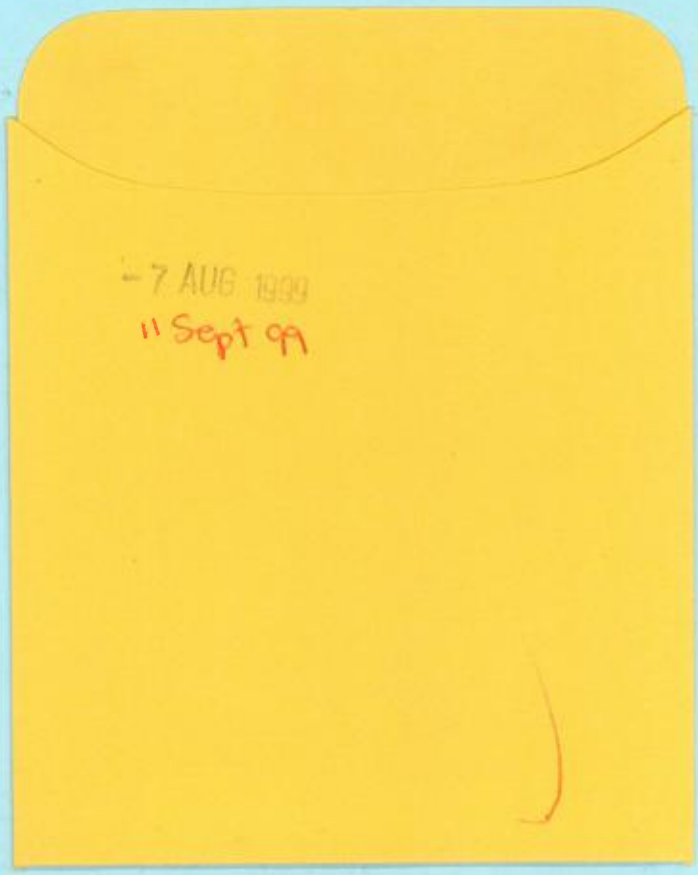
Forestry Commission
of
New South Wales

FORESTRY OPERATIONS IN
EDEN MANAGEMENT AREA

Environmental Impact Statement

APPENDIX 4

February 1990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Forestry operations in Eden management area : environmental

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Borrower				
Dept Minerals & Energy R. Molsher Renewal	St Leonards W Zone	27/3/91 7/7/99 11/8/99	✓	✓ 11/8/99

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FORESTRY OPERATIONS

IN

EDEN MANAGEMENT AREA

Environmental Impact Statement

APPENDIX 4

Consideration of Proposed Harvesting Areas

and Road Construction

ISBN 0 7305 5675 1

Eden 1990 EIS
Appendix 4

Consideration of proposed Harvesting Areas and Road Construction

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Introduction

Appendix 4 is a consideration, by groups of harvesting areas and roads, of proposed operations and likely environmental effects.

These "Areas" are those used in the 1988 EIS except that two have been deleted, namely,

Bemboka - Area 4 (no current proposal)
Tantawangalo Research - Area 9 (completed)

and five have been added, namely,

Bermagui (2a), Pericoe (25), East Boyd regrowth thinning (26), Nth Glenbog windthrow salvage (27) and Tantawangalo Mountain windthrow salvage (28).

Map 5A is the 1988 EIS map 5 updated to show the extent of roading and harvesting completed in the 1988 proposed areas together with additional roading and harvesting proposed in 1990. It has not been updated for tenure (e.g. the recent purchase of lands from Kapunda Development Co. Pty Ltd) nor land use (e.g. additional Flora Preserves/Reserves established).

Appendix 4 considers the following:

1. 1988 EIS coupes where logging has not yet started.

2. 1988 EIS coupes where logging had started but was not expected to be completed by about 31.12.89 and

3. Additional coupes possibly required for scheduling in 1990,

4. Roads proposed to be constructed during 1990, included in roading supplements to the respective Areas.

Those 1988 EIS coupes where logging was completed or expected to be completed about 31.12.89, are not included.

Explanation of Terms

Integrated Harvesting is forest harvesting for more than one type of timber product from the one area at the one time in the one harvesting operation. In the sense used at Eden it means simultaneous harvesting for sawlogs and pulpwood by the same contractor.

Limited Integrated Harvesting with sustantial forest canopy retention is integrated harvesting for sawlogs and pulpwood with additional tree retention to that required by normal prescriptions. It is generally applied in forest stands of low productive potential.

Retained Coupes are those retained for harvesting in the second round of the first cutting cycle under the alternate coupe harvesting system.

Salvage Windthrow Severe winds sometimes cause extensive tree damage in parts of the forest, often blowing them down or breaking their crowns. Sawlogs and pulp are salvaged from such areas, where economic and practicable, from trees which have little chance of recovery for future timber productivity.

Regrowth Thinning Regrowth eucalypt forest, initially resulting from past wildfire but increasingly in the future from harvesting, will be thinned for pulpwood to improve the productivity of the forest, by removal of poor quality slower growing or defective trees to concentrate growth on the sound vigorous trees retained in the stand as potential future sawlogs.

Forest Vegetation Types used in this appendix are groups of Forest Types as used in the 1988 EIS and in map 2 of that EIS, as reproduced below.

A	SILVERTOP ASH (INCL. FOREST TYPES 112 113 114 156 162)
B	BROWN BARREL (INCL. FOREST TYPES 151 154 155 156)
C	MESSMATE (INCL. FOREST TYPES 150 151 152 156)
D	GUM TYPES OTHER THAN SPOTTED GUM (INCL. FOREST TYPES 158 159 131)
E	SPOTTED GUM (INCL. FOREST TYPES 70 74 75 76)
F	STRINGYBARK (INCL. FOREST TYPES 121 123 126)
G	GULLY TYPE (INCL. FOREST TYPES 157 165 166 AND OCCASIONAL TREES OF BROWN BARREL, MESSMATE & MANNA GUM)
H	BLACKBUTT (INCL. FOREST TYPES 39 40 41)
Y	YELLOW STRINGYBARK - GUM (INCL. FOREST TYPE 157)
M	SILVERTOP ASH, STRINGYBARKS, YERTCHUK, BLOODWOOD COMPLEX (INCL. FOREST TYPES 102 111-115 121 123 126 130)
S	SWAMP (INCL. FOREST TYPE 231)
R	RAINFOREST (INCL. MAINLY FOREST TYPE 18)
N	NON-FOREST TYPES (INCL. TYPES 216 220 223 234)
O	SWAMP GUM (INCL. FOREST TYPE 143)
V	REGENERATING FOREST

The individual Forest Types are described in "Forest Types in New South Wales", Forestry Commission of N.S.W., Research Note 17, 1989, 95 pp.

Fauna Habitat Strata used in this appendix are Regional Value Rankings of preferred habitat for arboreal animals as used in the 1988 EIS map 3 and indicated generally by forest types present.

Stratum	Value	Forest Types (Res. Note 17)
0	Nil	Generally non-forest types including swamp 216, 220, 223, 231, 234.
1	Low	Mostly Silver-top Ash/Stringybark Types 102, 112-115, 121, 123, 126, 130
2	Low-Moderate	Spotted Gum, Blackbutt 39-41, 70, 74-76 and combinations strata 1 and 3.
3	Moderate	Rainforest, Drier Gum and Brown Barrel-Messmate 18, 131, 140, 151, 152, 156, 158, 159, 165, 166.
4	Moderate-High	Moist Brown Barrel, Gum and Peppermint types, Swamp Gum 111, 143, 154, 155, 157
5	High	As for stratum 4 but incorporating identified high value habitat in overall mosaic.

Rare and Threatened Plants referred to in this appendix are those so classified in "Rare and Threatened Australian Plants" (1988 revised edition) - J. Briggs and J. Leigh. Australian National Parks and Wildlife Service, Canberra, Special Publication 14.

Such plant species are covered by a coding system to summarize their distribution, conservation, and reservation status. Codes relevant to this publication are:

Distribution Codes:

"2" Restricted area distribution in Australia, geographic range less than 100 km.

"3" Restricted habitat distribution in Australia, range over 100 km in Australia but in small populations in very specific and localised habitats.

Conservation Codes:

"E" - Endangered - species in risk of extinction within 20 years under continued influence of causal factors.

"V" - Vulnerable - at risk of disappearing from the wild over 20-50 years due to continued depletion or likely changes in land use on their native sites.

"R" - Rare - some populations may be threatened, but at least one population occurs in a secure habitat ensuring species' persistence for the foreseeable future.

Reservation Codes:

"C" - species occurs within a proclaimed reserve

"a" - adequate reservation - 1000 or more plants occur within reserves.

"i" - inadequate reservation - less than 1000 plants within reserves.

EDEN EIS
APPENDIX 4A (i)
SUMMARY OF HARVESTING AREA DESCRIPTIONS
1989 - 1990

HARVESTING AREA		S.F. No.	ROAD CONSTR.(km)			CONSTITUTION OF COMPARTMENTS TO BE HARVESTED						PERCENTAGE OF SLOPE CATEGORY TO BE HARVESTED				HARVESTING AREA BY EROSION CATEGORY	
No.	Name	Section	Forestry Comm. Cl.2	Cl.3	Con trac tor	Prev. Harv. Coupes	Coupes Retain	No. Coupes	Net Area Harv.	Reserve in Coupe	Reserve ex Coupe	Gross Area Cpts.	0-10°	10-20°	20-30°	30+°	Average	High
1	Murrabrine	SF 947 Verona			1	120	277	4	107	8	54	566	20	19	9	0	0	107
2	Murrah	SF 140 Quaama			17.5	323	1141	21	1876	124	0	3464	35	35	35	35	1876	0
2a	Bermagui	SF 142 Quaama			0.9	0	96	1	99	0	8	203	38	33	0	0	99	0
3	Tanja	SF 544 Numbulla			5	83	100	4	315	0	0	498	48	39	39	0	315	0
	SUBTOTAL				24.4	526	1614	30	2397	132	62	4731					2290	107
5	Nth. Glenbog	SF 149 Glenbog SF 1009 Oorannok Sp.L 59/27 Ph. Winifred		2.3	21	56	674	17	598	69	211	1608	32	31	25	0	598	0
6	Bull Mountain	SF149 Glenbog		1.5	5	324	808	11	593	18	668	2411	20	20	24	0	593	0
7	Tantawangalo West	SF 143 Glenbog				82	93	1	23	1	0	199	11	0	0	0	23	0
8	Tantawangalo South	SF 143 Glenbog			4	75	594	4	300	8	91	1068	22	22	27	0	300	0
10	Glen Allen	SF 1031 Glenbog			6	57	551	8	454	11	0	1073	31	27	26	0	454	0
11	Crown Lands Bega	Glenbog			4	0	N/A	4	207	624	N/A	831	21	20	0	0	167	40
	SUBTOTAL			3.8	40	594	2720	45	2175	731	970	7190					2135	40
12	Yurammie East	SF 133 Yurammie			18	300	812	17	663	94	276	2145	29	34	26	0	277	386
13	Yurammie West	SF 134 Yurammie		24.0	7	0	375	14	490	44	246	1155	30	40	23	0	0	490
	SUBTOTAL			24.0	25	300	1187	31	1153	138	522	3300					277	876
14	Lennards West	SF 545 Lennards		2.1	4	0	128	3	179	21	80	408	37	27	0	0	179	0
15	Lennards East	SF 545 Lennards				223	245	5	21	15	65	569	4	4	4	0	0	21
	SUBTOTAL			2.1	4	223	373	8	200	36	145	977					179	21
16	Jingera North	SF 545 & 132 Jingera		6.3	62	797	3443	71	2667	340	779	8026	30	39	35	7	2054	613
17	Jingera South	SF 545 Jingera			6	219	358	8	115	42	109	843	2	19	15	0	115	0
17a	Jingera West	SF 545 Jingera		3.2	3		153	3	155	16	63	387	28	39	33	0	155	0
	SUBTOTAL			9.5	71	1016	3954	82	2937	398	951	9256					2324	613
18	Falkner North	SF 126 Falkner	10.8	2.6	52	545	3064	68	2400	345	555	6909	24	34	22	0	120	2280
19	Falkner Waalimna	SF 126 & 131		10.2	99	1294	3074	76	2009	250	751	7378	24	21	17	0	190	1819
	SUBTOTAL		10.8	12.8	151	1839	6138	144	4409	595	1306	14287					310	4099
20	Cathcart/ Big Jack	SF 607 Coolangubra		8.4	16	30	548	17	528	52	102	1260	36	26	29	0	528	0
21	Pheasant's Peak	SF 547 Coolangubra			26	169	1220	26	873	114	298	2674	25	25	23	0	498	375
22	Nalbaugh Mines Rd	SF 129 Coolangubra	3.4	7.7	6	116	455	11	410	52	72	1105	32	28	17	0	179	231
23	Rockton	SF 128 Rockton			33	493	2302	42	1239	125	219	4378	24	23	11	0	224	1015
24	Bondi	SF 128 Bondi			10	258	431	6	183	99	0	971	16	16	16	0	60	123
25	Pericoe	SF 547 Pericoe	31.3	22.5	3	0	164	2	78	18	3	263	27	19	25	0	0	78
	SUBTOTAL		34.7	38.6	94	1066	5120	194	3311	460	694	10651					1489	1822
	TOTAL (Integrated Harvesting)		45.5	90.8	409.4	5564	21106	444	16582	2490	4650	50395					9004	7578
26	East Boyd	SF 127 East Boyd			5	area to be thinned:			300	54 - excluded from thinning		N/A					300	0
27	North Glenbog	SF 149 Glenbog			1	N/A	N/A	11	1495	Nil	106	1601	50	50	27	0	1495	0
28	Tantawangalo Mountain	SF 134 Glenbog			1	N/A	1187	8	152	55	0	1394	10	10	12	0	152	0
	TOTAL (Others)				7		1187	19	1947	109	106	2995					1947	0
	GRAND TOTAL		45.5	90.8	506.4		22293	463	18529	2599	4756	53390					10951	7578

EDEN EIS
APPENDIX 4A (ii)
SUMMARY OF HARVESTING AREA DESCRIPTIONS
1989 - 1990

Area No.	Rainfall mm	CATCHMENT Area(ha)	Name	AREAS OF VEGETATION TYPES (HA) (SEE GLOSSARY) A	B	C	D	E	F	G	Y	M	N	S	R	V	O	REGIONAL ARBOREAL ANIMAL STRATA (HA) 0	1	2	3	4
1	1000	107	TUROSS	32						15	25	35							54		16	37
2	900	402	BERNAGUI	171						357	40	1308							1218	383	245	30
		1474	MURRAH/CUTAGEE																			
2a	850	99	NARIRA	44				5	6	44									44	5	44	6
3	850	315	BEGA							120		190			5				120	195		
4	N/A																					
5	950	559	BEGA	119	358		18					103							168	43	27	360
		39	MURRUMBIDGEE																			
6	950	273	BEGA	31	356	44	14					119	29						148		89	356
		320	BOMBALA																			
7	925	23	BOMBALA	10		5	5					3							5		18	
8	1000	157	BOMBALA	78	101		104				11		6						21		98	181
		143	BEGA																			
9	N/A																					
10	900	454	BOMBALA	299		45	110												396		58	
11	850	200	MURUMBIDGEE																			
		7	TUROSS		37		110							60				60			147	
12	950	663	(PAMBULA	302						8	353								245		130	288
			(YOWAKA																			
			(NULLICA																			
13	900	121	TOWAMBA	31	222	160	42		11		18	6							23	53	174	240
		369	TANTAWANGALO																			
14	800	179	YOWAKA	83						22		74							157		22	
15	800	21	(PAMBULA	13								8							13		8	
			(YOWAKA																			
			(NULLICA																			
16	1000	460	TOWAMBA	798		56				957	56	800							1443		1140	84
		2205	(NULLICA																			
			(YOWAKA																			
17	900	84	TOWAMBA	22						44	30	19							41		44	30
		31	NULLICA																			
17a	900	155	TOWAMBA				14		13	105	23								12		119	24
18	1050	1761	WALLAGARAUGH	984	48				576	96	120	576							2136		96	168
		639	TOWAMBA																			
19	1000	109	WONBOYN	980					431		189	305				104			1830			179
		1004	GENOA																			
		896	WALLAGARAUGH																			
20	800	528	TOWAMBA	121	272	120	5		10										108		264	156
21	1000	792	TOWAMBA	277	260	336													300		470	103
		81	BOMBALA																			
22	900	130	GENOA	140	110	160												40	290		40	40
		280	TOWAMBA																			
23	900	560	GENOA	700	4	270	5					260							976		263	
		70	TOWAMBA																			
24	850	183	GENOA	128		55													128		55	
25	900	132	TOWAMBA	41		22	15														78	
26	825	23	TOWAMBA	15								285							300			
		277	WONBOYN																			
27	1000	52	BEGA	136	1223		102					34							136	34	102	1223
28	1000	100	BEGA-SHIRE	100		15	37												100		37	15
		44	EX BEGA-SHIRE																			
TOTALS BY VEGETATION TYPE				5655	2991	1288	581	5	1047	1768	865	4125	35	60	5	104						
TOTALS BY ANIMAL STRATA																		100	10412	713	3784	3520

VEGETATION AREA SUM 18529 FAUNA AREA SUM 18529

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Murrabrine; Verona Section,
part Murrabrine State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

1

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 3

First Scheduled 1988 EIS	First Scheduled 1990 EIS
Nil	2504
	2505
	2506(pt)

1.2.3 Weather contingencies

Areas are only suitable for dry weather logging.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Areas are grouped together in the north west of the forest reflecting the existing road pattern.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)			120 ha
(b) Coupes retained for future harvesting (gross area)			277 ha
(c) Coupes now proposed for harvesting (gross area)			115 ha
	Number of coupes	4	
	Net area to be harvested	107 ha	
	Contained areas excluded from harvesting	8 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)			54 ha
Total gross area of compartments			566 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Undulating ridges and lower slopes within headwaters of New England Creek.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	170	43
10-20°	226	53
20-30°	113	11
over 30°	57	0
	566	107

2.2 Climate

2.2.1 Local features

Warm to hot summers, mild to cool winters. Occasional hot dry winds in spring/summer.

2.2.2 Annual precipitation

About 1000 mm.

2.3 Geology and Soils

2.3.1 Considerations

Coarse grained sandy loams from granite. Can be highly erodible.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	-	-
high	4	107

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Tuross	107

2.4.2 Considerations

This area is an extremely small part of the upper Tuross River catchment. The Eden Standard Erosion Mitigation Conditions should be sufficient to minimise erosion and maintain water quality.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	32	87	42
Y	25	44	12
M	35	102	-
G	15	44	8
	107	277	62

2.5.3 Additional description

Mainly dry sclerophyll forest with a medium shrub understorey. Very heavily damaged by past wildfire.

2.5.4 Rare or threatened species

None found in pre-logging surveys.

2.5.5 Conservation measures

The nearby Wadbilliga National Park and Illawambra Forest Preserve provide extensive flora conservation in the locality.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Considered and no further action required.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	54	107	42
3	16	75	12
4	37	95	8
	107	277	62

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

The nearby Wadbilliga National Park and Illawambra Forest Preserve provide extensive fauna conservation in the locality.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Arboreal mammals, especially hollow-dwelling mammals and birds are likely to be most affected. No special measures required. Fauna values considered to be adequately protected.

2.7 Scenery

2.7.1 Consideration of scenic values

Logging is confined to a natural basin on the north west of Murrabrine Mountain which has low visual sensitivity.

2.7.2 Additional measures to protect important features

None required.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known

2.8.2 Investigations

A consultant archaeologist has reported that the only sites likely to be present on areas to be harvested are open sites consisting of small surface scatters of flaked stone and that survey of these areas is not warranted due to the number of known sites on the adjacent National Park.

2.8.3 Action to protect identified sites

Not applicable

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

No known sites.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

Coupes in Compartments 2505 and 2506 (1989) adjoin over 0.5 km along ridge roading. Cumulative impact is considered to be insignificant.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Murrah; Quaama Section,
Murrah State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

17.5

1.2 Harvesting

1.2.1 Type

Integrated, except operations on visually sensitive and usually less productive areas will be confined to limited integrated harvesting with substantial canopy retention.

1.2.2 Compartments containing coupes to be harvested.

Total 16

First Scheduled 1988 EIS	First Scheduled 1990 EIS	
2031	2021(pt)	2062
2053	2024	2063
	2025	2064
	2028	2065
	2045	2066
	2060	2067
	2061	2068

1.2.3 Weather contingencies

Areas suitable for wet weather operations have been designated within the area.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Operations to meet local commitments have necessarily been concentrated in that small proportion of Murrah State Forest remaining to be logged, mainly the southern and north-west sections.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area) 323 ha

(b) Coupes retained for future harvesting (gross area) 1141 ha

(c) Coupes now proposed for harvesting (gross area) 2000 ha

Number of coupes	21
Net area to be harvested	1876 ha
Contained areas excluded from harvesting	124 ha

(d) Areas excluded from harvesting outside of harvesting coupes (gross area) Ø ha

Total gross area of compartments 3464 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions.

1.3.2 Post-logging burning

Normal prescriptions.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Main topographical feature is Cadjangarry Mountain (364m) in the north with a series of ridges radiating to the southeast and east, dissected by Myrtle, Nutleys and Cuttagee Creeks. Murrah State Forest is generally between 100 and 200m above sea level.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	1039	564
10-20°	1385	750
20-30°	694	375
over 30°	346	187
	3464	1876

2.2 Climate

2.2.1 Local features

Temperatures are warm to hot in summer (max.32°C Feb.) and cool to mild in winter (min.1.4°C July). Annual rainfall is spread evenly throughout the year.

2.2.2 Annual precipitation

850-950 mm/yr.

2.3 Geology and Soils

2.3.1 Considerations

Parent material-Ordovician shales. Soils are shallow clay loams of normal erosion class.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	21	1876
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Bermagui	402
Murrah/Cuttagee	1474
	1876

2.4.2 Considerations

Main streams within the area are the Murrah River, Cuttagee Creek, Myrtle Creek, and Nutleys Creek. The latter two are tributaries of the Bermagui River.

Only some 4-5% of these catchments will be harvested and the Erosion Mitigation Conditions employed will ensure minimal erosion and effect on water quality.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

No additional measures required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	171	103	58
G	357	217	-
M	1308	787	66
Y	40	34	-
	1876	1141	124

2.5.3 Additional description

Dry sclerophyll forest with small, isolated pockets of moist forest containing rainforest elements in the heads of gullies.

2.5.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.5.5 Conservation measures

Rainforest and gullies conserved..

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Considered and no further action required.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	1218	741	124
3	383	228	-
4	245	153	-
2	30	19	-
	1876	1141	124

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Rainforest conserved. Normal Management Plan prescriptions for retention of fauna habitat apply.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Fauna values considered to be adequately protected, no further action required.

2.7 Scenery

2.7.1 Consideration of scenic values

Some areas of the Compartments listed in 1.2.2 and 2.7.2 are visible from Princes Highway to the west and the Bermagui-Cobargo Road to the north. Elsewhere logging coupes are obscured by intervening ridges.

2.7.2 Additional measures to protect important features

The visual impact of harvesting in Compartments 2028, 2031,2053,2066,2067,2068 is reduced by limiting harvesting to sawlogs and associated residues utilised for pulpwood. The western half of coupe 1, cpt 2053 is classified PMP 1.1.6 Visual Resource Protection and logging shall be of a low intensity to maintain the visual integrity of the area.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

There are known Aboriginal sites on Cpts 2031, 2066,2067 and 2068.

These, together with Cpt 2053 are within Biamanga Aboriginal Place.

2.8.2 Investigations

No further investigations required.

2.8.3 Action to protect identified sites

Any harvesting and other works within the Aboriginal Place will conform to the requirements of the approved Management Plan for that area. All known sites will be protected.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

Part of the area is within the Biamanga Aboriginal Place on the Register of the National Estate and managed under a Management Plan agreed to by the Yuin Aboriginal Tribal Council, the National Parks and Wildlife Service and the Forestry Commission.

2.9.2 Action to maintain values

Any work undertaken within the area will conform to the requirements of the Plan.

3. CUMULATIVE IMPACT

The only areas adjoining 1989 coupes are areas of limited integrated harvesting and cumulative impact is not considered to be significant.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Bermagui; Quaama Section,
part Bermagui State Forest (west)

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

0.9

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 1

First Scheduled 1988 EIS	First Scheduled 1990 EIS
Nil	2069

1.2.3 Weather contingencies

Areas suitable for wet weather operations have been designated within the area.

1.2.4 Dispersal, within the Area, of coupes to be harvested

A single coupe in the westernmost part of Bermagui State Forest, north of the Cobargo/Bermagui road.

1.2.5 Constitution of compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area) Nil

(b) Coupes retained for future harvesting (gross area) 96 ha

(c) Coupes now proposed for harvesting (gross area) 99 ha

Number of coupes	1
Net area to be harvested	99 ha
Contained areas excluded from harvesting	Nil

(d) Areas excluded from harvesting outside of harvesting coupes (gross area) 8 ha

Total gross area of compartments 203 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Generally undulating to hilly, sloping north towards Narira Creek from the Bermagui road.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	80	50
10-20°	100	49
20-30°	23	-
over 30°	-	-
	203	99

2.2 Climate

2.2.1 Local features

Mild winters, warm summers.

2.2.2 Annual precipitation

About 850 mm/yr

2.3 Geology and Soils

2.3.1 Considerations

Ordovician shales have created shallow clay loams of average erosion class.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	1	99
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Narira	99

2.4.2 Considerations

Only a very small part of the Narira catchment is to be harvested and soils are not highly erodible.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	44	40	-
E	5	5	-
G	44	41	8
F	6	10	-
	99	96	8

2.5.3 Additional description

Dry Sclerophyll Type - mixture of Spotted Gum, Stringybark, Silvertop Ash. Understorey medium density of Acacias.

2.5.4 Rare or threatened species

None known or found in pre-logging surveys.

2.5.5 Conservation measures

The area adjoins Wallaga Lake National Park.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

No special action required.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	44	40	-
2	5	5	-
3	44	41	8
4	6	10	-
	99	96	8

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Fauna present are expected to be all well represented in the adjoining National Park.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Fauna values considered to be adequately protected.

No special measures required.

2.7 Scenery

2.7.1 Consideration of scenic values

The harvesting area is adjacent to Bermagui Road.

2.7.2 Additional measures to protect important features

A visual strip 50 m wide has been designated adjoining Bermagui Road and logging will be excluded from the first 20 m of that area.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

No known sites on the area to be harvested. Significant sites are more likely to occur on Narira Creek or in the vicinity of Wallaga Lake.

2.8.2 Investigations

None required.

2.8.3 Action to protect identified sites

Not applicable.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

No known sites.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

Does not adjoin 1989 harvesting.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Tanja; Mumbulla Section,
Tanja State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

5

1.2 Harvesting

1.2.1 Type

Limited integrated harvesting with substantial canopy retention for mainly visual reasons.

1.2.2 Compartments containing coupes to be harvested.

Total 3

First Scheduled 1988 EIS	First Scheduled 1990 EIS
2102	
2103	Nil
2115	

1.2.3 Weather contingencies

Three coupes are suitable for wet weather operations.

1.2.4 Dispersal, within the Area, of coupes to be harvested.

Normal dispersal.

1.2.5 Constitution of compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area) 83 ha

(b) Coupes retained for future harvesting (gross area) 100 ha

(c) Coupes now proposed for harvesting (gross area) 315 ha

Number of coupes	4
Net area to be harvested	315 ha
Contained areas excluded from harvesting	Nil

(d) Areas excluded from harvesting outside of harvesting coupes (gross area) Nil

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Total gross area of compartments 498 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions applying to strategic areas.

1.3.2 Post-logging burning

Normal prescriptions applying to strategic areas.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

The area is close to Doctor George Mountain and is on the western slope of the divide between Bega River and minor catchments within Mimosa Rocks National Park.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	98	94
10-20°	249	158
20-30°	98	63
over 30°	53	-
	498	315

2.2 Climate

2.2.1 Local features

Expected to be similar to Bega which has a mean annual rainfall of 870 mm and warmer summer and winter temperatures than more southerly and westerly parts of the management area.

2.2.2 Annual precipitation

About 850 mm

2.3 Geology and Soils

2.3.1 Considerations

Basically shales of Ordovician origin, with occasional granite outcrops. Soils are generally stable, but shallow and with poor nutrient status.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	4	315
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Bega	315

2.4.2 Considerations

Logging in the Bega catchment covers a very minor proportion of the catchment.

Drainage from the area enters the Bega River near its mouth through Reedy Swamp.

Application of the Eden Standard Erosion Mitigation Condition will be adequate to minimise erosion and maintain water quality. Furthermore harvesting is essentially limited integrated maintaining substantial canopy cover.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
G	120	37	-
R	5	5	
M	190	58	
	315	100	

2.5.3 Additional description

Dry silvertop ash/stringybark forest, including other species such as Woolybutt and Grey Box. Understorey is mainly sparse and grassy. Very small areas of rainforest are protected by prescription.

2.5.4 Rare or threatened species

None found in pre-logging surveys. Three species are known to exist on Mt. George in an area that will not be logged (PMP 1.1.6 Special Emphasis Scenic Resource Protection). There are Acacia georgensis 2VCi, Haloragodendron baeuerlenii 3RCa and Phebalim carruthersii 3RC.

2.5.5 Conservation measures

Species are generally well represented in the adjoining Mimosa Rocks National Park. Rainforest is protected.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

No special action to conserve species required.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	120	23	-
2	195	77	
3	-	-	
	315	100	

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

All species present are expected to be well represented and conserved in the adjoining Mimosa Rocks National Park.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Harvesting areas are generally of low value for fauna. No special measures required.

2.7 Scenery

2.7.1 Consideration of scenic values

Doctor George Mountain and the ridgeline between National Park and State Forest are features, particularly from the west.

2.7.2 Additional measures to protect important features

Much of the area is zoned for scenic resource protection (PMP 1.1.6) and harvesting therein will be at an intensity to protect that resource.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None. Significant sites are more likely to occur adjoining major water courses elsewhere.

2.8.2 Investigations

None required.

2.8.3 Action to protect identified sites

Not applicable

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

There are no known sites in this area.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

Does not adjoin 1989 logging. 1990 coupes adjoin but all are areas of limited integrated logging and the cumulative effect is not considered to be significant.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : North Glenbog; Glenbog and Ooranook Sections, part Glenbog (north) and Bemboka (west) State Forests and Special Lease 59/27 Ph. Winifred

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

2.3 (see Area 5, sub-section R1).

1.1.3 Minor access to dump sites (kms)

21

1.2 Harvesting

1.2.1 Type

Integrated harvesting.

1.2.2 Compartments containing coupes to be harvested.

Total 9

First Scheduled 1988 EIS	First Scheduled 1990 EIS
2201	2368
2203	2369
2204 (pt)	2370
2320	
SP.L59/27	
2304	

1.2.3 Weather contingencies

There are limited areas available for wet weather, mainly off Xi road. These have been designated for that purpose.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Much of the area in adjoining compartments has already been logged in the first half of the cutting cycle. Harvesting areas have been dispersed as far as practicable in the remainder. Note that adjoining areas will be harvested for windthrow salvage.

1.2.5 Constitution of compartments containing coupes to be harvested

(a) Previously harvested coupes		(gross area)	56 ha
(b) Coupes retained for future harvesting		(gross area)	674 ha
(c) Coupes now proposed for harvesting		(gross area)	667 ha
	Number of coupes	17	
	Net area to be harvested	598 ha	
	Contained areas excluded from harvesting	69 ha	
(d) Areas excluded from harvesting outside of harvesting coupes		(gross area)	211 ha
Total gross area of compartments			1608 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions.

1.3.2 Post-logging burning

Normal prescriptions.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

The area is located near the eastern edge of the tablelands. Topography is undulating to hilly in northern coupes; steeper in southern and eastern coupes which adjoin the steep escarpment east of the tablelands. Altitudinal range of proposed logging is 800-1100m a.s.l.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	503	235
10-20°	628	280
20-30°	247	83
over 30°	230	-
	1608	598

2.2 Climate

2.2.1 Local features

Cold winters with frosts and occasional snowfall. Mild to warm summers with occasional hot dry northwest winds. Xi Road area strongly affected by the orographic effect of the escarpment with high preciputation and frequent afternoon fogs.

2.2.2 Annual precipitation

Range about 800-1100 mm

2.3 Geology and Soils

2.3.1 Considerations

Parent material is mainly Devonian biotite granodiorite, commonly with granite outcrops on ridgetops and boulders on mid and lower slopes. Soils are relatively stable red and yellow sandy loams.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	17	598
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Bega	559
Murrumbidgee	39

2.4.2 Considerations

Most of the area drains into the Bemboka River which is used extensively for irrigation downstream below the escarpment and about 22 km downstream for domestic water supply for the township of Bega. Harvesting areas are in the headwaters of the catchment and constitute a very small part of the catchment area, which has been substantially cleared for agriculture.

Application of the Eden Standard Erosion Mitigation Conditions (ref. App. 1), which provide for such soils, will be adequate to minimise erosion and maintain water quality.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

Very steep areas not to be logged. No other special measures required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	119	135	112
B	358	358	133
D	18	20	-
M	103	150	21
R	-	11	14
	598	674	280

2.5.3 Additional description

Wet sclerophyll - dominant
Dry sclerophyll - on exposed ridgetops.
Swampy vegetation on poorly drained sites
Cool temperate rainforest on steep, southeast aspect gullies
Understorey light especially near swamps
Fire damage heavy on exposed areas.

2.5.4 Rare or threatened species

Locally uncommon (not rare), King Fern (Todea barbara) occurs on Compartments 2203, 2204 and 2320.

2.5.5 Conservation measures

Plant communities are well represented in nearby Brown Mountain and Werrinook Flora Reserves and Wadbilliga National Park. Rainforest is protected by harvesting prescriptions.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Considered and no further action required.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	168	189	55
2	43	48	23
3	27	33	53
4	360	404	149
	598	674	280

2.6.3 Additional description

Small areas of raiunforest occur in some creeks.

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Arboreal animals, especially hollow-dwelling mammals are the species likely to be most affected. All species present on the area would be well represented in nearby Wadbilliga National Park and/or Brown Mtn. and Werrinook Flora Reserves. Wildlife corridors (PMP 117) also traverse the area to interconnect the large reserves. Harvesting prescriptions provide additional protection in areas not specifically reserved.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Fauna values considered to be adequately protected. No further action required.

2.7 Scenery

2.7.1 Consideration of scenic values

The main landscape feature in the area is the escarpment, which is visible from various locations along the Snowy Mountains Highway. Other areas are generally undulating to hilly and lacking any dominating landscape features.

2.7.2 Additional measures to protect important features

Much of the prominent escarpment area is excluded from logging as PMP 1.2 (Undeveloped Natural Forest). Elsewhere, the limited areas visible from the Snowy Mountains Highway, particularly skyline areas, are zoned PMP 1.1.6, Special Emphasis Scenic Resource Protection, and 25-50% of the canopy is retained in harvesting operations.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known, considered unlikely. There are no known sites in adjacent areas.

2.8.2 Investigations

None required.

2.8.3 Action to protect identified sites

Not applicable.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

No coupes adjoin 1989 logging areas. Coupe in compartment 2201 adjoins coupe in Cpt. 2320 over 1.5 km of ridge road but harvesting is modified by scenic protection zone PMP 1.1.6. Cumulative effect is not considered to be significant. Coupe in Cpt. 2369 adjoins coupe in 2370 along 0.5 km boundary but coupes are separated by wildlife corridor. Cumulative impact is not considered to be significant.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Bull Mountain; Glenbog section, Glenbog State Forest (central)

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

1.5 (see Area 6, subsection R1)

1.1.3 Minor access to dump sites (kms)

5

1.2 Harvesting

1.2.1 Type

Integrated logging and some regrowth thinning.

1.2.2 Compartments containing coupes to be harvested.

Total 11

First Scheduled 1988 EIS	First Scheduled 1990 EIS
2343	2358
2345	2360
2348	2362 (pt)
2352	2363
2356	2364
2361	
2362 (pt)	

1.2.3 Constitution of compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area) 324 ha

(b) Coupes retained for future harvesting (gross area) 808 ha

(c) Coupes now proposed for harvesting (gross area) 611 ha

Number of coupes	11
Net area to be harvested	593 ha
Contained areas excluded from harvesting	18 ha

(d) Areas excluded from harvesting outside of harvesting coupes (gross area) 668 ha

Total gross area of compartments 2411 ha

1.2.4 Weather contingencies

Limited areas available. Only compartments 2356, 2360, 2361 and 2362 have areas accessible in wet weather.

1.2.5 Dispersal, within the Area of, coupes to be harvested

Areas have been dispersed as far as practicable in this part of the forest to reduce environmental impact and road traffic concentration.

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Undulating with no significant features. Altitudinal range 850-1100 metres a s l.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	964	236
10-20°	1205	296
20-30°	194	61
over 30°	48	-
	2411	593

2.2 Climate

2.2.1 Local features

Cold winters with frosts and occasional snowfall. Mild to warm summers with occasional hot dry northwest winds.

2.2.2 Annual precipitation

800 to 1100 mm

2.3 Geology and Soils

2.3.1 Considerations

Granite geology has created relatively stable red and yellow sandy loam soils commonly with rock outcrops on ridgetops. Some basalt enrichment occurs in western areas.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	11	593
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Bega	273
Bombala	320

2.4.2 Considerations

Rural irrigation and Bega town water supply downstream in Bega catchment. The total of areas proposed for harvesting are only a very small part of these large catchments already substantially cleared for agriculture.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

Very steep areas not to be logged. No other special measures required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	31	40	343
B	356	485	-
C	44	56	-
M	119	162	-
N	29	45	-
D	14	20	343
	593	808	686

2.5.3 Additional description

Much of the original high site quality wet sclerophyll forest has been severely degraded by catastrophic wildfire of 1952. In some areas eucalypt forest has been temporarily eliminated, being replaced by Acacia. Understorey is light in the west, medium to heavy in the east.

Much of the area has a high component of eucalypt regrowth from the 1952 fire.

2.5.4 Rare or threatened species

E.badjensis 2RC: may be present in local areas. No other rare or endangered plants found in pre-logging surveys.

2.5.5 Conservation measures

E. badjensis will not to be felled in logging unless severely damaged and provision made for regeneration by advanced growth or seed trees.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Considered that no further conservation action is required. Note that Nunnock Swamp Flora Reserve (1820 ha) is situated immediately to the south and conserves similar vegetation and animal habitat.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	148	202	152
3	89	121	114
4	356	485	420
	593	808	686

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Standard prescriptions for retention of habitat trees and classification of wildlife corridors apply.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Arboreal animals, especially hollow-dwelling mammals and birds are likely to be most affected. See comments under 2.5.6.

Fauna values considered to be adequately protected.

2.7 Scenery

2.7.1 Consideration of scenic values

No significant features, except Compartments 2361, 2362 and 2364 may be visible from parts of the Bega Valley.

2.7.2 Additional measures to protect important features

An area of 83 ha will be subject to at least 20% canopy retention to reduce visual impact.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known or likely in these upland areas. There are no known sites in adjacent areas.

2.8.2 Investigations

None required.

2.8.3 Action to protect identified sites

Not applicable.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE EFFECT

Cpt. 2343 coupe adjoins Cpt. 2344 (1989) coupe but is well separated by wildlife corridor and no significant impact is considered to be likely. Coupes in Cpts. 2360 and 2361 (1990) adjoin along a 0.5 km creek boundary. Coupes in Cpts. 2363, 2361 and 2364 adjoin but the combined areas is 150 ha which is not considered to be excessive as about half is to be logged under modified prescriptions for scenic protection (PMP 1.1.6). Furthermore operations in adjoining areas are regrowth thinning with low environmental impact.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area :Tantawangalo West; Glenbog Section, Tantawangalo State Forest (west)

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

Nil

1.2 Harvesting

1.2.1 Type

Integrated logging

1.2.2 Compartments containing coupes to be harvested.

Total 1

First Scheduled 1988 EIS	First Scheduled 1990 EIS
2400	Nil

1.2.3 Weather contingencies

The compartment is accessible in wet weather.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Not applicable. Single coupe only.

1.2.5 Constitution of compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area) 82 ha

(b) Coupes retained for future harvesting (gross area) 93 ha

(c) Coupes now proposed for harvesting (gross area) 24 ha

Number of coupes	1
Net area to be harvested	23 ha
Contained areas excluded from harvesting	1 ha

(d) Areas excluded from harvesting outside of harvesting coupes (gross area) Nil

Total gross area of compartments 199 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

The area is flat to undulating, 800m asl.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	184	23
10-20°	15	-
20-30°	-	-
over 30°	-	-
	199	23

2.2 Climate

2.2.1 Local features

Short mild summers and long, cold winters. Frequent frosts and occasional snow. May experience strong west and south west winds.

2.2.2 Annual precipitation

About 850-1000 mm

2.3 Geology and Soils

2.3.1 Considerations

Major formation is Devonian granitoid group of which biotite granodiorite predominates. Hornblende granodiorite found in south-west. Some small Tertiary basalt flows north-east of Nunnock Swamp. Soils are generally sandy loams to clay loams with a high proportion of coarse sand. Rocky outcrops are evident throughout the granite geology.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	1	23
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Bombala	23

2.4.2 Considerations

The area is very small and will have negligible impact on water quality in the catchment.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in the coupe.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	10	42	-
C	5	10	-
M	3	20	1
D	5	21	-
	23	93	1

2.5.3 Additional description

High altitude woodland and open forest with exposed granite tors and a generally sparse understorey.

2.5.4 Rare or threatened species

None known or found on this area in pre-logging surveys.

2.5.5 Conservation measures

Adjoins the extensive (1800 ha) Nunnock Swamp Flora Reserve.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Considered and no additional action required.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	5	7	-
3	18	86	1
	23	93	1

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys but significant glider populations have been identified in nearby Dragon Swamp Creek area.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

The large Nunnock Swamp Flora Reserve nearby was established substantially to conserve its wildlife, particularly gliders.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Fauna values considered to be adequately protected. No special measures are required.

2.7 Scenery

2.7.1 Consideration of scenic values

Area is relatively featureless with no prominent landscape features. The flat to undulating topography results in little topographical contrast and the area is not clearly visible from major access routes.

2.7.2 Additional measures to protect important features

None required.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None identified or expected. No significant sites in adjacent areas.

2.8.2 Investigations

None required.

2.8.3 Action to protect identified sites

Not applicable.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

Nil. Isolated from 1989 logging.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Tantawangalo South; Glenbog Section, part Tantawangalo State Forest (south)

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

4

1.2 Harvesting

1.2.1 Type

Integrated logging

1.2.2 Compartments containing coupes to be harvested.

Total 4

First Scheduled 1988 EIS	First Scheduled 1990 EIS
2453	2427
	2431
	2432

1.2.3 Weather contingencies

Areas suitable for wet weather operations have been designated.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Small numbers of harvesting coupes are progressively scheduled on this area to minimise overall environmental impact including existing road use.

1.2.5 Constitution of compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)			75 ha
(b) Coupes retained for future harvesting (gross area)			594 ha
(c) Coupes now proposed for harvesting (gross area)			308 ha
	Number of coupes	4	
	Net area to be harvested	300 ha	
	Contained areas excluded from harvesting	8 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)			91 ha
Total gross area of compartments			1068 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions.

1.3.2 Post-logging burning

Normal prescriptions.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

There are no topographic features of particular interest within the review area.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	479	134
10-20°	529	150
20-30°	43	16
over 30°	7	-
	1068	300

2.2 Climate

2.2.1 Local features

Warm summers, cool to cold winters with occasional snow fall.

2.2.2 Annual precipitation

About 1000mm p.a.

2.3 Geology and Soils

2.3.1 Considerations

Coarse grained sandy loams from granite. Considerable rock outcrops occur. Some basalt enrichment occurs on part of compartment 2453.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	4	300
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Bombala	157
Bega	143

2.4.2 Considerations

These areas are only a very small part of their respective catchments. No significant effect on water quality is anticipated.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	78	113	43
B	101	231	33
D	104	218	23
N	6	5	-
Y	11	27	-
	300	594	99

2.5.3 Additional description

Mostly wet sclerophyll with dry sclerophyll elements on exposed ridgetops and rock outcrops. Understorey of Acacia and Hakea medium to sparse. Heavy damage from past wildfire.

2.5.4 Rare or threatened species

Hibbertia hermaniifolia (3RCa) has been identified on Cpt. 2431 in pre-logging surveys and has been reported on Cpt. 2453. Integrated logging is considered not to adversely effect the distribution of this species and, in fact, observations indicate that its propagation is enhanced by disturbance.

Eucalyptus badjensis (2RCi) has been found in gernal vicinity, and in Cpt. 2431.

2.5.5 Conservation measures

Burning within Hibbertia hermaniifolia will be minimised. It is not threatened by proposed logging and is fully protected in various reserves.

Eucalyptus badjensis will not be felled in logging areas unless seriously damaged and provision made for regeneration by advanced growth or seed trees.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Given the consideration under 2.5.5 and the fact that Hibbertia hermaniifolia tends to occur in rocky outcrops unlikely to be logged anyhow, no further conservation action is required.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	21	33	51
3	98	217	-
4	181	344	48
	300	594	99

2.6.3 Additional description

E. viminalis occurs occasionally in the area and is recognised as an important browse species for koalas. It may also be significant that soil nutrient levels are enriched by basalt on Cpt 2453.

2.6.4 Rare or threatened species

None known or identified in pre-logging survey. Koalas are likely to be present but pre-logging surveys have not found any individuals. There have been reports of Koalas in the Area and a dead Koala was found on adjoining private property.

One particular site was found to contain a colony of yellow-bellied gliders.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Glider colony is protected in wildlife corridor (PMP 1.1.7) and adjoining areas too steep to log.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Hollow-dwelling mammals and birds are likely to be most affected. Past nearby sightings of koalas have been noted. Further survey will be undertaken prior to logging, and modification or exclusion of operations instituted where appropriate. In particular, the occurrence of E. viminalis will be investigated and the need to conserve this habitat type in these compartments (by instituting a higher level of canopy retention with preference for E. viminalis) will be considered before harvesting.

The location of Koalas in prelogging investigations will lead to more detailed investigation of habitat requirements, extent of potential habitat and requirements for habitat protection, especially in the light of current work by the consulting biologist engaged by the Commission and the joint Scientific Committee (refer Section 6.4.2.4)

2.7 Scenery

2.7.1 Consideration of scenic values

Several compartments have a low visibility profile from the nearby Mt. Darragh road.

2.7.2 Additional measures to protect important features

No special measures required.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

The area along Tin Mine Road was inspected by an archaeologist prior to road construction. As only a few open sites of low archaeological significance were found, road construction proceeded as planned. No other sites are known and likelihood of significant sites is low.

2.8.2 Investigations

Archaeologist inspection of Tin Mine Road in 1987.

2.8.3 Action to protect identified sites

None required.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

No known sites.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

Coupe in Cpt. 2427 adjoins 1989 coupe in Cpt. 2428 (0.5 km) but is separated by Tin Mine Road in ridge type. Cumulative impact is considered to be negligible.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Glen Allen; Glenbog Section,
Glen Allen State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

6 km

1.2 Harvesting

1.2.1 Type

Integrated Harvesting

1.2.2 Compartments containing coupes to be harvested.

Total 3

First Scheduled 1988 EIS	First Scheduled 1990 EIS
2457	2456
2458	

1.2.3 Weather contingencies

Nil

1.2.4 Dispersal, within the Area, of coupes to be harvested

These areas will complete the harvesting of initial alternate coupes on this forest.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area) 57 ha

(b) Coupes retained for future harvesting (gross area) 551 ha

(c) Coupes now proposed for harvesting (gross area) 465 ha

Number of coupes	8
Net area to be harvested	454 ha
Contained areas excluded from harvesting	11 ha

(d) Areas excluded from harvesting outside of harvesting coupes (gross area) Nil

Total gross area of compartments 1073 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions.

1.3.2 Post-logging burning

Normal prescriptions.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Area is generally undulating to hilly, height above sea level 850-1011 metres.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	671	303
10-20°	382	144
20-30°	20	7
over 30°	-	-
	1073	454

2.2 Climate

2.2.1 Local features

Area has a slightly milder climate than Bombala with 40-50 frosts in winter. Summer maximum temperature range from 25-30° C.

2.2.2 Annual precipitation

800-1000 mm per annum

2.3 Geology and Soils

2.3.1 Considerations

Soils are derived from Devonian granite or granodiorite to form coarse-graned sandy loams. These soils are shallow on ridge tops where considerable rock outcrops occur. These soils are moderately erodible.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	8	454
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Bombala	454

2.4.2 Considerations

These areas form only a very small part of the Bombala catchment. There will be negligible effect on water quality.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	299	385	11
C	45	73	-
D	110	93	-
	454	551	11

2.5.3 Additional description

Area generally contains poor quality, previously undeveloped native forest with evidence of defect due to past fires.

2.5.4 Rare or threatened species

None known or found in pre-logging surveys.

2.5.5 Conservation measures

A wildlife corridor has been reserved along the major stream through the State Forest, effectively preserving moister elements of vegetation.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Considered and no further special measures required.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	396	464	8
3	58	87	2
4	0	-	1
	454	551	11

2.6.3 Additional description

Fauna likely to be concentrated in moister areas of which there is little on this forest.

2.6.4 Rare or threatened species

None known, or identified in pre-logging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Wildlife corridors have been designated along main creeks through the area.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Arboreal animals, especially hollow-dwelling mammals are likely to be most affected by logging. These will be protected by normal prescriptions and wildlife corridors. Fauna values considered to be adequately protected.

2.7 Scenery

2.7.1 Consideration of scenic values

Low visual sensitivity.

2.7.2 Additional measures to protect important features

None required.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known, considered unlikely.

2.8.2 Investigations

None required.

2.8.3 Action to protect identified sites

Not applicable.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE EFFECT

The only logging that will adjoing 1989 logging in this area is within a coupe commenced in 1989, for which environmental impact was assessed in the 1988 EIS.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Bega Crown Lands
V.C.L. Ph Kydra (pn.32) and Dolondundale (pns 46,47)
A.C.P. Ph Kydra (pn.96). Mineral Reserve 1264
Sp.L.52/16 Ph Kydra

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

4

1.2 Harvesting

1.2.1 Type

Sawlog only operation with salvage of pulpwood from logging residues on V.C.L. and Sp.L. Integrated sawlog/pulpwood harvesting on A.C.P.

1.2.2 Compartments containing coupes to be harvested.

Total 4

First Scheduled 1988 EIS	First Scheduled 1990 EIS
Ptn 96 S.P.L. 52/16 Ptn 32 Ptns 46, 47 Min. Res.1264	Nil

1.2.3 Weather contingencies

None made

1.2.4 Dispersal, within the Area, of coupes to be harvested

These operations will utilise the Crown's timber interest in these areas.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		Nil
(b) Coupes retained for future harvesting (gross area)		N/A
(c) Coupes now proposed for harvesting (gross area)		831 ha
Number of coupes	4	
Net area to be harvested	207 ha	
Contained areas excluded from harvesting	624	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		N/A
Total gross area of compartments		831 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

None

1.3.2 Post-logging burning

None

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Undulating areas on the eastern edge of the tablelands.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	580	150
10-20°	230	57
20-30°	21	-
over 30°	0	-
	831	207

2.2 Climate

2.2.1 Local features

Short mild summers and long cold winters. Frequent frosts and occasional snow. Strong winds June to October from the west and south-west.

2.2.2 Annual precipitation

About 800 to 900 mm

2.3 Geology and Soils

2.3.1 Considerations

Lower and Middle Devonian granites.

Soils are lithosols on ridges and slopes and leached loams in drainage lines. Alpine humus soils occur on flat, poorly-drained sites.

Application of the Eden Standard Erosion Mitigation Conditions (App. 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	3	167
high	1	40
		207

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Murrumbidgee (via Kybeyan)	200
Tuross	7
	207

2.4.2 Considerations

Areas are close to river headwaters and are only a very small part of the respective catchments.

Swamps abound in the area but not near areas to be harvested.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
B	37		38
D	110		332
S	60		254
	207	N/A	624

2.5.3 Additional description

-

2.5.4 Rare or threatened species

Eucalyptus parvifolia (classified 2VCi) has been identified on V.C.L. in pre-logging surveys.

2.5.5 Conservation measures

Logging will not take place near E.parvifolia.

Eucalyptus parvifolia is also protected in Nunnock Swamp Flora Reserve.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

None required.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
Ø	6Ø		181
3	147		443
	2Ø7	N/A	624

2.6.3 Additional description

Significant fauna species are unlikely. The understorey is largely modified (to grasses) by land use (grazing).

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

These areas adjoin Wadbilliga National Park.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Restriction of harvesting to sawlogs in most areas with only "head and butt" salvage for pulpwood will ensure ample retention of habitat trees. No special measures required.

2.7 Scenery

2.7.1 Consideration of scenic values

No outstanding scenic features. Low sensitivity due to remoteness.

2.7.2 Additional measures to protect important features

None required

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known or considered likely

2.8.2 Investigations

None required

2.8.3 Action to protect identified sites

Not applicable

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known

2.9.2 Action to maintain values

Not applicable

3. CUMULATIVE EFFECT

Scattered areas not subject to cumulative effects and not adjoining 1989 logging.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Yurammie East; Yurammie (east) section, part Yurammie State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

18

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 12

First Scheduled 1988 EIS	First Scheduled 1990 EIS
998	987
980	988
982	989
984	997

1.2.3 Weather contingencies

Approx. 40% of coupes are available for wet weather harvesting

1.2.4 Dispersal, within the Area, of coupes to be harvested

Alternate coupe harvesting. Scheduling so that no coupes within a compartment will be harvested concurrently.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a)	Previously harvested coupes (gross area)		300 ha
(b)	Coupes retained for future harvesting (gross area)		812 ha
(c)	Coupes now proposed for harvesting (gross area)		757 ha
	Number of coupes	17	
	Net area to be harvested	663 ha	
	Contained areas excluded from harvesting	94 ha	
(d)	Areas excluded from harvesting outside of harvesting coupes (gross area)		276 ha
	Total gross area of compartments		2145 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Topography is generally steep, with slopes over 15° on more than half the area. There are several cliff faces on the northern side of the main range below Wolumla Peak.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	322	129
10-20°	644	335
20-30°	575	199
over 30°	604	-
	2145	663

2.2 Climate

2.2.1 Local features

Monthly rainfall fairly evenly distributed throughout the year. Dry spells occur from time to time, but it is rare for these to exceed 3 to 4 months. Periodic severe droughts are a feature of the area.

2.2.2 Annual precipitation

800-1100 mm per annum

2.3 Geology and Soils

2.3.1 Considerations

Majority of the soils are derived from a complex of conglomerate, sandstone and red shale. The remainder are mostly derived from a hornblende granodiorite. The soils are quite variable and most tend to be skeletal, particularly high up in the topography. Application of the Eden Standard Erosion Mitigation Conditions (refer App. 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	5	277
high	12	386

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Pambula) Yowaka) Nullica)	663

2.4.2 Considerations

The Pambula River below its tidal limit, particularly in Pambula Lake, has significant usage for recreation, boating, fishing, etc., and has a number of commercial oyster beds.

The areas to be harvested constitute less than two per cent of these catchments.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

Very steep areas will not be logged.

Scheduling of operations has meant that areas of high erodibility will be protected during wet weather.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been conducted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	237	154	12
Y	288	580	175
A/Y	130	78	179
G	8	-	-
R	-	-	4
	663	812	370

2.5.3 Additional description of forest types

Silvertop Ash-Stringybark	Type 114	(A)	-dominant	) -condition poorer on some
Silvertop Ash	Type 112	(A)	-on some ridges	) lower slopes due to fire
Stringybark-Gum	Type 157	(Y,G)	-in creeks and gullies	history

2.5.4 Rare or threatened species

None known or found in prelogging surveys

2.5.5 Conservation measures

A number of wildlife corridors, filter strips and buffer zones add to protection of moist riparian vegetation types including rainforest.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Conservation measures for vegetation are considered to be adequate for this area.

2.6 Fauna

2.6.1 Surveys

Normal pre-logging surveys have been instituted and habitat has been evaluated for retention in pre-logging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	245	154	16
3	130	78	179
4	288	580	175
	663	812	370

2.6.3 Additional description

Extensive areas of Stringybark-Gum Type have resulted in a fairly rich faunal habitat overall.

2.6.4 Rare or threatened species

Koalas are said to exist in the general area, but have not been sighted in recent surveys. Special surveys were carried out in 1988 in Cpt 986.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Wildlife corridors occupy one third of logging areas.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Surveys prior to logging will further investigate possible koala presence. Particular attention will be paid to potential habitat containing E. viminalis and/or E. tereticornis.

2.7 Scenery

2.7.1 Consideration of scenic values

In general, the main ridge system running east-west through Myrtle Mountain to Wolumla Peak and east-north-east to Policeman's Cap stands out and is visible from most of the Bega Valley. Harvesting will not intrude into any of these areas.

2.7.2 Additional measures to protect important features

Extensive areas are classified PMP 1.1.6 (Special Emphasis Visual Protection) in the Myrtle Mountain-Wolumla-Policeman's Cap area. Visual values are also maintained by exclusion of logging from PMP 1.2 (Undeveloped Forests) zone, a visual protection zone along the Wyndham, Pambula Road, Princes Highway, and Milligandi Road and the existence of a high proportion of inaccessible and rocky areas.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known, likely sites are predicted to occur on flat areas such as saddles and ridges in dissected, hilly country.

2.8.2 Investigations

Likely sites have been field-checked for artefacts during preplanning. None were found.

2.8.3 Action to protect identified sites

None required.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

Coupe within Cpt 986 logged in 1989 adjoins coupe within Cpt 989 scheduled for possible logging in 1990 along a 0.5 km interface but separated by a wildlife corridor. It is considered that there will be negligible cumulative impact.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Yurammie West; Yurammie (west) section, part Tantawangalo State Forest (south east)

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

24.0 (see Area 13, subsections R1, R2 and R3).

1.1.3 Minor access to dump sites (kms)

7

1.2 Harvesting

1.2.1 Type

Integrated. Plus salvage logging of windthrown and severely damaged trees (see w/s below).

1.2.2 Compartments containing coupes to be harvested.

Total 7 plus 2 salvage areas involving 3 compartments.

First Scheduled 1988 EIS	First Scheduled 1990 EIS	
950	925	930 w/s
953	927	931 w/s
954	944	936 w/s
	945	

1.2.3 Weather contingencies

Dry weather logging only. Wet weather logging blocks are allocated within nearby Jingera Management Section.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Alternate coupe harvesting. Operation scheduling dispersed overtime. Not more than two contractors are scheduled to haul over the same roads at any one time.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		Nil
(b) Coupes retained for future harvesting (gross area)		375 ha
(c) Coupes now proposed for harvesting (gross area)		534 ha
Number of coupes	14	
Net area to be harvested	490 ha	
Contained areas excluded from harvesting	44 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		246 ha
Total gross area of compartments		1155 ha

In addition to the above, the three windthrow salvage compartments contain a net 25 ha to be salvaged.

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions (except, there will be no pre-logging burning in the windthrow salvage areas).

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

The general area rises from about 400m a.s.l. to 820m in the west. Ridges run north-south.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	350	147
10-20°	450	294
20-30°	165	49
over 30°	190	-
	1155	490

2.2 Climate

2.2.1 Local features

Lower eastern areas are drier. Rainfall evenly spread through the year. Periodic severe droughts can occur, but it is rare for dry spells to last more than 3 to 4 months.

2.2.2 Annual precipitation

800-1000 mms

2.3 Geology and Soils

2.3.1 Considerations

Parent materials are predominantly Devonian Granitoids including tonalite, biotite, granodiorite and granite/adamellite. Soils produced are of the grey granite type occurring in the highly erodible soil category. Application of the Eden Standard Erosion Mitigation Conditions (App 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	-	-
high	14	490

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Towamba	121
Tantawangalo	369

2.4.2 Considerations

Bega River is partly fed by Tantawangalo Creek. The Bega River services irrigation needs of Bimbaya, Kameruka and Bega River areas. Proposed harvesting areas are in a comparatively remote part of the catchment and constitute an extremely small part of this large catchment substantially cleared for agriculture.

Towamba River is a major source of water for Eden Town water supply. Logging occupies a very small part of the total catchment.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

Routine modified harvesting measures as set out in Appendix 1, including drainage of logging tracks, are adequate to protect catchment.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
Y	18	13	10
B	222	163	83
C	160	129	-
D	15	2	179
A	4	14	-
A/D	54	54	-
F	11	-	18
M	6	-	-
	490	375	290

2.5.3 Additional description of forest types

Moist Brown Barrel-Messmate	- dominant
Silvertop Ash,Mountain Grey Gum,Stringybark	- on exposed ridges
Southern Blue Gum, rainforest	- in few sheltered gullies

2.5.4 Rare or threatened species

None found in pre-logging surveys within harvesting areas. Pomaderris sp.aff.costata (2RC) identified to the south of this area.

2.5.5 Conservation measures

Wildlife corridors filter strips and buffer zones ensure protection of riparian rainforest and other very moist types.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

No further conservation action beyond normal provisions considered to be necessary.

2.6 Fauna

2.6.1 Surveys

A detailed wildlife survey has been conducted in the area as well as normal pre-logging surveys. Habitat has been evaluated for retention in prelogging investigations in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata map included as part of Appendix 4, F.C.E.I.S.

Stratum	Net harvesting area	Retained Coupes	Reserved
1	23	13	18
2	53	68	-
3	174	131	179
4	240	163	93
	490	375	290

Low - in areas dominated by Silvertop Ash.
Moderate - in the drier Brown Barrel-Messmate areas and rainforest.
Moderate to high - in the moister Brown Barrel types.

2.6.3 Additional description

In the general area species identified include:-

Ringtail and Mountain Possums, Sugar Gliders, Greater Glider, Southern Brown Bandicoot, Brushtailed Possum, Brown Antechinus, Dusky Antichinus and Bush Rat and 68 species of birds.

2.6.4 Rare or threatened species

Koalas have been sighted in the general area but have not been sighted in recent surveys. In particular Koala sightings have been reported at different times in the vicinity of Cpts 944, 945,953 and 954 and surveys conducted in 1987/8 but did not find any Koalas.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Potential koala habitat, particularly the occurrence of E. viminalis and/or E. tereticornis will be assessed before harvesting.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Further consideration of potential koala habitat is required and will be assessed as specified in 2.6.5. The location of koalas in prelogging investigations will lead to more detailed investigation of habitat requirements, the extent of potential habitat and requirements for habitat protection, especially in the light of current work by the consulting biologist engaged by the Commission and the joint Scientific Committee (refer Section 6.4.2.4).

Otherwise wildlife habitat is sufficiently conserved by wildlife corridors and normal prescriptions for protection.

2.7 Scenery

2.7.1 Consideration of scenic values

Part of the area is a scenic protection area. In the compartments to be harvested in 1990 a total of 246 hectares are in this category.

2.7.2 Additional measures to protect important features

The area outlined in 2.7.1 has been classified as PMP 1.1.6 (Special Emphasis Visual Resource Protection) and modified logging (or no logging) will occur.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

One site occurs in an area considered for logging and has been protected by exclusion of logging and roading from the site.

Archaeological sites are predicted to be located on flat areas such as saddles on ridges in the dissected hilly country.

2.8.2 Investigations

An archaeological survey program was undertaken by a private archaeologist in the section to assess the impact of planned roads on archeaological sites. Likely sites have been field checked for artefacts during preplanning.

2.8.3 Action to protect identified sites

The site as mentioned in 2.8.1 has been protected by exclusion of logging and roading from the site.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

No coupes adjoin 1989 logging.

Two 1990 coupes adjoin (in compartments 950 and 945) over 0.3 km in a ridge type area. No significant cumulative effect as the combined area of coupes is only 80 ha.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Lennards West; Lennards (west) Section, Part Nullica State Forest (east); Pambula area

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

2.1 (See Area 14, section R1)

1.1.3 Minor access to dump sites (kms)

4

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 2

First Scheduled 1988 EIS	First Scheduled 1990 EIS
623	624

1.2.3 Weather contingencies

Limited wet weather capabilities occur within the coupes. Construction has only recently been completed on Pipe Clay Road haulage during we periods is therefore very limited.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Alternate coupe harvesting. Only one contractor is scheduled in this section in 1990, therefore harvesting will not occur simultaneously in these compartments.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		Nil
(b) Coupes retained for future harvesting (gross area)		128 ha
(c) Coupes now proposed for harvesting (gross area)		200 ha*
Number of coupes	3	
Net area to be harvested	179 ha	
Contained areas excluded from harvesting	21 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		80 ha
Total gross area of compartments		408 ha

* logging to be deferred on 73 ha.

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions, but has high priority due to strategic location near populated centres.

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Undulating with some steep areas, rising from 50m to about 220m asl.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	210	125
10-20°	143	54
20-30°	35	-
over 30°	20	-
	408	179

2.2 Climate

2.2.1 Local features

Rainfall is reasonably even throughout the year, but with large variations between years. Although periodic severe droughts can occur, it is rare for dry spells to last more than 3 to 4 months.

2.2.2 Annual precipitation

800-850mm

2.3 Geology and Soils

2.3.1 Considerations

Parent material is the middle Devonian Eden Rhyolite, which forms stable soils in the "average" erosion class.

Application of the Eden Standard Erosion Mitigation Conditions (refer App. 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	3	179
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Yowaka	179

2.4.2 Considerations

Yowaka River flows via Pambula River into Pambula Lake, used extensively for oyster farming and recreation. The harvesting areas constitute only about two per cent of the catchment.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

Not required. Routine modified harvesting measures are sufficient to minimise erosion and maintain water quality.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	83	10	-
M	74	95	72
G	22	23	14
F	-	-	15
	179	128	101

2.5.3 Additional description

Silvertop Ash - type 112 on ridgetops and upper slopes
Silvertop Ash-Stringybark type 114 on low slopes and gullies
Yellow Stringybark-Gum type 114Y) in favourable
type 157) gully sites
Blueleaved Stringybark type 121 minor occurence

2.5.4 Rare or threatened species

None found in pre-logging surveys

2.5.5 Conservation measures

In nearby areas, rare/endangered plants were identified in vegetation surveys, associated with rhyolite outcrops. They are preserved in the Nethercote Falls Flora Reserve which also contains a series of cascades on the Yowaka River.

These include Acacia subtilinervis 3RCa, Phebalium ralstonii 3RC, Pseudanthus divaricatissimus 3RCa and Zieria sp. 72E

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Rhyolite outcrops which may contain rare vegetation do not carry harvestable forest. No further action necessary.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

Three Ringtail Possums identified in spotlight survey Brushtail Possums and Sugar Gliders were observed in adjacent areas.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	157	105	86
3	22	23	15
	179	128	101

2.6.3 Additional description

Yellow Stringybark Gum and Gully Types provide richest habitat types.

2.6.4 Rare or threatened species

Predator scat analysis to the south-west has identified mammal species which could occur on the area.

The Spotted Tailed Quoll, Eastern Pygmy Possum and Feathertail Glider (all classified under Part 1 (Fauna of Special Concern) of Schedule 12 of the National Parks & Wildlife Service Act) could possibly be present on the area.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Local surveys indicated the possible presence of Ringtail Possums, Brushtail Possum, Sugar Gliders, Eastern Pygmy Possums and Yellow-Bellied Gliders, but no high concentrations have been identified or are likely considering the predominantly dry forest types. Thus, no special conservation measures have been taken beyond the classification of wildlife corridors.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Considering that Nethercote Falls Flora Reserve adjoins to the south and is supplemented by a wildlife corridor in Compartment 623, wildlife conservation is adequately catered for in this area.

2.7 Scenery

2.7.1 Consideration of scenic values

Prominant areas are restricted to the western edges visible from Back Creek Road. Proposed logging coupes are generally inconspicuous from outside vantage points.

2.7.2 Additional measures to protect important features

The section of the compartments visible from Back Creek Road is classified PMP 1.1.6 Special Emphasis Visual Resource Protection and is excluded from logging.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

No sites have been recorded in this area, but one has in nearby Nethercote Falls Flora Reserve.

2.8.2 Investigations

Likely sites within the harvesting coupe have been field checked for artefacts during preplanning. None were found.

2.8.3 Action to protect identified sites

The site recorded is protected within the flora reserve.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

One coupe is partly within the preliminary boundary to the Panbula Goldfields historic area defined by the Australian Heritage Commission and is not to be harvested until further investigation of the goldfields area is completed and constraints to be applied to any harvesting of that area finally determined by the Forestry Commission.

2.9.2 Action to maintain values

Logging of Coupe 4 will be deferred pending determination of the historical significance of the area.

3. CUMULATIVE IMPACT

These coupes are well isolated from 1989 logging and from each other.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Lennards East; Lennards (east) Section, Nullica State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

Nil

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 2

First Scheduled 1988 EIS	First Scheduled 1990 EIS
606	Nil
608	

1.2.3 Weather contingencies

2 coupes will be used for wet weather

1.2.4 Dispersal, within the Area, of coupes to be harvested

The majority of these coupes have harvesting completed. The area allows some marginal wet weather harvesting for a single contractor during 1990. Harvesting will therefore not occur in the two compartments concurrently.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		223 ha
(b) Coupes retained for future harvesting (gross area)		245 ha
(c) Coupes now proposed for harvesting (gross area)		36 ha
Number of coupes	5	
Net area to be harvested	21 ha	
Contained areas excluded from harvesting	15 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		65 ha
Total gross area of compartments		569 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions except where modified by strategic requirements for local community protection.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

The area is dominated by part of the Bimmil Range. A north-south oriented major ridge running through the centre and rising to 315 m asl in the north. Topography is generally steep with some rock outcrops.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	150	6
10-20°	170	8
20-30°	189	7
over 30°	60	-
	569	21

2.2 Climate

2.2.1 Local features

Rainfall fairly evenly distributed throughout year. Occasional dry spells but rarely exceeding 3 to 4 months. Periodic severe droughts are a feature of the area.

2.2.2 Annual precipitation

700-900 mms

2.3 Geology and Soils

2.3.1 Considerations

Eden Rhyolite, red shales mainly with areas of sandstones and conglomerates.

Soils from the former are generally stable whilst those from the latter group are less stable and are classified high erosion class. In steeper areas, soils are often skeletal.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	-	-
high	5	21

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Pambula) Yowaka) Nullica)	21

2.4.2 Considerations

There is significant usage of the estuary and coastal lagoons for recreation, fishing and boating. There are commercial oyster beds in Pambula lake.

The harvesting areas are very small and are a very small part of these catchments.

Application of the Eden Standard Erosion Mitigation Conditions (refer App. 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required. Routine modified harvesting methods are satisfactory.

2.5 Vegetation

2.5.1 Surveys

Routine vegetation surveys have been undertaken in logging preplanning.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	13	135	41
M	8	1Ø2	39
G	-	8	-
	21	245	8Ø

2.5.3 Additional description

Silvertop Ash-Stringybark type 114 - dominates ridges and slopes
Yellow Stringybark-Gum type 157 - dominates creeks, gullies, southern slopes
Bloodwood, Silvertop Ash, Yellow and Blueleaved Stringybark, Monkey Gum - also present
Understorey - Acacia dominate with scattered forest oak, persoomia, grasses and heaths.

2.5.4 Rare or threatened species

None known or identified in the harvesting areas.

2.5.5 Conservation measures

The Area adjoins Ben Boyd National Park.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

No special measures are considered to be necessary for vegetation communities in this area.

2.6 Fauna

2.6.1 Surveys

Routine fauna habitat surveys have been undertaken in logging preplanning.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	13	135	41
3	8	102	39
4	-	8	-
	21	245	80

2.6.3 Additional description

Possibly useful habitat assists in retained coupe (Yellow Stringybark-Gum).

2.6.4 Rare or threatened species

None known or identified.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

The extensive Bimmil Range PMP 1.1.6 Special Emphasis Scenic Resource Protection area adjacent to Compartment 608 will provide large nearby areas of relatively undisturbed forest.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Fauna values considered to be adequately protected.

No further conservation action is required within these coupes.

2.7 Scenery

2.7.1 Consideration of scenic values

The Bimmil Range which runs north-south through the area is a highly sensitive landscape. About one third is visible from Eden, Pambula and the adjacent highway and large section visible from nearby settled areas and roads.

2.7.2 Additional measures to protect important features

The areas scheduled for 1990 do not intrude into the landscape as described - 2.7.1. Most of the main range has been designated for special emphasis on visual protection under PMP 116.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None identified although such sites are predicted to occur on flat areas such as saddles and ridges in the dissected hilly country.

2.8.2 Investigations

Likely sites have been field checked for artefacts during preplanning. None were found.

2.8.3 Action to protect identified sites

None required.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

These coupes are completion of 1989 logging and do not adjoin previously logged areas, or each other.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Jingera North; Jingera (north) Section part Nullica (west) and Gnupa State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil.

1.1.2 Feeder roads (kms)

6.3 (see Area 16, Subsection R1).

1.1.3 Minor access to dump sites (kms)

62.

1.2 Harvesting

1.2.1 Type

Integrated.

1.2.2 Compartments containing coupes to be harvested.

Total 32

First Scheduled 1988 EIS		First Scheduled 1990 EIS	
653	679	650	681c
657	702	652	697c
662	708	654	704c
664	712	655	706c
666	737c	656	707c
670	738c	659	709c
		660	714c
		661	726c
		665	727c
		667	731

c = National Estate Areas subject to prior consultation with the Commonwealth

1.2.3 Weather contingencies

Approximately 70% of the coupes are considered suitable for wet weather logging, and have nominated wet weather dumps. Coupes which are not suitable for wet weather logging have alternative areas available for wet weather logging in the same or nearby compartments.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Alternate coupe harvesting. Two contractors are scheduled to be within the section for a full 12 months. The remaining compartments shall be utilised during wet weather. Not more than two contractors are scheduled to use the road at the same time.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)			797 ha
(b) Coupes retained for future harvesting (gross area)			3443 ha
(c) Coupes now proposed for harvesting (gross area)			3007 ha
	Number of coupes	71	
	Net area to be harvested	2667 ha	
	Contained areas excluded from harvesting	340 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)			779 ha
Total gross area of compartments			8026 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions apply, but with high priority because of strategic location.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

The area generally has moderate to steep topography, about 20% of the area has slopes greater than 30°. However, the area to be harvested is more moderate and excludes most of the steeper terrain.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	1284	545
10-20°	1605	1032
20-30°	1520	811
over 30°	3617	279
	8026	2667

2.2 Climate

2.2.1 Local features

Rainfall is fairly evenly distributed throughout the year. Although periodic severe droughts can occur, it is rare for dry spells to last more than 3 to 4 months.

2.2.2 Annual precipitation

800 to 1200 mms.

2.3 Geology and Soils

2.3.1 Considerations

Most coupes to be logged occur on Ordovician sediments (principally shales) or Eden Rhyolite, both of which form stable soils. The remainder (about 30%) are on more erodible soils

Application of the Eden Standard Erosion Mitigation Conditions (refer App 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	55	2054
high	16	613

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Towamba	462
Nullica)	2205
Yowaka)	

2.4.2 Considerations

Bores downstream in Towamba River supply water to Eden. Towamba and Nullica Rivers flow into Twofold Bay and both rivers have high usage for recreation and boating below the tidal limit. Yowaka River flows via Pambula River into Pambula Lake, used extensively for oyster farming and recreation.

Only a small two proportion of the Nullica/Yowaka catchments is to be logged.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

Scheduling of wet weather areas and the Eden Erosion Mitigation conditions will ensure acceptable water quality. Note that very steep areas are not scheduled for logging.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been undertaken in all coupes. In addition, Cpts 665, 666, 667, 670, 679, 681, 697, 702, 704, 706, 707, 708, 709, 712, 714, Pt 726, 727, 737 and 738 are within areas that are being surveyed by detailed biological surveys.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
M	800	710	95
A	798	871	675
G	957	1647	349
Y	56	72	-
C	56	36	-
F	-	107	-
	2667	3443	1119

2.5.3 Additional description

Silvertop Ash type type 112) dominant {on higher rides
Silvertop Ash-Stringybark type 114) {on slopes,low ridges
Yellow Stringybark-Gum type 157 -on more favourable of above sites
Understorey poorly developed, better developed near gullies and creeks. Minor areas of gully rainforest.

2.5.4 Rare or threatened species

A few very small pockets of rainforest occur in the area.

Phebalium ralstonii 2VC and Pultenea villifera 3RC were found in Cpt. 704 during a recent detailed flora survey completed for part of the Area. Only a sparse population of the latter species occurs within the coupe planned for logging in 1990.

The Eden Rhyolite geological type is indicative of the occurrence of some rare or threatened flora species. See 2.5.5.

Species found on Rhyolite outcrops in the general vicinity and in Jingera Flora Reserve include:

Phebalium ralstonii 2VC: Near Cpts 726, 727
Pultenaea villifera 3RC
Westringia davidii 2V
Acacia subtilinervis 3RCa
Pseudanthus divaricatissimus 3RCa
Rulingia hermaniifolia 3RCa

Zieria sp. 14 2E and Zieria sp. 15 2E have been found on private property north of Jingera Flora Reserve.

2.5.5 Conservation measures

Phebalium ralstonii (2VCi) and Westringia davidii (2V) have been identified on Rhyolite outcrops, which occur outside the harvesting coupes. These sites are protected by PMP 1.1.7 Special Emphasis Flora and Fauna Protection and/or the Nethercote Falls Flora Reserve or Jingera Forest Preserve.

Rainforest areas are excluded and buffered from harvesting.

Eden Peaks Nature Reserve lies to the west of the area.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Compartments 681, 697, 704, 706, 707, 709, 714, 726, 727, 737 and 738 are the subject of special investigation by the Joint Scientific Committee.

Further investigation of the conservation requirements of Pheb. ralstonii and Pult. villifera in this Area will be undertaken prior to commencement of logging in Cpt. 704.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes.

Cpts 670, 679, 697, 704, 706, 707, 708, 709, 714, 737 and 738 are within areas that are being surveyed by detailed biological surveys.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	1443	1676	760
3	1140	1660	-
4	84	107	359
	2667	3443	1119

2.6.3 Additional description

Most suitable arboreal habitat is the Stringybark-Gum Type, associated with moist Gully Types.

2.6.4 Rare or threatened species

None known or found in pre-logging surveys or expected from reports.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Wildlife corridors protect areas of richest faunal habitat. See comment under 2.5.5.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

As for comment under 2.5.6.

2.7 Scenery

2.7.1 Consideration of scenic values

Less than 10% of the area is clearly visible from surrounding villages (mainly Towamba and Pambula). Prominence is reduced markedly by distance and distraction of more prominent features.

2.7.2 Additional measures to protect important features

The visual resource is protected by PMP 1.1.6 (Special Emphasis Visual Resource Protection) zoning of prominent hillsides and skylines.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

A recorded archaeological artefact site occurs in coupe 1, Cpt. 738. Additional sites are predicted to occur on flat areas such as saddles and ridges in the dissected, hilly country.

2.8.2 Investigations

Likely sites have been field checked for artefacts during preplanning. None were found.

2.8.3 Action to protect identified sites

The archaeological site on referred to in 2.8.1 is protected under N.P.W.S. Act and is strictly protected from any disturbance as denoted in the Harvesting Plan. The site has also been classified as PMP 1.1.9 Special Emphasis Aboriginal site.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

The central part of the area is within the nominated Yowaka National Estate Area.

2.9.2 Action to maintain values

Investigation of natural values in the National Estate area is continuing in conjuction with the Commonwealth and established values will be maintained.

3. CUMULATIVE IMPACT

There is very little cumulative impact expected to result from the position of coupes relative to 1989 logging. Coupe in Cpt 709 adjoins 1989 logging in Cpt 705 along 0.6 km. The combined area is about 120 ha and the impact is not considered to be significant.

The 1990 coupe in Cpts 661/656 adjoins 1989 logging in Cpt 662 in two sections each of about 0.7 km. One interface is buffered by a wildlife corridor, thus ameliorating the effect which might otherwise have been cumulative. The shape presented by the combination of Cpts. 661 and 662 is sinuous and not a solid block. Compartments (1990) 650, 652, 653, 654, 655 and 660 are similar with a total interface of about 1.2km.

The unusually intense scheduling in this area, particularly to the south of the proposed Yowaka National Estate area, has been stimulated by a desire to avoid, as far as possible, scheduling in the Yowaka NE area. Nonetheless, the pattern of dispersal is in conformity with the alternate coupe system and although there are some adjoining edges as described above the cumulative effect is acceptable and does not significantly impact on any particular identified value.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Jingera South; Jingera (south) Section, Nullica State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

6

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total

First Scheduled 1988 EIS	First Scheduled 1990 EIS
635 641 644 645	Nil

1.2.3 Weather contingencies

Coupes are suitable for wet weather logging and have nominated wet weather dumps.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Alternate coupe harvesting. These compartments form the basis for winter harvesting in the area, and as such will only be utilised in wet conditions when soil moisture levels preclude harvesting on the granite soils in other sections.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area) 219 ha

(b) Coupes retained for future harvesting (gross area) 358 ha

(c) Coupes now proposed for harvesting (gross area) 115 ha

Number of coupes	8
Net area to be harvested	115 ha
Contained areas excluded from harvesting	42 ha

(d) Areas excluded from harvesting outside of harvesting coupes (gross area) 109 ha

Total gross area of compartments 843 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions, but high priority because of strategic location.

1.3.2 Post-logging burning

Normal prescriptions, but high priority because of strategic location.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Most of the area is moderate to steep with no prominent peaks.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	143	3
10-20°	320	73
20-30°	220	39
over 30°	160	-
	843	115

2.2 Climate

2.2.1 Local features

Rainfall is fairly evenly distributed throughout the year. Although periodic severe droughts occur, it is rare for dry spells to last more than 3 to 4 months.

2.2.2 Annual precipitation

800-1000 mms

2.3 Geology and Soils

2.3.1 Considerations

The soils are derived from Ordovician sediments (primarily shales) and are generally stable.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	8	115
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Towamba	84
Nullica	31

2.4.2 Considerations

Bores in Towamba River, downstream from area, supply water to Eden. Area is close to confluence of Towamba and Nullica Rivers with Twofold Bay and both rivers are frequently used for fishing and recreation below the tidal limits. However, areas are very small in relation to these large catchments.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required. Routine modified harvesting measures (refer Appendix 1) are adequate to protect water quality.

2.5 Vegetation

2.5.1 Surveys

Routine vegetation surveys have been carried out as part of prelogging planning.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
G	44	174	75
A	22	60	-
M	19	52	-
Y	30	72	76
	115	358	151

2.5.3 Additional description

Dry forest (type 112 - on high ridges
(114 - on slopes and lower ridgetops
Wet sclerophyll 157 - near gullies and creeks where single understorey is better developed and more diverse, also some areas of gully rainforest
Understorey - includes acacias, forest oak, Persoonia sp., wiregrass and bitter pea.

2.5.4 Rare or threatened species

None known or identified.

2.5.5 Conservation measures

Rainforest areas are protected from disturbances.

The nearby Nullica Flora Reserve features Eucalyptus smithii, E. sideroxylon ssp tricarpa as well as uncommon or unusual understorey species such as Adiantum hispidulum, Aphanopetalum resinosum and Pomaderris cinerea.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

No special conservation measures are considered necessary to adequately conserve vegetation.

2.6 Fauna

2.6.1 Surveys

Routine fauna habitat surveys have been carried out as part of prelogging planning.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	41	112	
3	44	174	75
4	30	72	76
	115	358	151

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Wildlife corridors have been classified within the area under consideration.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Further conservation action in these coupes is not considered necessary for adequate conservation of animal species in this area.

2.7 Scenery

2.7.1 Consideration of scenic values

About 10% of the harvested area comprising the section north-east of Ben Boyd Road is visible from certain vantage points within the town of Eden. However, the prominence of the area is reduced markedly by distance (about 10 kilomentres) and the distraction of more prominent features such as Mt. Imlay, Nullica Hill, Twofold Bay etc.

2.7.2 Additional measures to protect important features

The scenic resource is protected and short-term impact of harvesting reduced by PMP 1.1.6 zoning (Special Emphasis Visual Resource Protection) with complete logging exclusion on the following areas:-

Compartment 635 - 23 hectares; along the Princes Highway
Compartment 641 - 23 hectares; along Snake Track Road and Towamba River
Compartment 644 - 63 hectares; on steep sideslopes and prominent hillsides on Nullica Hill

109

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known however likely sites are predicted to occur on flat areas such as saddles and ridges in the dissected hilly country.

2.8.2 Investigations

Likely sites have been field checked for artefacts during pre-planning. None were found.

2.8.3 Action to protect identified sites

None required.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known.

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

No coupes adjoin 1989 logging although some scheduled logging is the completion of coupes commenced in 1989.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Jingera West; Jingera (west) Section, Part Nullica State Forest (west)

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

3.2 (see Area 17(a) subsection R1)

1.1.3 Minor access to dump sites (kms)

3

1.2 Harvesting

1.2.1 Type

Integrated.

1.2.2 Compartments containing coupes to be harvested.

Total 2

First Scheduled 1988 EIS	First Scheduled 1990 EIS
Nil	743
	748

1.2.3 Weather contingencies

Wet weather capabilities exist within each compartment. Construction of Stanton Rock Road has only recently been completed. The ability to cart during wet weather is therefore limited.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Only two compartments have been scheduled for harvesting in 1990. Stanton Rock road has only recently been constructed. Operations will be limited and dispersed over its length i.e. at the end and close to the start to allow compaction of the road formation.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)			Nil
(b) Coupes retained for future harvesting (gross area)			153 ha
(c) Coupes now proposed for harvesting (gross area)			171 ha
	Number of coupes	3	
	Net area to be harvested	155 ha	
	Contained areas excluded from harvesting	16 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)			63 ha
Total gross area of compartments			387 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescription

1.3.2 Post-logging burning

Normal prescription

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Topography is generally steep with slopes greater than 15° over more than 40% of the area. Some 20% of the area has slopes over 30°. The area rises from 200-300 m on the boundaries to central high area reaching 708 m at "Little Jingera Peaks."

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	77	31
10-20°	97	62
20-30°	124	62
over 30°	89	
	387	155

2.2 Climate

2.2.1 Local features

Winters are cool to cold, summers warm to hot. Rainfall is evenly distributed throughout the year. Periodic droughts create conditions conducive to severe bushfires.

2.2.2 Annual precipitation

800-1000 mm

2.3 Geology and Soils

2.3.1 Considerations

The soils over most of the area are derived from Ordovician sediments (primarily shales). These form stable soils (average erosion hazard). A small area of Devonian Granitoids is located to the east of Stanton Rock/Little Jingera Peak. These form less stable soils (high erosion hazard), but are not represented in these areas proposed for harvesting.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	3	155
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Towamba	155

2.4.2 Considerations

Towamba River is a major source of water supply for the town of Eden, the areas harvested, however, are only a very small part of the catchment.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

No special measures required. Application of the Eden Standard Erosion Mitigation Conditions will minimise erosion and maintain water quality.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been undertaken in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
G	105	124	66
D	14	10	-
Y	23	19	13
F	13	-	-
	155	153	79

2.5.3 Additional description of Forest Types

Yellow Stringybark -dominant
Coastal Grey Box-Maidens Gum) -on lower areas associated
Monkey Gum-Stringybark) with Myrtle & Towamba River
River Peppermint)
Blueleaved Stringybark -type 121) -dry, mid slopes
Silvertop Ash-Stringybark -type 114) central & northern ridges

2.5.4 Rare or threatened species

None found in pre-logging surveys or identified in vegetation report.

2.5.5 Conservation measures

Wildlife corridors in the area add to protection of moist and riparian vegetation.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

It is considered that conservation of vegetation is adequately covered in existing measures.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigation in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	12	-	-
3	119	134	66
4	24	19	13
	155	153	79

2.6.3 Additional description

Habitat of value includes Yellow Stringybark-Gum Type and Monkey Gum flats.

2.6.4 Rare or threatened species

None known or identified in pre-logging survey.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply including the protection of Monkey Gum flats.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

It is considered that standard fauna protection measures are adequate in this area.

2.7 Scenery

2.7.1 Consideration of scenic values

About one fifth of the area comprising the section north and east of Stanton Rock is visible from vantage points within the village of Wyndham.

2.7.2 Additional measures to protect important features

Almost all of the more visible areas are classified as undeveloped native forest or special emphasis PMP 1.1.6 Scenic Resource Protection. No logging or modified logging only will occur in these areas.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known, however likely sites are predicted to occur predominantly close to streams (covered by streamside reserves) or on flat positions such as saddles or ridges.

2.8.2 Investigations

Likely sites have been field checked for artefacts during pre-planning. None were found.

2.8.3 Action to protect identified sites

None required.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None within harvesting areas.

The Stanton Rock and Little Jingera Peaks are of local significance.

2.9.2 Action to maintain values

Visual PMP classification will protect these sites.

3. CUMULATIVE EFFECT

Coupes well isolated from previous logging and each other.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Falkner North; Falkner (north) Section, Yambulla State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

10.8 (see Area 18, Subsection R2).

1.1.2 Feeder roads (kms)

2.6 (see Area 18, subsection R1).

1.1.3 Minor access to dump sites (kms)

52

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 40

First Scheduled 1988 EIS		First Scheduled 1990 EIS	
484	523	482	530
486	532	483	535 (pt)
503	533	487	536
504	535 (pt)	492	538
506	537	500	542
507	546	508	552
517	556	509	559
518	557	510	573
521	579	519	574
	585	527	578
		529	583

1.2.3 Weather contingencies

46% of compartments have areas suitable for moderate wet weather logging.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Alternate coupe harvesting. Scheduled so not more than two contractors haul over the same road during the same period of time.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		545 ha
(b) Coupes retained for future harvesting (gross area)		3064 ha
(c) Coupes now proposed for harvesting (gross area)		2745 ha
Number of coupes	68	
Net area to be harvested	2400 ha	
Contained areas excluded from harvesting	345 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		555 ha
Total gross area of compartments		6909 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions.

1.3.2 Post-logging burning

Normal prescriptions.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

The Letts Mountain Range in the west and the Black Range/Mt. Imlay system in the east are the main features and only here are steep slopes experienced.

2.1.2 Comparison of slope categories (hectares)

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	4490	1440
10-20°	1382	720
20-30°	830	240
over 30°	207	-
	6909	2400

2.2 Climate

2.2.1 Local features

Cool winters, warm summers, fairly even rainfall distribution. Periodic severe droughts occur with resultant high fire danger.

2.2.2 Annual precipitation

900-1200 mms

2.3 Geology and Soils

2.3.1 Considerations

The majority of the area has Devonian granites and adamelite producing soils in the high erosion class. Two areas of Ordovician sediments in the Mt. Imlay and Letts Mountain areas produce soils of average erodibility.

Application of the Eden Standard Erosion Mitigation Conditions (ref. App 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	6	120
high	62	2280

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Wallagaraugh	1761
Towamba	639

2.4.2 Considerations

Towamba River is a major source of water supply for the town of Eden. The area proposed for scheduling for logging in 1990 totals only 0.7% of the total catchment. The area within Wallagarangh catchment together with the area to be harvested in Area 19 constitute about four per cent of that catchment.

Water quality in this catchment is monitored by the Forestry Commission.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required. Routine modified harvesting measures (App 1) are satisfactory.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes. Note that flora and fauna strata identification has been completed since 1988 EIS. Detailed vegetation surveys have been conducted in the Yambulla Burning Study area which is adjacent to part of the logging area.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
M	576	888	160
B	48	62	-
G	96	-	-
F	576	705	260
Y	120	92	-
A	984	1317	480
	2400	3064	900

2.5.3 Additional description of forest types

Dry sclerophyll types, predominantly Silvertop Ash and Stringybarks are prevalent, with scattered occurrences of Yellow Stingybark-Gum Type and Gully Types. Compartment 583, 585, 578 and 579 contain some Brown Barrel Type.

2.5.4 Rare or threatened species

None known or identified. Routine modified harvesting measures are adequate.

2.5.5 Conservation measures

Mount Poole Forest Reserve to the west of the logging area preserves examples of the forest types encountered. Throughout the area there are numerous PMP 1.1.7 classifications, mainly covering wildlife corridors but also providing a large area of Special Emphasis in the vicinity of Letts Mountain.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Considered. No further special conservation action required in respect of proposed logging area.

2.6 Fauna

2.6.1 Surveys

Normal pre-logging surveys have been instituted in all coupes. See note under 2.5.2. Note also that detailed bird and small mammal surveys have been undertaken in the Yambulla burning study area adjacent to part of the area.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	2136	2911	900
3	96	-	-
4	168	153	-
	2400	3064	900

2.6.3 Additional description

The area generally is not considered to contain rich habitat for arboreal marsupials.

2.6.4 Rare or threatened species

The glossy black cockatoo occurs in the area. Otherwise rare and endangered animals have not been identified.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

See also 2.5.5.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Considered. The normal conservation measures contained in harvesting prescriptions together with classification for protection are sufficient to conserve animals in the Area.

2.7 Scenery

2.7.1 Consideration of scenic values

Letts Mountain and the associated range dominates the western section, while the Black Range ridge system forms the predominant feature in the east.

2.7.2 Additional measures to protect important features

* Imlay, Black Range and Skink Roads have a scenic reservation strip classified Special Emphasis Visual Resource Protection under the P.M.P. system.

* Vegetation is retained on the skyline of the Timbillica Range as a Special Emphasis Reserve Protection.

* Vegetation is retained beside the Imlay creek as a scenic reservation strip (100 to 1100m wide). Vegetation is also retained along Imlay Road as Visual Resource Protection.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

Sites occur in the section as described in the report from the consultant archaeologist. Sites predominantly occur along or close to streams and flat areas and on saddles along ridgetops.

2.8.2 Investigations

Potential sites indicated by the survey for archaeological sites have been field checked during pre-planning. None were found.

2.8.3 Action to protect identified sites

Identified sites are protected under the N.P.W.S. Act and are excluded from logging and road construction. PMP Classification as PMP 1.1.9 is made for registered sites.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known

2.9.2 Action to maintain values

Not applicable

3. CUMULATIVE IMPACT

Coupes in Compartments 557 and 556, scheduled and commenced but not completed in 1989, adjoin one another to form a consolidated area of about 120 hectares. Cumulative impact on identified environment values is not considered to be significant. Coupes in compartment 542 and 546 adjoin but the interface is a ridge road (about 1 km) and the cumulative impact is insignificant.

Coupes in Compartments 528 and 529 adjoin but the total area is only 100 ha and the cumulation impact is considered to be insignificant. Coupes in Cpts 523, 521 and 518 adjoin but are separated by wildlife corridors and road, effectively nullifying cumulative impact. Coupes in Cpts 500 and 519 adjoin on a 0.4 km road interface with insignificant cumulative impact. Coupe in Cpt 483, partly logged in 1989 adjoins coupe in 483 but together total only 80 ha, with insignificant cumulative impact. Coupe in Cpt. 507 logged in 1989 adjoins coupe in Cpt 508, together totalling about 150 ha. The cumulative effect will be insignificant.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Falkner Waalimma; part Waalimma and Falker Sections, Yambulla and Nungatta State Forests

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

10.2 km (see Area 19, subsection R1)

1.1.3 Minor access to dump sites (kms)

99 km

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 45

First Scheduled 1988 EIS			First Scheduled 1990 EIS	
230	400	445	376	453
231	402	446	377	454
380	403	463	389	456
381	405	476	422	457
382	406	478	423	
383	412	479	424	
391	425	480	432	
392	426		434	
393	429		436	
394	430			
397	431			
399	439			

1.2.3 Weather contingencies

Approximately 30% of the area to be harvested is suitable for moderate wet weather operations. Wet weather contingencies also exist within Jingera Management Section.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Alternate coupe scheduling. Operators have been scheduled such that not more than two contractors haul over the same road in the same period.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		1294 ha
(b) Coupes retained for future harvesting (gross area)		3074 ha
(c) Coupes now proposed for harvesting (gross area)		2259 ha
Number of coupes	76	
Net area to be harvested	2009 ha	
Contained areas excluded from harvesting	250 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		751 ha
Total gross area of compartments		7378 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Topography is gentle except for some steep, rocky sections on major ridges and particularly around Poole and Waalimma Mountains. These features are in broad areas reserved from logging.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	3836	1179
10-20°	2270	620
20-30°	1052	210
over 30°	220	-
	7378	2009

2.2 Climate

2.2.1 Local features

Winters are cool to cold, summers warm to hot. Rainfall is evenly distributed throughout the year. Periodic droughts create conditions conducive to severe bushfires.

2.2.2 Annual precipitation

900-1100 mms

2.3 Geology and Soils

2.3.1 Considerations

Grey granite soils derived from Devonian granitoids predominate. These fall within the "high" erosion class. Soils derived from Ordovician sediments occurring around Waalimma Mountain and Poole Mountain are more stable and are classified "average".

Application of the Eden Standard Erosion Mitigation Conditions (ref. App 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	8	190
high	68	1819

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Wonboyn	109
Genoa	1004
Wallagaraugh	896

2.4.2 Considerations

Recreational use (particularly boating and fishing) of the lower reaches of both the Genoa and Wallagaraugh Rivers is high, but above the tidal limit use is limited by poor access.

The area within the Wallagarangh Catchment together with the area to be harvested in Area 18 constitute about four per cent of that catchment. Water quality in the Wallagarangh catchment is monitored by the Forestry Commission.

The area to be harvested in the Genoa catchment is less than one per cent of the total catchment area.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

Logging is totally excluded from a strip along the Wallagaraugh River which varies in width from 100m to 1400m.

Steep areas are infrequent. Very steep areas are not logged. Unstable soils will not be logged in wet weather.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	980	1672	540
F	431	897	310
V	104	163	-
M	305	276	151
Y	189	66	-
	2009	3074	1001

2.5.3 Additional description

Silvertop Ash-Stringybark type 114 - dominant upperslopes and ridges
Yellow Stringybark-Gum - on lower slopes
Temperate Rainforest - in some gullies with southerly aspect, dominated by Lilly Pilly.

2.5.4 Rare or threatened species

None have been identified within harvesting areas by survey. The following species have been found in nearby areas:-

Hibbertia hermanniifolia	(3RCa)
Pomaderris sp. nov.	(2RC)
Pseudanthus divaricatissimus	(3RCa)

Although not classified as rare or threatened, a variation of Eucalyptus baueriana, known as E.Sp. nov polyanthemos is present in some harvesting areas.

2.5.5 Conservation measures

The 3 rare or endangered plants listed in 2.5.3 occur in areas classified PMP 1.2 Undeveloped Natural Forest (not subject to logging) within the proposed Mt. Poole Forest Preserve and are also protected in other sites. E.sp.nov.polyanthemos is excluded from harvesting and is present in the proposed Pericoe Forest Preserve to the north of this area.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

The abovementioned conservation measures are considered to be adequate.

2.6 Fauna

2.6.1 Surveys

Normal pre-logging surveys have been carried out in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	1830	2976	1001
4	179	98	-
	2009	3074	1001

2.6.3 Additional description

Yellow Stringybark-Gum Type is regarded as having generally the richest faunal habitat together with moister creek habitat.

2.6.4 Rare or threatened species

None known or identified.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Mt. Poole Forest Preserve and Waalimma Mountain Forest Preserve reflect habitat types common in the area. Substantial wildlife corridors thread throughout the area.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

The network of wildlife corridors and large area of proposed flora reserves, together with standard provisions are considered to be adequate for the area.

2.7 Scenery

2.7.1 Consideration of scenic values

The dominant, visual features of the area are Poole and Waalimma Mountains (774 and 721 m.a.s.l. respectively) and their associated ridges. Both are steep and rocky. The rest of the area is of relatively low profile and is not visible from any town, village or public road. Harvesting has been scheduled to occur in the Nungatta lease. Scenic values from the homestead will be taken into account in the harvesting of the appropriate compartments.

2.7.2 Additional measures to protect important features

Poole and Waalimma Mountains and the steep, rocky ridges associated with them will be neither logged or roaded, due mainly to their classification as PMP 1.3 Preserved Natural Forest, but also to some PMP 1.2 Undeveloped Natural Forest and some PMP 1.1.6 Special Emphasis Scenic Resource Protection.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

Sites occur in the Section. It is predicted that aboriginal sites would occur on flats associated with creeks or valleys or on saddles along ridges.

2.8.2 Investigations

Likely sites have been field checked for artefacts during preplanning.

2.8.3 Action to protect individual sites

The sites mentioned in 2.8.1 occur outside of the areas scheduled for harvesting in 1990 and are protected under the N.P.W.S. Act and by PMP classification and consequent protection.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

Gazetted National Estate Areas occur within the Mt. Poole Forest Preserve.

2.9.2 Action to maintain values

These areas will not be logged now or in the future due to their classification as PMP 1.3 Preserved Natural Forest.

3. CUMULATIVE IMPACTS

1989 logged areas do not adjoin scheduled 1990 areas. The following 1990 areas adjoin: coupes within Cpts 423 and 422 (about 80 ha total - no cumulative impact) and coupes within Cpts 453, 436 and 434. These latter three total about 180 ha. However only 434 and 436 form a consolidated block, of about 100 ha. The coupe in 436 adjoins the Cpt 453 coupe on an interface of about 0.3 km and the cumulative affect is considered to be minimal.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Cathcart/Big Jack; Coolangubra (north) section, part Cathcart and Tantawangalo State Forests

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

8.4 (see Area 20, subsection R1, R2)

1.1.3 Minor access to dump sites (kms)

16

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 10

First Scheduled 1988 EIS	First Scheduled 1990 EIS
1367	1369
1370	1372
1378	1373
1389	1374
1391	1390

1.2.3 Weather contingencies

Areas suitable for wet weather operation have been designated for that purpose.

1.2.4 Dispersal, within the Area, of coupes to be harvested

The maximum number of contractors per road type has been utilized to provide compartments for three crews.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area) 30 ha

(b) Coupes retained for future harvesting (gross area) 548 ha

(c) Coupes now proposed for harvesting (gross area) 583 ha

Number of coupes	17
Net area to be harvested	528 ha
Contained areas excluded from harvesting	52 ha

(d) Areas excluded from harvesting outside of harvesting coupes (gross area) 102 ha

Total gross area of compartments 1263 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescription, modified within communities of Hibbertia hermanniifolia.

1.3.2 Post-logging burning

Normal prescriptions, modified within communities of Hibbertia hermanniifolia.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Altitudinal range of the area is from 320 to 990 metres asl. Two major ridge systems exist in the area, separated by Black Log Creek.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	370	212
10-20°	613	211
20-30°	255	105
over 30°	25	-
	1263	528

2.2 Climate

2.2.1 Local features

Summer maximum temperatures range from 25-30° C. Winter frosts can number 40-50 pa. with 2-3 snowfalls on the higher peaks.

2.2.2 Annual precipitation

816mm (Cathcart P.O.)

2.3 Geology and Soils

2.3.1 Considerations

Major parent materials in the area are biotite granodiorite, hornblende granodiorite and shale around Cathcart Trig. Soils derived from the above rocks are stable red granite soils.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	17	528
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Towamba	528

2.4.2 Considerations

Main streams are Black Log and Station Creeks which are tributaries of the Towamba River. The Towamba River is used for domestic and irrigation purposes along much of its length and the river contributes to Eden's water supply. Proposed harvesting areas are a very small part of the catchment and there will be minimal effect on water quality.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	121	55	30
B	272	368	75
C	120	90	20
D	5	25	20
F	10	5	3
G	-	-	5
	528	548	154

2.5.3 Additional description

-

2.5.4 Rare or threatened species

Hibbertia hermanniifolia (3RCa) has been found within Compartments 1369, 1372, 1373, 1374, 1378 and 1390. This occurrence is within both retained and proposed harvesting coupes. Integrated logging is considered not to adversely affect the distribution of Hibbertia hermanniifolia. In fact field observations indicate that the propagation of Hibbertia Hermanniifolia is enhanced by disturbance.

2.5.5 Conservation measures

The deeply dissected and steeper southern parts of this Area are protected as Undeveloped Forest (PMP 1.2) and species in moist sites are additionally protected within the several wildlife corridors along the main streams.

Burning within Hibbertia hermanniifolia will be minimized.

Hibbertia hermanniifolia is not under threat from proposed logging operations and is fully protected on other areas eg. Mt. Poole Forest Preserve.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

The above conservation measures together with the standard prescriptions employed in harvesting should be adequate to ensure species survival.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging surveys in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	108	110	15
3	264	274	92
4	156	164	47
	528	548	154

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified in pre-logging survey

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

There is an extensive area of Undeveloped Forest (PMP 1.2) in the southern part of this Area and wildlife corridors along the major dissecting streams.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Hollow-dwelling mammals and birds are most likely to be adversely affected. Standard harvesting prescriptions together with the above conservation measures provide adequate protection.

2.7 Scenery

2.7.1 Consideration of scenic values

The area is dominated by steep ridges dropping into the floor of the Towamba Valley. The southern section of Cathcart State Forest is visible from the Towamba Valley. A number of ridges on the northern side of Cathcart State Forest are visible from the Mt. Darragh Road.

2.7.2 Additional measures to protect important features

Modified logging to ensure canopy retention for visual resource protection will be implemented along ridges visible from the Towamba Valley and the Mt. Darragh Road. These visual resource strips will be located within Compartments 1367, 1369, 1373, 1378, 1389, 1390 and 1391.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known. No significant sites are known or expected in proximity to the area.

2.8.2 Investigations

None considered necessary.

2.8.3 Action to protect identified sites

Not applicable.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

No sites known. Five original trails were said to have existed between Eden/Pambula and Bombala/Bibbenluke to give access to the Towamba Valley via Big Jack Mountain or the Coal Hole.

2.9.2 Action to maintain values

Any protection of the trails would depend on their discovery and consequent assessment of historic value.

3. CUMULATIVE IMPACT

No 1989 or previous logging in this area adjoins proposed 1990 coupes. Coupes in compartments 1370 and 1372 adjoin but together total about 100 hectares. Similarly coupes in Cpts 1378 and 1389, and Cpts 1389 and 1391, adjoin but total only about 100 hectares for each pair.

Overall the principle of alternate coupes has been followed as well as possible and cumulative impacts are not considered to be significant.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Pheasants Creek, Coolangubra (south) Section, part Coolangubra and Bombala State Forests.

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

26

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 18

First Scheduled 1988 EIS	First Scheduled 1990 EIS
1323	1320
1325	1321
1326	1322
1327	1324C
1328	1330
1332C(pt)	1331C
1336C	1333C
1338	1403C
1339	
1340	

C = National Estate Areas subject to prior consultation with the Commonwealth.

1.2.3 Weather contingencies

Dumps suitable for wet weather operation have been identified on harvesting plans.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Commonwealth constraints have encouraged maximum use of Kanoonah Rd section in lieu of other National Estate sections.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		169 ha
(b) Coupes retained for future harvesting (gross area)		1220 ha
(c) Coupes now proposed for harvesting (gross area)		987 ha
Number of coupes	26	
Net area to be harvested	873 ha	
Contained areas excluded from harvesting	114 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		298 ha
Total gross area of compartments		2674 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

High features visible from a large part of the surrounding countryside.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	1049	345
10-20°	1317	447
20-30°	265	81
over 30°	43	-
	2674	873

2.2 Climate

2.2.1 Local features

Mild summer, cool winters

2.2.2 Annual precipitation

900-1100 mm

2.3 Geology and Soils

2.3.1 Considerations

All compartments are on Devonian hornblende granodiorite. Soils are predominantly red earths and red podzolics.

Application of the Eden Standard Erosion Mitigation Conditions (Appendix 1), which provide for such soils, is expected to be adequate to minimize erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	18	498
high	8	375

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Towamba	792
Bombala	81

2.4.2 Considerations

Towamba River is used for domestic and irrigation purposes, along much of its length and the river contributes to Eden's water supply well downstream from the area. Proposed harvesting areas are a very small part of the catchment and there will be minimal to zero effect on water quality.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes. In addition all compartments are within areas being surveyed by detailed biological surveys.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	277	365	130
B	260	310	60
C	336	540	170
D	-	5	52
	873	1220	412

2.5.3 Additional description

70% of area carries wet sclerophyll forest; remaining 30% carries dry sclerophyll forest.

2.5.4 Rare or threatened species

None known or found in pre-logging surveys, however Pittosporum bicolor was recorded in a vegetation survey. This species is limited in its occurrence throughout the Region and is found in gullies, where it is protected by reserves and prescriptions.

2.5.5 Conservation measures

Two large reserves adjoin. They are Waratah Creek Flora Reserve (880 ha), representing undulating tableland forest, and Coolangubra Escarpment Forest Preserve (2900 ha), representing steep escarpment forest.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

The Commonwealth/State Scientific Committee is undertaking further investigation in coupes within Compartments 1332, 1336, 1324, 1333 and 1403.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging investigations in all coupes. In addition all compartments are within areas being surveyed by detailed biological surveys.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	300	425	80
3	470	675	280
4	103	120	52
	873	1220	412

2.6.3 Additional description

Most of the area proposed for logging is classed as having "moderate" regional value for fauna; the remainder of the area is "low". This division generally coincides with the occurrence of wet and dry sclerophyll types.

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Waratah Creek Flora Reserve and Coolangubra Escarpment Forest Preserve. See Section 2.5.5.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Hollow-dwelling mammals and birds are most likely to be adversely affected. See also Section 2.5.6.

Fauna values considered to be adequately protected.

2.7 Scenery

2.7.1 Consideration of scenic values

The high ridge, with Coolangubra Mountain at its peak, is visible from surrounding areas, especially from the west. Likewise Pheasants Peak is highly visibile.

2.7.2 Additional measures to protect important features

Modified logging to ensure canopy retention for visual resource protection has been implemented along the Coolangubra Mountain ridge. The level of logging will vary from no logging on highly visible areas to varying degrees of canopy removal depending on the visual impact. Logging will be modified in parts of compartments 1320, 1321, 1322, 1327, 1328, 1330, 1331, 1332, 1333, and 1336. Pheasants Peak visual protection maintained on the west by Waratah Creek Flora Reserves and on the east by an extensive area of undeveloped Natural Forest, PMP 1.2.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known. No significant sites known in the surrounding area, or expected.

2.8.2 Investigations

None considered necessary.

2.8.3 Action to protect identified sites

Not applicable.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

The area is part of the Coolangubra Area on the Interim Register of the National Estate.

2.9.2 Action to maintain values

Investigation of natural values is continuing in conjunction with the Commonwealth and established values will be maintained.

Harvesting is subject to consultation between Commonwealth and State in terms of any current agreement, and subsequent to scientific investigation of the general area.

3. CUMULATIVE IMPACT

No 1990 coupes adjoin 1989 logging.

Some coupes nominated in 1989 and not logged but scheduled for 1990 adjoin areas newly scheduled for 1990. Three of these in Cpts 1333, 1336 and 1332 adjoin to form a block of about 150 hectares. However, about a half of this area is to be harvested under modified prescriptions to protect scenic values and the cumulative impact is not considered to be significant. Coupes in Cpts 1330 and 1332 adjoin but total only about 100 ha of mainly modified harvesting - insignificant cumulative impact. Coupes in compartments 1328 and 1324 adjoin along a 0.5 km interface but are effectively separated by a wildlife corridor.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Nalbaugh/Mines Rd; Coolangubra (south) Section part Coolangubra and Nalbaugh State Forests

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

3.4 (see Area 22, Subsection R1)

1.1.2 Feeder roads (kms)

7.7 (see Area 22, Subsection R1,R2)

1.1.3 Minor access to dump sites (kms)

6

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 7

First Scheduled 1988 EIS	First Scheduled 1990 EIS
1304	1309
	1312C
	1402C
	1405C
	1406C
	1408C

C = National Estate Areas subject to prior consultation with the Commonwealth.

1.2.3 Weather contingencies

Dumps suitable for wet weather operation have been identified on harvesting plans.

1.2.4 Dispersal, within the Area, of coupes to be harvested

This is a high sawlog yield area required to sustain sawlog flow.

Harvesting coupes have been dispersed on the alternate copue principle constituting about 40% of the area agreed to by the Commonwealth.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		116 ha
(b) Coupes retained for future harvesting (gross area)		455 ha
(c) Coupes now proposed for harvesting (gross area)		462 ha
Number of coupes	11	
Net area to be harvested	410 ha	
Contained areas excluded from harvesting	52 ha	
(d) Areas excluded from harvesting outside of harvesting coupes, (gross area)		72 ha
Total gross area of compartments		1105 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Generally undulating to hilly with some steeper patches and rocky outcrops, altitudinal range 550-1060 m a.s.l. The White Rock River forms the western boundary and the Wog Wog river drains the area generally to the east.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested *
0-10°	420	202
10-20°	420	166
20-30°	230	42
over 30°	35	-
	1105	410

* Subject to final adjustment - refer 2.6.6.

2.2 Climate

2.2.1 Local features

Mild to warm summers, cool winters (60-80 frosts)

2.2.2 Annual precipitation

900mm per annum

2.3 Geology and Soils

2.3.1 Considerations

Compartments 1309 and 1312 have hornblende granodiorite geology underlying stable red earths.

Cpt 1304, 1405, 1408 are on granite and biotite granodiorite parent material with poorly structured grey granite soils.

Application of the Eden Standard Erosion Mitigation Conditions (App.1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	3	179
high	8	231
	11	

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Genoa	130
Towamba	280

2.4.2 Considerations

Erodible soils derived from granitoid rocks occur in some areas and have been identified in pre-planning surveys.

The more steeply dissected parts of the overall area are mostly within the forest preserve or associated areas of Undeveloped Forest (PMP 1.2). The wildlife corridor along Myanba Creek also helps to prevent soil loss. Standard Erosion Mitigation Conditions are expected to be adequate to maintain water quality.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

The steepest parts of compartments to be harvested have been excluded from harvesting. No further special measures required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes. In addition, all compartments (except 1309) are within areas being surveyed by detailed biological surveys.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area*	Retained Coupes	Reserved*
A	140	130	40
B	110	165	34
C	160	135	50
D	-	10	-
	410	455	124

* Subject to final adjustment - refer 2.6.6.

2.5.3 Additional description

Combination of wet and dry sclerophyll forest, with some previous logging for sawlogs only.

2.5.4 Rare or threatened species

None found in pre-logging surveys.

2.5.5 Conservation measures

Waratah Creek Flora Reserve (880 ha) and Nalbaugh National Park (3764 ha) adjoin representing all vegetation types present in coupes.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

The Commonwealth/State Scientific Committee is undertaking further investigations in coupes within compartments 1312, 1402, 1405, 1406, 1408.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging surveys in all coupes. Major wildlife studies have been undertaken at Waratah Creek, adjacent to the north. In addition, all compartments (except 1309) are within areas being surveyed by detailed biological surveys.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area*	Retained Coupes	Reserved*
0	40	45	10
1	290	320	64
3	40	-	25
4	40	90	25
	410	455	124

* Subject to final adjustment - refer 2.6.6.

2.6.3 Additional description

Area's value as habitat is substantially less than area already reserved in Waratah Creek.

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

The area of significant wildlife value has been incorporated in the Waratah Creek Flora Reserve.

See 2.5.5.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Hollow-dwelling aboreal mammals and birds are the species types likely to be most affected by logging. Normal habitat retention measures together with nearby reserved areas should be adequate to maintain species viability. See comment under 2.5.6 which applies similarly to fauna investigations.

Amended PMP classifications, to extend the wildlife corridor system to other major creeks as outlined in Section 6.3.2, will be applied in completion of planned harvesting in Cpt 1304. Determinations resulting from consideration of the possible extension of filter strips along minor creeks, in conjunction with the report of the joint Scientific Committee with respect to the coupe in Cpt 1312, will be applied in the logging of that coupe.

2.7 Scenery

2.7.1 Consideration of scenic values

The area is part of the divide between the Wog Wog and White Rock rivers and is dominated by Pheasants Peak on the north and White Rock Mountain on the south.

2.7.2 Additional measures to protect important features

None required in logging area. Nearby areas extensively zoned for scenic resource protection.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

There are no known archaeological sites on areas to be harvested or in the vicinity.

2.8.2 Investigations

None required

2.8.3 Action to protect identified sites

Not applicable

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

Most of the area is within the Coolangubra area on the Interim Register of the National Estate.

2.9.2 Action to maintain values

Investigation of natural values is continuing in conjunction with the Commonwealth/State Scientific Committee and established values will be maintained.

3. CUMULATIVE IMPACT

Coupes in Cpts 1406, 1405 and 1402 adjoin and together total 180 ha. Coupes in Cpts 1405 and 1406 form a consolidated block of only 100 ha and are separated from coupe in Cpt. 1402 by a wildlife corridor. Cumulative impacts are not significant.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Rockton; Rockton Section, part Bondi State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

33 km

1.2 Harvesting

1.2.1 Type

Integrated. Some 1983 fire kill salvage in cpt 1766.

1.2.2 Compartments containing coupes to be harvested.

Total 29

First Scheduled 1988 EIS		First Scheduled 1990 EIS
1703	1755	1701
1704	1756	1705
1721	1757	1706
1727	1759	1707
1730	1760	1708
1731	1761	1728
1736C	1762	1741
1737	1763	1742C
1745	1766	1743C
1750		1758

C = National Estate Areas subject to prior consultation with the Commonwealth.

1.2.3 Weather contingencies

Due to soil type, none of the compartments are suitable for wet weather logging.

1.2.4 Dispersal within the area of coupes to be harvested

Logging coupes have been concentrated as far as possible in that part of the area, south of Imlay Road to be excised from Coolangubra National Estate area.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		493 ha
(b) Coupes retained for future harvesting (gross area)		2302 ha
(c) Coupes now proposed for harvesting (gross area)		1364 ha
Number of coupes	42	
Net area to be harvested	1239 ha	
Contained areas excluded from harvesting	125 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		219 ha
Total gross area of compartments		4378 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Mostly undulating with the remainder hilly to steep. Only in a few small areas do slopes exceed 30°, principally around Kellys Mountain, east of Mt. Calabash, along the White Rock River and Reef Creek and adjacent to Nungatta and Nalbaugh National Parks.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	2400	772
10-20°	1300	391
20-30°	640	76
over 30°	38	-
	4378	1239

2.2 Climate

2.2.1 Local features

With an altitudinal range of 420 to 900 metres asl, the climate is generally milder than that of the tablelands. Summer maximum temperatures are typically 25 to 35°C. During winter 40 to 50 frosts may occur and snow sometimes falls on the higher peaks.

2.2.2 Annual precipitation

800 to 1000 mms

2.3 Geology and Soils

2.3.1 Considerations

Granite rock predominates except for small areas on Kellys Mountain and adjacent to Nalbaugh and Nungatta National Parks where metasediments occur. Weathering of these parent materials gives rise to deep red or grey soils and poor, skeletal soils respectively. The grey granite soils are particularly susceptible to erosion.

Application of the Eden Standard Erosion Mitigation Conditions (ref. App 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	6	224
high	36	1015
		1239

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Genoa	988
Towamba	251
	1239

2.4.2 Considerations

The Towamba River is the source of domestic water for the township of Eden. Domestic and irrigation supplies are drawn from the Genoa River in north-eastern Victoria. The area of these catchments being harvested in 1990 is a very small proportion of total catchment and logging will not have an impact on water quality.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

Steepest areas (>30°) not to be logged. No additional special measures required.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes. In addition all compartments are within the areas that have been surveyed by detailed biological surveys.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	700	1080	115
B	4	90	12
C	270	480	160
D	5	5	8
M	260	647	49
	1239	2302	344

2.5.3 Additional description

Except for the wet sclerophyll forest found in the north-western extension around Mount Calabash, the area carries dry sclerophyll forest with a few ferny gullies with moister vegetation types. Typically, stands are mature to overmature with regeneration found only where old trees have died or been removed. Some areas of major regeneration occur along Laings Rd. The vegetation south of Reef Road was heavily burnt in 1983.

2.5.4 Rare or threatened species

Considerable investigation and sampling of vegetation has been undertaken in these areas by special biological survey. No rare or endangered plants have been recorded or are known to exist in the area. Riparian associations include some that are unusual in the local context.

2.5.5 Conservation measures

Species of interest in the area are well represented in the adjacent Nalbaugh and Nungatta National Park and in Rockton Forest Preserve (proposed Flora Reserve). Unusual riparian associations protected in Forest Preserve and in PMP 1.1.7 (Protection of Flora and Fauna Special Emphasis areas on White Rock River, Reef Creek and Southern Creek.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Generally investigations have not indicated any need for further conservation action beyond the reservations already made.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated in pre-logging surveys in all coupes and all compartments are within areas that have been surveyed by detailed biological surveys. Current research is ongoing to determine status of species in Sheep Station Creek area and appropriate management regime. Special surveys for the long footed potoroo were carried out in 1988 and 1989.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	976	1852	85
3	263	450	259
	1239	2302	344

2.6.3 Additional description

The area is typically dry sclerophyll with a number of moist gullies providng significantly richer fauna habitat. Past wildfire appears to have emphasised this contrast between moist and dry habitat, particularly south of Imlay Road.

2.6.4 Rare or threatened species

Recent studies in conjunction with the Victorian Department of Conservation Forests and Lands has confirmed the presence of the long-footed potoroo (Potorous longipes) north of Sheep Station Creek, within Compartments 1716 and 1719 (not scheduled for logging). Potential habitat has also been identified in Cpts 1717, 1718, 1720 and further studies will be undertaken in Cpts 1721, 1727, 1728, 1730 and 1731.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply, with the exception of the compartments listed in 2.6.4 above.

Rockton Forest Preserve has been recently established to assist the conservation of the potoroo. Within the recently identified likely habitat north of the reserve, Compartments 1718 and 1720 have been deleted from harvesting proposals and Kingsley and Dingo roads deleted from road construction proposals. In addition, proposed roading and harvesting has been suspended in Cpts 1721, 1727, 1728, 1730 and 1731, which are close to the identified area, pending ecological studies and production of a potoroo management plan.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Further investigations are in progress to determine appropriate conservation measures that will optimise survival potential for this isolated occurrence of the long footed potoroo. An active program of feral predator eradication has been initiated. Construction of Dingo Road has been suspended. Harvesting will not take place in Cpts 1716, 1717, 1718, 1719 and 1720. Harvesting in Cpts 1721, 1727, 1728, 1730 and 1731 has been deferred pending further investigation and the preparation of specific guidelines for the protection of potoroo habitat.

2.7 Scenery

2.7.1 Consideration of scenic values

The dominant landscape features are White Rock and Wog Wog Mountains to the north (1096 and 1139 metres asl respectively) and Nungatta Mountain (939 metres asl) to the south.

2.7.2 Additional measures to protect important features

As all three of the peaks mentioned above are within National Parks, a loss of visual amenity by other than natural causes seems unlikely. Harvesting operations within Compartments 1730, 1742 and 1743 will be screened from travellers on Imlay Road by the retention of a 50 metre wide strip of vegetation along the road edge. Modified harvesting (with increased canopy retention) is prescribed for steeper slopes and areas that are more highly visible, e.g. Cpt 1706.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known on proposed harvesting areas.

2.8.2 Investigations

Archaeological surveys in nearby Falkner and Waalima Sections indicate that significant sites are most likely to occur on flats adjoining major creeks. Such sites, if existing, may be protected by filter strips and wildlife corridors. Several sites in the nearby Sheep Station Creek area have been identified by a consultant archaeologist.

2.8.3 Action to protect identified sites

Sites identified along Sheep Station Creek have been incorporated into the Rockton Forest Preserve.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

Part of the area is within the Coolangubra Area on the Interim Register of the National Estate, viz. mainly north of Imlay Road and east of White Rock River.

2.9.2 Action to maintain values

Investigation of natural values is continuing in conjunction with the Commonwealth and established values will be maintained.

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APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Bondi; Bondi Section (west), part Bondi State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

10

1.2 Harvesting

1.2.1 Type

1983 fire kill salvage in Cpts 1202,1211,1212,1213 and integrated thinning in Cpt 1226.

1.2.2 Compartments containing coupes to be harvested.

Total 5

First Scheduled 1988 EIS	First Scheduded 1990 EIS
1202	
1211	
1212	Nil
1213	
1226	

1.2.3 Weather contingencies

Only coupes in Cpts 1226 have sections suitable for wet weather logging.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Areas are mostly 1983 fire kill areas needing to be salvaged i.e. dead and dying trees to be harvested.

1.2.5 Constitution of compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		258 ha
(b) Coupes retained for future harvesting (gross area)		431 ha
(c) Coupes now proposed for harvesting (gross area)		282 ha
Number of coupes	6	
Net area to be harvested	183 ha	
Contained areas excluded from harvesting	99 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		Nil
Total gross area of compartments		971 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

None planned

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Generally hilly escarpment with some steep slopes, becoming gentler in the valley bottoms and along ridge tops.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	370	70
10-20°	470	89
20-30°	131	24
over 30°	-	-
	971	183

2.2 Climate

2.2.1 Local features

Harsh, cold, windy winters with frequent frosts. Temperatures from a min. of 5°C to a max. of 35°C.

2.2.2 Annual precipitation

750-1000mm, predominantly in winter.

2.3 Geology and Soils

2.3.1 Considerations

Soils are mostly derived from shales and are quite stable. However, grey granites are found in the Genoa River area and soils derived from these are highly erodible.

Application of the Eden Standard Erosion Mitigation Conditions (ref.App 1), which provide for such soils is expected to be adequate to minimise erosion and maintain water quality. Areas of very high erosion susceptability are excluded from harvesting.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	2	60
high	4	123

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Genoa	183

2.4.2 Considerations

The area to be harvested on this Area is less than 0.2% of the large Genoa catchment.

Areas of particular sensitivity were identified in pre-logging surveys. Filter strips along tributaries of the Genoa River will be widened to between 20 m and 50 m depending on side slopes and soil conditions.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

On Compartment 1213 areas identified with very high erosion potential are excluded from logging coupes. Other areas of high erosion potential will not be logged during wet weather.

2.5 Vegetation

2.5.1 Surveys

Normal prelogging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	128	340	64
C	55	91	34
G	-	-	1
	183	431	99

2.5.3 Additional description

Silvertop Ash/Messmate - ridgetops
Monkey Gum/White Stringybark and Brown Barrel) - slopes
Peppermint and Apple Box - lower slopes

2.5.4 Rare or threatened species

None found in pre-logging surveys.

2.5.5 Conservation measures

The area is well served by wildlife corridors and areas of PMP 1.1.6 Special Emphasis Scenic Resource Protection. The latter although not specifically provided for flora protection does result in increased tree retention.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

It is considered that normal conservation measures and PMP classifications provide adequate conservation of vegetation. Particular care will be taken to minimise damage to select stems of the abundant regeneration which followed the 1983 wildfire.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in prelogging surveys in all coupes.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	128	258	29
3	55	149	69
4	-	24	1
	183	431	99

2.6.3 Additional description

Monkey Gum/White Stringybark and Brown Barrel types provide potential habitat for gliders and possums.

2.6.4 Rare or threatened species

None known or identified in prelogging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

See also 2.5.5.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Hollow-dwelling mammals and birds are likely to be most affected by harvesting.

The following special measures will apply in addition to standard prescriptions:

* The wider than normal filter strips along Genoa River (see 2.4.2) will maintain additional habitat.
* Any healthy trees to be retained in areas severely burnt by the 1983 Bondi wildfire.

These measures should be adequate to conserve fauna in the Area.

2.7 Scenery

2.7.1 Consideration of scenic values

Broken, generally not excessively steep escarpment country, drained by the Genoa River.

There are some slopes adjacent to Genoa River which are quite steep, e.g. Bondi Gulf.

2.7.2 Additional measures to protect important features

Visually sensititve sections of cpt.1212 and cpt.1226 will have between 30% and 70% of the canopy retained and a strip of trees in cpt.1226 some 50 m to 100 m wide will be retained, to preserve the visual amenity along the Monaro Highway.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known

2.8.2 Investigations

The area has been heavily disturbed in the past be clearing and logging and surveys would find very little if anything. The area has also been heavily burnt.

2.8.3 Action to protect identified sites

Not applicable.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known

2.9.2 Action to maintain values

Not applicable.

3. CUMULATIVE IMPACT

Only two areas adjoin, both 1989 coupes that were unfinished in 1989. The operation is salvage of fire killed trees and impact of logging is minor compared with the existing impact of wildfire.

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APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Pericoe; Pericoe Section, part Coolangubra State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

31.3 (see Area 25, subsection R)

1.1.2 Feeder roads (kms)

22.5 (see Area 25, subsection R)

1.1.3 Minor access to dump sites (kms)

3

1.2 Harvesting

1.2.1 Type

Integrated

1.2.2 Compartments containing coupes to be harvested.

Total 2

First Scheduled 1988 EIS	First Scheduled 1990 EIS
Nil	1434C
	1449C

C = National Estate Areas subject to prior consultation with the Commonwealth.

1.2.3 Weather contingencies

Aras suitable for wet weather logging have been designated for that purpose on the harvesting plans.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Necessary to haul loads over Wog Way so as to compact pavement and shoulders and reduce logging pressure on other sections of forest.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		Nil ha
(b) Coupes retained for future harvesting (gross area)		164 ha
(c) Coupes now proposed for harvesting (gross area)		96 ha
Number of coupes	2	
Net area to be harvested	78 ha	
Contained areas excluded from harvesting	18 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		3 ha
Total gross area of compartments		263 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescription

1.3.2 Post-logging burning

Normal prescriptions

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

This area is escarpment forest falling from the tablelands into the lowlands of the Towamba Valley. The area is hilly and deeply dissected by streams. Rocky outcrops of varying size are common. Height above sea level ranges between 200 and 840 metres.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	127	47
10-20°	104	24
20-30°	21	7
over 30°	11	-
	263	78

2.2 Climate

2.2.1 Local features

Climate is generally milder than that of the nearby tabelands. Summer maximum temperatures are typically 25-30° C. During winter 40-50 frosts may occur with the potential for light snowfalls on the higher peaks.

2.2.2 Annual precipitation

800-1000 mm

2.3 Geology and Soils

2.3.1 Considerations

Major parent materials in the area are biotite granodiorite. Soils derived from the above rock are moderate depth grey granite soils with a very thin A horizon.

Application of the Eden Standard Erosion Mitigation Conditions (ref. App 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	-	-
high	2	78

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Towamba	78

2.4.2 Considerations

Both compartments are in the headwater of the Wog Wog River. Cpt 1434 is near the ridgetop and the range in altitude is from 700-800 m. Cpt 1449 ranges from 300-500 m.

The Wog Wog River, into which the harvest area drains is a tributary of the Towamba River which is used for domestic and irrigation purposes along much of its length. The Towamba River contributes to Eden's water supply well downstream from the area. The logging area is a very small part of the total catchment and the effect on water quality will not be discernible.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

Very steep areas will not be logged. Only specified areas may be logged during wet weather.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes. In addition, Cpt 1434 is within an area being surveyed by a detailed biological survey.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	41	100	-
C	22	41	13
D	15	23	8
	78	164	21

2.5.3 Additional description

The two harvest blocks are distinct in their vegetation type.

Cpt. 1434 is Moist Sclerophyll forest predominantly Messmate/Monkey Gum with some Monkey Gum/Maidens Gum and a component of Brown Barrel. On several rocky knobs, almost pure stands of Silvertop Ash regeneration exist. This compartment lacks a major understorey component.

Cpt. 1449 is Dry Sclerophyll forest, predominately Silvertop Ash/Stringybark with occurence of Messmate/Monkey Gum along drainage lines.

Both these forest harvest areas are of mature to overmature status with considerable wind damage.

2.5.4 Rare or threatened species

Scattered individuals of Pomaderris cinerea (previously Category 3v but not currently classified as rare or threatened) have been found along Wog Wog River, which runs nearby. However, as the harvest area does not border with Wog Wog River, and as there is a reserve along the same river, logging is not anticipated to disturb these communities.

2.5.5 Conservation measures

No special conservation measures have been applied in these areas.

Pomaderris cinerea is not under threat from proposed logging operations.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Subject to consideration of report from the Commonwealth/State Scientific Committee.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging surveys in all coupes. In addition, Cpt 1434 is within an area being surveyed by a detailed biological survey.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
3	78	164	21

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Arboreal mammals, particularly hollow dwelling mammals and birds are likely to be most affected. Fauna values considered to be adequately protected.

See comment under 2.5.6 which applies here.

2.7 Scenery

2.7.1 Consideration of scenic values

This general area is a section of escarpment merging the coastal valley of Towamba with the most coastal tableland range between Big Jack and Pheasants Peak. The hilly, heavily dissected topography drains either into the Wog Wog River (which forms the southern boundary) or into the Towamba River which runs adjacent to the northern boundary. The most dramatic scenery is the sharp drop off the escarpment in the north east into the Towamba Valley.

Cpt. 1434 is the only visibly significant compartment and is a small area visible only from forest roads on ridges to the immediate west.

The existence of Coolangubra Escarpment Forest Preserve will ensure that the aesthetically impressive escarpment fall off into the lowlands of the Towamba Valley is not significantly affected by logging operations in the medium and long term.

2.7.2 Additional measures to protect important features

No special measures required

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

No known sites on or in the vicinity of the harvest area. Significant sites are unlikely in these steeper areas.

2.8.2 Investigations

None intended.

2.8.3 Action to protect identified sites

Not applicable.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

The area is within the Coolangubra Area on the Interim Register of the National Estate.

2.9.2 Action to maintain values

Investigation of natural values is continuing in conjunction with the Commonwealth. No logging will occur before consultation with the Commonwealth following completion of these investigations. Established values will be maintained.

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APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : East Boyd; East Boyd Section, part East Boyd State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

5 km

1.2 Harvesting

1.2.1 Type

Regrowth thinning

1.2.2 Compartments containing regrowth to be thinned.

Total 4 Gross Area 1057 ha

First Scheduled 1988 EIS	First Scheduled 1990 EIS
Nil	24
	28
	29
	30

1.2.3 Weather contingencies

Wet weather capability occurs within the coupes

1.2.4 Dispersal, within the Area, of coupes to be harvested

Not subject to alternate coupe system. Thinning was selected according to requirements for economic logging. Scheduled for one contractor; therefore no two compartments will be logged simultaneously.

1.2.5 Area of regrowth to be thinned

About 300 ha

1.2.6 Area excluded from thinning within compartments to be thinned

54 ha

1.2.7 Net area of previously thinned regrowth

Nil

1.3 Fuel Management

1.3.1 Pre-logging burning

Normal prescriptions will apply for regrowth fuel management.

1.3.2 Post-logging burning

Fuel reduction burning for research purposes is proposed.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Undulating with some steeper areas, rising from 20 metres to about 270 asl.

2.1.2 Slope categories (hectares).

Category	Net areas to be harvested
0-10°	240
10-20°	60
20-30°	-
over 30°	-
	300

2.2 Climate

2.2.1 Local features

Rainfall is reasonably even throughout the year, but with large variations between years. Although periodic severe droughts occur it is rare for dry spells to last more than three to four months.

2.2.2 Annual precipitation

800-850mm

2.3 Geology and Soils

2.3.1 Considerations

Parent material is primarily derived from Ordovician sediments (principally shales) or Eden Rhyolite both of which form stable soils.

Application of the Eden Standard Erosion Mitigation Conditions (ref. App 1), which provide for such soils, is expected to be adequate to minimise erosion and maintain water quality.

2.3.2 Numbers and area of thinning areas by erosion category

Erosion Category	Number of Compartments	Net Area (ha)
average	4	300
high	-	-

2.4 Hydrology

2.4.1 Net thinning area by catchments

Catchment	Area (ha)
Towamba	23
Wonboyn	277

2.4.2 Considerations

The Towamba River is a major source of water supply for the town of Eden above the section of the catchment scheduled for thinning. The Wonboyn River flows into Wonboyn Lake which is used extensively for oyster farming and recreation.

The area to be harvested in Wonboyn catchment is less than 1% of the total catchment area.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required. Routine modified harvesting measures associated with thinning operations will minimise erosion and maintain water quality.

2.5 Vegetation

2.5.1 Surveys

Normal pre-logging surveys have been instituted in all coupes.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Thinning Area	Reserved
A	15	-
M	285	39
G	-	15
	300	54

2.5.3 Additional description

Predominant forest types are Forest Type 112 on ridgetops and upper slopes and Forest Type 114 on lower slopes and gullies. There are smaller areas of Forest Type 157 in favourable gully sites. The area has been harvested under integrated operations and mining timber operations in the past. The area to be harvested in 1990 will be predominantly made up of regeneration areas generally in the range of 10 to 20cm d.b.h.o.b.

2.5.4 Rare or threatened species

None known or found in pre-logging surveys.

2.5.5 Conservation measures

Various swamp vegetation species and communities in the drainage system of the area are preserved under the Preferred Management Priority System as PMP 1.1.7 Flora and Fauna Protection.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

None required. Routine modified harvesting measures associated with thinning operations are adequate.

2.6 Fauna

2.6.1 Surveys

Habitat has been evaluated for retention in pre-logging surveys in all compartments.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Reserved
1	300	39
3	-	15
	300	54

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified in pre-logging surveys.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

A wildlife corridor bisects the area and is not subject to logging operations.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Wildlife corridor and routine modified harvesting measures associated with thinning operations will maintain dominant canopy structure and species diversity. No additional measures required.

2.7 Scenery

2.7.1 Consideration of scenic values

Prominent areas are restricted to small areas visible from the Princes Highway and Edrom Road. The nature of the thinning operation, wherein tree removal from below leaves the dominant and codominant trees, minimises the visual impact.

2.7.2 Additional measures to protect important features

The more prominent visual feature (Roundhill) is protected by its classification as PMP 1.1.6 Special Emphasis Visual Resource Protection. Those areas visible from the Princes Highway are also classified as PMP 1.1.6.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

One site occurs on a ridgetop to the south of the area to be harvested. Significant sites are likely to be found, if present, along streams and rivers.

2.8.2 Investigations

Likely sites have been field checked for artefacts during preplanning. None were found.

2.8.3 Action to protect identified sites

Not applicable.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

The area to the north of the proposed thinning operations has some historical significance at the mouth of the Kiah River where Davidsons Whaling Station is situated. The Wonboyn Lake to the south-east has a large recreational usage. The Harris Daishowa Chipmill is situated on private property to the north-east of the section.

2.9.2 Action to maintain values

None of the above sites will be affected by the thinning operations proposed for the area.

3. CUMULATIVE IMPACT

These compartments, totalling 300 ha, constitute adjoining areas. The operation is regrowth thinning and the impact on recognised environmental values is not considered to be significant.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : North Glenbog Windthrow

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

1

1.2 Harvesting

1.2.1 Type

Salvage logging of windthrown forest. Only windthrown or severly damaged trees will be harvested.

1.2.2 Compartments containing coupes to be harvested.

Total 6

First Scheduled 1988 EIS	First Scheduled 1990 EIS	
	2204(pt)	2306
Nil	2205	Cn.L.19/2
	2206	
	2305	

1.2.3 Weather contingencies

Very limited wet weather access. Very limited wet weather areas available elsewhere in the section.

1.2.4 Dispersal within the area of coupes to be harvested

Dispersal not considered, being a salvage operation i.e. not scheduled harvesting in the normal sense.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area) N/A

(b) Coupes retained for future harvesting (gross area) N/A

(c) Coupes now proposed for harvesting (gross area) 1495 ha

Number of coupes	11
Net area to be harvested	1495 ha
Contained areas excluded from harvesting	Nil

(d) Areas excluded from harvesting outside of harvesting coupes (gross area) 10⌀ ha

Total gross area of compartments 160⌀ ha

Note: Low intensity logging over a large gross area.

1.3 Fuel Management

1.3.1 Pre-logging burning

Nil, to prevent damage to salvagable timber.

1.3.2 Post-logging burning

Nil to prevent damage to existing tree regeneration and surrounding swamps.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Flat to undulating-hilly.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	885	885
10-20°	595	595
20-30°	41	15
over 30°	80	0
	1601	1495

2.2 Climate

2.2.1 Local features

The area is strongly influenced by the orographic effect of the escarpment with high precipitation and frequent afternoon fogs. Winters are cold, with sleet and occasional snowfall.

2.2.2 Annual precipitation

900-1100 mm

2.3 Geology and Soils

2.3.1 Considerations

Parent material is mainly Devonian biotite granodiorite, commonly with granite outcrops on ridgetops and boulders on mid and lower slopes. Soils are relatively stable red and yellow sandy loams.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	11	1495
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Brogo	139
Bega	1356
	1495

2.4.2 Considerations

Rural irrigation to Bega town water supply downstream on Bega River. Brogo Dam is downstream of Portion 53 area. However there is very little possibility of any effect on water supply quality. The harvesting area is less than Ø.5% of the catchment and occupies part of the undulating tableland edge at the head of the catchment.

Only a small part of the very large Bega catchment, which has been substantially cleared for agriculture is to be logged.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

Normal erosion mitigation conditions are adequate to protect water quality.

2.5 Vegetation

2.5.1 Surveys

Previously logged areas already surveyed.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	136		
B	1223		
M	34	N/A	N/A
D	1Ø2		
	1495		

2.5.3 Additional description

Wet sclerophyll - dominant
Dry sclerophyll - on exposed ridgetops, large swamps on flatter country.

- Severe wind damage, June 1988, after heavy rain uprooted up to 8Ø% of canopy trees in the unlogged forest.
- Evidence of severe damage from past wildfires.
- Most trees to be logged are already on the ground.

2.5.4 Rare or threatened species

None known or identified.

2.5.5 Conservation measures

Werrinook Flora Reserve adjoins to the east and Wadbilliga National Park is nearby to the north.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Further conservation action is not considered to be required. Salvage operation applies to damaged trees.

2.6 Fauna

2.6.1 Surveys

Previously logged areas already surveyed.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	136		
2	34		
3	1Ø2	N/A	N/A
4	1223		
	1495		

2.6.3 Additional description

Generally rich arboreal marsupial habitat potential. Because most trees to be harvested are already on the ground there will be limited further effect on fauna species.

2.6.4 Rare or threatened species

None known

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Comments as in 2.5.5 apply here.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Additional measures will be taken to reserve remaining groups of trees and to conserve as much tree cover as practicable in existing wildlife corridor.

2.7 Scenery

2.7.1 Consideration of scenic values

The tablelands escarpment is visible from the Snowy Mountains Highway.

2.7.2 Additional measures to protect important features

Only trees severely damaged will be felled. Ground disturbance will not be visible. Therefore the operation should improve scenic values.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known and there are no known sites in adjacent area.

2.8.2 Investigations

Not required

2.8.3 Action to protect identified sites

Not applicable

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

None known

2.9.2 Action to maintain values

Not applicable

3. CUMULATIVE IMPACT

This operation is salvage logging of scattered areas of windthrown forest which do not adjoin 1989 logging and do not themselves present large areas.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION BY HARVESTING AREAS

Name of Area : Tantawangalo Mountain; Glenbog Section (south), Tantawangalo State Forest

1. PROPOSED ACTIVITY

1.1 Roading

1.1.1 Secondary roads (kms)

Nil

1.1.2 Feeder roads (kms)

Nil

1.1.3 Minor access to dump sites (kms)

1 km

1.2 Harvesting

1.2.1 Type

Salvage logging of windthrown forest. Only windthrown or severely damaged trees will be harvested.

1.2.2 Compartments containing coupes to be harvested.

Total 5

First Scheduled 1988 EIS	First Scheduled 1990 EIS
	2438C
	2448C
Nil	2449C (Pt.)
	2450
	2451C (Pt.)

C = National Estate Areas subject to prior consultation with the Commonwealth.

1.2.3 Weather contingencies

All coupes have limited wet weather capability.

1.2.4 Dispersal, within the Area, of coupes to be harvested

Not applicable, salvage of wind-damaged trees only.

1.2.5 Constitution of Compartments containing coupes to be harvested

(a) Previously harvested coupes (gross area)		N/A
(b) Coupes retained for future harvesting (gross area)		1187 ha
(c) Coupes now proposed for harvesting (gross area)		207 ha
Number of coupes	8	
Net area to be harvested	152 ha	
Contained areas excluded from harvesting	55 ha	
(d) Areas excluded from harvesting outside of harvesting coupes (gross area)		Nil
Total gross area of compartments		1394 ha

1.3 Fuel Management

1.3.1 Pre-logging burning

Nil, to prevent damage to salvagable timber.

1.3.2 Post-logging burning

Normal prescriptions, with as far as possible, exclusion of fire from major drainage lines.

2. CONSIDERATION OF THE ENVIRONMENT

2.1 Topography

2.1.1 Main features of the area

Undulating to hilly on logging areas. Steep to very steep areas adjacent.

2.1.2 Comparison of slope categories (hectares).

Category	Total area of compartments containing coupes to be harvested	Net area of coupes to be harvested
0-10°	583	62
10-20°	437	50
20-30°	304	40
over 30°	70	-
	1394	152

2.2 Climate

2.2.1 Local features

Cool winters with frosts. Mild to warm summers with occasional hot dry north-west winds.

2.2.2 Annual precipitation

About 1000 mm

2.3 Geology and Soils

2.3.1 Considerations

Granite has created relatively stable red and yellow sandy loams with frequent rock outcrops.

2.3.2 Numbers and area of harvesting coupes by erosion category

Erosion Category	Number of Coupes	Net Area (ha)
average	8	152
high	-	-

2.4 Hydrology

2.4.1 Net area of harvesting coupes by catchments

Catchment	Area (ha)
Bega-Shire water supply	108
Bega-ex water supply	44

2.4.2 Considerations

Shire water supply catchment supplies Wolumla and Merimbula/Pambula townships.

2.4.3 Any special measures to protect, in addition to Standard Erosion Mitigation Conditions.

None required. There will be a negliable impact on catchment values as the individual logging areas are small and harvesting is restricted to salvage of windthrow.

2.5 Vegetation

2.5.1 Surveys

Normal pre-harvesting surveys have been instituted in all coupes and a Flora Survey was carried out by Research in 1982 in compartments 2448 and 2449.

2.5.2 Table of areas (ha) of Forest Types present.

Forest Type	Net Harvesting Area	Retained Coupes	Reserved
A	100	-	55
C	15	-	-
D	37	-	-
	152	-	55

2.5.3 Additional description

Silvertop Ash type 112) - dominant, of moderate
Silvertop Ash -) quality with open to
Stringybark type 114) moderate density understorey

- severe wind in June 1988, uprooted up to 80% of canopy trees in the area.
- Evidence of damage from past wildfires.

2.5.4 Rare or threatened species

None known or identified in surveys.

2.5.5 Conservation measures

Wildlife corridor in Tantawangalo Creek protects important moist species.

2.5.6 Consideration and further conservation action in addition to normal prescriptions.

Considered that normal conservation measures are adequate.

2.6 Fauna

2.6.1 Surveys

None planned. Windthrow negates most wildlife values.

2.6.2 Table of areas (ha) of Regional Animal Habitat Strata present

Stratum	Net harvesting area	Retained Coupes	Reserved
1	100	-	40
3	37	-	10
4	15	-	4
	152	-	55

2.6.3 Additional description

-

2.6.4 Rare or threatened species

None known or identified.

2.6.5 Conservation measures

Normal Management Plan prescriptions for retention of fauna habitat apply.

Most trees to be logged are already on the ground. There will be limited additional effect on fauna species from salvage logging.

2.6.6 Consideration and further conservation action in addition to normal prescriptions.

Considered that no further conservation measures required. Trees that have survived wind damage will provide some habitat.

2.7 Scenery

2.7.1 Consideration of scenic values

Tantawangalo Mountain Shire Road traverses the logging area. It has some limited tourist use. Operation has more benefits than disadvantages as excessive ground debris and broken trees would generally be regarded as unattractive and, if anything, improved by salvage logging.

2.7.2 Additional measures to protect important features

A 50 metre visual protection strip either side of the road is in place. Logging impact will be reduced in this strip.

2.8 Aboriginal Sites

2.8.1 Known sites and likelihood of significant sites

None known.

2.8.2 Investigations

There are no known sites in adjacent areas.

2.8.3 Action to protect identified sites

None required.

2.9 Historic or other Local Heritage Values

2.9.1 Consideration of known sites

This area is mostly within the Tantawangalo Area on the Interim List of the National Estate. Salvage logging is unlikely to affect heritage values and will improve scenic values.

2.9.2 Action to maintain values

Compartments 2438, 2448, Pt. 2449 area and Pt 2451 are subject to consultation with the Commonwealth on protection required for heritage values.

3. CUMULATIVE IMPACT

Coupes do not adjoin 1989 or earlier logging areas. There is no cumulative impact on identified environmental values.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section North Glenbog; Glenbog and Ooranook Sections

1. Road Name/s : Xi

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

2.3 km — III

2.1.2 Clearing width

Generally up to 18 m

2.1.3 Formation width

4.2 m

2.1.4 Grades

0 - 10%	10 - 13%	Total
1.2 km	1.1 km	2.3 km

2.1.5 Provision for drainage

Concrete culverts with headwalls will be provided at regular intervals and where the road crosses drainage lines.

2.1.6 Major structures

Two log bridges will be constructed to carry the road across streams.

2.1.7 Planned revegetation measures

None proposed. Revegetation is by natural means.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Ø - 10°	1Ø - 25°	Total
2.Ø km	Ø.3 km	2.3 km

3.2 Hydrology

3.2.1 Soils types

Relatively stable red and yellow sandy loams.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

Erosion hazard category is average; special measures not required.

3.3 Vegetation affected

3.3.1 Types

Silvertop Ash, Brown Barrel, Gum Types

3.3.2 Understorey

Sparse. Some moist species clumps near log bridge sites.

3.3.3 Rare or endangered plants

Locally uncommon (but not rare) King Fern, Todea barbara.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

None required.

3.4 Fauna

3.4.1 Stratum

Mostly 1 and 3; small areas of 4 at log bridge sites.

3.4.2 Unusual or rare and threatened species present

None known or identified in pre-logging surveys.

3.4.3 Habitat loss

About 1.6 ha; negligible. Crosses wildlife corridor but unavoidable.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative active proposed.

3.5 Scenic impact and ameliorative action

Nil

3.6 Aboriginal sites

3.6.1 Significance and likihood of sites

No sites known; unlikely to occur.

3.6.2 Investigations

None required.

3.7 Other Heritage Values

None

3.8 Other Comment

This road is necessary for the integrated logging of coupes in the north-east of Glenbog S.F. and western part of Bemboka State Forest.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Bull Mountain, Glenbog Section

1. Road Name/s : Obliqua Road

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

1.5 km — III

2.1.2 Clearing width

Generally up to 18 m

2.1.3 Formation width

4.2 m

2.1.4 Grades

Ø - 10%	10-13%	Total
Ø.2 km	1.3 km	1.5 km

2.1.5 Provision for drainage

Concrete culverts with headwalls will be provided at regular intervals and where the road crosses drainage lines.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures. None proposed. Revegetation is by natural means.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Ø - 10°	10 - 25°	Total
Ø.5 km	1.Ø km	1.5 km

3.2 Hydrology

3.2.1 Soils types

Relatively stable red and yellow sandy loams.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

Erosion hazard category is average throughout. Special measures not required.

3.3 Vegetation affected

3.3.1 Types

Brown Barrel and non-forest types

3.3.2 Understorey

Sparse to medium Acacia and Hakea species dominate.

3.3.3 Rare or endangered plants

None identified in survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

None.

3.4 Fauna

3.4.1 Stratum

Mostly 1 and 3.

3.4.2 Unusual or rare and threatened species present

None identified in roading survey.

3.4.3 Habitat loss

About 1 ha; negligible.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.5 Scenic impact and ameliorative action

Negligible; no ameliorative action proposed. Road avoids intruding into PMP 1.1.6 Special Emphasis Scenic Resource Protection Zone.

3.6 Aboriginal sites

3.6.1 Significance and likihood of sites

No sites known; unlikely to occur.

3.6.2 Investigations

None required.

3.7 Other Heritage Values

None

4. Other Comment

The road generally follows ridgeline and is required to harvest coupes east of Packers Swamp Road in that part of Glenbog S.F. not included in the Tantawangalo Catchment Area.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Yurammie West

1. Road Name/s : Candelo Creek Road

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

3.5 km — III

2.1.2 Clearing width

Generally up to 16 m.

2.1.3 Formation width

4.2 m

2.1.4 Grades

0 - 10%	10 - 13%	Total
3.5 km	0 km	3.5 km

2.1.5 Provision for drainage

As the road is located on ridgetop for most of its length, drainage is primarily by mitre drains. Concrete culverts will be installed where the use of mitre drains is impracticable.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures

Routine seeding and fertilizing of batters and table drain in high erosion hazard areas, as recommended by the Soil Conservation Service.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

0 - 10°	10 - 25°	Total
1.5 km	2.0 km	3.5 km

3.2 Hydrology

3.2.1 Soils types

Relatively stable to highly erodible soils derived from granitoids and hornfels.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

None. Road will not be used for wet weather logging.

3.3 Vegetation affected

3.3.1 Types

Silvertop Ash and Messmate types.

3.3.2 Understorey

Goodenia ovata, Bracken fern, Poa sp. Doodia aspera, Acacia sp., tree ferns.

3.3.3 Rare or endangered plants

None known or identified in pre-logging survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.4 Fauna

3.4.1 Stratum

Mainly Stratum 3 with sections of Strata 1, 2 and 4.

3.4.2 Unusual or rare and threatened species present

None known; no unusual habitat identified in prelogging survey.

3.4.3 Habitat loss

About 5.6 ha although most of this is Stratum 3 which has only moderate value for wildlife.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

None; no ameliorative action proposed.

3.5 Scenic impact and ameliorative action

Negligible; no ameliorative action proposed.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

Although no sites are known, there is some chance of significant sites being discovered. All such sites will be protected.

3.6.2 Investigations

A search for sites of significance on or adjacent to the line of the proposed road will be undertaken in conjunction with road survey.

3.7 Other Heritage Values

None.

3.8 Other Comment

This roadline is the logical and least environmentally disruptive to harvest the central part of the Area.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Yurammie West

1. Road Name/s : Leasehold Road (1.0 km)
Wyndham Trig Road (4.5 km)

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

5.5 km — III

2.1.2 Clearing width

Generally up to 16 m.

2.1.3 Formation width

4.2 m

2.1.4 Grades

0 - 10%	10-13%	Total
5.0 km	0.5 km	5.5 km

2.1.5 Provision for drainage

Concrete culverts with headwalls will be provided at regular intervals and where the road crosses drainage lines. Those sections of the road located on ridge top shall be drained by mitre drains.

2.1.6 Major structures

Large-section concrete culverts, complete with headwalls, will be construction on major drainage lines.

2.1.7 Planned revegetation measures

Routine seeding and fertilizing of batters and table drains in high erosion hazard areas as recommended by the Soil Conservation Service.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Ø - 1Ø°	1Ø - 25°	25 - 35°	Total
Ø.5 km	4.5 km	Ø.5 km	5.5 km

3.2 Hydrology

3.2.1 Soils types

Highly erodible soils derived from granite parent materials.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

None required beyond those mentioned above (see 2.1.7).

3.3 Vegetation affected

3.3.1 Types

Brown Barrel, Silvertop Ash and Gum types.

3.3.2 Understorey

Bedfordia sp. Pomaderris aspera, Correa sp. Goodenia ovata, Doodia aspera, Bracken and tree fern.

3.3.3 Rare or endangered plants

None known or identified in pre-harvesting survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.4 Fauna

3.4.1 Stratum

Stratum 3 and 4 mostly.

3.4.2 Unusual or rare and threatened species present

None known or habitat identified in surveys.

3.4.3 Habitat loss

About 8.8 ha, all of which is moderate to moderate-high value as arboreal animal habitat. The impact is not likely to be significant as the road occupies less than 1% of the total area of Area 13.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.5 Scenic impact and ameliorative action

Negligible; no ameliorative action proposed.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

Sites are known in the general area. These are most commonly less-important "open" sites.

3.6.2 Investigations

A search for sites of significance on or adjacent to the line of the proposed roads will be undertaken in conjunction with road survey and adjustments made as necessary.

3.7 Other Heritage Values

None.

3.8 Other Comment

These roadlines are the logical and least environmentally disruptive to provide for harvesting of the south east part of the Area.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Yurammie West

1. Road Name/s : Mount Harriet Road (5.4 km)
Careys Road (3.7 km)
Devils Creek Road (5.9 km)

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

15.0 km — III

2.1.2 Clearing width

Generally up to 16 m.

2.1.3 Formation width

5.5 m and 4.2 m

2.1.4 Grades

0 - 10%	10 - 13%	Total
14.5 km	0.5 km	15.0 km

2.1.5 Provision for drainage

Concrete culverts with headwalls and appropriate scour protection will be installed where the road crosses drainage lines and to provide relief drainage where the use of mitre drains is impracticable.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures

Routine seeding and fertilizing of batters and table drains in high erosion hazard areas, according to recommendations of the Soil Conservation Service.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Ø - 1Ø°	1Ø - 25°	25 - 35 °	Total
3.7 km	8.6 km	2.7 km	15.Ø km

3.2 Hydrology

3.2.1 Soil types

Highly erodible soils derived from granite parent materials.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

None required beyond those mentioned above (see 2.1.7).

3.3 Vegetation affected

3.3.1 Types

Silvertop Ash, Brown Barrel, Messmate and Gum types.

3.3.2 Understorey

Bedfordia sp., Pomaderris aspera, Correa sp. Goodenia ovata, Doodia aspera, Bracken fern and Poa sp.

3.3.3 Rare or endangered plants

None identified in pre-harvesting survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.4 Fauna

3.4.1 Stratum

Stratum	1	2	3	4	Total
Length(km)	1.6	1.5	6.Ø	5.9	15.Ø

3.4.2 Unusual or rare and threatened species present

None identified in pre-harvesting survey.

3.4.3 Habitat loss

About 24 ha, 80% of which is forest of moderate to moderate-high habitat value. Overall, this loss of habitat represents only about 2% of the total area of Area 13.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Devils Ck Rd unavoidably crosses wildlife corridor. Impact is negliglible; no ameliorative action proposed.

3.5 Scenic impact and ameliorative action

Devils Creek Road skirts area classified as PMP 1.1.6 Scenic Resource Protection Impact negligible; no ameliorative action proposed.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

Sites of low to moderate significance are known from the general area.

3.6.2 Investigations

A search for sites of significance on or adjacent to the line of these proposed roads was undertaken in 1987 by a consultant achaeologist. A small number of open sites was found. The road alignment has been re-routed for the protection of these sites.

3.7 Other Heritage Values

None.

4. Other Comment

These roadlines are the logical and least environmentally disruptive to provide for harvesting between Devils Creek and Candelo Creek within the Area.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Lennards (west)

1. Road Name/s : Goshawk Road

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

2.1 km — III

2.1.2 Clearing width

Generally up to 16 m.

2.1.3 Formation width

4.2 m

2.1.4 Grades

0 - 10%	10 - 13%	Total
2.1 km	0 km	2.1 km

2.1.5 Provision for drainage

Mitre drains on ridgetop. Concrete culverts with headwalls on sidecut sections. The road does not cross any major drainage lines.

2.1.6 Major structures

None.

2.1.7 Planned revegetation measures

Routine seeding and fertlizing of batters and table drains in high erosion hazard areas.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Ø - 1Ø°	1Ø - 25°	Total
1.9 km	Ø.2 km	2.1 km

3.2 Hydrology

3.2.1 Soils types

Stable soils derived from Middle Devonian Eden Rhyolite.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

Erosion hazard category is average throughout; special measures not required.

3.3 Vegetation affected

3.3.1 Types

Almost completely Silvertop Ash - Stringybark - Yertchuk - Bloodwood type.

3.3.2 Understorey

Quite dense, dominated by casuarinas and acacias.

3.3.3 Rare or threatened plants

None identified in pre-harvesting survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

None required.

3.4 Fauna

3.4.1 Stratum

Entirely within Stratum 1.

3.4.2 Unusual or rare and threatened species present

None identified in pre-harvesting survey.

3.4.3 Habitat loss

About 3.4 ha, but all in low wildlife value Stratum 1.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

None; no ameliorative action proposed.

3.5 Scenic impact and ameliorative action

Negligible; no ameliorative action proposed.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

An archaeological survey has located a significant site in the area. However, the distance between the site and Goshawk Road is sufficient to ensure that the construction of the road will not adversely affect the archaeological site.

3.6.2 Investigations

Completed.

3.7 Other Heritage Values

Goshawk Road is within a 600 ha area entered in the Interim Register of the National Estate for its historical values. The Forestry Commission, assisted by the NSW Heritage Council, is arranging for a consultant archaeologist to assess and identify those parts of the original mining works most suitable for protection and presentation of the area's history. Once the consultant has reported, an appropriate boundary and the nature and location of future uses allowable within the area will be determined in consulation with the NSW Heritage Council and the Australian Heritage Commission. This will occur before any road is constructed or general harvesting takes place within the 600 ha area already identified.

4. Other Comment

This road would be required for harvesting in the southern part of the National Estate area in the event of agreement being reached as indicated in 3.7.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Jingera North

1. Road Name/s : Yowaka Road

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

6.3 km — III

2.1.2 Clearing width

Generally up to 16 m

2.1.3 Formation width

4.2 m

2.1.4 Grades

0 - 10%	10 - 13%	Total
6.3 km	0 km	6.3 km

2.1.5 Provision for drainage

Concrete culverts with headwalls will be installed where the road crosses drainage lines and to provide relief drainage where the use of mitre drains is impracticable.

2.1.6 Major structures

None.

2.1.7 Revegetation

Routine seeding and fertilizing of disturbed areas in high erosion hazard areas, as recommended by the Soil Conservation Service.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by proportion of road length

Ø - 1Ø°	1Ø - 25°	25-35°	Total
1.5 km	3.6 km	1.2 km	6.3 km

3.2 Hydrology

3.2.1 Soils types

Parent materials are either Ordovician sediments (mostly shales) or Eden rhyolite, both of which weather to produce stable soils.

3.2.2 Special erosion mitigation measures

No special measures proposed beyond those in 2.1.7 above.

3.3 Vegetation affected

3.3.1 Types

Mostly Silvertop Ash Type but including small areas of Silvertop Ash - Stringybark - Yertchuk - Bloodwood Type and Yellow Stringybark - Gum Type.

3.3.2 Understorey

The vegetation is mostly a dry forest type with a poorly undeveloped understorey except on sheltered aspects.

3.3.3 Rare or endangered plants

Rare species such as Phebalium ralstonii and Westringia davidii occur within the area. However, these will not be affected by road construction.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

None required.

3.4 Fauna

3.4.1 Stratum

Stratum	1	2	3	4	Total
Length(km)	6.Ø	Ø	Ø	Ø.3	6.3

3.4.2 Unusual or rare and threatened species present

None identified in pre-harvesting surveys.

3.4.3 Habitat loss

About 10.1 ha, almost all of Stratum 1 forest which has a low value as arboreal animal habitat.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.5 Scenic impact and ameliorative action

The impact of road construction is reduced markedly by distance and by distraction provided by more prominent features.

3.6 Aboriginal sites

Significance and likihood of sites

Significant sites are most likely to occur on creek flats. Less significant "open" sites are occasionally found in saddles along major ridge lines.

Investigations

Likely sites are to be investigated during survey along the proposed road location.

3.7 Other Heritage Values

The proposed Yowaka Road is within a large area nominated for listing in the Register of the National Estate. The Scientific Committee has oversight of the conduct of biological surveys in the Yowaka area and will report to the Commonwealth Government.

Construction of Yowaka Road will be subject to prior consultation with the Commonwealth Government in terms of any current agreement, and subsequent to scientific investigation of the general area.

3.8 Other Comments

The road is necessary to log future harvesting areas and requires advance construction for consolidation.

The roadline is the logical and least environmentally disruptive available to harvest the central eastern part of Jingara North Section of Nullica State Forest.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Jingera West

1. Road Name/s : Jingera Road (2.0 km)
Schrapnel Road (1.2 km)

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

3.2 km — III

2.1.2 Clearing width

Up to 16 m generally.

2.1.3 Formation width

4.2 m

2.1.4 Grades

0 - 10%	10 - 13%	Total
3.2 km	0 km	3.2 km

2.1.5 Provision for drainage

Concrete culverts with headwalls and appropriate scour protection will be installed where the road crosses drainage lines and to provide relief drainage where the use of mitre drains is impracticable.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures

None proposed. Revegetation is by natural means.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Ø - 10°	10 - 25°	25 - 35°	Total
Ø.3 km	2.Ø km	Ø.9 km	3.2 km

3.2 Hydrology

3.2.1 Soils types

Parent materials are Ordovician sediments (primarily shales) which weather to relatively stable soils.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

Erosion hazard is average; no special mitigation measures are required.

3.3 Vegetation affected

3.3.1 Types

Yellow Stringybark - Gum type (about 3.7 ha) and Gully type (about 1.4 ha).

3.3.2 Understorey

Sparse. Acacias, banksias, Persoonia sp., Bracken, heath, Correa sp. wire grass, dodder laurel and Daviesia sp. are common.

3.3.3 Rare or threatened plants

None identified in pre-harvesting survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.4 Fauna

3.4.1 Stratum

Stratum	1	2	3	4	Total
Area (ha)	Ø	Ø	1.5	3.7	5.2

3.4.2 Unusual or rare and threatened species present

None identified in pre-logging survey.

3.4.3 Habitat loss

About 5.2 ha, all of which is moderate to moderate-high value as arboreal animal habitat. However, this loss is of minor significance overall as it represents less than 1.5% of the total area of Area 17A.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

To maintain access to additional ridges in Jingera West and maintain acceptable grade standards, the roads could not be located primarily on ridge top. The roads, while passing through a small area of Gully Type do not pass through the actual gullies where it is expected that higher fauna habitat levels occur.

3.5 Scenic impact and ameliorative action

Negligible, no ameliorative action proposed.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

Significant sites are most likely to occur on creek flats. Less sigificant "open" sites are occasionally found in saddles along major ridge lines.

3.6.2 Investigations

Likely sites were field checked for artefacts. No new sites have been discovered.

3.7 Other Heritage Values

None

4. Other Comment

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EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Falkner North

1. Road Name/s : Mountain View Road

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

2.6 km — III

2.1.2 Clearing width

Generally up to 16 m.

2.1.3 Formation width

4.2 m

2.1.4 Grades

0 - 10%	10 - 13%	Total
2.6 km	0 km	2.6 km

2.1.5 Provision for drainage

Concrete culverts with headwalls and appropriate scour protection will be installed where the road crosses drainage lines and to provide relief drainage where the use of mitre drains is impracticable.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures

Routine seeding and fertilizing of batters and table drains in high erosion hazard areas, as recommended by the Soil Conservation Service.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by length of road

0 - 10°	10 - 25°	25 - 35°	Total
2.6 km	0	0	2.6 km

3.2 Hydrology

3.2.1 Soils types

Granite parent material weathers to a highly erodible soil.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

None required beyond those already stated in 2.1.7 above.

3.3 Vegetation affected

3.3.1 Types

Silvertop Ash - Stringybark - Yertchuk - Bloodwood complex.

3.3.2 Understorey

Dominated by various acacias, banksias and heaths together with bracken, Correa sp. and wire grass.

3.3.3 Rare or threatened plants

None identified in preliminary survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative active proposed.

3.4 Fauna

3.4.1 Stratum

Most of the proposed road lies within Stratum 1.

3.4.2 Unusual or rare and threatened species present

None identified in preliminary survey.

3.4.3 Habitat loss

About 4.2 ha, almost all of which is of low value as arboreal animal habitat.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.5 Scenic impact and ameliorative action

Negligible; for most of its length the road is located on minor ridges and thus will be quite inconspicuous.

3.6 Aboriginal sites

3.6.1 Significance and likihood of sites

Significant sites occur generally in the flatter terrain beside creeks, ie away from road lines.

3.6.2 Investigations

Likely sites were investigated during initial survey work along the proposed road location.

3.7 Other Heritage Values

None.

4. Other Comments

None

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Pericoe Section (Bombala District)
Falkner Section (Eden District)

1. Road Name/s : Wog Way - Stage IV

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

10.8 km — II

2.1.2 Clearing width

Up to 20 m generally.

2.1.3 Formation width

7.3 m

2.1.4 Grades

0 - 10%	10 - 13%	Total
10.8 km	0 km	10.8 km

2.1.5 Provision for drainage

Concrete culverts with headwalls where the road crosses drainage lines and to provide relief drainage where the use of mitre drains is impracticable.

2.1.6 Major structures

Concrete bridge across Wog Wog River. This structure will not adversely affect aquatic habitat values or impede the free movement of aquatic fauna.

2.1.7 Planned revegetation measures

Revegetation is by natural means with routine seeding and fertilising of batters and table drains in high erosion hazard areas, according to Soil Conservation Service advice.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by length of road

0 - 10°	10-25°	25 - 35°	Total
3.0 km	7.6 km	0.2 km	10.8 km

3.2 Hydrology

3.2.1 Soils types

Biotite-granodiorite parent materials weather to highly erodible soils.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

None required beyond those specified in 2.1.7.

3.3 Vegetation affected

3.3.1 Types

Silvertop Ash - Stringybark - Yertchuk - Bloodwood complex.

3.3.2 Understorey

Various acacias and heaths, together with banksia, bracken, dodder-laurel, wiregrass, Daviesia sp., Persoonia sp. and Correa sp.

3.3.3 Rare or threatened plants

None identified in preliminary survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.4 Fauna

3.4.1 Stratum

Almost all the proposed road lies within Stratum 1.

3.4.2 Unusual or rare and threatened species present

None identified in preliminary survey.

3.4.3 Habitat loss

About 21.6 ha, almost all of which is of low value as arboreal animal habitat.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.5 Scenic impact and ameliorative action

Negligible, the road will be partly visible in the middle distance from higher vantage points only, such as Wog Wog Mtn, Letts Mtn. and parts of Letts Mtn. Rd. Roadside revegetation will minimise its impact overtime.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

Sites are predicted to occur on flat areas such as creek flats or on saddles or ridges in the more dissected country.

3.6.2 Investigations

A search was conducted along the route of the proposed road in conjunction with road survey. No sites were found.

3.7 Other Heritage Values

None

4. Other Comments

Consideration of Alternatives

1. Benefits of Road
. Provides major access to timber required to keep sawmilling industry on sustained yield.
. Provides access for fire fighting in an area otherwise very difficult to protect, including Nalbaugh National Park.
. Provides access for recreational use of the area - pleasure driving, motor vehicle camping, bushwalking.

2. Benefits foregone
. May result in some weed invasion (mainly native species)
. May result in some increase in feral predation (but also makes control of feral animals practicable.)
. Reduces primitiveness of part of the area.

The benefits accruing from construction of the road are considered to outweigh the benefits foregone. The road is necessary for the use of the area for the purposes of forestry and essential for the integral use of whole management area for sustained yield timber production. Alternative routes were considered but none offered better prospects to minimise erosion or have less impact on flora and fauna, by nature of road survey criteria. Reservation is catered for in adjoining National Park and proposed flora reserves.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Waalimma and Falkner

1. Road Name/s : Walak Road (1.9 km)
Walla Walla Road (8.3 km)

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

10.2 km — III

2.1.2 Clearing width

Up to 16 m generally.

2.1.3 Formation width

4.2 m

2.1.4 Grades

0 - 10%	10 - 13%	Total
10.2 km	0 km	10.2 km

2.1.5 Provision for drainage

Concrete culverts with headwalls and appropriate scour protection will be installed where the road crosses drainage lines and to provide relief drainage where the use of mitre drains is impracticable.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures

Revegetation by natural means with routine seeding and fertilising of batters and table drains in areas of high erosion hazard.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes length of roads

Ø 10°	10 - 25°	25 - 35°	Total
8.9 km	1.3 km	Ø km	10.2 km

3.2 Hydrology

3.2.1 Soils types

Devonian granitoid parent materials weather to grey granite soils which are placed in the "high" erosion hazard class.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

Reduced spacing between relief culverts, scour protection at culvert outlets and revegetation works.

3.3 Vegetation affected

3.3.1 Types

Silvertop Ash - Stringybark Type (114).

3.3.2 Understorey

Sparse, with Acacia mearnsii and Daviesia mimosoides dominating. Other species include Persoonia silvatica, Hibbertia obtusifolia, Cassinia aculeata and Epacris impressa.

3.3.3 Rare or threatened plants

None identified in preliminary survey.

Although not classified as rare or threatened, a variation of E.bauerana known as E.sp. nov. polyanthemos is present.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Although some species as in 3.3.3 may be affected by road construction, E. sp. nov. polyanthemos is excluded from harvesting and is present in the Mount Pericoe Forest Preserve.

3.4 Fauna

3.4.1 Stratum

All Stratum 1.

3.4.2 Unusual or rare and threatened species present

None identified in preliminary survey.

3.4.3 Habitat loss

About 14.3 ha, all of which is of low value as arboreal animal habitat.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.5 Scenic impact and ameliorative action

Negligible; both proposed roads will be located on low ground and will not be visible from any town, village or public road.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

Significant sites typically occur beside streams and, occasionally, in saddles on ridges. Sites have been identified in the general area.

3.6.2 Investigations

Possible areas along the alignment of Walla Walla road were investigated by a consultant archaeologist in 1987. No sites were found.

3.7 Heritage Values

None

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Cathcart and Big Jack

1. Road Name/s : Maidens Road (3.7 km)
Bredbendoura Road (1.1 km)
Rayners Road (2.8 km)

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

7.6 km — III

2.1.2 Clearing width

Up to 16 m generally.

2.1.3 Formation width

4.2 m

2.1.4 Grades

12.5% maximum

2.1.5 Provision for drainage

Concrete culverts with headwalls will be installed where the road crosses drainage lines and to provide relief drainage where the use of mitre drains is impracticable.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures

No revegetation measures are planned as natural regeneration will adequately cover cleared areas.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

0 - 10°	10 - 25°	25 - 35°	Total
4.6 km	3.0 km	0 km	7.6 km

3.2 Hydrology

3.2.1 Soils types

Biotite granodiorite parent material weathers to yield a highly erodible soil.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

No special measures are required.

3.3 Vegetation affected

3.3.1 Types

Brown Barrel (Type 154), Brown Barrel/Messmate-Ash (Type 156), Silvertop Ash - Stringybark (Type 114) and Messmate-Gum (Type 152).

3.3.2 Understorey

Only partial survey of the roadlines has been completed. An understorey description will be compiled during final roadline survey.

3.3.3 Rare or threatened plants

Hibbertia hermaniifolia 3 RCa has been recorded in the general area. However, this species will not be endangered by the proposed road work - and is well represented in the Coolangubra Escarpment Forest Preserve.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Roadline realignment and/or restrictions on clearing width will be introduced if investigations reveal sensitive roadside communities.

3.4 Fauna

3.4.1 Stratum

Stratum	1	2	3	4	Total
Area (ha)	0.7	0	5.2	7.1	13.0 ha

3.4.2 Unusual or rare and threatened species present

None known or identified in preliminary survey.

3.4.3 Habitat loss

About 13 ha, more than half of which is of moderate-high value as arboreal animal habitat.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Although the most practical ridge-top routes were selected, it proved impossible to totally avoid Stratum 4 forest. However, Strata 3 and 4 are so abundant in the general area that the loss of 12 ha is unlikely to be significant.

3.5 Scenic impact and ameliorative action

Little (if any) of the roads will be visible from public roads or vantage points. Visual impact is insignificant.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

Only "open" sites of low significance normally occur on ridge lines such as the ones on which these roads are located. Sites of greater significance are more likely to occur in undulating areas adjoining streams.

3.6.2 Investigations

A search for sites on or adjacent to the proposed roads was made in conjunction with road survey. No sites were discovered.

3.7 Other Heritage Values

None.

4. Other Comments

None

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Cathcart and Big Jack

1. Road Name/s : Jill Road

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

Ø.8 km — III

2.1.2 Clearing width

Up to 16 m generally.

2.1.3 Formation width

4.2 m

2.1.4 Grades

Ø - 10%	10 - 13%	Total
Ø.8 km	Ø km	Ø.8 km

2.1.5 Provision for drainage

Concrete culverts with headwalls and appropriate scour protection will be installed where the road crosses drainage lines and to provide relief drainage where the use of mitre drains is impracticable.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures

No revegetation is planned as natural regeneration will adequately cover disturbed areas.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

0 - 10°	10 - 25°	25 - 35°	Total
0 km	0.8 km	0 km	0.8 km

3.2 Hydrology

3.2.1 Soils types

Hornblende granodiorite parent material weathers to yield a relatively stable soil.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

No special measures are required to protect these "average" erosion hazard soils.

3.3 Vegetation affected

3.3.1 Types

Coastal Stringybark (Type 123) and Southern Blue Gum (Type 158).

3.3.2 Understorey

No detailed survey of the roadline has been completed to date. An understorey description will be completed during preliminary roadline investigation.

3.3.3 Rare or threatened plants

None identified in preliminary survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Road realignment and or restrictions on clearing width will be introduced if survey reveals sensitive roadside cummunities.

3.4 Fauna

3.4.1 Stratum

Stratum	1	2	3	4	Total
Area (ha)	0.5	0	0.8	0	1.3

3.4.2 Unusual or rare and threatened species present

None identified in preliminary survey.

3.4.3 Habitat loss

About 1.3 ha, of which 0.5 ha is of low value and 0.8 ha is of moderate value as arboreal animal habitat. The loss of this small area of habitat is judged to be insignificant.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action is proposed.

3.5 Scenic impact and ameliorative action

Negligible. In view of relatively high traffic volumes on Big Jack Road, special care in the construction of the Big Jack Road/Jill Road intersection is warranted.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

Previous archeological surveys in the district have stated that most aboriginal sites found in the area are small open campsites representing brief or overnight stops. Typically these sites are found on ridgetops or across saddles. As the roadline does not cross either topographical type it is not expected that any aboriginal sites exist.

3.6.2 Investigations

No specific surveys have been undertaken along the roadline to date. Inspections will be undertaken during preliminary roadline survey.

3.7 Other Heritage Values

Jill Road is on the northern edge of the "Coal Hole" which is an unusual land depression on the edge of the escarpment. The Coal Hole with very steep valley sides and two lakes at the bottom, is reserved within the Coolangubra Escarpment Forest Preserve. The construction of Jill Road will not effect this unusual landform.

4. Other Comments

None

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Nalbaugh and Mines Road

1. Road Name/s : Mines Road

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length

Length	Class
3.4 km	II
5.3 km	III
Total 8.7 km	

2.1.2 Clearing width

Class II up to 18 m generally
Class III up to 16 m generally

2.1.3 Formation width

3.4 km	5.5 m
5.3 km	4.3 m

2.1.4 Grades

3.4 km	8% maximum
5.3 km	12.5% maximum

2.1.5 Provision for drainage

Concrete culverts with headwalls and appropriate scour protection will be installed where the road crosses drainage lines and to provide relief drainage where the use of mitre drains is impracticable.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures

No vegetation measures are planned as natural regeneration will adequately cover cleared areas. However on large cuts and fill in areas prone to high erosion risk, erosion control seed mix will be spread to revegetate and cover those sites, in accordance with Soil Conservation Service advice.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Ø - 10°	10 - 25°	25 - 35°	Total
6.7 km	2.0 km	Ø km	8.7 km

3.2 Hydrology

3.2.1 Soils types

Hornblende granodiorite/granite parent materials at the western end of Mines Road weather to yield a relatively stable red earths. At the eastern end, granite and biotite granodiorite parent materials weather to poorly strucutred grey granite soils.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

No special measures are required beyond those already outlined in 2.1.7.

3.3 Vegetation affected

3.3.1 Types

Brown Barrel Gum (Type 155), Messmate-Gum (Type 152), Brown Barrel (Type 154), Silvertop Ash (Type 112) and Silvertop Ash-Stringybark (Type 114).

3.3.2 Understorey

Acacia dealbata, Bedfordia arborescens, Leucopogon lanceolatus, Acacia longifolia, Acacia leprosa, Pteridium esculentum and Pomaderris sp.

3.3.3 Rare or threatened plants

None identified in preliminary survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible; no ameliorative action proposed.

3.4 Fauna

3.4.1 Stratum

Stratum	1	2	3	4	Total
Area(ha)	12.9	Ø	Ø	1.1	14.Ø

3.4.2 Unusual or rare and threatened species present

None known or identified in preliminary survey.

3.4.3 Habitat loss

About 14 ha, all but 1.1 ha of which is of low value as arboreal animal habitat. In view of the abundance of Stratum 4 forest in the vicinity, the loss of 1.1 ha is not judged to be significant.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Clearing width will be reduced to an absolute minimum where the road crosses wildlife corridors.

3.5 Scenic impact and ameliorative action

Negligible; no ameliorative action proposed.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

There are no significant sites in this area on the Aboriginal Sites Register maintained by the N.P.W.S. There are no major sites expected.

3.6.2 Investigations

None required.

3.7 Other Heritage Values

These roads are located on part of the Coolangubra Area on the Interim List, National Estate.

Construction is subject to consultation between Commonwealth and State in terms of any current agreement, and subsequent to scientific investigation of the general area.

4. Other Comments

Mines Road provides access to the strip of forest lying between Waratah Creek Flora Reserve in the north-west and Nalbaugh National Park to the south and is essential for the effective and efficient timber harvesting of this area.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Nalbaugh and Mines Road

1. Road Name/s : Pheasants Road

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length — Class

2.4 km — III

2.1.2 Clearing width

Generally up to 16 m.

2.1.3 Formation width

4.2 m

2.1.4 Grades

12.5% maximum

2.1.5 Provision for drainage

Concrete culverts with headwalls will be installed where the road crosses drainage lines and to provide relief drainage where the use of mitre drains is impracticable.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures

No revegetation measures are planned as natural regeneration will adequately cover cleared areas. However, on large cuts and fills in areas prone to high erosion risk, erosion control seed mix will be spread to revegetate and cover those sites, in accordance with Soil Conservation Service advice.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Ø - 1Ø°	1Ø - 25°	25 - 35°	Total
Ø.7 km	1.7 km	Ø km	2.4 km

3.2 Hydrology

3.2.1 Soils types

Granite parent materials weather to yield relatively erodible soils.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

None required beyond those already specified in 2.1.7.

3.3 Vegetation affected

3.3.1 Types

Brown Barrel-Gum (Type 155) and
Messmate-Gum (Type 152).

3.3.2 Understorey

Acacia dealbata, Bedfordia arborescens and Pomaderris sp.

3.3.3 Rare or threatened plants

None known or identified in the preliminary survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible. Where practical, large specimens of Acacia dealbata will be retained at the edge of the road clearing.

3.4 Fauna

3.4.1 Stratum

All Stratum 1.

3.4.2 Unusual or rare and threatened species present

None known or identified in preliminary suvey.

3.4.3 Habitat loss

Up to 3.9 ha, all of which is of low value for arboreal animal habitat.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Negligible, special care will be exercised where the road crosses filter strips.

3.5 Scenic impact and ameliorative action

Negligible; no ameliorative action proposed.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

There are no significant sites in this area on the Aboriginal Sites Register maintained by the N.P.W.S. There are no major sites expected.

3.6.2 Investigations

None required.

3.7 Other Heritage Values

Waratah Creek Flora Reserve is close by to the north-west and Nalbaugh National Park lies several kilometres to the south.

Construction is subject to consultation between Commonwealth and State in terms of any current agreement, and subsequent to scientific investigation of the general area.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Pericoe

1. Road Name/s : Wog Way II

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length	Class
8.0 km	II

2.1.2 Clearing width

20 m

2.1.3 Formation width

7.3 m

2.1.4 Grades

max of 8%

2.1.5 Provision for drainage

Relief pipes installed as per erosion conditions and grade. Gully pipes installed as per catchment size calculation.

2.1.6 Major structures

None

2.1.7 Planned revegetation measures

No vegetation measures are planned as natural regeneration will adequately cover cleared areas. However on large cuts and fills in areas prone to high erosion risk, erosion control seed mix will be spread to revegetate and cover those sites, in accordance with advice from the Soil Conservation Service.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Up to 10°	10 - 20°	20 - 30°	30°+
3.8 km	3.3 km	0.7 km	0.06 km

3.2 Hydrology

3.2.1 Soils types

Biotite granodiorite and Hornfel derived soils - medium to high erodibility.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

None proposed beyond those mentioned above at 2.1.7.

3.3 Vegetation affected

3.3.1 Types

Major forest types are Messmate-Monkey Gum and Messmate - Silvertop Ash - Stringybark. Brown Barrel - Messmate and Brown Barrel-Monkey Gum are found on the moister aspects. On the drier sites Silvertop Ash - Stringybark and Coastal Stringybark can be found.

3.3.2 Understorey

Acacias, banksias, tea-tree, bracken fern, *Bedfordia* sp.

3.3.3 Rare or threatened plants

None known or identified in survey.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

None required.

3.4 Fauna

3.4.1 Stratum

Stratum	1	2	3	4	Total
Area (ha)	2.0	0	10.6	3.4	16.0

3.4.2 Unusual or rare and threatened species present

None recorded.

3.4.3 Habitat loss

The section of Stratum 4 traversed is a small part of a fairly large area in the basin at the head of the Wog Wog River. Close by to the west, 880 ha of Stratum 5 high value habitat is reserved in the Waratah Creek Flora Reserve. Nalbaugh National Park is about 4 kms to the south. The remainder of this southern part of Coolangubra State Forest is mostly Stratum 3. Habitat loss in the general area will therefore have negligible effect.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Faunal corridors linking Reedy Creek, Basin Creek and Wog River, will need to be crossed at two saddles. At these two points road clearing and thinning will be to the minimal width for practical construction and haulage purposes with an emphasis on retaining old growth trees in undisturbed patches on either side of the roadline.

3.5 Scenic impact and ameliorative action

Not visually significant from sensitive viewpoints.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

None known and no major sites expected.

3.6.2 Investigations

None required.

3.7 Other Heritage Values

Wog Way Stage II follows roughly the path of the existing Wog Fire Trail and is viewed as an upgrade of this trail to facilitate vehicular access and logging. The road is within Coolangubra National Estate Interim listed area. The Commonwealth Government has recognised the necessity of this road for forestry purposes and agreed to construction.

4. Other Comments

Consideration of benefits

a) Benefits
- Provides part of major access to timber required to keep sawmilling industry on sustained yield.
- Provides access for firefighting in an area otherwise difficult to protect, including Nalbaugh National Park.
- Provides access for recreational use of the area - pleasure driving, motor vehicle camping, bushwalking.

b) Benefits foregone
- May result in some minor weed invasion (mainly native species).
- May act as barrier to wildlife movement. This would be very minor if at all.
- May result in some increase in predation of native animals (but also provides access for control of predators which exist on the area anyhow).
- Reduces primitiveness of part of area.

The benefits accruing from construction of the road are considered to outweigh the benefits foregone. The road is necessary for sustained yield timber management yet does not detract from adjoining National Park and Flora Reserves.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Pericoe

1. Road Name/s : Wog Way State III (7.5 km)
Reedy Creek Link (2.8 km)

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length	Class
10.3	II

2.1.2 Clearing width

Up to 20 m generally.

2.1.3 Formation width

7.3 m

2.1.4 Grades

Up to a maximum of 8%.

2.1.5 Provision for drainage

Relief pipes installed according to erosion hazard and grade. Gully pipes installed according to catchment area calculations with appropriate scour protection measures at outlets.

2.1.6 Major structures

Nil

2.1.7 Planned revegetation measures

No revegetation measures are planned as natural regeneration will adequately cover cleared areas. However on large cuts and fills in areas prone to high erosion risk, erosion control seed mix will be spread to revegetate and cover those sites, in accordance with advice from the Soil Conservation Service.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Up to 5%	Ø.5 km
11 to 28%	9.Ø km
28 to 39%	Ø.8 km

3.2 Hydrology

3.2.1 Soil types and erodibility

Biotite granodiorite parent materials weather to highly erodible soils.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

None required.

3.3 Vegetation affected

3.3.1 Types

Major forest types: Messmate, Monkey Gum, Maidens Gum, Silvertop Ash and Yellow and White Stringybark.

3.3.2 Understorey

Acacias, banksias, tea-tree, bracken fern, Bedfordia sp.

3.3.3 Rare or threatened plants

None identified in surveys. Further investigative work will be carried out during roadline surveys.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Road reallingnment and or restrictions on clearing width will be introduced if surveys reveal sensitve plant communities.

3.4 Fauna

3.4.1 Stratum

Roads traverse mainly Stratum 3.

3.4.2 Unusual or rare and threatened species present

No rare or endangered species have been identified to date.

3.4.3 Habitat loss

Negligible on roadlines.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Wildlife corridors crossed in three places will require particular care in relation to retention of habitat trees and clearing of debris.

3.5 Scenic impact and ameliorative action

The impact will be minimal and will reduce through time following regrowth of roadside vegetation.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

No known sites. Potential sites will be investigated during road survey.

3.6.2 Investigations

To be carried out prior to construction during road survey and action taken to protect (avoid) if necessary.

3.7 Other Heritage Values

Roads are within the Coolangubra National Estate Interim listed area.

4. Other Comments

Construction is subject to consultation between Commonwealth and State in terms of any current agreement, and subsequent to scientific investigation of the general area.

Woy Way Road Stage III is part of the main secondary road servicing Coolangubra State Forest. Reedy Creek Link connects it with another secondary road, namely Mataganah Road. These roads are essential for the effective and efficient harvesting of forest in the central part of Coolangubra State Forest. Benefits accruing and foregone have been considered in Area 25/R.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Pericoe

1. Road Name/s : Bruin Mountain Rd (9 km).
Mataganah Rd (11.5 km).
Carrot Rd (3.8 km).
Peak Rd (1.5 km).

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length	Class
13.0	II
12.8	III

2.1.2 Clearing width

Class II up to 18 metres generally.
Class III up to 16 metres generally.

2.1.3 Formation width

5.5 m (II)
4.2 m (III)

2.1.4 Grades

Max 8% (II)
Max 12.5% (III)

2.1.5 Provision for drainage

Relief pipes installed as per erosion conditions
Gully pipes installed as per catchment size calculation.

2.1.6 Major structures

Unknown. Not yet surveyed.

2.1.7 Planned revegetation measures

No revegetation measures are planned as natural regeneration will adequately cover clared areas. However on large cuts and fills in areas prone to high erosion risk, erosion control seed mix will be spread to revegetate and cover those sites, in accordance with advice from the Soil Conservation Service.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Up to 10°	16.4 km
10° - 25°	8.8 km
25° - 35°	0.6 km

3.2 Hydrology

3.2.1 Soils types

Biotite granodiorite parent materials weather to highly erodible soils.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

None required.

3.3 Vegetation affected

3.3.1 Types

Major forest types are Messmate, Brown Barrel and Silvertop Ash/Stringybark.

3.3.2 Understorey

No detailed survey of the roadline has been completed to date. Surveys will be completed during preliminary roadline investigations.

3.3.3 Rare or threatened plants

Pomaderris cinerea occurs in riparian locations. No longer listed as rare or threatened.

Callistenon subulatus has been recorded along the lower sections of Reedy Creek. This species also is no longer listed as rare or threatened.

These areas will not be disturbed by the proposed roading activity.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Locations of unusual plant communities, if detected, will be mapped and subsequent road line varied if necessary to avoid such communities.

3.4 Fauna

3.4.1 Stratum

Road traverses Strata 1, 3 and 4.

3.4.2 Unusual or rare and threatened species present

None known but observations will be made during survey.

3.4.3 Habitat loss

Will be negligible in area of construction.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Where road crosses fauna corridors impact will be minimised through special care in clearing and debris disposal.

3.5 Scenic impact and ameliorative action

This network of roads will not be strongly apparent from sensitive viewing areas. PMP 1.1.6 Special Emphasis Scenic Resource Protection areas have been avoided.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

No significant sites expected.

3.6.2 Investigations

Not intended beyond routine inspection of roadlines in the course of road survey.

3.7 Other Heritage Values

As the proposed roads occur within the Coolangubra National Estate area construction is subject to consultation between Commonwealth and State in terms of any current agreement, and subsequent to scientific investigation of the general area.

4. Other Comments

Mataganah Rd. is a major road required to supplement Wog Way in the logging of the Pericoe Section of Coolangubra State Forest. All roads occur mainly within areas classified by the Forestry Commission as PMP 1.1.1 and are necessary for effective and efficient harvesting.

The roads introduce development into a relatively undisturbed area but, apart from their necessity for timber extraction, will provide access for firefighting, recreation, predator management and scientific enquiry. Weed introduction is expected to be negligible.

EDEN 1990 EIS

APPENDIX 4B

CONSIDERATION OF PROPOSED ROAD CONSTRUCTION

Area/Section Pericoe

1. Road Name/s : Station (3.7 km)
Rough (3.5 km)
Conga (2.5 km)

2. Road information

2.1 Secondary and Feeder roads

2.1.1 Length	Class
9.7 km	III

2.1.2 Clearing width

Up to 16 m generally

2.1.3 Formation width

4.2 m

2.1.4 Grades

Up to a maximum of 12.5%

2.1.5 Provision for drainage

Relief pipes installed according to erosion hazard and grade. Gully pipes installed according to catchment area calculations with appropriate scour prtection measures at outlets.

2.1.6 Major structures

Unknown. Not yet surveyed.

2.1.7 Planned revegetation measures

No revegetation measures are planned as natural regeneration will adequately cover cleared areas. However on large cuts and fills in areas prone to high erosion risk, erosion control seed mix will be

spread to revegetate and cover those sites, in accordance with advice from the Soil Conservation Service.

3. Consideration of the Environment

3.1 Topography

3.1.1 Side slopes by road length

Up to 10°	4 km
10° - 25°	5.1 km
25° - 35°	0.65 km

3.2 Hydrology

3.2.1 Soil types and erodibility

Biotite granodiorite, hornfels, greywacke and shale/sandstone parent materials weather to soils of average and high erodibility.

3.2.2 Special erosion mitigation measures in addition to standard Environmental Guidelines for Road Construction and Eden Erosion Mitigation Conditions.

None required beyond those specified in 2.1.7.

3.3 Vegetation affected

3.3.1 Types

Major forest type - Messmate with Silvertop Ash, Peppermint and Stringybark.

3.3.2 Understorey

No detailed survey of the roadline has been completed to date. Surveys will be completed during preliminary roadline investigations.

3.3.3 Rare or threatened plants

Pomaderris cinerea occurs in riparian locations. No longer listed as rare or threatened.

Callistemon subulatus has been recorded along the lower sections of Reedy Creek. This species also is no longer listed as rare or threatened.

These areas will not be disturbed by the proposed roading activity.

These areas will not be disturbed by the proposed roading activity.

3.3.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

Locations of unusual plant communities, if detected, will be mapped and subsequent road line varied if necessary to avoid such communities.

3.4 Fauna

3.4.1 Stratum

Road traverses mainly Stratum 3 with some 1 and 4.

3.4.2 Unusual or rare and threatened species present

None known but observations will be made during roadline survey.

3.4.3 Habitat loss

Negligible due to mostly ridge top roading. No wildlife corridors crossed.

3.4.4 Special impacts and proposed ameliorative action in addition to normal prescriptions

None required.

3.5 Scenic impact and ameliorative action

The impact will be minimal and will reduce over time with regrowth of roadside vegetation.

3.6 Aboriginal sites

3.6.1 Significance and likelihood of sites

No known sites. Likely sites will be investigated during road survey.

3.6.2 Investigations

To be carried out prior to construction, during road survey.

3.7 Other Heritage Values

The roads are within the Coolangubra National Estate Interim Listing.

Construction is subject to consultation between Commonwealth and State in terms of any current agreement, and subsequent to scientific investigation of the general area.

4. Other Comments

These roads are necessary for effective and efficient harvesting of forest in the south-central part of Coolangubra State Forest. The road lines generally follow ridgetops and are located very largely in areas classified by the Forestry Commission as P.M.P. 1.1.1, multiple Use, General.


MAP 5A SOUTH
ROADING / HARVESTING
EDEN MANAGEMENT AREA
ROADING / HARVESTING
1: 100 000
KILOMETRES
MANAGEMENT AREA LIMITS
FORESTRY DISTRICT BOUNDARIES
EXISTING ROADS
PRIMARY ACCESS
SECONDARY ACCESS
FEEDER ROADS
TRAILS
STATE FORESTS WITHIN EDEN MANAGEMENT AREA
STATE FORESTS OUTSIDE EDEN MANAGEMENT AREA
OTHER CROWN—TIMBER LANDS OF FOREST MANAGEMENT INTEREST
NATIONAL PARKS, NATURE RESERVES
STATE RECREATION AREAS
NATIONAL ESTATE
PROPOSED HARVESTING AND ROAD CONSTRUCTION IN 1990 WHICH ARE SUBJECT TO CONSULTATION WITH THE COMMONWEALTH GOVERNMENT
HARVESTING
SECONDARY ACCESS ROAD
FEEDER ROAD
COMPARTMENTS
ROADING
PROPOSED ROADS 1990
SECONDARY ACCESS
FEEDER ROADS
PROPOSED ROADING 1991–2009
SECONDARY ACCESS
FEEDER ROADS
SCHEDULED FOR HARVESTING 1990 EIS
PREVIOUSLY SCHEDULED 1988 EIS
NORMAL INTEGRATED LOGGING COUPE (ALTERNATE COUPE SYSTEM)
LIMITED INTEGRATED HARVESTING
NOT PREVIOUSLY SCHEDULED
NORMAL INTEGRATED LOGGING COUPE (ALTERNATE COUPE SYSTEM)
LIMITED INTEGRATED HARVESTING
WINDTHROW SALVAGE OPERATION ONLY
HARVESTING STATUS
NO FURTHER HARVESTING PLANNED BEFORE 2010
HARVESTING OF 1ST SET OF ALTERNATE COUPES COMPLETED
WINDTHROW AREAS – IDENTIFIED SEPTEMBER 1988
PROPOSED THINNING AREAS 1990
CARTOGRAPHY BY MAPPING BRANCH,
FORESTRY COMMISSION OF NEW SOUTH WALES
SOME BASE DETAIL FROM 1: 100 000 NATIONAL MAPS.
SUPPLEMENTED BY LARGE SCALE FORESTRY MAPS AND FIELD REVISION.
MAP RELIABILITY 31/12/89
MAP PRINTED 1990
EDEN REGION
Bombala District
Eden District
BOMBALA MANAGEMENT AREA
NALBAUGH SF 129
COOLANGUBRA SF 547
NALBAUGH NATIONAL PARK
SUBJECT TO CONSULTATION WITH THE COMMONWEALTH (SEE LEGEND)
BONDI SF 128
TOWAMBA SF 908
NULLICA SF 545
EGAN PEAKS NATURE RESERVE
BEN BOYD NATIONAL PARK
EDEN
MOUNT IMLAY NATIONAL PARK
NUNGATTA NATIONAL PARK
NUNGATTA SF 131
YAMBULLA SF 126
EAST BOYD SF 127
TIMBILLICA SF 768
NADGEE SF 125
BRUCES CREEK SF 777
NADGEE NATURE RESERVE
COOPRACAMBRA–KAYE NATIONAL PARK
STATE FOREST
VICTORIA
SOUTH PACIFIC OCEAN
CROAJINGALONG NATIONAL PARK
DISASTER BAY
Rockton
Craigie
Nungatta
Yambulla
Towamba
Burragate
Nethercote
Kiah
Narrabarba

MAP 5A NORTH
ROADING /
HARVESTING

BATEMANS BAY REGION

Narooma District

Bega District

EDEN REGION

Eden District

Bombala District

BODALLA SF 606

WALLAGA LAKE NATIONAL PARK

BERMAGUI

BERMAGUI NATURE RESERVE

MURRABRINE SF 947

MURRAH SF 140

MUMBULLA SF 605

MIMOSA ROCKS NATIONAL PARK

BEMBOKA SF 1007

GLENBOG SF 149

GLEN ALLEN SF 1031

MURNOCK SF 74

TANJA SF 544

BEGA

TATHRA

BOURNDA NATURE RESERVE

BOURNDA STATE RECREATION AREA

TANTAWANGALO SF 134

CATHCART SF 607

YURAMMIE SF 133

MERIMBULA

PAMBULA

BEN BOYD NATIONAL PARK

NULLICA SF 545

EGAN PEAKS NATURE RESERVE

COOLANGUBRA SF 547

BOMBALA

NIMMITABEL

WADBILLIGA NATIONAL PARK

PACIFIC OCEAN SOUTH

EDEN MANAGEMENT AREA

ROADING / HARVESTING

0 1: 100 000 5 KILOMETRES

MANAGEMENT AREA LIMITS
FORESTRY DISTRICT BOUNDARIES
EXISTING ROADS
- PRIMARY ACCESS
- SECONDARY ACCESS
- FEEDER ROADS
- TRAILS

STATE FORESTS WITHIN EDEN MANAGEMENT AREA
STATE FORESTS OUTSIDE EDEN MANAGEMENT AREA
OTHER CROWN--TIMBER LANDS OF FOREST MANAGEMENT INTEREST
NATIONAL PARKS, NATURE RESERVES
STATE RECREATION AREAS
NATIONAL ESTATE

PROPOSED HARVESTING AND ROAD CONSTRUCTION IN 1990 WHICH ARE SUBJECT TO CONSULTATION WITH THE COMMONWEALTH GOVERNMENT
- HARVESTING (1990)
- SECONDARY ACCESS ROAD (1990)
- FEEDER ROAD (1990)

COMPARTMENTS 743

ROADING
- PROPOSED ROADS 1990
  - SECONDARY ACCESS (1990)
  - FEEDER ROADS (1990)
- PROPOSED ROADING 1991--2009
  - SECONDARY ACCESS
  - FEEDER ROADS

SCHEDULED FOR HARVESTING 1990 EIS
- PREVIOUSLY SCHEDULED 1988 EIS
  - NORMAL INTEGRATED LOGGING COUPE (ALTERNATE COUPE SYSTEM)
  - LIMITED INTEGRATED HARVESTING L
- NOT PREVIOUSLY SCHEDULED
  - NORMAL INTEGRATED LOGGING COUPE (ALTERNATE COUPE SYSTEM)
  - LIMITED INTEGRATED HARVESTING
- WINDTHROW SALVAGE OPERATION ONLY W/S

HARVESTING STATUS
- NO FURTHER HARVESTING PLANNED BEFORE 2010
- HARVESTING OF 1ST SET OF ALTERNATE COUPES COMPLETED

WINDTHROW AREAS -- IDENTIFIED SEPTEMBER 1988

PROPOSED THINNING AREAS 1990

SUBJECT TO CONSULTATION WITH THE COMMONWEALTH (SEE LEGEND)

SUBJECT TO CONSULTATION WITH THE COMMONWEALTH (SEE LEGEND)

CARTOGRAPHY BY MAPPING BRANCH,
FORESTRY COMMISSION OF NEW SOUTH WALES
SOME BASE DETAIL FROM 1: 100 000 NATIONAL MAPS.
SUPPLEMENTED BY LARGE SCALE FORESTRY MAPS AND FIELD REVISION.
MAP RELIABILITY 31/12/89
MAP PRINTED 1990