appendix 1 Mrs. Tehan's Response to WFS/Sawmillers Letter.....32.
Appendix 2 Snowy River Mail/ Forest Future Article 33
Appendix 3. Shelterwood Forecasts 34
Appendix 4 Clearfall Forecasts 34

May 1999

Wombat Forest Society
Midlands Model Analysis

Introduction

The following report is an analysis of the Midlands Forest Management Area 'Sustainable Yield Model'. This model was presented to Victorians as the best modeling that the Department of Natural Resources and Environment had ever done. The sustainable sawlog yield for the Midlands was reduced by 17% at the start of 1997. This saw a reduction in the sawlog rate from 70,400 m3 per annum for D+ logs, to 58,000 m3.

Since the mid to late 1980's the communities around the Wombat State Forest, which makes up most of the medium to high production areas of the Midlands, have been questioning the sustainability of the forests. In particular it has been members of the local timber industry that have raised their concerns.

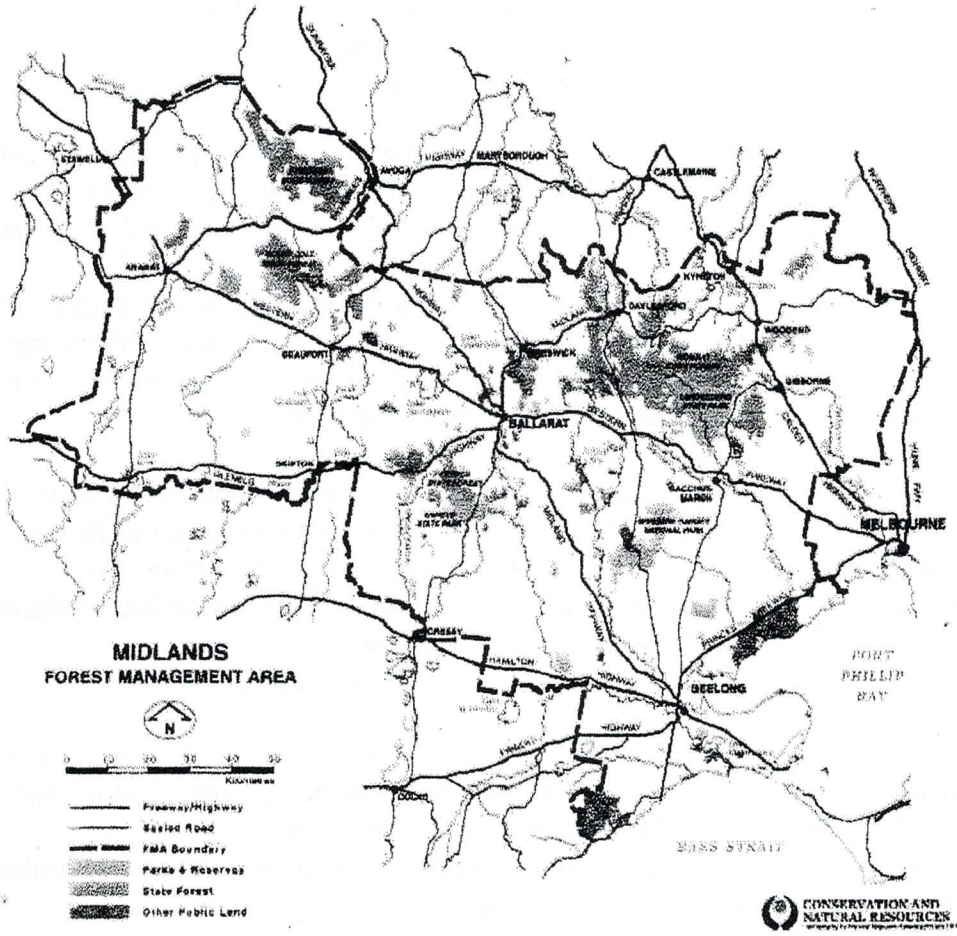
The Governments of the day and the Department that is responsible for the management of the forests have told these members of the timber industry that they do not know what they were talking about, and to be quiet.

The early 1990's saw the people of the Daylesford region publicly raising their concerns over the condition of the Wombat Forest. At the same time the communities of the Macedon Ranges and around the Cobaw Ranges were voicing their concerns for the Cobaws.

Successive State Governments have refused to respond to the mounting concerns and despite many deputations to State Ministers, the region's forests have continued to fall at an alarming rate.

In 1994 still mounting concern within the community saw conservationists and members of the local timber families realised that they all shared a number of common concerns. Out of this union the Wombat Forest Society was formed

The Wombat Forest Society took a new approach to forest campaigning. The founding members intensively 'number crunched' the Wombat and Midlands. The WFS put an embargo on 'Actions" in the forest, recognising that the timber workers where simply people going about their work.



Midlands Forest Management Area

These were not the people driving the obvious over-cutting we have seen in the Wombat Forest over the last ten to fifteen years.

The WFS has always taken a technical approach in to campaign trying to ensure *'ecologically sustainable forest management'*. Over the past five years the WFS has gained an extensive resource library, reports, commissioned studies and reviews, built up an impressive data-base of the region's and state's forests, lobbied on Federal and State levels, built a diverse network and carried out public education on the forests and the issues.

The community gave unprecedented support to the WFS in an effort to save the regions forests. The WFS is simply fighting for what Federal and State legislation already demands. The Society wants to see true intergenerational sustainability for the

Midland's forests. With all values, both timber and non-timber, properly factored into the sustainable sawlog yield as well as the on ground management practices.

In short, see compliance to the Timber Industry Strategy and the Forest Act 1958..

The WFS has been successful on many fronts and believes that when all stakeholders have open and tolerant dialogue, that respects each others right to a different point of view. The WFS has found that sections of the timber community and the Union share many of the same concerns and frustrations.

This report is a thorough analysis of the figures, graphs and charts that the Department of Natural Resources and Environment supplied with the Review of the Sustainable Yield and the Midlands Forest Area Management Area Plan. In interpreting the model, this report has used conservative interpretations of figures and always-rounded figures and estimates, in favor of the timber resource.

The simple aim has been to see if the figures do add up.

The Wombat Forest Society would like to state that it is disappointed with the often dismissive and secretive nature that DNRE is with information requested by the WFS and the general public. The forests in the Midlands are public forests.

The public does have the right to scrutinize, question, analyze and criticize the management and practices within *our* forests.

We are often told that forestry is a 'complicated' topic, this is often the justification for the withholding of information. We are told that we will use it 'out of context'. Many DNRE reports contain a disclaimer, stating that the report or any of its contents cannot be used or quoted.

This is a condescending attitude from a bureaucracy whose role should be really nothing more than the '*managers*' or '*custodians*' of the people of Victoria's forests.

Over the last five years the Wombat Forest Society has attended many meetings with DNRE staff. During presentations over various issues, the staff have been unable to answer many of the questions and concerns presented. Similarly, many letters and reports remain unanswered, or if answered, in a way that fails to convince. Quite often it is a lack of real knowledge of the forests by some staff, that has hindered detailed discussion.

During the Federal Election of 1998, the unprecedented situation of the Wombat Forest Society, all the Sawmillers of the Midlands and the Logging Syndicate, all co-signed detailed letter of concern over almost all management practices and the medium to long term sustainability of the Midlands. This letter was addressed to the Minister, Mrs. Tehan.

Mrs. Tehan has recently replied to the above letter. Appendix 1.

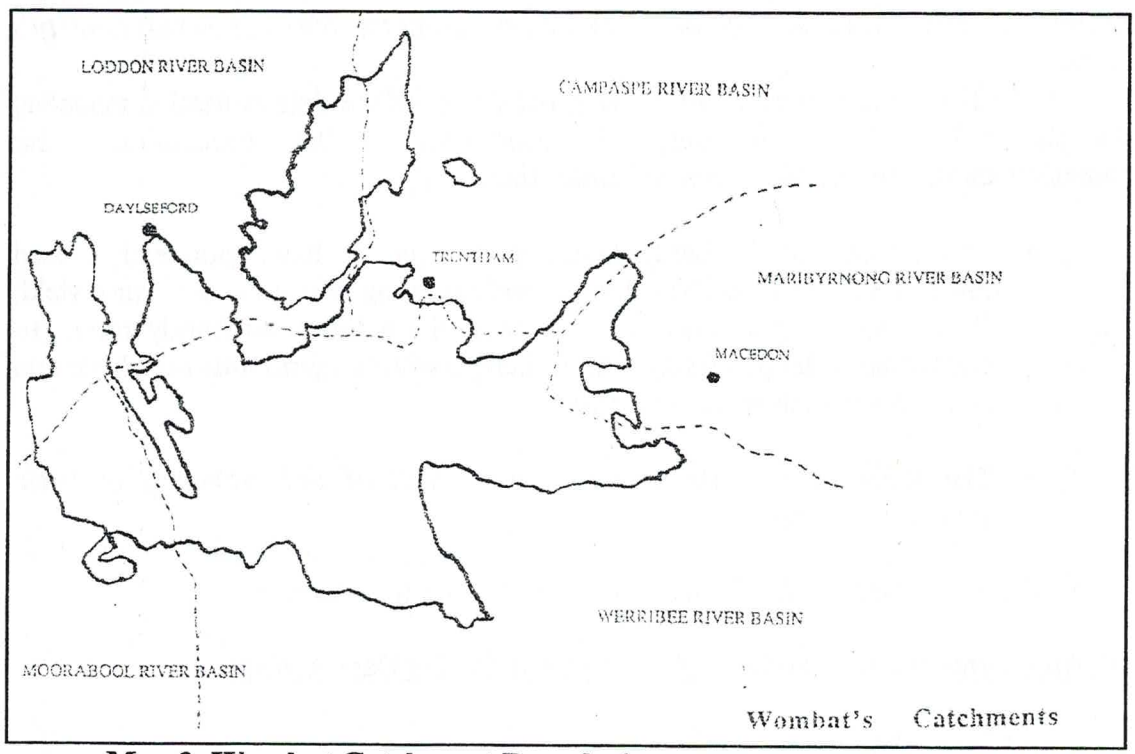
More than just Timber

Catchments

The Wombat Forest, is possibly the most important forest in Victoria, from a catchment perspective. The three south flowing rivers, the Lerderderg, Werribee and Moorabool supply the Western suburbs of Melbourne. Water from the Wombat will be the source for the Western Growth Corridor along the Western Highway as well as the Calder Growth Corridor.

The forest also supplies the towns immediately to the west and south west of Melbourne. The north flowing rivers, the Loddon, Coliban and Campaspe, supply domestic water to many of Central Victoria's towns. These rivers supply into high demand irrigational areas. With allocations from 92% to 100%. Clearly the management of the Wombat *must* be considerate of these catchment values.

All of the rivers that rise in the Wombat Forest supply domestic water at some or many points.



Map 2. Wombat Catchment Boundaries.

The '*Code of Forest Practices for Timber Production*' states under the heading of Water Yield Protection (pg 22. 2.3.4) :

Goal: Water yield from catchments used for the water supply must be protected by the adoption of appropriate rotation lengths and silvicultural techniques and, if appropriate, by limitation on annual harvest areas.

The model that Department of Natural Resources and Environment has set for the Midlands will see low-grade forests entirely cut out over a fifty year rotation.

The model sets the Wombat (medium/high quality) at a sixty-year rotation.

The model for the Midlands is therefore inappropriate in its consideration of the catchment values. The minimum rotation should be 80 to 100 years.

The Wombat Forest Society therefore rejects the model.

Lerderderg Report

In 1995 the then Department of Conservation and Natural Resources produced a Report into the effects of timber harvesting in the Lerderderg Catchment[1].

The Report was produced to counter WFS claims about poor catchment management and planning. The Wombat Forest Society had statistician Dean Haywood's critique the study.

Mr. Haywood's executive summary states that "... *that the Lerderderg Report is seriously flawed and provides no basis for criticizing the Wombat Forest Society's claims.*"

Mr. Haywood was involved in the initial design of the data collection modeling that the DNRE's Lerderderg Report is based upon. In the Introduction to his comments on the Report Mr. Haywood states that:

- The authors (of the Lerderderg Report) seem to have completely closed minds about the possibility that timber harvesting may influence water yield. When explaining anomalies in the data, the authors stubbornly refuse to countenance the possibility that timber-harvesting operations may have had some role in causing the anomalies.

- The statistical analysis demonstrates a lack of understanding of basic statistical concepts.

Page 5 of the DNRE's Lerderderg Report under the heading:

6. An Interpretation of the Results of Yield and Quality Data Analysis

6.1 Water Yield

(c) The retention of a shelterwood which dampens any regrowth effects. If a retention of say 25 tree per ha and an average crown diameter of 15m is assumed this results in a residual crown cover of 4400m2 per ha. This dominating canopy would limit the influence of the regrowth canopy by reducing the radiation load on the regrowth crowns and therefore transpiration (i.e. water yield loss).

[1] A Report on the Effects of Forest Harvesting on Water Yield and Quality in the Lerderderg Catchment. Pat o'Shaughnessy, Tim Fletcher & Leon Bren for DNRE July 1996.

The authors of this report are not fully aware of the shelterwood system used in the Wombat Forest. The 'retained canopy' is removed after ten years with the second shelterwood cut.

The implications of this removal would be the loss of water yield, that is implied, would result if the hypothetical 'residual crown of 4400m2' was not there.

The sample sites for the study have a large natural buffer between timber harvesting and sample sites. The sample sites are well into the Lerderderg State Park (no timber harvesting allowed). Above this area there is also a Special Protection Zone, again not timber harvesting.

The area is also below where the earliest shelterwood took place. The harvesting was low intensity shelterwood and therefore not representative of the current high intensity shelterwood.

The Wombat Forest Society would like to see a comparable study carried out in the Loddon Catchment.

Goulburn-Murray water has carried out a Field Investigation[2] of the Loddon catchment, following a complaint by one of its irrigation customers.

This report criticises the DNRE for having coupes that are too large, for its management of coupes from a catchment perspective during harvesting and post-harvesting operations. The Report also states that DNRE have refused to supply its catchment data, for verification by Goulburn-Murray water.

The rotation periods for forests in Victoria has generally been accepted as 80 years up until the mid-1990's. Where other values were seen to be in need of special management considerations, the rotation period was increased to take these into account. Commonly forests that are also important catchments, for both domestic and agricultural purposes, the rotation was set at a minimum of 100 years.

The Department of Natural Resources and Environment have not proven that their catchment management is adequate.

[2] Wombat State Forest Field Investigation Report. Goulburn-Murray Water.
Peter Butcher. Environmental Management Officer. March 1998.

Mineral Springs

In 1996 a hydrogeologist, working for DNRE, identified the Wombat Forest and the areas around it as the probable recharge for the region's world famous 'mineral springs'. This region contains 70% of Australia's mineral springs. Mr. Shugg's paper '*Mineral and Spring Water, Resource Protection - Discussion Paper (Report 6)*' produced a map that indicates the likely recharge areas for the mineral springs.

The report identified fire, forestry and tree clearing as possibly causing a degradation of the mineral springs (page ix). Clearly, forest management must be sensitive to this value. The Midlands Forest Management Plan carries two paragraphs on the Groundwater of the Wombat. It identifies the mineral spring's recharge as being '*ridges surrounding the town*'.

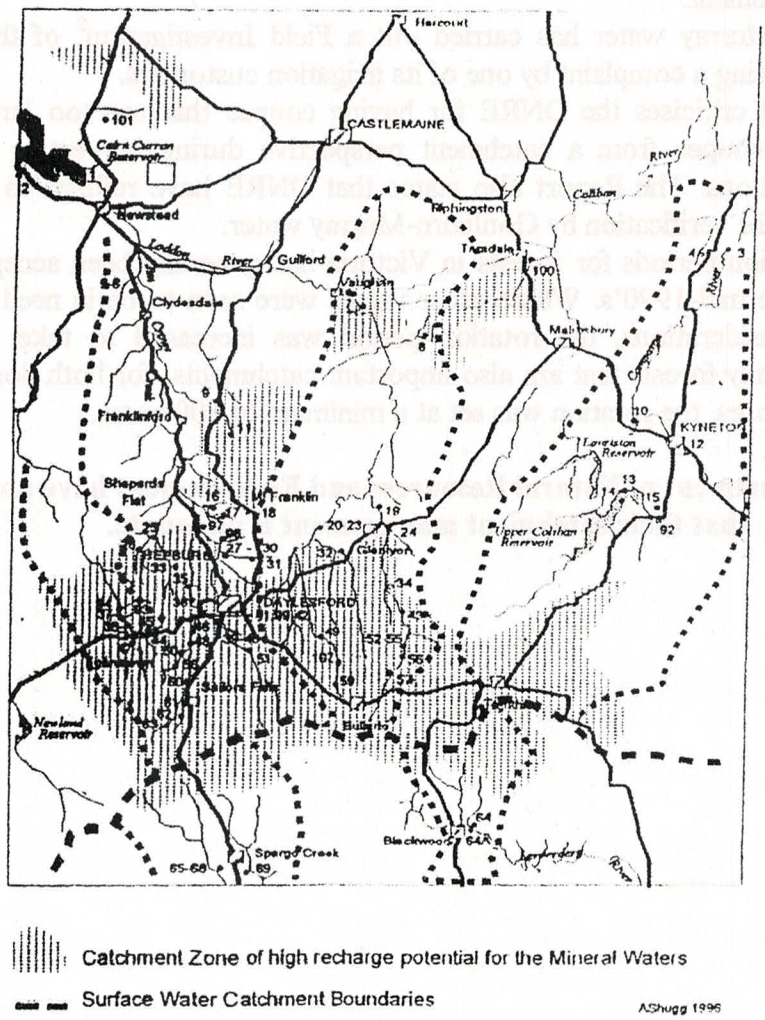


Figure 7 Provisional identification of areas with high recharge potential for mineral waters.

Map 3 Provisional High Potential Recharge for Mineral Springs.
Mineral & Spring Water. Resource Protection. A Shugg.[3]

This negligently dismisses the importance of the mineral springs of the area.

Discussions with Mr. Shugg suggest that the author of the Midlands Plan possibly failed to adequately reflect the opinion and concerns Mr. Shugg had for forestry practices in the recharge areas.

The forests of the Midlands also are important areas with regards to bio-diversity. Some of the western extremity of some species lies in these forests.

The Wombat Forest Society has commissioned two reports on Flora and Fauna. These reports identified aspects of forest management as being possibly detrimental to important bio-diversity values.

Tourism is the region's major industry. The mineral springs and the natural amenity of the region, particularly around Daylesford, are important to this industry.

The then President of the Spa Country Chamber of Commerce, Mr. Ian Esmore, stated in a media release in June 1996, that the expenditure of tourist's to the Daylesford/ Hepburn Springs area was $37.5 million.

Mr. Esmore says in the article..."It is clear that Tourism is one of the main drivers of the Hepburn Shire economy and it is important that a Tourism Strategy and Policy be developed for the Shire."

"The forest and mineral waters indirectly impact on a broad spectrum of employment factors that effects the entire Hepburn Shire." He added.

Planning Permits where issued in the Shire for nearly $20 million for tourist developments.

[3] A. Shugg. Mineral and Spring water. Resource Protection Discussion Paper. Department of Natural Resources and Environment 1996. Report 6.

Timber

Background

Logging History

In 1898 a Royal Commission into the over-harvesting of the Wombat Forest last century was handed down. It described the Wombat as the "ruined forest". Recommendations from this report resulted in the closure of the forest for a number of years.

During the 1930s, sustenance gangs worked through the forest carrying out extensive ring-barking of many of the old 'stag' trees that where too big and old to justify cutting down with the axes and crosscut saws of last century. The sustenance gangs also carried out a light thinning of young defective trees.

The pressures of the Second World War and the post war building boom saw small-scale sawmilling return to the Wombat. Small mills where opened in the bush, and the start of thirty years of 'stand improvement' selection harvesting began.

The logs the mill harvested were small by today's standards. During most of this period the mills had their own areas of the bush and it was in their interest to look after the bush. Lamp posts where also cut from the forest.

In the early 1960's CSR opened a hardboard plant in Bacchas Marsh. Billets of 4'6" were cut from the waste and processed. This plant provided over two hundred jobs in the region.

Towards the end of the 1960's discussion began on what to do with a maturing high quality forest.

Forest Commission reports from that time clearly recognise the importance of the catchment values, and recommend special harvesting and silvicultural practices in areas of the Wombat.

Fire was also identified as 'converting nutrients into soluble salts, which are then transported from the site by rain water.'[4]

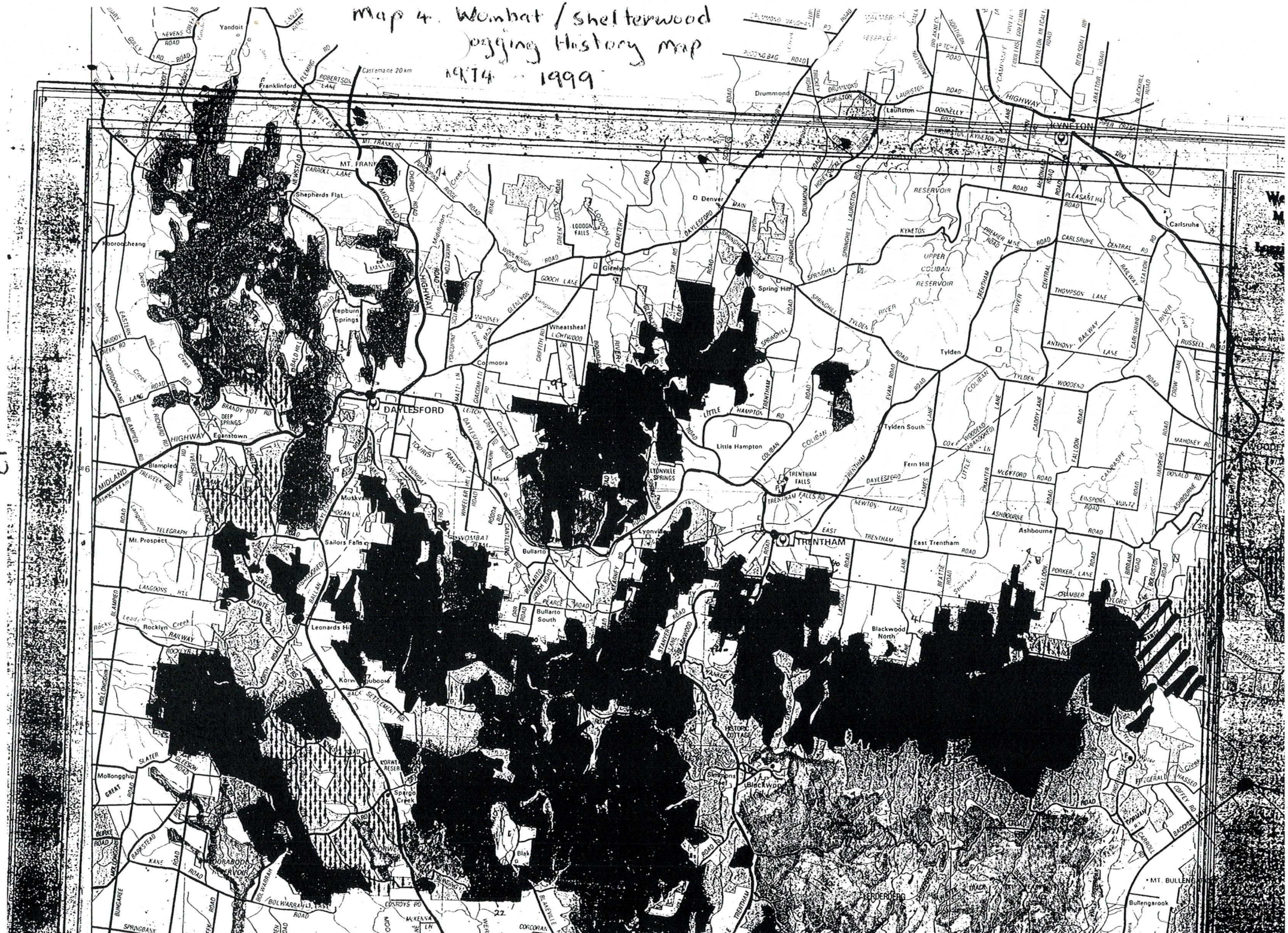
In 1974 the Shelterwood harvesting system was introduced to the entire Wombat Forest. Most of the early harvesting was east of Trentham and Blackwood.

Since that time (1974) seventy five percent of the Wombat has had at least the first shelterwood harvest applied. Most of this harvesting has been targeted at the best parts of the forest.

Map 4 shows the areas that have had at least the first Shelterwood harvest. As can be seen most of the forest, and therefore most of the Medium/High quality forests have been cut.

Regeneration surveys during the first fifteen years shelterwood one cuts, showed a swing to peppermints as a regeneration response (15%). In the early 1990's the first shelterwood cut was changed from low intensity shelterwood to high intensity

[4] Field Conference Report. Forest Commission. 1968.Conference held in Bullarto. Report is transcripts and papers from various presenters to the conference.


Map 4. Wombat / Shelterwood
logging History map
1974 - 1999
Yandoit
Franklinford
Castlemaine 20km
Drummond
Launston
KYNETON
Shepherds Flat
Denver
Carlsruhe
Kooroocheang
Glenlyon
Spring Hill
Wheatsheaf
Tylden
DAYLESFORD
Egansown
Blampied
Little Hampton
Tylden South
Fern Hill
Mt. Prospect
Sailors Falls
Bullarto
Lyonville
TRENTHAM
East Trentham
Ashbourne
Rocklyn
Leonards Hill
Bullarto South
Blackwood North
Mollongghip
Spargo Creek
Blackwood
Simpsons Reef
Bullengarook
MT. BULLENGAROOK
KERDERDENG
HISTORIC COTTAGE
HIGHWAY
RAILWAY
TOURIST RAILWAY
RESERVOIR
LODDON FALLS
CEMETERY
TRENTHAM FALLS
LYONVILLE SPRINGS
UPPER COLIBAN RESERVOIR
MT. FRANKLIN
MT. PROSPECT
MT. BULLENGAROOK
Creswick
Ballarat
Bacchus Marsh
Melbourne
Geelong
Ballan
Daylesford
Kyneton
Castlemaine
Bendigo
Maryborough
Ararat
Stawell
Ballarat
Geelong
Melbourne
Bacchus Marsh
Ballan
Daylesford
Kyneton
Castlemaine
Bendigo
Maryborough
Ararat
Stawell

13

shelterwood. This saw the basal rate reduced from 9-11 m2 basal area per hectare to 5-7% basal area. The consequence of this will be a reduction in sawlog yield from the second shelterwood harvest.

The reason for the reduction in basal area was due to the regeneration characteristics of messmate (the desired saw and pulp species) and peppermint gums. The peppermints are more shade tolerant and so have a better regeneration rate than messmate beneath a denser over-wood canopy.

The Loddon, Werribee and Lerderderg Rivers have now had most of their catchments with at least the first shelterwood cut completed. These areas will receive their final shelterwood harvest from early next century (2000 to 2010).

Sections of the local timber industry believe that it will be necessary to harvest some of the current shelterwood regeneration at 'age 40', as the Chart[5] that accompanies the DNRE's model called the "Midlands Forest Management Area Strategic Harvest Schedule for Existing Forest Stands" shows an obvious short fall in supply of logs. The current model shows the next shelterwood rotation to be between 50 and 60 years.

The Wombat Forest Society questions whether this will be allowable.

The importance of the Wombat's catchment and mineral springs recharge should mean a much longer rotation. Accepted catchment rotations would suggest at least 80 to 100 years.

Many members of the local timber industry have been claiming for many years that the B-Grade sawlog quota was too high for the forest. The result has seen almost a decade of the DNRE needing to cut contingency coups in order to supply legislated volumes. More forest has needed to be cut each year in order to supply the required quantity of B-Grade logs.

This Report believes that it has been the over-cutting in terms of area over the last twenty years that now seriously placed the Midlands in jeopardy in terms of the medium and long-term supply of sawlogs.

A further limiting factor to the potential viability of the current Midlands Forest management Area model is the reduced current standing sawlog reserves. The move from high to low intensity shelterwood in the early 1990's means that there was only 5-7 m2 basal area retained.

Regeneration

Many of the regeneration burns in the 1990's have been so severe that the second harvest from the coupe, has seen the need to harvest the retained trees as a 'fire salvage' soon after the first cut. The trees that are left will be of a lower grade due to *gum-veins* that will be in the timber when it is milled, as a result of the hot regeneration burns.

Many more coups have had the necessary 'growth response' retarded by the intensity of the regeneration burns.

In the Cobaws and My Cole there are many areas that have failed to be adequately regenerated. Some of these areas have been in this condition since the 1960's. Department staff blame the failure on 'predation' from wallabies.

---

[5] Chart Midlands Forest Management Area
Strategic Harvest Schedule for Existing Forest Stands.

The South Lyonville/South Bullarto area of the Wombat produce some of the best logs in the region, this area is also the peak of the region's rainfall. The ground often rich red and chocolate brown volcanic soils.

Most of the coupes in this region have had at least their first shelterwood cut.

Most of these coupes have failed to properly regenerate. Some areas have had the top soil and logging residue bulldozed into long windrows. The result is almost park-like pasture, and certainly not prime regenerating forest.

Some of the coupes in this region have had three costly treatments in an endeavor to get them to regenerate.

With the model looking to optimise the rotation and harvest the next rotation in sixty years, having coupes that have not regenerated despite twenty years of trying must seriously compromise the model.

At the other end of the extreme, there are many areas of the Wombat where the regeneration has been so prolific, that up to 30-40 stems per square meter are common. To get these coupes thinned is costly and until these areas are treated they are not contributing to the sawlog stock.

The quality of the trees that have been harvested over the last ten years and for the next five to eight years, are the best of the rotation. The current sawlog volumes are the best that this forest area can produce over 100 years.

The model that this Report is examining has projected annual sawlog yields per hectare that for most parts of the model, exceed the current (peak of the cycle) average yields per hectare. This report has reduced all DNRE modeling to a set of common denominators. This allows easy interpretation of the model.

Shelterwood

The Silvicultural system known as Shelterwood was phased into the Wombat Forest in the mid-1980s. Since that time an alarming amount of the Wombat Forest has had at least the first Shelterwood cut applied.

The Shelterwood System is essentially a two-stage clearfelling system.

Th first shelterwood cut removes around eighty percent of all trees over 100cm in diameter. The resultant yield from the first cut is around 2:1 pulp/sawlog.

The coup is then given a regeneration burn.

The remaining trees are left to drop the seed for the next rotation. The results in the Wombat have been highly variable in results. Some coups regenerate with 30 – 40 stems per square meter. Other coups fail almost entirely to regenerate. The coups that are on the better soils, sees and the regeneration of many other types of prolific vegetation after remedial treatments that 'out competes' the Eucalypt's regeneration. The time and cost of re-treating the coup is costly.

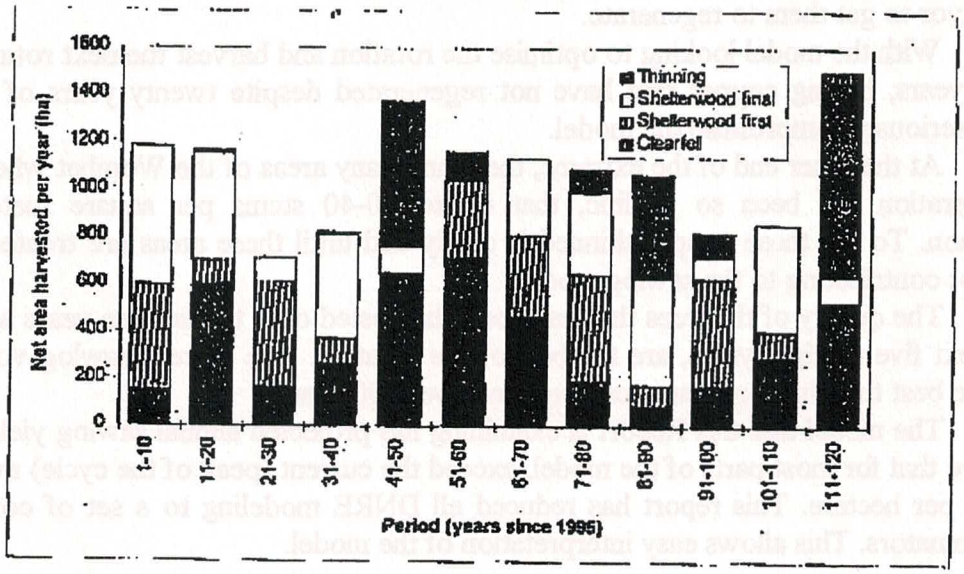
The forward to the 'Sustainable Yield Review' for the Midlands states that it is necessary for the DNRE to spend $300,000 a year on remedial silvicultural treatments.

The proposed model is based on absolute optimal silvicultural results that the delay of between five and twenty years for some coups must compromise the likelihood of the model even working within itself.

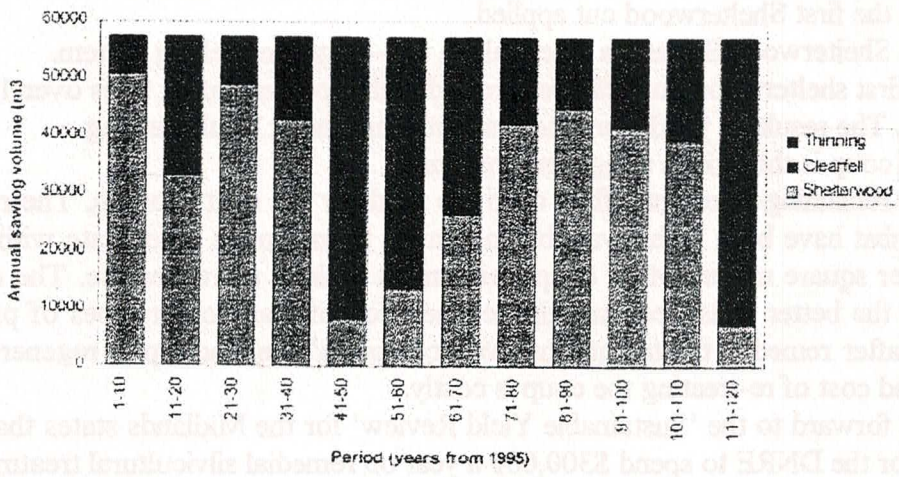
With predicted rotations of less than sixty years, delays of even five to ten years in achieving adequate regeneration, must severally compromise the possibility of meeting the models necessary growth rates.

Critique of Sustainability Model
Midlands Forest Management Area

The Midlands Forest Management Plan, released early in 1997, contains three graphs on pages 129 and 130. These graphs detail the Harvesting Model; that supports the revised sustainable yield for the Midlands.

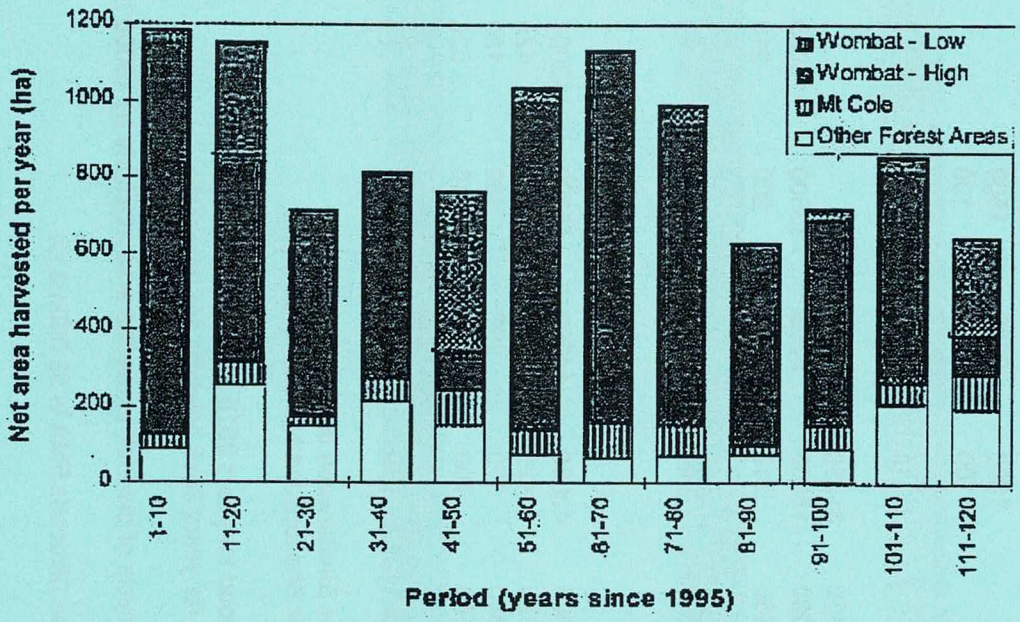


Graph 1: Forecast net area to be harvested (hectares) by operation type for the Midlands FMA. From Midlands FMA Plan pg 130.



Graph 2: Forecast sawlog volume (m3) to be harvested in 10-year periods by harvesting and regeneration system in the Midlands FMA. Midlands FMA Plan pg 130

Graph 3: Forecast net area to be harvested in 10-year periods within grouped forest areas in the Midlands FMA.



Graph 1. Illustrates the area to be harvest annually by each harvesting method. These are represented in ten yearly periods.

Graph 2. Shows the volume of sawlogs that will be harvested annually by each harvesting type, in cubic meters. Again this graph represents ten-year periods within the model.

The Spreadsheet

(Figure 1.)

The spreadsheet has combined graphs 1 & 2. Both graphs project harvesting operations in the Midlands for the next 120-year period. Over this period the graphs reduce the Midlands forest to three harvesting cycles: thinning, clearfell and shelterwood. (Graph 1. Breaks the shelterwood harvest into their first and second cuts).

The spreadsheet (Figure 1) has used the 120-year model from the graphs, and displayed the three harvesting techniques with the corresponding information from the graphs, on area cut annually and volume harvested annually.

By dividing the area into the volume we can see the expected m3/ha annually.

Currently the harvesting in the Midlands is achieving around

42 m3/ha from *shelterwood one* cuts (applied to medium to High-grade forests).

35 m3/ha from *shelterwood two* cuts (applied to the medium/high grade forests).

	Years 1-10 1995/2004	11-20 2005/2014	21-30 2015/2024	31-40 2025/2034	41-50 2035/2044	51-60 2045/2054	61-70 2055/2064	71-80 6065/2074	81-90 2075/2084	91-100 2085/2094	101-110 2095/3004	111-120 3005/3014
Thinning Harvest Cycle												
Volume m3					10000			1000	8000	1500		14000
Area ha		20			610	150		100	410	100		800
m3 per ha					16.4			10	19.5	15		17.5
Clearfell Harvest Cycle					18550	25850	30450	31550				
Volume m3	7000	25480	8500	16000	40000	44500	32000	15000	6000	15500	18000	36500
Area ha	185	600	180	270	650	700	460	210	100	200	210	540
m3 per ha	37.8	41.7	47.2	59.2	61.5	63.6	69.6	136	60	77.5	58	67.6
Shelterwood Harvest Cycle												
Volume m3	51000	32500	49500	42000	7550	13500	26000	42000	44000	41000	40000	7500
Area SW2ha	580	330	100	420	100		325	420	440	80	420	100
Area SW1ha	425	140	420	110		320	340	370	100	460	100	
Area totalha	1050	470	520	530	100	320	665	790	540	540	520	100
m3 per ha	48.6	69.1	95.2	79.2	75	42.2	39.1	70	81.5	76	77	75

NOTE: The above numbers represent annual Areas and Volumes.
To work the figures for the ten year columns used in the Model, multiply all numbers by 10.

Current volume to area yield for Shelterwood one cuts is 42m3/ha
Current volume to area yield for Shelterwood two cuts is 30m3/ha

Projected volumes for shelterwood for years 2015-2044 are unrealistic
Projected volumes for clearfell for years 2015 onwards are unrealistic

Area needed/projected for the cycle of clearfell exceedes area available by 10000 ha.

Sustainable Sawlog Yield for the Midlands FMA is 58 000m3 pa

Midlands FMA Sustainable Yield Forecast Analysis

Figure 1.

The *low-grade* forests of the Midlands are *clearfelled.* Due to the degraded state of many of these low-grade forests, the current harvesting is virtually all pulpwood. Currently coupes are being harvested in the Ross Creek area, south of Ballarat. These coups are almost entirely going to woodchip. The quantity of sawlogs expected is described as being virtually nil.

Low-grade forests produce up to 20 meters of sawlog per hectare.

The spreadsheet has divided the projected area to be cut annually (Graph 1) by the projected yield (Graph 2). By doing this, this report has broken down the data to the common denominator of cubic meters of sawlog per hectare (m3/ha).

Reading the resultant m3/ha row from the three harvesting techniques (shaded rows) from Figure 1, show yield expectations that are unrealistically high for each of the silvicultural methods.

Shelterwood Model Projections.

Graph 4. Shows the projected Shelterwood Yield per hectare from the model. The graph also has a second line that represents an average yield for shelterwood. The graph is using 50 m3/ha.

As can be seen for much of the Shelterwood harvests, the projected yields are not achievable.

The Model is therefore flawed.

Currently the Wombat forest is around the one hundred years of age. As stated above, the current average yield from shelterwood one harvests is around 43 m3/ha. Shelterwood two harvests are well below expectations, currently they averaging in the low thirty cubic meters per hectare (shelterwood model projected 47m3/ha).

The graph's 50-m3/ha-reference line is therefore representing a greater volume than is being currently achieved at the current *'peak of the rotation'*.

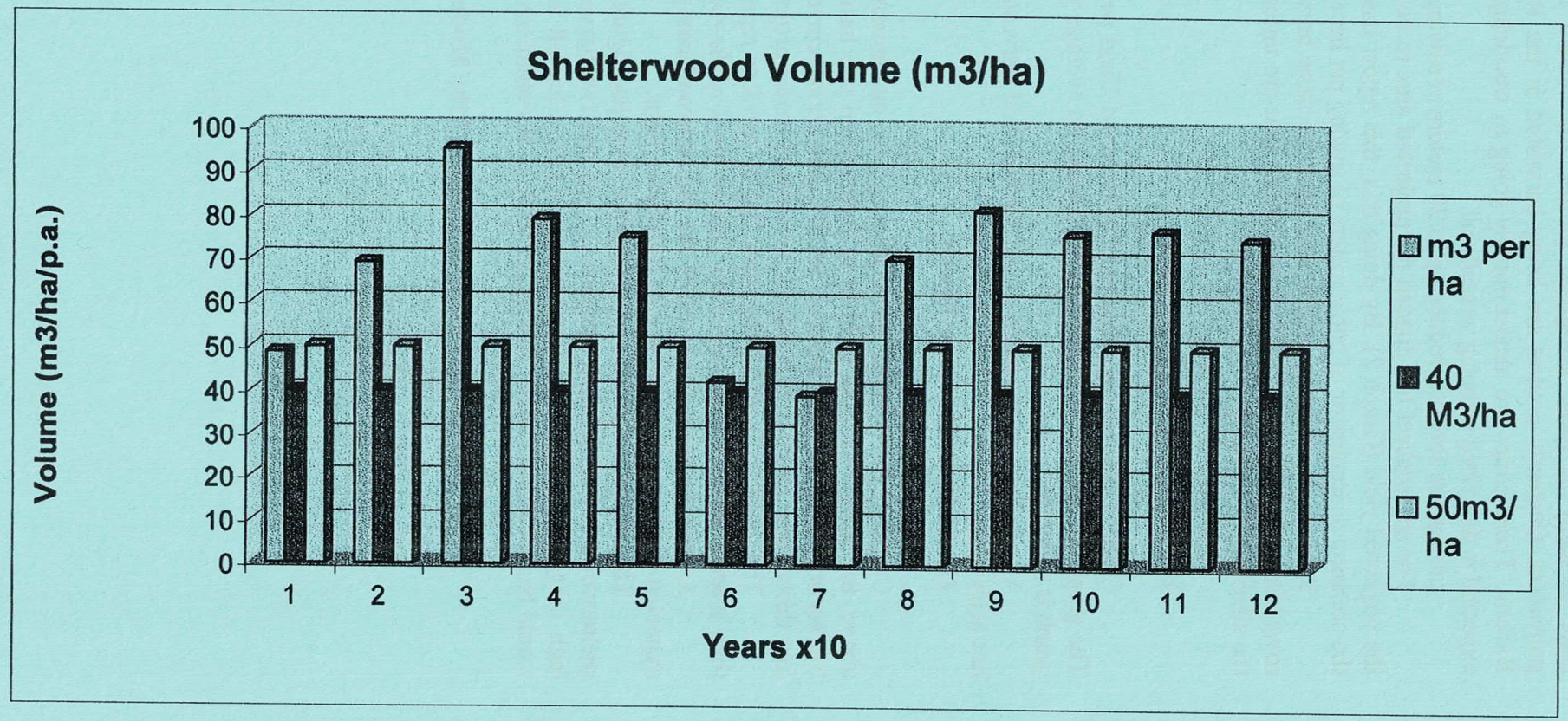
As can be seen, for most of the shelterwood-component of the model the expected yields per hectare are unjustifiably high.

This report has used well optimized base-line figures in the graphs. The real shelterwood averages, when shelterwood one and two harvest are averaged would be high thirty cubic meters per hectare/ per anum. Clearfall in the lower grade forests would be well below twenty meters per hectare/ per anum average.

The shelterwood-component of the Model is unrealistic.

Shelterwood Volume /Area Graph

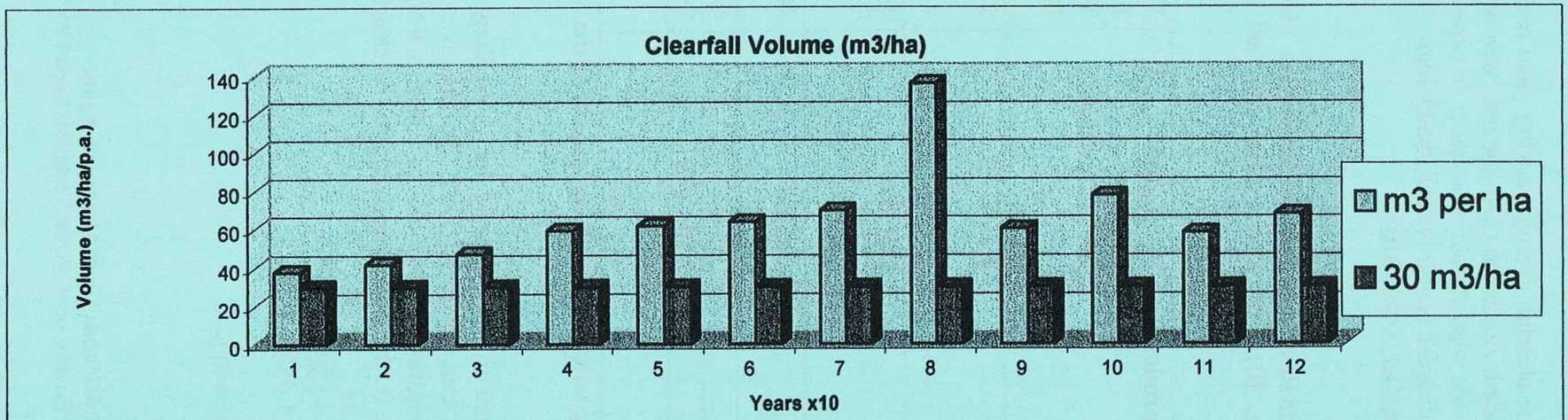
	Years 1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120
Volume m3	51000	32500	49500	42000	7550	13500	26000	42000	44000	41000	40000	7500
Area SW2ha	580	330	100	420	100		325	420	440	80	420	100
Area SW1ha	425	140	420	110		320	340	370	100	460	100	
Area totalha	1050	470	520	530	100	320	665	790	540	540	520	100
m3 per ha	48.6	69.1	95.2	79.2	75	42.2	39.1	70	81.5	76	77	75
40 M3/ha	40	40	40	40	40	40	40	40	40	40	40	40
50m3/ha	50	50	50	50	50	50	50	50	50	50	50	50



Graph 4.

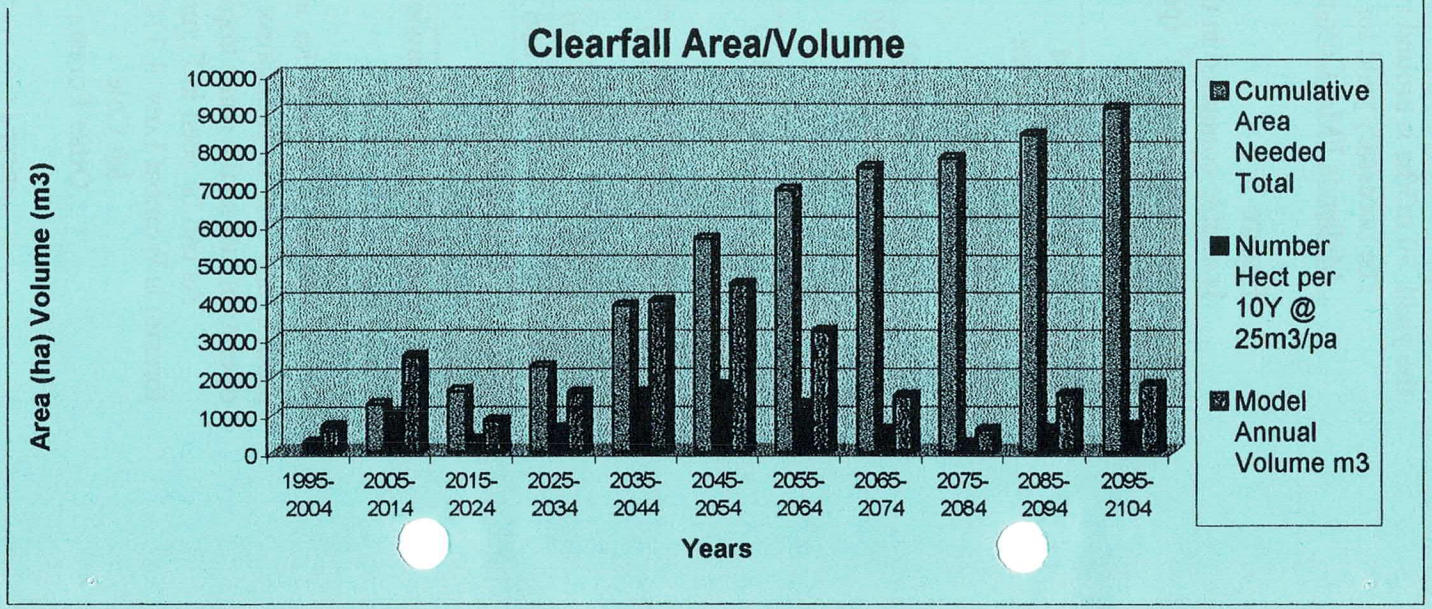
Clearfell Volume/Area Graph

	Years 1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120
Volume m3	7000	25480	8500	16000	40000	44500	32000	15000	6000	15500	18000	36500
Area ha	185	600	180	270	650	700	460	210	100	200	210	540
m3 per ha	37.8	41.7	47.2	59.2	61.5	63.6	69.6	136	60	77.5	58	67.6
30 m3/ha	30	30	30	30	30	30	30	30	30	30	30	30



22

Graph 5



Graph 6

Clearfall Model Projections

Graph 5.

This graph illustrates the clearfall average sawlog yield requirements. A base-line of 30 m3/ha has been included. Again the base-line has been optimised in favor of the yield. 30 m3/ha is around twice what should reasonably be expected.

The necessary yield for clearfall is also unrealistically high

. Midlands FMA Commercial Forest Area

Figure 3

Is a table contained in the Review of Sustainable Sawlog Yield for the Midlands Forest Management Area[6] (pg. 10). This table defines the "net area" available for timber production.

Forests **(Productivity Class)**	**Net productive area** **(ha)**	**Estimated D+ grade Sawlog volume** **(m3)**	**Estimated residual Log/pulpwood Volume (m3)**
Wombat State Forest (Medium/ High)	26 140	1 340 000	2 100 000
Wombat State Forest (Low)	8 330	240 000	400 000
Mount Cole State Forest	4 550	148 000	200 000
Other forests	11 430	293 000	600 000
TOTAL	**50 450**	**2 021 000**	**3 300 000**
95% Confidence limit		+/- 431 000	

Figure 3. Current sawlog volume in the State Forests of the Midlands FMA.

Graph 6. Shows the area to be harvested by clearfelling each year for the model, and has a cumulative area harvested line. Clearfall is a single harvesting operation that as the name implies, takes all merchantable timber from the site.

As can be seen in Figure 3. the total area available for clearfelling (low-grade forests) is Wombat Low 8 330 ha

Mt Cole 4 550 ha
Other Forests 11 450 ha

TOTAL 24 330 ha

[6] Review of Sustainable Sawlog Yield Midlands Forest Management Area
Department of Natural Resources and Environment Forest Technical Report 95-5. December 1995

The Model, as can be seen illustrated in Graph 7., will have cut 24 330 hectares by around 2050. By 2050 the low grade forests will have needed to have produced 1 19 2300 cubic meters of sawlog.

By dividing the sawlog volume by the area cut i.e. $\frac{1\ 192\ 300\ m3}{24330ha}$

The resulting volume per hectare required would be **49 m3/ha.**

This is absolutely ridiculous. To expect to be able to achieve around three times the average yield for low-grade forests, again shows that the Model is flawed and there must be an immediate review of the Midland's sustainable sawlog yield and the DNRE methodology used to arrive at the current model.

With regards to the clearfall-component of the model, the expected average yield per hectare is also unrealistic.
On these grounds the Wombat Forest Society believe that the current Model for the Midlands Forest Management Area is flawed.

DNRE Midlands Sawlog Model Totals

The model as defined in the Midlands FMA Plan, and represented by the spreadsheet (Figure 4), when totaled projects to achieve the following yields from the listed gross harvested area.

Silvicultural Technique		Total Volume from Model (m3) Total Area from Model (ha)	Model Predictions Of Volume/Hectare
Thinning	Volume (m3)	345 000	
	Area (ha)	21 900	15.6 m3/ha
Clearfell	Volume (m3)	2 644 800	
	Area (ha)	43 050	61.4 m3/ha
Shelterwood	Volume (m3)	3 965 500	64.5 m3/ha
	Area (ha)	61 450	

Figure 4 : Model Total Area and Volume Chart.

- The Thinning volume per hectare (15 m3/ha) is achievable and is in line with model's predicted thinning program.
- The Clearfall volume per hectare (61.4 m3/ha) is not a realistic prediction of yield.
- The Shelterwood volume per hectare (64.5 m3/ha) is not realistic given the model's shelterwood rotation of 60 years. Today's 80-120 year old forest is not producing these volumes.

- The total Clearfall Volume of 2 644 800 m3 represents the equivalent of 45.6 years of sawlog volumes. (2 644 800 m3 divided by the current sustainable yield for the Midlands FMA 58 000 m3 p.a.

Over-harvesting of Wombat Compromises Sustainability.

The above analysis of the current model shows that the required volume per hectare is unrealistic. When an examination of the amount of area that has had at least the first shelterwood cuts. The Wombat forest has around 75% of the area already cut.

The coupes that are currently being harvested are coups cut in the 1980's. In the early 1990's shelterwood was moved from *low intensity shelterwood* to *high intensity shelterwood.* This was done for silvicultural reasons to promote stronger *messmate* response in regeneration.

This means that the coupes cut with high intensity shelterwood will commence being harvested early next century. The volume of timber cut will be less, as less trees where left.

Regeneration Burns

Many of the regeneration burns conducted in the 1990's have been too intense. In some coupes the surviving trees have had to be fire salvaged. These coupes will leave a whole in the future supply. Many other coupes have trees that have received 70-90% crown scorch from the regeneration burns. This has resulted in intense epicormal growth in the retained trees.

It must be remembered that trees that are left after the first shelterwood harvest, are the best trees. They are left to throw strong seed from trees with desirable form. To burn these trees on such a regular basis discounts the value and return from these prime retained trees.

This years regeneration burns in the Wombat have seen almost all the coupes having very hot burns that have blackened 75%+ of the retained trees. Crown scorch has been up to 90%.

Fuel Reduction Burns

For much of this century a regime of fuel-reduction burns have been carried out in most of the region's forests. This was necessary to keep fire fuel levels at a safer level in order to minimize bush fires and their intensities.

This regime of fire on a regular basis has contributed to the degrading of the quality of soils and nutrients in these forests.

This means that the next generation of forest will be growing on a lesser site quality and the resulting forest will be of a lesser standard than the current 'second-rotation' forest we have.

This type of treatment of the second harvest trees, severely compromises the shelterwood's sustainability/yield projections. Scorching all the canopy of most of the trees, causes the trees to send out epicormal shoots. This response, and the lack of

canopy to enable photosynthesis in the trees slows down the growth rate of the tress for up to five years.

The shelterwood system is meant to leave a number of retained trees for ten to twenty years. These tress have had much of their competition removed by the first shelterwood harvest. The remaining trees are then meant to put on a quick growth spurt and return good sawlog volumes for the second cut.

The regeneration burns as practiced in the Wombat render the remaining trees with almost no benefit for having been retained. Many are downgraded.

The areas that have already had the first shelterwood cut are from the best parts of the Wombat.

The entire shelterwood cycle will be completed by 2010-2015.

Too Much Area Harvested in the Last Fifteen Years.

People that have watched the rate of harvesting in Midlands FMA and in particular the Wombat Forest, will all express the belief that far too much area has been harvested.

An examination of the sawlog volumes and grades points to where some of the problems have arisen.

Figure 5 is a table containing the 'Actual' yields for timber from the Midlands, from 1988-1998.

The early 1990's saw an industry-lobbied change in the '*sawlog grading card*'. At that time the timber industry argued that the grading-card for the Midlands was different from the rest of the State's.

As can be seen in the table contained in Figure 5 the A-grade and B-grade volumes reduce significantly from 1989-90 to 1990-91. This illustrates what the change in grading did to sawlog grades.

The License Volumes stayed the same. This means that more forest was cut each year in order to produce the license commitments. The quality of the bush had not altered, only how it is graded.

In 1997 the current sustainable yield was finalised. The forest went from a C+-Grade forest to a D+-Grade forest. The 'Sustainable Yield' was reduced from 70 000 m3 p.a. down to 58 000 m3 p.a.

This alteration was largely due to the concerns expressed by the WFS and the community over the forest.

The Wombat Forest Society has maintained that this 17% reduction was a '*politically expedient*' reduction. For the State Government to have implemented the drop in sustainable yield that WAS required, would have looked like the Wombat Forest Society's concerns where founded.

The interesting aspect of this reduction was how it was applied across the sawlog grades.

The B-Grade log licensed volume was not altered. This means that effectively the same amount of forest is needed to be felled each year in order to supply the required volume of B-Grade sawlogs.

Actual Timber Harvest Yields for the Midlands 1988-1998

	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
A-Grade	2330	1084	108	33	not supplied	68	55	169	89	110
B-Grade	24422	25478	9486	4943	not supplied	14793	16277	15597	17905	14634
C-Grade	33793	34768	25926	32084	not supplied	41198	43636	33875	34938	35541
C+ Total	*60545*	*61330*	*35520*	*37060*	not supplied	*56059*	*59969*	*49641*	*52932*	*502867*
%C+SY 70,000m3p.a.	86%	88%	51%	53%	not supplied	80%	86%	71%	76%	72%
D-Grade	14279	11610	9786	11816	not supplied	13525	13521	11512	8636	7389
D+ Total	74824	72940	45306	48876	not supplied	69584	73490	61153	61568	57675
%D+SY 58,000m3p.a.	129%	126%	78%	84%	not supplied not supplied	120%	127%	105%	106%	99%
Residual		1134	47759		not supplied		40511	64462	30521	60314
Unclassified					not supplied			424	650	329
Pulp	?	?	?	?	not supplied	?	?	?	46469	26950
Total	74824	74074	93065	48876		69584	114001	126039	139208	145368

NOTE: The Total Volume of timber products from the Midlands FMA for 1997-98 was **145,368** m3/tons

26

Figure 5.

At the same time as the reduction in sawlog yield was reduced, the E-Grade volumes where increased by 10 000 m3 p.a. Therefore, while the DNRE reduced the sawlog volume by 12 000 m3 p.a., the E-Grade was increased by 10 000m3. E-Grade sawlogs are not counted in the sustainable sawlog yield.

The Wombat Forest Society believes that the reduction was effectively a '*Clayton's reduction*', all that really changed was the grading of the logs or how the tree is cut into logs.

Conclusion

This report has taken the model as presented in the Midlands FMA Plan, and carried out a performance feasibility audit. As well, this report has checked the model within itself. All numbers and estimates have been generously rounded up[7].

The model simply does not add up.

2010-2015 will complete the entire shelterwood cycle. The model will then systematically work through the Enfield, Mt Cole, Pyrenees and the Cobaws.

The forest of the eastern half of Victoria abut each other, with virtually continuous forest from the Hume Highway To the eastern tip if Victoria. The western half of the state is a different proposition. Open grasslands, often degraded/marginal dry lands. The forests of western Victoria are oases of life among vast tracts of open plain.

The model sees these forests as just '*hectares of commercial forest areas*', but does this give these forests their due significance in a regional context as *islands of forests*?

The parts of these forests that are for timber production, cannot be treated as simply 'low grade forests' that can be managed as an 'intensively managed regrowth forest. This approach is an insult to the communities, especially the people that hold each of these forests as part of an important part of their local and regional identity.

---

[7] The Department of Natural Resources and Environment model as contained in the Midlands FMA Plan, has only been presented as three bar graphs. In order to convert this to a spreadsheet format, this report has scaled the graphs and made as close to possible estimates. The graphs are drawn from Excel, and therefor the scale should be accurate.

Footnote 7 (cont.) It is worth noting that in the 'number crunching' involved in this report, the area estimates that Graph 1 and 3 represent, when worked through the figures, Graph 1 shows a total area to be harvested for the 120 years of 126 400 ha. Graph 3 comes in at 106 850 ha.

My suspicion is that graph 3 has not included the thinning component of the model. The thinning amounts to 21 900 hectares. When this is added to the area from Graph 3, the total area is 104 500ha, or within 2.2% accuracy.

With regards to volume estimates from the model's graphs, the sustainable yield for the Midlands for this 120 year period is 120 x 58 000 = 6 960 000m3

The volume estimates the report has used, after being worked through the spreadsheet is 6 955 300 m3 of sawlog volume. This is within 0.07% accuracy.

Federal Governments Recognised Concerns over Sustainability

Large sections of the local timber industry, the community and people in allied fields all know that the Midlands is far from sustainable. The Department of Natural Resources and Environment are either so fragmented in their structure that no-one really knows what the true situation is or there is a hidden agenda to cut out the Wombat and perhaps most of the Midlands within twenty years.

The Wombat Forest Society analysis of the model shows quite clearly that sawlogs of the size and quality we see today, will be all gone within ten to twelve years.

The local timber industry will then be forced to almost entirely close down in the region. The economic and social consequences will be a 'bitter blow' to many communities.

The next generation will not have access to quality logs. What of DNRE's responsibility towards inter-generational equity?

The Federal Government recognised the validity of the Wombat Forest Society arguments in 1994, by the then Minister for Resources Hon. D Bedall, ordering a Commonwealth Environmental Impacts Study be carried out in the Wombat.

The following year the Federal ALP Government suspended Midway's from taking pulp from the Wombat Forest.

The announcement of the DFA/RFA process saw the original Deferred Forest Areas Report[8] page 24, states that:

"As part of the development of a Forest Management Plan covering the area, Victoria has been reviewing sustainable yield levels for the Midlands (which includes the Wombat Forest).....The Commonwealth will have the opportunity to participate in the public review of the FMA plan, including sustainable yield implications of that plan."

Point 22. Of the Executive Summary, of the above document, also states that ... *"Agreement has also been reached to increase the priority of this region in the RFA timetable through the commencement of a number of CRA (Comprehensive Regional Assessments) studies in 1996."*

Where are these studies?

The Commonwealth clearly can see that there are problems in the Midlands.

The Wombat Forest Society asks that given the quality of the submissions and briefings that the WFS has supplied to Canberra since 1994, that the Commonwealth review of *'sustainable yield implications'* should have been carried out before this year and been easily able to detect the obvious problems for future sustainable yield, based on the logging history since 1975.

[8] Deferred Forest Areas Victoria Commonwealth of Australia December 1995.

Wombat Forest Society/Timber Industry Letter

In the letter that the Wombat Forest Society signed in September 1998, with the local timber industry, recommendation 1. Was *"That the Sustainable Yield model be tested by producing a set of overlays at an appropriate scale (e.g.1:25 000) showing the coupes that will theoretically be cut in five year bands, up until the year 2060 (using a different colour per each five year band).*

This would be a simple desk-top exercise for DNRE. The data and logging history information should have been compiled during the last sustainable sawlog review.

If DNRE was to produce these maps, the WFS believes that it would graphically, show whether the forest area is available to supply the model's required performance levels.

The Minister for Conservation and Land Management Mrs. Tehan has just (6 months later) replied to the joint WFS/Industry letter.

The reply is an insult to her clients or customers, the timber industry as well as the WFS and the broader community.

The letter we signed took ten months to produce and tune to a point that all parties were happy to sign. The letter questions almost every aspect of DNRE management, State Government funding to forests, staffing levels and DNRE studies and modeling.

The Minister's reply to the unprecedented letter, is one A4 page with simplistic answers and justifications that contradict arguments that Mrs. Tehan's own Departmental staff have been throwing at us for 5 years.

The Minister basically refuses ,disagrees or sees no need to act on all of the recommendations made in the letter.

For Mrs. Tehan to have replied to such an important letter in such a dismissive way, in an election year, in a region of marginal seats, is a total dereliction of duty.

Mrs. Tehan should hang her head in shame.

The response to recommendation 1. Is:

"Some further information has been provided to NRE forestry staff based at Daylesford. The method proposed does not test the model but would assist in validating it. Consideration will given to consulting with stakeholders once work is complete."

Clearly DNRE are reluctant to use this method, as it will expose the unacceptable state of the Midlands.

The Department of Natural Resources and Environment have also proclaimed that the work that they did in producing the recent 'Review of the Sustainable Yield", was the best work it had ever done and that the numbers where 'untouchable'.

The co-signed letter last year and this Report highlight that the 'best work' ever done by DNRE simply does not add up.

The statewide implications are enormous if the Midlands is wrong. Already we are told that the sustainable yield in East Gippsland FMA needs adjustment, that Tambo FMA also need adjusting and rumours abound that even the Central Highlands FMA may need reductions in the Sawlog Yield.

In Closing.

The Midlands Forest Management Area is not sustainable at the current rate of harvesting. While the Regional Forest Agreement process is on in West Victoria, the Wombat Forest Society and the community need to ensure that:

- The Regional Forest Agreement process is made to look closely at the issue of sustainability. The Wombat Forest Society will not allow the West RFA to be signed off if there is no proper resolution to the sustainability issue.
- The community should demand complete openness and transparency in the Regional Forest Agreement process. From both Federal and State Governments and their Agencies.
- The WFS and the community need to stand behind our local timber mills and mill and forest workers to help get proper and adequate restructuring and exit scheme money.
  The Victorian Government has $17.2 million for industry development and exit schemes. These funds have been allocated at $16 million for industry promotion and development and the $1 Million for exit scheme. This is clearly an insult to the workers and contractors.
  Any timber worker that has purchased equipment since the implementation of the current sustainable sawlog yield, should have his total purchase price of new equipment refunded by DNRE
  These contractors and workers have invested in new machinery on figures that the DNRE forest and resource managers have said is their best work.
- The WFS supports the right of all current mills to have equal access to the timber, provided it comes from a sustainable level of harvesting, for this and future generations.

The Future for the Midland's Forests.

An article in the Snowy River Mail, 12 May 1999, may point towards the agenda that our Governments and the DNRE have for some of our forests.

The article (Appendix 2) is about an up-coming conference on 'Intensive Management of Regrowth Forests'. The conference is reported to be about... *"..the growing recognition of the potential contribution of intensive management of selected regrowth forests to meeting Australia's future hardwood needs."*

This is a tunnel-visioned view of some of our forest that is based on an atitude that because some of our forests are not viable to produce sawlogs, and therefore 'low-grade', that all of that forest's non-timber values are also irrelevant.

In Victoria's West, the Enfield, Cobaws, Pyrenees and MT Cole, are low yielding forests from a timber perspective. Yet among hundreds of square kilometers of flat open land, these small forests are pools of diversity and life.

The article goes on to state that the answer to our future timber demands is the intensive management of our...'low conservation value, growth potential and proximity to markets. The article talks of fertilizers being used to enhance growth.

For the public forests to compete with private forestry all the hidden subsidies to native forest timber production will have to be made public. Where these subsidies give an unfair competitive advantage to private forestry, will have to be removed.

Will it therefore be economically viable to carry out such 'intensive management on such 'low quality forests'.

This is the pre-cursor to our public forests being privatised and sold off.
The people of Victoria will not allow this to happen.

"The midlands FMA is currently heading for disaster. The tall forests will be all but gone within fifteen years.

One thing is for sure, ...all the trees that have been cut down before today, have been cut down.

What we all have to do, is be honest with the situation, take an honest look at what trees we still have left, and decide the fairest way of managing that resource that we have left, for this generation, and more importantly those coming after us. Careers and egos cannot be more important than our forests.

What if it can be shown that through no fault of their own, that this generation has already used ITS allocation of the forest of the Midlands?" Tim Anderson.

Wombat Forest Society inc.
Wild & Wonderful Wood & Water Work & Wildlife
ASN: A0029445N
PO Box 428, Daylesford. 3460.
Ph/Fax: 0353 481748.

Published Wednesdays at Orbost, Victoria.

SNOWY RIVER MAIL

Circulating throughout Snowy River, Cann River, Murrungowar, Nowa Nowa, Lake Entrance, Bendoc, Club Terrace, Buchan, Mallacoota, Genoa, Beam River, Combienbar, Errinundra, Cabbage Tree, Bonang and Border District
P.P. No. 341163/00002

Phone (03) 5154 1919

No. 5098 Wednesday, May 12th, 1999 109th Year Price 50c

National forest workshop to be held in Orbost

A national workshop dealing with the intensive management of regrowth forest and expected to attract some 100 delegates from all parts of Australia, will be held in Orbost next week.

The workshop, facilitated by the C.S.I.R.O., will be attended by forest managers, researchers and policy-makers, and it is expected the opening address will be delivered by Mr. Wilson Tuckey, Federal Minister for Forestry and Conservation.

A C.S.I.R.O. spokesperson told the "Mail" the workshop, to be held over three days, reflects the growing recognition of the potential contribution of intensive management of selected regrowth forests to meeting Australia's future hardwood needs.

The workshop will include a field day to view research and operations in East Gippsland and south-east New South Wales.

Planning for the meeting is being guided by a steering committee representing resource managers, government departments and industry representatives.

Workshop objectives:

- Identify market and other impediments to the adoption of intensive management practices and increase wood production in the public and private sectors and identify possible solutions.
- Summarise and synthesise practical experience and advances in research and development relating to intensive management of regrowth forests.
- Foster linkages between researchers and forest managers.
- Identify priorities and improved mechanisms for research and commercial development.

It is expected that discussion will focus on market and other impediments to adoption of intensive forestry in public and private sectors, and potential solutions.

Strategies to enhance the adoption of intensive management practices — including value adding of the sawlog product and utilisation and marketing of residual wood — will be key issues.

According to a steering committee member, intensive management of selected regrowth forest — chosen because of their low conservation value potential growth response and proximity to markets — will play a big part in making up the expected deficit in hardwood sawlogs during the next 20 to 30 years.

Results from experiments conducted by C.S.I.R.O. and set up seven years ago, near Orbost, in conjunction with D.N.R.E., show that very large responses to early spacing, thinning and fertilisation are possible.

The spokesperson said the size of the workshop is being deliberately restricted to facilitate discussion and to help obtain clear outcomes from the workshop. Attendance will be by invitation only.

33

Response to recommendations contained in the joint Wombat Forest Society/Central Victorian Logging Co. submission on the Wombat State Forest.

Recommendation	Response
1. Test the sustainable yield model by indicating where the model predicts timber will be harvested up until 2060.	Some further information has been provided to NRE forestry staff based at Daylesford. The method proposed does not test the model but would assist in validating it. Consideration will be given to consulting with stakeholders once this work is complete.
2. Engage Professor Brian Turner of ANU to review the information used to create the sustainable yield model.	Prof. Turner reviewed the original model. Further review is not warranted.
3. Review operating funds available to the Midlands Forest Management Area including the funds required to conduct thinning operations.	Funding to the Midlands FMA is consistent with allocations to State forest in other parts of Victoria. A specific annual allocation of $300,000 has been made to fund regrowth thinning. Regional forestry staff are actively pursuing efficiencies in thinning programs to maximise the area that can be thinned with these funds. Further diversion of funds to the Midlands FMA would be at the expense of forest management programs in other parts of the State.
4. Further research on water yield be conducted in cooperation with Catchment Management Authorities.	There is no evidence that forestry activities are having any adverse impact on water quality or yield in the Wombat State Forest. The relevant Catchment Management Authorities have not indicated any specific concern over the management of public native forest in the context of overall catchment land use. NRE is actively engaged in catchment research elsewhere in the State and the general findings of this research will translate to the Wombat State Forest.
5. NRE should fund further research on mineral springs.	NRE has already supported research on mineral springs. This found that almost all potential mineral spring aquifer recharge occurs on land lying outside of State forest.
6. NRE should produce a paper outlining logging history since the commencement of shelterwood harvesting in the early 1970s.	Early shelterwood logging history records are in poor condition, however, the impacts of early shelterwood harvesting were incorporated into the timber resource assessment completed in the early 1990s. Harvesting following the timber assessment was considered in establishing the sustainable yield estimate. Production of the paper suggested would not be a useful contribution to resolving the issues arising from historical practices.
7. Early thinning and stand improvement plans should be developed.	Areas suitable for thinning can be identified in timber resource assessment maps and operational planning for thinning is conducted annually. The strategic issues were adequately dealt with in the Midlands Forest Management Plan and the sustainable yield review.
8. NRE should produce a paper explaining standards for adequate regeneration.	Native Forest Silviculture Guideline No. 10 - *Eucalypt stocking surveys* outlines the processes and standards used by NRE.
9. Continuing applied research on the effects of regeneration burns on growth rates and timber quality.	The Fire Effects Study conducted by NRE in the Wombat Forest has addressed some of these issues. Work is continuing on development of improved burning prescriptions.
10. Continued applied research on the impact of overwood on regeneration and growth.	There have been extensive studies on this issue allowing adequate conclusions for management purposes. Further research is not a high priority.
11. NRE to prepare a paper summarising yields from shelterwood one and two coupes over the past 10 years in comparison with predictions.	Comparisons of this type may be possible in an experimental context but the data held by NRE would not permit any valid conclusions from the suggested retrospective analysis. NRE is establishing procedures for monitoring against sustainable yield forecasts. This will enable tracking of actual versus predicted harvesting over the next few years.

SHELTERWOOD

YEARLY FIGURES

	Cumulative Area Needed p.a.	Number Hect pa @45m3/ha	Model Annual Volume m3	Cumulative Model Vol
1995-2004		1133	51000	
2005-2014	1844	711	32500	83500
2015-2024	2944	1100	49500	133000
2025-2034	3877	933	42000	175000
2035-2044	4044	167	7550	182550
2045-2054	4344	300	13500	196050
2055-2064	4921	577	26000	222050
2065-2074	5854	933	42000	264050
2075-2084	6831	977	44000	308050
2085-2094	7742	911	41000	349050
2095-2104	8630	888	40000	389050
2005-2014	8796	166	7500	396550
TOTAL	8796			396550

TEN YEAR TOTAL VOLUMES

	Cumulative Area Needed Total	Number Hect per 10Y @ 45m3/pa	10 Year Sawlog Volume m3	Cumulative sawlog Vol
1995-2004		11330	510000	
2005-2014	18440	7110	325000	835000
2015-2024	29440	11000	495000	1330000
2025-2034	38770	9330	420000	1750000
2035-2044	40440	1670	75500	1825500
2045-2054	43440	3000	135000	1960500
2055-2064	49210	5770	260000	2220500
2065-2074	58540	9330	420000	2640500
2075-2084	68310	9770	440000	3080500
2085-2094	77420	9110	410000	3490500
2095-2104	86300	8880	400000	3890500
2005-2014	87960	1660	75000	3965500
TOTAL	87960			3965500

The DNRE model as contained in the Midlands FMA Plan Pgs 129 &130.

Between this year (1999) to the start of 2015, th efollowing results will need to be met.
The volumes for Shelterwood are 1999-2004 are 25,500m3 per annum
2005-2014 are 32500m3 per annum

Total Volume m3 from 1999-2004 = 25500 by 5 = 127500
Total Volume m3 from 2005-2014 = 32500 by 10 = 325000

Total Volume from Model = 452500 m3

Area needed if 45m3 /ha was achieved would be 10,055ha
Area needed if 50m3/ha was achieved would be 9,100 ha
Area needed if 35m3/ha was achieved would be 12928ha

Appendix 3

CLEARFELL YEARLY FIGURES

	Cumulative Ar Needed p.a.	Number Hect pa @25m3/ha	Model Annual Volume m3	Cumulative Model Vol
1995-2004		280	7000	
2005-2014	1299	1019	25480	32480
2015-2024	1639	340	8500	40980
2025-2034	2279	640	16000	56980
2035-2044	3879	1600	40000	96980
2045-2054	5659	1780	44500	141480
2055-2064	6939	1280	32000	173480
2065-2074	7539	600	15000	188480
2075-2084	7779	240	6000	194480
2085-2094	8399	620	15500	209980
2095-2104	9119	720	18000	227980
TOTAL		9119		227980

TEN YEAR TOTAL VOLUMES

	Cumulative Area Needed Total	Number Hect per 10Y @ 25m3/pa	Model Annual Volume m3	10 Year Sawlog Volume m3	Cumulative Sawlog Volume
1995-2004		2800	7000	70000	
2005-2014	12990	10190	25480	254800	324800
2015-2024	16390	3400	8500	85000	409800
2025-2034	22790	6400	16000	160000	569800
2035-2044	38790	16000	40000	400000	969800
2045-2054	56590	17800	44500	445000	1414800
2055-2064	69390	12800	32000	320000	1734800
2065-2074	75390	6000	15000	150000	1884800
2075-2084	77790	2400	6000	60000	1944800
2085-2094	83990	6200	15500	155000	2099800
2095-2104	91190	7200	18000	180000	2279800
TOTAL	91190 .		..		2279800

35

The DNRE model as contained in the Midlands FMA Plan Pgs 129-130.

Between this year (1999) to the start of 2014, the following results will need to be met.
The Volumes for Clearfell are 1999-2004 are 3,500m3 per annum
2005-2014 are 25480m3 per annum

Total Volume m3 from 1999-2004 = 3500p.a. by 5 years = 17500
Total Volume m3 from 2005-2014 = 25480p.a. by 10 years = 254800

Total Volume for clearfall operations from the Model = 272300 m3

Total Volume for clearfall operations from the Model is 272,300m3

Area needed if 30m3/ha was achieved would be 9076ha
Area needed if 25m3/ha was achieved would be 10892ha
Area needed if 20m3/ha was achieved would be 13615ha

Total area available for 'Clearfall' in the Midlands is 24,310 hectares Net
If the average sawlog yield from the low grade forests (where clerafell is applied) was 25m3/ha.
The model will need 10,892 hectares, or approximately 40% of the available area, in a fifteen year period.

Appendix 4