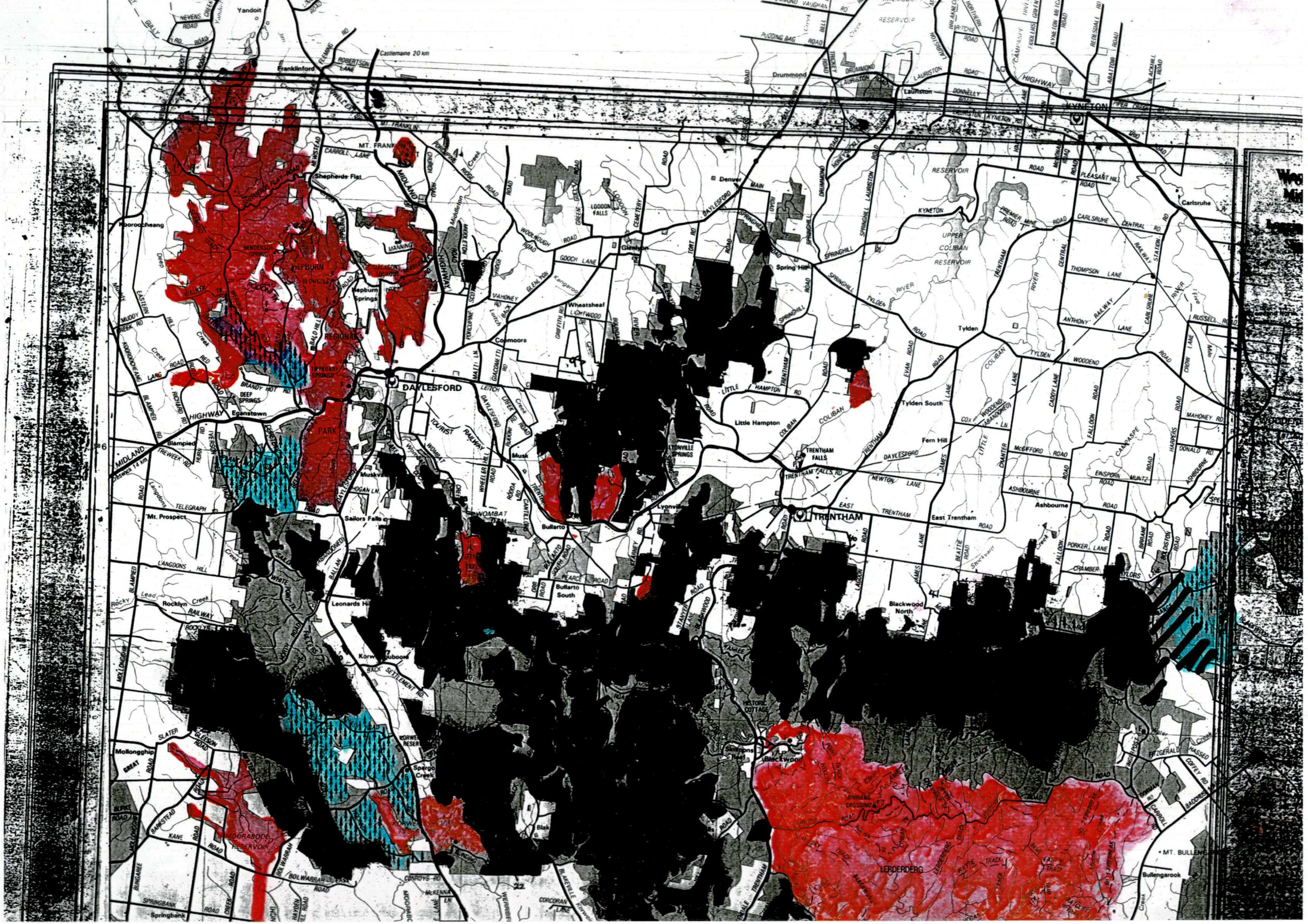
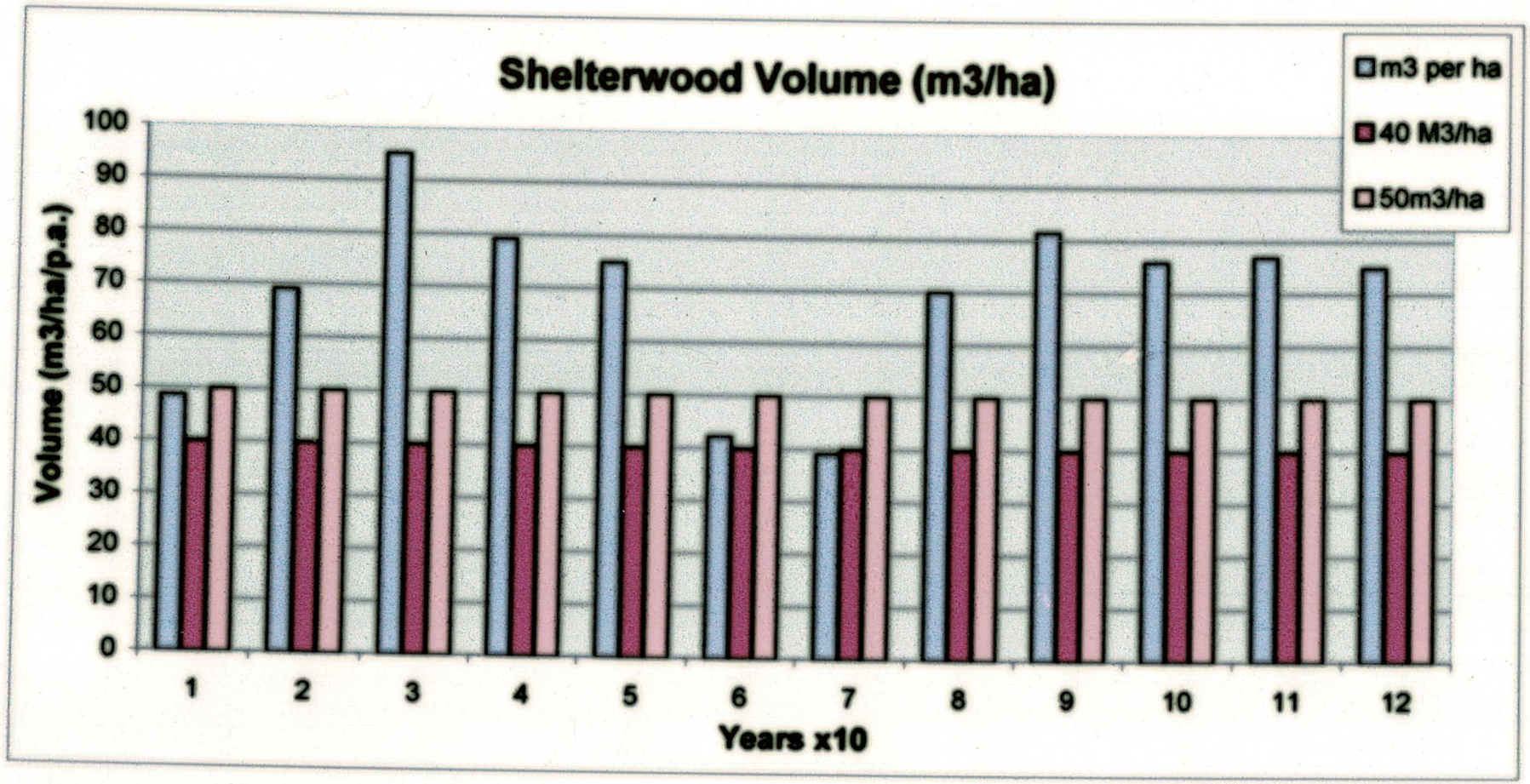

DAYLESFORD
TRENTHAM
KYNETON
Castlemaine 20 km
Franklinford
Yandoit
Drummond
Launston
Denver
Glenlyon
Spring Hill
Carlsruhe
Tylden
Tylden South
Little Hampton
Fern Hill
Ashbourne
East Trentham
Blackwood North
Coomoors
Wheatsheaf
Musk
Lyonville
Bullarto
Bullarto South
Sailors Falls
Mt. Prospect
Leonards Hill
Rocklyn
Korweinguboora
Blampied
Pipers Creek
Eganstown
Shepherds Flat
Hepburn Springs
Upper Coliban Reservoir
Lerderderg
Mt. Bullengarook
Springbank
Mollongghip
Sparrovale
Trentham Falls
Lyonville Springs
Deep Springs
Upper Springs
Trentham Falls
Historic Cottage
Blackwood
Mt. Franklin
Mt. Bullengarook
Midland Highway
Daylesford-Trentham Road
Daylesford-Malmsbury Road
Daylesford-Spa Country Railway
Tourist Railway
Coliban River
Loddon River
Deep Creek
Rocky Lead Creek
Jim Crow Creek
Wombat Creek
Coliban Reservoir
Korweinguboora Reservoir
Hepburn Regional Park
Lerderderg State Park
Trentham Falls
Lyonville Springs
Upper Springs
Historic Cottage
Blackwood
Mt. Franklin
Mt. Bullengarook

	Years 1-1(	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	350	440	80	420	100
Area SW1ha	425	140	420	110		320	340	250	100	460	100	
Area totalha	1050	470	520	530	100	320	665	600	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



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[1] (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

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. **1 192 300 m3 / 24330ha**

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

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

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
D-Grade	14279	11610	9786	11816	not supplied	13525	13521	11512	8636	7389

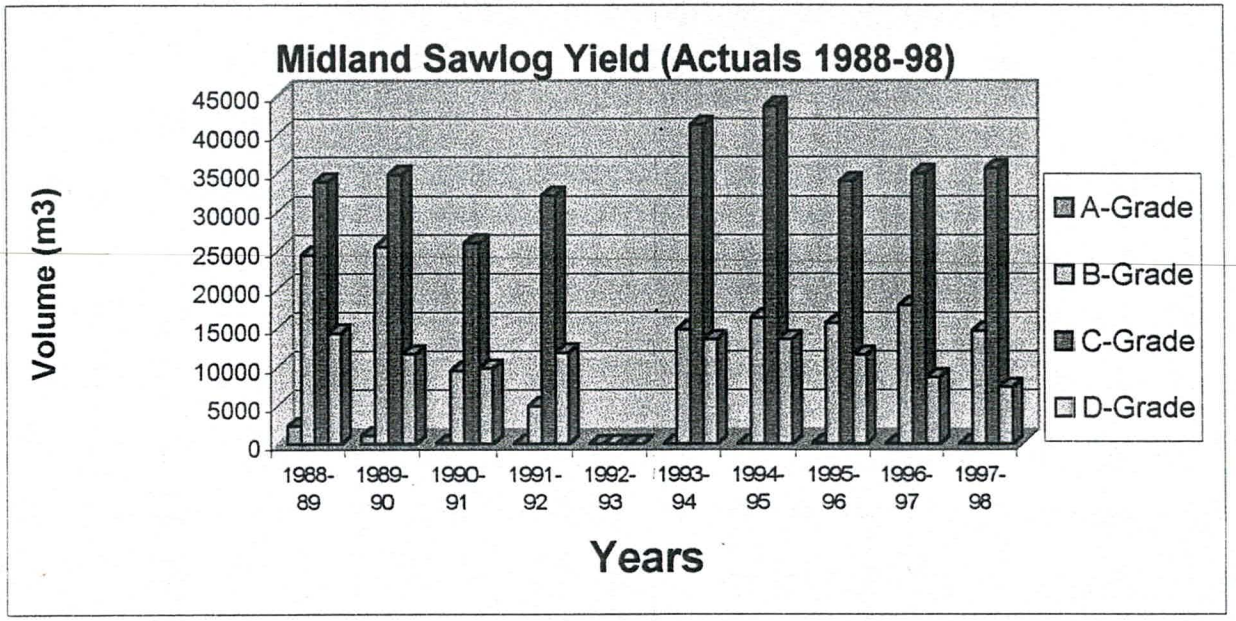


Figure 5

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	

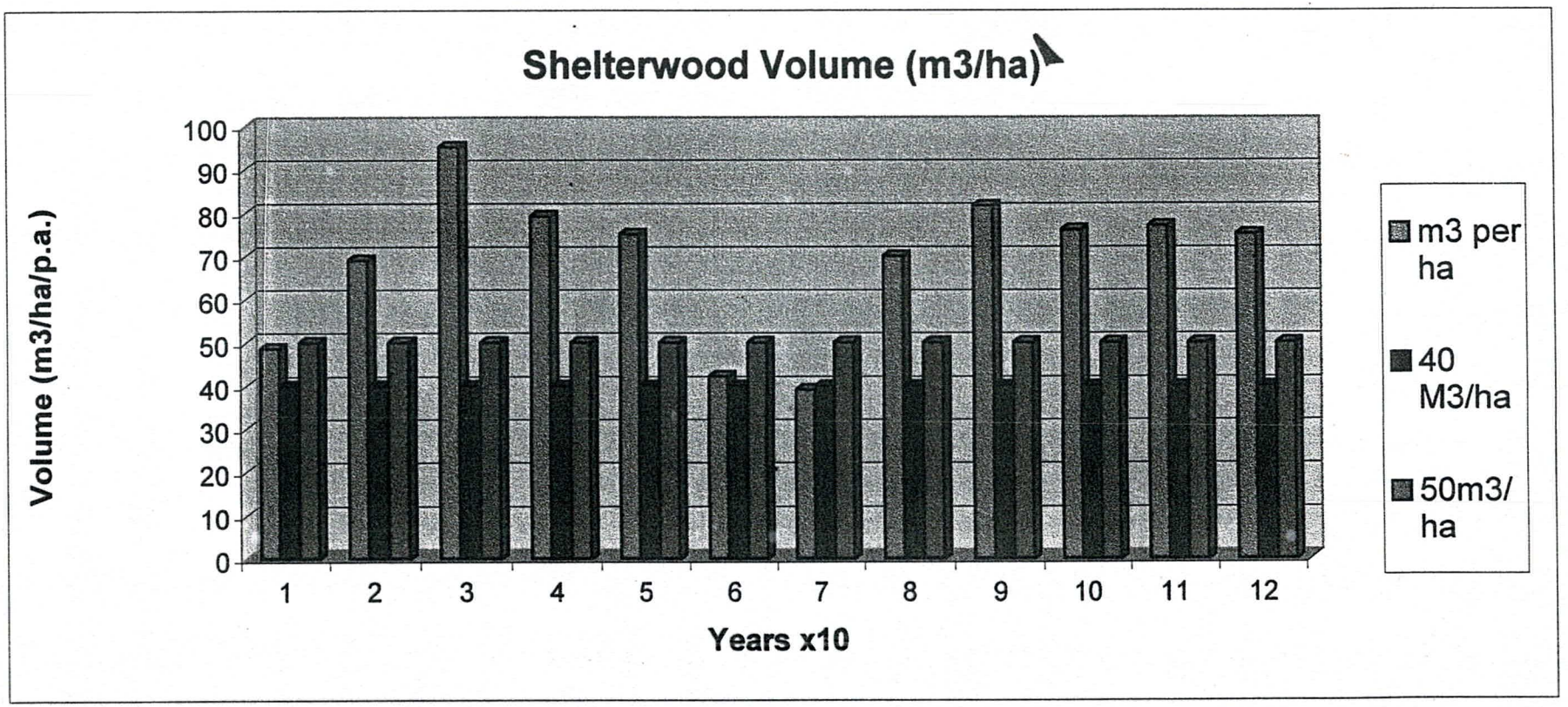
Figure 4 : Model Total Area and Volume Chart.

- 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.

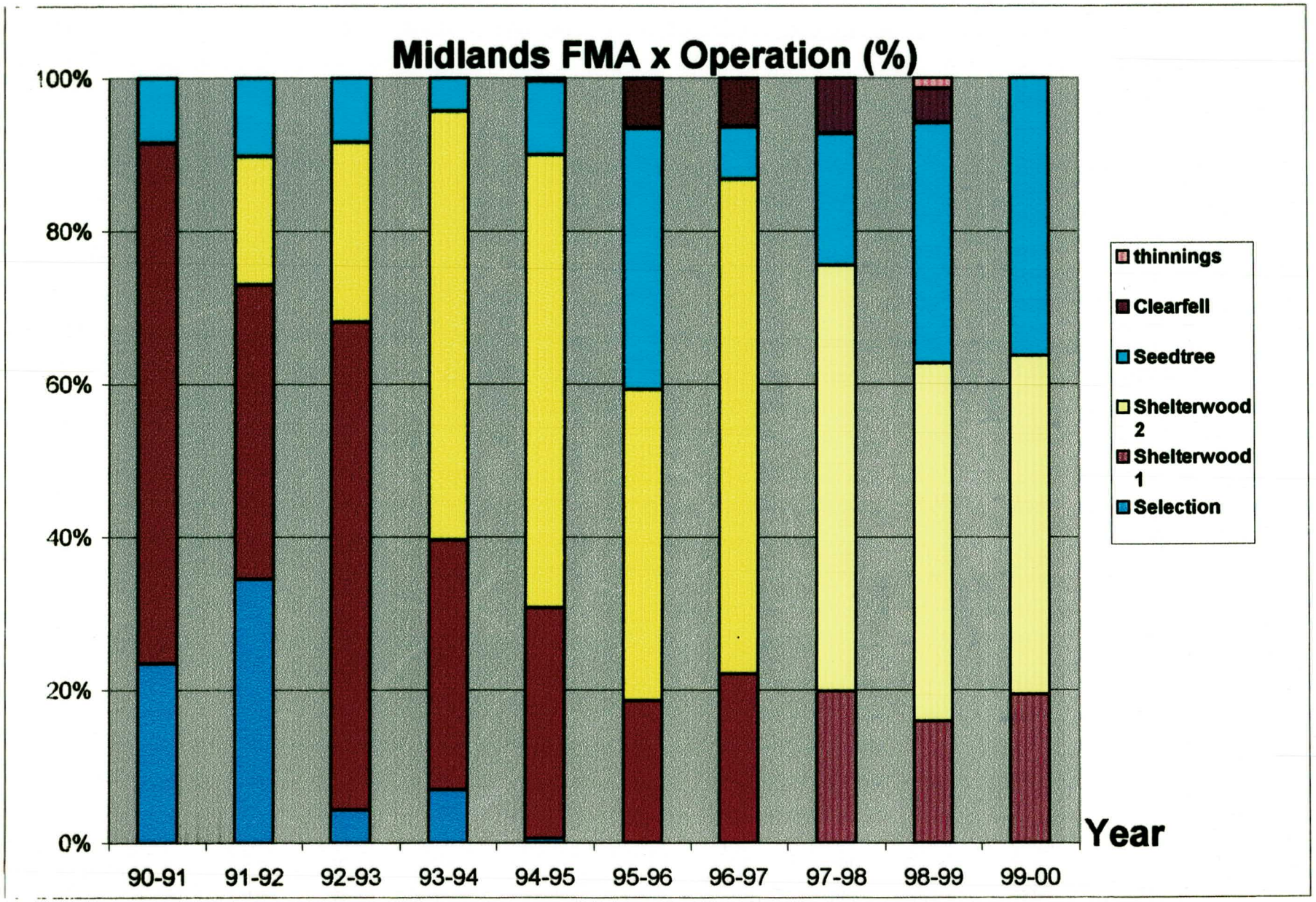
Over-harvesting of Wombat Compromises Sustainability.

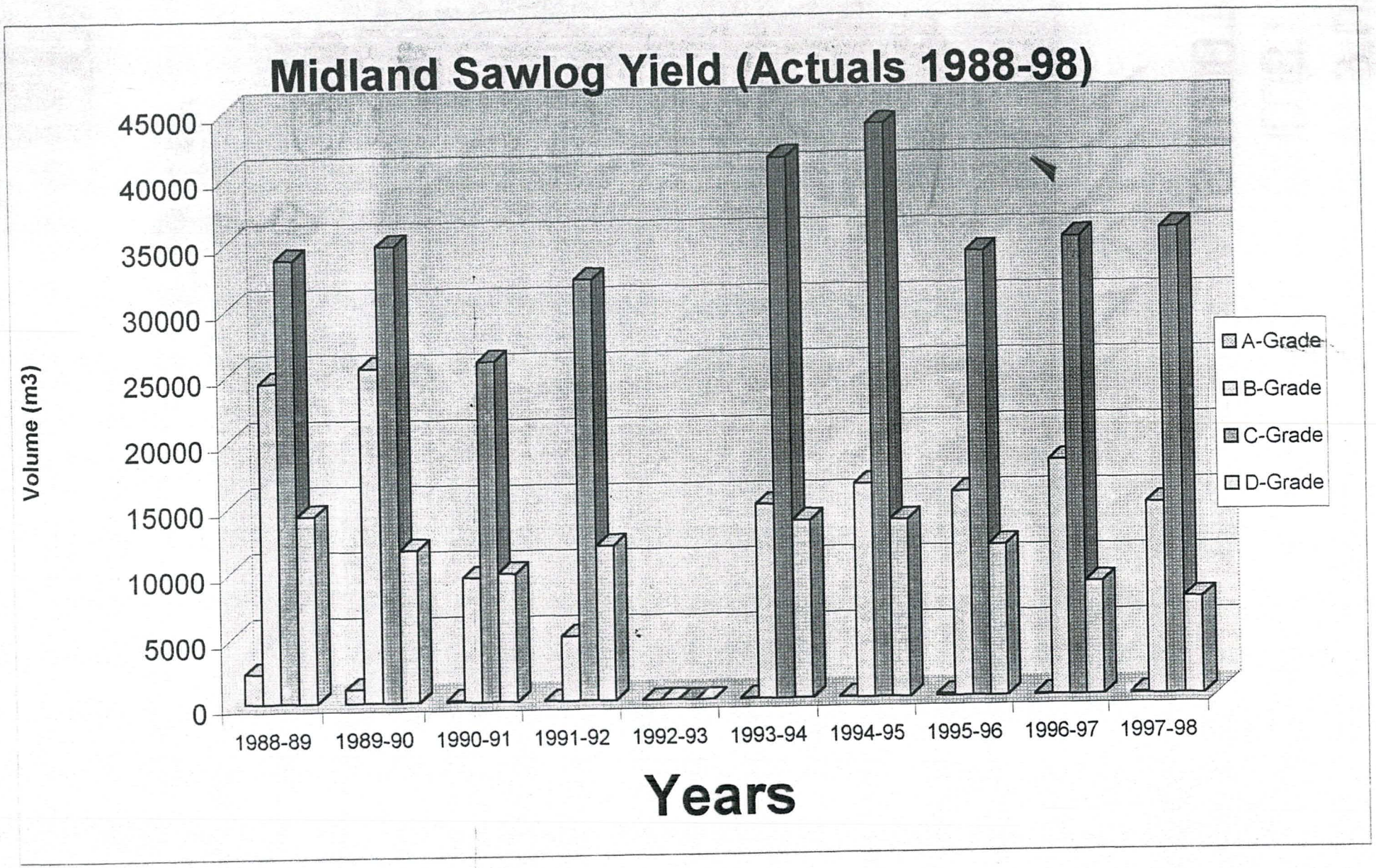
Shelterwood Volume /Area Graph

	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.


Midlands FMA x Operation (%)
100%
80%
60%
40%
20%
0%
90-91
91-92
92-93
93-94
94-95
95-96
96-97
97-98
98-99
99-00
Year
thinnings
Clearfell
Seedtree
Shelterwood 2
Shelterwood 1
Selection


Midland Sawlog Yield (Actuals 1988-98)
Volume (m3)
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
1988-89
1989-90
1990-91
1991-92
1992-93
1993-94
1994-95
1995-96
1996-97
1997-98
Years
A-Grade
B-Grade
C-Grade
D-Grade

APPENDIX N

Results from the forecast of sawlog sustainable yield for the Midlands FMA

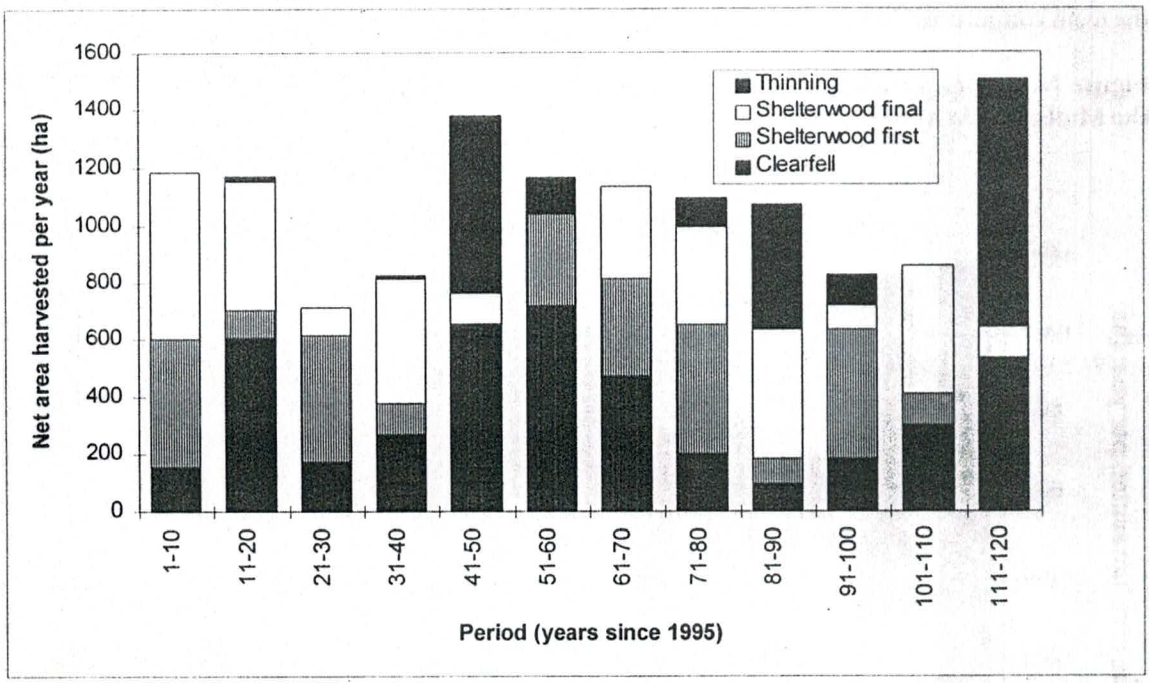
The following graphs result from the Integrated Forest Planning System used to determine the sustainable yield of sawlogs for the Midlands Forest Management Area. They detail forecasts of:

- net area harvested in 10-year periods by harvesting and regeneration system
- sawlog volume in 10-year periods by harvesting and regeneration system
- net area harvested in 10-year periods within grouped forest areas
- forest age structure in the years 1995, 2115, and 2185.

The results shown were prepared from the analyses undertaken for the Review of Sustainable Sawlog Yield for the Midlands Forest Management Area (CNR 1995a). Reviews of sustainable yield are required by the *Forests Act* 1958 (as amended by the *Forests (Timber Harvesting) Act* 1990). The reviews occur every five years, following significant change in the available sawlog resource, or at any time the Minister considers appropriate. The next review is required by 2001.

The results of the analysis will also be periodically examined to compare the predicted yields and area harvested against actual harvesting results. This will allow refinement of the assumptions in the model to provide a sustainable yield estimate with a higher level of confidence. Adjustments to the sustainable yield rate would occur as required under the *Forests Act* 1958.

Figure N1: Forecast net area to be harvested (hectares) by operation type for the Midlands FMA



The type of harvesting operation, over the next twenty years, will shift from the current predominance of shelterwood one into mainly shelterwood two and clearfell. (All Shelterwood two operations are scheduled to occur in the period immediately following the Shelterwood one operation.) Figure N1 shows that the type and area of harvesting operation conducted in the FMA can vary markedly between periods.

Figure N2: Forecast sawlog volume (m^3) to be harvested in 10-year periods by harvesting and regeneration system in the Midlands FMA

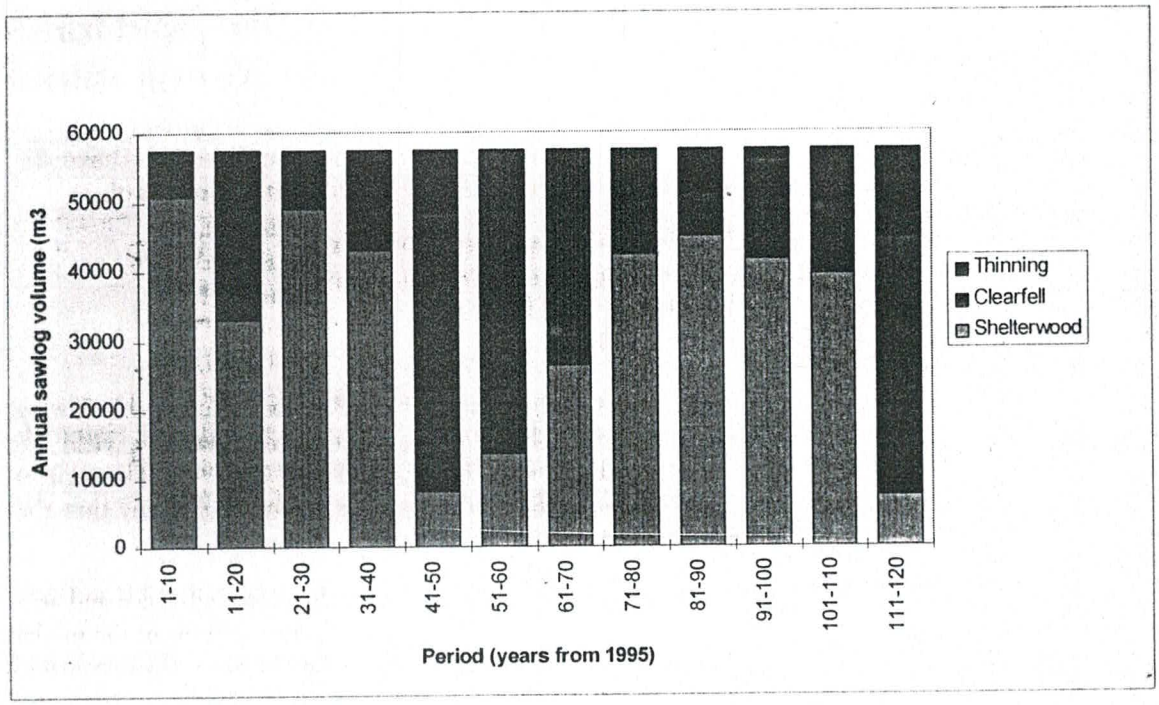
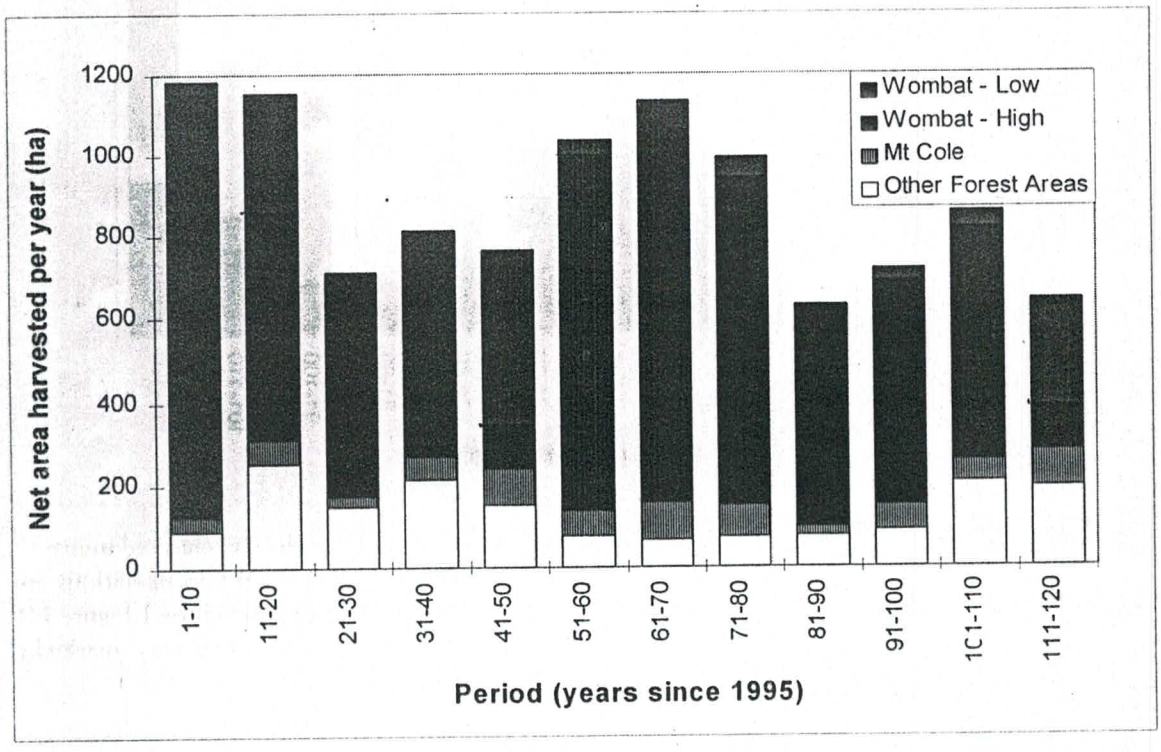
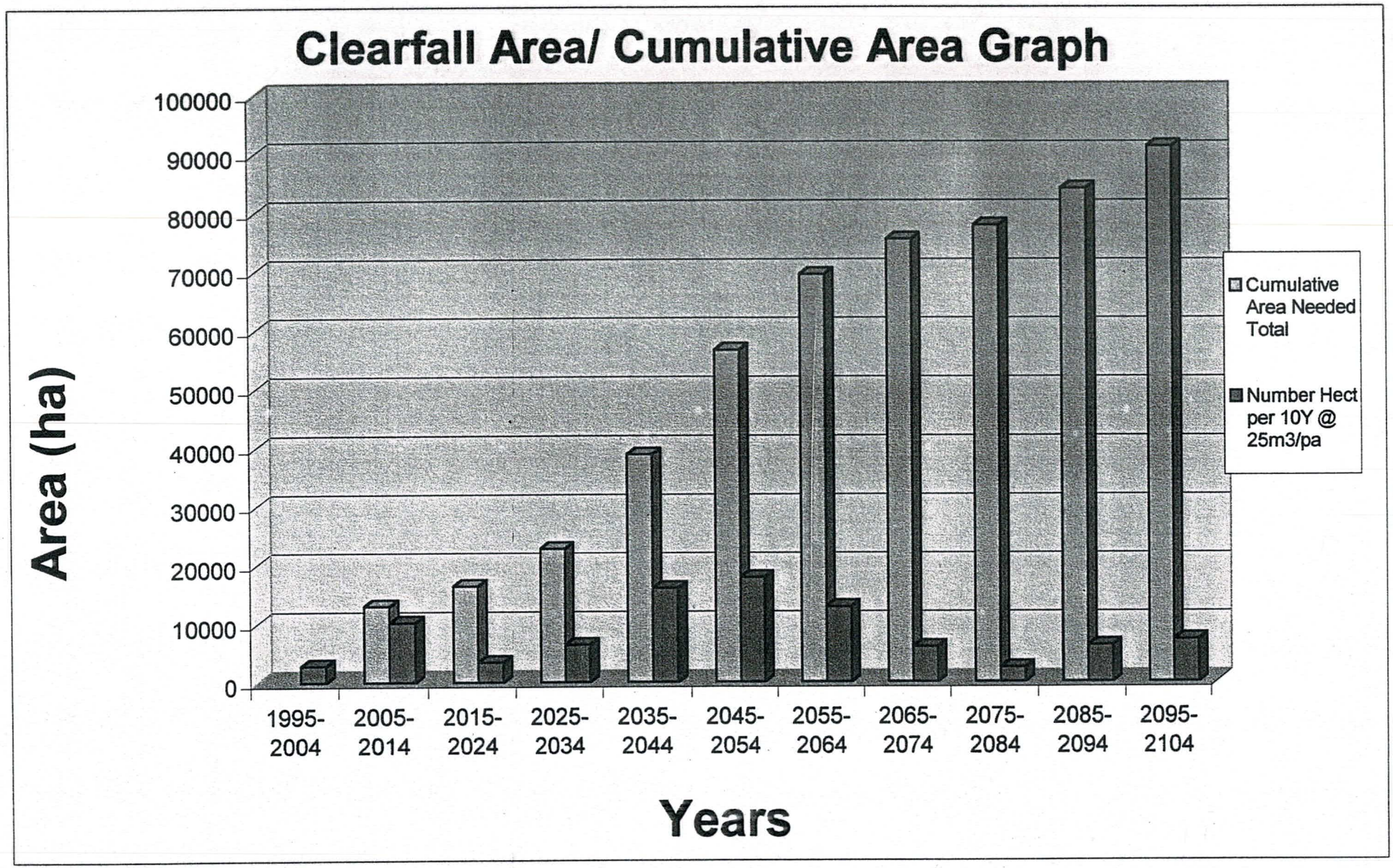


Figure N2 shows that most of the sawlog commitment will be met by shelterwood operations for the next 40 years; then clearfell will be the main source of supply for a number of periods. In about 2035, the main commercial thinning operations will begin and yield commercial quantities of small sawlog.

Figure N3: Forecast net area to be harvested in 10-year periods within grouped forest areas in the Midlands FMA




Clearfall Area/ Cumulative Area Graph
Area (ha)
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
1995-2004
2005-2014
2015-2024
2025-2034
2035-2044
2045-2054
2055-2064
2065-2074
2075-2084
2085-2094
2095-2104
Years
Cumulative Area Needed Total
Number Hect per 10Y @ 25m3/pa

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

