RICHMOND RANGE 214

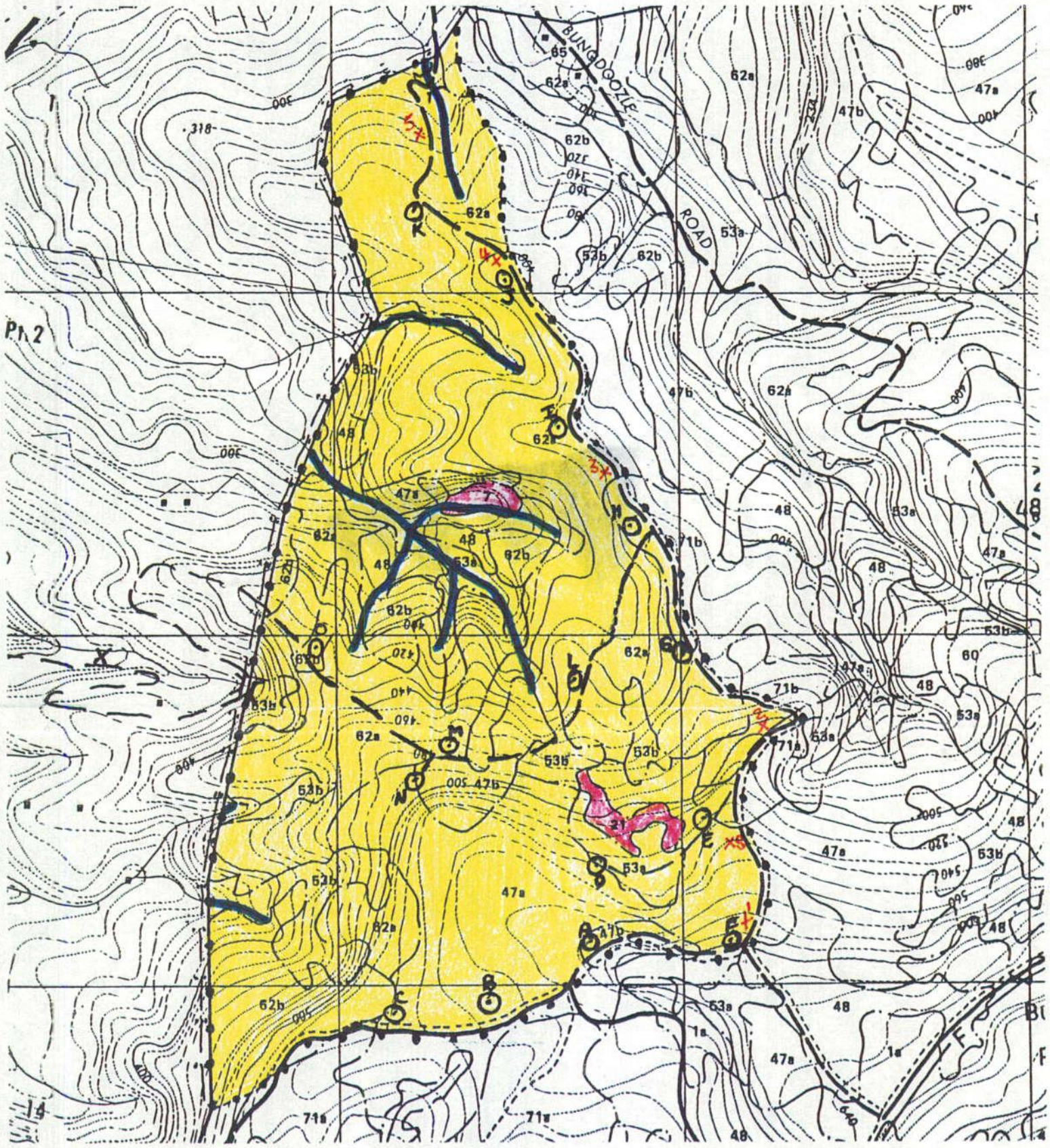
Urbenville District
Northern Region

WOODENBONG
SF 346
WOODENBONG
Mulli Mulli
NIGHTCAP
MOUNTAIN
NIGHTCAP
671
Boomi Creek
EDINBURGH
CASTLE
SF 541
EDINBURGH
CASTLE
EDINBURGH
CASTLE
893
URBENVILLE
SF 862
URBENVILLE
FOREST
PARK
NORTH
OBELISK
728
Coutts
Crown
RICHMOND
UNUMGAR
SF 540
Unumgar
UNUMGAR
390
RICHMOND
WAY
SUMMERLAND
Brumby
Plains
GLASSY
MOUNTAIN
RANGE
DOME
MOUNTAIN
DOME MOUNTAIN
FOREST PRESERVE
MIDDLE
MOUNT
Pine
Plantation
RANGE
TOOLOOM
798
Yabbra
Rest Area
Tooloom
Falls
Battery
Hill
Pine
Plantation
TOOLOOM
YABBRA
SF 394
Clover
Park
CAPEEN
CAPEEN
597
MOUNTAIN
Bean Creek
Falls
Capeen
TOONUMBAR
562
BUNGDOOZLE
FR 80010
Bean Creek
RICHMOND
RANGE
SF 610
MOUNT
BROWN
Peacock
Creek
Mt Brown
Tick Gate
Old Bonalbo
Joes
Box
MOUNT
WILLIAM
576
WILLIAM
BUNGDOOZLE
RANGE
SF 610
Duck Creek
Toonum

HARVESTING PLAN OPERATIONAL MAP
RICHMOND RANGE STATE FOREST No.610
COMPARTMENT 214

Map Reference: Capeen 9440-4-N

AMG NW Cnr 469000E 6838500N SE Cnr 473000E 6836200N



BOUNDARIES
- State Forest
- Compartment, Coupe, Logging Area

ROADS
- Existing Gravelled, Sealed
- Exsiting Natural Surface
- Road To Be Constructed

WATERCOURSES AND DRAINAGE LINES
- Filter and Protection Strip, Approved Crossing

AVAILABLE FOR HARVESTING NORMAL PRESCRIPTIONS

MODIFIED PRESCRIPTIONS
- Special Emphasis - Visual
- Rainforest

FLORA AND FAUNA

NON HARVEST AREAS

DUMP SITES OR LANDINGS
- ⊗ Permanent Dry weather
- ⊠ Permanent Wet weather
- ⊙ Temporary Dry weather
- ⊡ Temporary Wet weather

xs Soil survey by Soil Scientist
x1-5 Field soil survey

URBENVILLE MANAGEMENT AREA

NATIVE FOREST HARVESTING PLAN

AREA:	RICHMOND RANGE STATE FOREST No 610	
LOCATION:	Compartment 214	
OPERATION:	FOREST HARVESTING	
PLAN No.	UMA 95/09	19/9/95

STATE FORESTS

MANAGING - CARING - SUSTAINING

HARVESTING PLAN NO. UMA 95/09

Richmond Range State Forest No 610 Compartment 214

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Part 2 FOREST MANAGEMENT & ENVIRONMENTAL CONSIDERATIONS

2.1 PHYSICAL FEATURES

Description 1 Physical description of the area

STATE FOREST	Richmond Range	DISTRICT	Urbenville
REGION	Northern	COMPARTMENT	214

The compartment is bounded by private property to the West, and compartment boundary Roads on all other sides except for a section of approximately 100m on the Southern tip of the compartment which is not fenced, and which abuts State Forest in the Casino District. This section will be marked by the Supervising Forest Officer before operations commence. The Compartment has a westerly aspect and falls from a high of 600m ASL to a low of 280m.ASL. The topography is generally steep although large areas of relatively gentle slopes do exist. Drainage lines have formed deep gullies in places and feed in a westerly direction where they join Duck Creek approximately km 1.5 away. No water was observed in drainage lines at the time of inspection. Duck Creek eventually feeds into the Clarence River about 30 km away

Reference Plan Operational Map and Locality Map.

Description 2 Special warning of critical boundaries or non-harvest areas

Boundaries are generally clearly indicated by fence lines and roads. The Southern tip will be marked with paint prior to harvesting.

Due to steep slopes and protection areas (5%) of the compartment is in practice a non harvest area.

2.2 FOREST MANAGEMENT AND SILVICULTURE

Description 3 Area of Plan by Forest Types and vegetation description (hectares)

Forest Type	7	21	47ab	48	53ab	62ab	71ab	TOTAL
Stand condition								
Unlogged	0	0	0	0	0	0	0	0
Selectively logged 71/74	0	3	40	7	40	150	6	246
Net Harvest Area	**0**	**0**	**60**	**6**	**39**	**154**	**6**	**265**
Inaccessible/drainage	na	na	1	1	1	1		4
Wildlife corridor								
Non-harvest Rainforest	2	3						5
TOTAL	**2**	**3**	**61**	**7**	**40**	**155**	**6**	**274**

Description 4 Broad description of Vegetation

(a) Forest types

The dominant forest type (FT) in Cpt. 278 is grey gum, grey iron bark, white mahogany (Type 62ab, 57%) which occupies the drier sites on the middle and lower slopes, with common occurrence of brush box (Type 53ab) around moister depressions, and tallowwood, blue gum (FT 47ab) on the higher site quality upper slopes. Isolated pockets of flooded gum (FT48) and spotted gum (FT71ab) are found in more productive sites. Two small areas of rainforest, hoop pine (FT21) and palm (FT7) are confined to gully areas.

(b) Understorey

The understorey of the forest is primarily native grasses over most of the compartment. The shrub layer becomes more defined and mesic in nature in some of the upper slopes under FT47a and FT53a. Lantana is found through much of the compartment.

(c) Ground-cover

Ground cover over the compartment is well developed and provides a high degree of soil protection. Ground cover becomes a well developed forest litter layer in moister areas.

(d) Rare or endangered species

No occurrences of protected or endangered species were encountered during the field inspections. There have been positive sightings of Wampoo Fruit Dove, Rose-crowned Fruit Dove, Sooty Owl, Parma Wallaby, Red-legged Pademelon, Marbled Frogmouth, Stephen's Banded Snake, Yellow-bellied Glider, Fossirial Skink, Long-nosed Potoroo and Loveridge's Frog within a 2 km. arc of the Southern tip of Compartment 214

(e) Rainforest

There are two small patches of rainforest namely Palm (FT7)in a lower gully and Hoop Pine (FT21) on an escarpment at the head of a gully. Total area of rainforest whilst estimated at 5 ha, of which 3 ha. has been previously logged.

(f) Exotic weeds

Lantana has invaded large areas of the compartment. No other exotic weeds are evident.

(g) Regeneration and seral stages

Considerable Eucalypt regeneration is evident especially where disturbance has been high, adjacent to and on dump sites.

Description 5 Forest and crop condition

Most of the area was logged in the 1973-4 and an average volume of 30 m^3 /Ha was removed. Existing stumps show the Compartment had previously been logged some years before. A small area of forest , mainly FT 47a and a little FT62a (approximately 25 ha. in total) was not logged in the 73-4 operation but had been selectively logged in the previous cut. The Compartment has been assessed under the **Draft Protocol, Interim API Assessment for Old Growth Forest** (see appendix for assessment results), and the Eucalypt forest types were classified with the majority of the area being category e (regrowth). The area referred to above was classed as SB (10-30% subdominant regrowth and 10-30% subdominant irregular or senescent crowns) and another small area approximately 3 ha was TB (less than 10% regrowth and 10-30% of irregular or senescent crowns subdominant. The survey shows the compartment is available for harvesting. The whole area would support a light selective logging as utilisation standards have increased, and there has been increment since the previous logging. It is aimed to further encourage regeneration and cull non-productive trees not required for habitat and soil protection.

Description 6 Harvesting Conditions to be determined

(a) Silviculture

The silvicultural prescriptions in the Urbenville Management Plan 1986 and the Silvicultural Workshop notes prepared by the Silviculturist, Forest Planning Branch 1994, should be followed in determining silvicultural conditions.

Harvesting should aim at optimising the production of quota and ex-quota sawlogs, poles, piles and girders. The long term timber production potential will be increased as a result of the harvesting operation. In the Forest Types 47ab, 48, 53ab, 62ab and 71ab selective felling should promote growth on retained sub-merchantable stems.

This will be achieved by:

1. Removing all mature trees suitable for production of hardwood sawlogs.
2. Provision of canopy gaps and ground disturbance to promote seedling regeneration leading to the initiation of patches of regrowth. This is restricted to slopes less than 18 degrees.
3. Retaining sufficient trees to meet habitat requirements.

A minimum canopy gap size of 0.5 ha is required in tall forest to achieve successful regeneration. This corresponds to a circular area approximating 80 metres in diameter. Based on visual evidence in the drier forest types such as FT62ab regeneration on past log dumps appears successful in gaps of 40-50 meters diameter. Since enrichment planting is not warranted in the bulk of the Compartment natural regeneration will be facilitated by these gaps. Gap creation should aim at treating approximately 10% of the net harvestable area and be focused on areas where regeneration is lacking and an acceptable commercial yield can be obtained in conjunction with the silvicultural procedure. Canopy gaps must not intrude into protection strips or filter strips and the maximum area to be gapped is 25% of the net harvest area. Soil disturbance within the gaps will be 100% but will regenerate quickly. Slopes over 18 degrees and areas where rapid regeneration is unlikely are to be selectively logged only.

(b) Fire protection

In addition to silvicultural needs, fuel management of logging debris resulting from the harvesting operations is also needed to ensure that forest areas are adequately protected through reduction of fire fuel hazards. State Forests has to meet its obligations under the Bush Fires Act to ensure that forest fuel levels are kept at strategically low levels to allow effective control of wildfire. Pre-harvesting burning is not required but post-harvesting burning is needed to ensure:

(1) Reduction of flash fuel and log debris levels to an acceptable fuel loading throughout the Compartment to make fire control feasible under worst expected seasonal conditions during the Bush Fire Danger Period;

(2) co-ordination of post-harvest burning with other fuel management burning in accord with the **Urbenville District Fuel Management Plan** 1994;

(3) sufficient post-harvest burning of logging slash within canopy gaps to allow regeneration, leaving sufficient unburnt litter and slash in other areas to, minimise potential soil erosion and control water pollution, and maintain wildlife ground-cover requirements with minimal damage to retained trees and sensitive habitat;.

(4) protection of the cattle grazing interests and property of the lessees

Mean monthly rainfall erosivity (**Rm**) does not exceed 500 in June to November, and post-harvest burning can be scheduled satisfactorily in this period.

References Rosewall C.J. & Turner J. B. *Rainfall Erosivity in New South Wales.* **Technical Handbook No. 11 (1st Edition), Soil Conservation Service of New South Wales(1992)**

Pilgrim D. H. (ed) *Australian Rainfall and Runoff - A guide to flood estimation,* **The Institute of Engineers of Australia,** (1987)

Urbenville Management Plan 1987

Horne. R.H. *Silvicultural Workshop Notes* , **SF NSW Forest Planning Branch** (1994)

Fire Manual **FC NSW** 1992

2.3 FLORA PROTECTION

Description 7 Presence of protected or endangered plant species

See Description 4(d). None present in the area.

Description 8 Presence of rainforest

The occurrences of rainforest areas are excluded from logging. No tree shall be fallen outside the rainforest where there is a likelihood of disturbing the rainforest structure. Buffer strips around rainforest are not necessary since the subtropical rainforest is an aggressive invader of eucalypt forest in the absence of fire.

Reference Briggs, J.H. and Leigh J.H., *Rare And Threatened Australian Plants* **Special Publication 14, Australian National Parks and Wildlife Service, 1988**

2.4 FAUNA PROTECTION

Description 9 Endangered and protected fauna occurrence

(a) General

The following Schedule 12 fauna are known or likely to occur within the Urbenville Management Area. Whilst none were seen during inspections there have been positive sightings of Wampoo Fruit Dove, Rose-crowned Fruit Dove, Sooty Owl, Parma Wallaby, Red-legged Pademelon, Marbled Frogmouth, Stephen's Banded Snake, Yellow-bellied Glider, Fossirial Skink, Long-nosed Potoroo and Loveridge's Frog within a 2 km. arc of the Southern tip of Compartment 214

COMMON NAME	SCIENTIFIC NAME
Koala	*Phascolarctos cinereus*
Yellow-bellied Glider	*Petaurus australis*
Parma Wallaby	*Macropus parma*
Black-Striped Wallaby	*Macropus dorsalis*
Tiger Quoll	*Dasyurus maculatus*
Brush-tailed Phascogale	*Phascogale tapoatafa*
Red-legged Pademelon	*Thylogale stigmatica*
Brush tailed Rock Wallaby	*Petrogale pencillata*
Rufous Bettong	*Aepyprymnus rufescens*
Common Planigale	*Planigale maculata*
Long-nosed Potoroo	*Potorous tridactylus*
Great Pipistrelle	*Falsistellus tasmaniensis*
Eastern Little Mastiff Bat	*Mormopterus norfolkensis*
Beccari's Mastiff Bat	*Mormopterus beccarii*
Golden-tipped Bat	*Kerivoula papuensis*
Large Footed Myotis	*Myotis adversus*
Queensland Long-eared Bat	*Nyctophilus bifax*
Glossy Black Cockatoo	*Calyptorhynchus lathami*
Red-tailed Black Cockatoo	*Calyptorhynchus magnificus*
Red Goshawk	*Erythrotriorchis radiatus*
Wompoo Fruit Dove	*Ptilinopus magnificus*
Superb Fruit Dove	*Ptilinopus superbus*
Rose-crowned Fruit Dove	*Ptilinopus regina*
Barred or Yellow-eyed Cuckoo Shrike	*Coracina lineata*
Albert's Lyrebird	*Menura alberti*
Powerful Owl	*Ninox strenua*
Sooty Owl	*Tyto tenebricosa*
Masked Owl	*Tyto novaehollandiae*
Marbled Frogmouth	*Podargus ocellatus plumiferus*
Black-breasted Button Quail	*Turnix melanogaster*
White-eared Monarch	*Monarcha leucotis*
Loveridge's Frog	*Philoria loveridgei*
Giant Barred Frog	*Mixophyes iteratus*
Stuttering Frog	*Mixophyes balbus*
Fleay's Barred River Frog	*Mixophyes fleayi*
Fossirial Skink	*Coeranoscincus reticularis*
Stephen's Banded Snake	*Hoplocephalus stephensii*
White-crowned Snake	*Cacophis harriettae*
Little Bent-wing Bat	*Miniopterus australis*
Greater Broad-nosed Bat	*Nycticeius rueppellii*

Fauna species that are known or likely to occur in the subject area are documented in Appendix 5 of the Urbenville Management Plan. In respect of Protected species (not listed in Schedule 12 of the NPWS Act), the selective logging operation is not expected to impact in any significant way on their habitat or population status in the locality.

The Faunal Impact Statement associated with the Urbenville EIS is being prepared by the Australian Museum and will be released in 1995.

Fauna protection measures include adoption of other non-harvest areas such as steep areas (slopes generally over 30°) as contributing to wildlife habitat because of minimal disturbance. These inaccessible areas within the Compartment forms a large contiguous area that will be undisturbed by harvesting and therefore constitute an important conservation resource.

It is also necessary to report and record confirmed sightings of Schedule 12 species to the NPWS through the appropriate channels.

(b) Habitat trees

The following prescription should be followed on the basis that the nett harvestable areas of the Compartments contain predominantly dry eucalypt forest with a xeromorphic understorey and small areas of dry and moist hardwood forest with a mesic understorey.

Habitat tree retention in dry hardwood and moist hardwood forests with a xeromorphic understorey shall be four trees per hectare. For the purposes of this prescription a xeromorphic understorey is considered to be one composed predominantly of grasses, heath and/or shrubs with sclerophyllous leaves.

Habitat tree retention in dry hardwood and moist hardwood forests with a mesic understorey shall be six trees per hectare. For the purposes of this prescription a mesic understorey is considered to be one composed predominantly of moist elements such as vines shrubs with mesophyllous leaves and/or rainforest ferns.

Habitat trees will be hollow bearing trees. They are to be well spaced throughout the Compartment being harvested consistent with the size of canopy gaps required for adequate regeneration and growth for the species of these forest types. Where the specified density of habitat trees is not present the existing density is to be retained. Sufficient recruitment habitat trees to sustain the retained density of habitat trees into perpetuity are also to be retained. Stags shall not be counted as habitat trees.

In addition, all practical precautions shall be taken to protect identified habitat trees during logging (harvesting) operations. The following shall be adhered to:

1. All practical precaution shall be taken to avoid tree heads landing adjacent to identified habitat trees. In gapping operations tree heads shall be moved to the centre of gaps prior to burning.

2 In forests with a mesic understorey heads of trees within a radius of 10 metres of identified habitat trees are not to be spot burnt.

3. Alternatively, if a ground burn can be carried out in this forest type then burn conditions shall follow those agreed upon for xeromorphic understorey.

4. In forests with a xeromorphic understorey heads of trees will be removed from within approximately a 5 metre radius of identified habitat trees prior to the general ground burn.

5. Tree heads shall be removed with minimum disturbance to understorey vegetation and ground logs.

(c) Wildlife Corridor

Filter and protection strips along gullies and extensive areas of steep terrain will provide undisturbed habitat to facilitate wildlife movement.

(d) Refugia areas

There are considerable areas of the compartment which will not be disturbed due to stream and gully protection prescriptions and the rugged and inaccessible nature of many parts of the Compartment. The system of filter strips allows movement of wildlife down the drainage lines from the higher ranges to the well defined gullies lower in the compartment.

Description 11 Species and habitat description

The following is a list of Schedule 12 species (Vulnerable, rare and threatened species) known or likely to be found in the compartment, and considered to be sensitive to logging. Sighting of any of the listed species should be reported directly to Urbenville Forestry Office. The procedure to be adopted upon identification is defined for each species.

(1) **Koala** - *Phascolarctos cinereus*

Koalas have been recorded in many locations in the Management Area. Where a Koala or recent evidence of a Koala is located the tree shall be retained together with all other trees within a 100 metre radius of the location subject to further survey. Recent evidence of Koala activity is indicated by the presence of dung pellets beneath trees being used by Koalas or by characteristic claw mark scratchings on the trunks of trees used by Koalas. The survey procedure to be adopted is as follows:

(a) The extent of habitat use and preferred food trees within the 100m radius shall be assessed using the modified asterisk technique. Paragraph (b), (c) & (d) below will then apply as appropriate to the outcome of the assessment.

(b) If no further evidence of regular Koala activity is found, forestry operations may resume but a minimum of 5 Koala food trees must be retained within the 100m radius area. If Koala was recorded in a preferred food tree that tree must be included among the retained trees.

(c) If regular Koala activity is detected but less than 20% of trees examined have Koala faecal pellets underneath and no further Koalas are observed, limited forestry operations may resume under the following conditions:

(i) trees with evidence of regular Koala activity shall be retained.

(ii) a minimum of 15 Koala food trees per hectare shall be retained within the 100m radius area.

(iii) if the density of Koala food trees per hectare does not permit the above specified number of trees to be retained, all existing Koala food trees will be retained.

(d) If regular Koala activity is detected and more than one koala is observed or more than 20% of trees examined have Koala faecal pellets underneath, forestry operations including post harvest and hazard reduction burning shall be excluded from the 100m radius area and the Director General of National Parks notified.

The definition of Koala food trees for these purposes are trees with leafy broad crowns and representing the range of sizes greater than 40cm dbh and be selected with preference to Tallowwood, Small-fruited Grey Gum, Grey Gum, Large fruited Grey Gum, Forest Red Gum, Sydney Blue Gum, and White Mahogany. If these species are not present in adequate numbers, food trees should be selected from the following species - Blackbutt, Flooded Gum, and Red Mahogany. Koala food trees may be counted as habitat trees or habitat recruitment trees for the purposes of other conditions.

(2) **Yellow-Bellied Glider** - *Petaurus australis*
Have been recorded in several locations in the Management Area. There has been a positive sighting of a Yellow Bellied Glider just south of Cpt 214. Where a Glider feed tree with V-notch markings is located, a 100 metre radius shall be retained around the tree, with the following procedures to be implemented:

- a brief inspection shall be undertaken to determine the tree with the most active V-notch markings;
- this tree shall then become the centre of the 100 metre radius; all trees with V-notch markings shall be retained;
- a minimum of 30 trees (>10cm dbh) of the V-notch tree species shall be retained within the 100 metre radius;
- a minimum of 15 mature gum bark trees, with their bark shedding in long strips, shall be retained if available within the 100 metre radius. Examples of relevant bark shedding species include Flooded Gum, Blue Gum, Grey Gum, Forest Red Gum, and White Gum groups;
- where the density of these tree species does not permit the above specified number of trees to be retained, all existing species appropriate to the above shall be retained.
- If there is more than one V-notch tree within the 100 metre radius the additional V-notched trees can be counted in those feed trees to be retained.

(3) **Parma Wallaby** - *Macropus parma*
The optimum habitat for the Parma Wallaby is wet sclerophyll forest with a thick, shrubby understorey associated with grassy patches. The Parma Wallaby was thought to be extinct in the 19th Century but is now known to be secure in parts of the Great Dividing Range. It has been recorded in Richmond Range State Forest approximately 1 km. to the south-east of the compartment. The retention of vegetation on steep slopes and the abundance and proximity of suitable habitat in surrounding areas should mitigate against impacts to this species. Retention of areas of dense vegetation along water courses will provide habitat continuity if the animal exists in this harvesting area.

(4) **Black-Striped Wallaby** - *Macropus dorsalis*
The preferred habitat for this wallaby is forest with dense shrub layers, including rainforest margins. Care shall be taken to minimise snig track disturbance to the understorey, particularly adjacent to any cleared grassy areas where it may feed.
If during the tree marking or logging operations Black-striped Wallabies are observed, logging is not to start or recommence until a survey is undertaken to determine the extent of the population within the logging area.

(5) **Tiger Quoll** - *Dasyurus maculatus*
The Tiger Quoll has been widely recorded in the Management Area, as well as the north eastern part of the State, in some cases (eg. Dorrigo District) becoming a common inhabitant around camp sites. It uses logs and tree hollows for nesting. Prescriptions for the retention of filter strips and protection strips, no logging in rainforest and minimisation of disturbance to fallen logs and ground cover are to be adhered to.

(6) **Brush-tailed Phascogale** - *Phascogale tapoatafa*
Known to inhabit a range of forest types. It uses small tree hollows for nesting, feeding in the canopy and ground vegetation. Has been found in numerous locations in the Management Area. Adherence to prescriptions for the retention of habitat trees will mitigate against loss of habitat.

(7) **Red-legged Pademelon** - *Thylogale stigmatica*
Inhabits rainforest to moist sclerophyll forest, and is thought to prefer gully forest, feeding mostly on leaves and berries. This species has been sighted to the south of Cpt 214. Seems to be reasonably well distributed throughout northern NSW. Exclusion of logging from rainforest, as well as filter and protection strip prescriptions will mitigate against any impact on this species.

(8) **Brush tailed Rock Wallaby** - *Petrogale penicillata*
Inhabits cliffs, steep stony hills, and escarpments in dry forest types. Core habitat area will not be affected due to the steep and rocky nature of the terrain preferred as habitat. Regeneration of the shrub layer following logging disturbance may be beneficial for the food sources of this species.

(9) **Rufous Bettong** - *Aepyprymnus rufescens*
A common (Strahan 1983) Rat-kangaroo with a head and body length of 380 mm and tail length of 360 mm. Distinguishable from other macropods of comparable size by reddish-brown fur and hairy muzzle. Watch for nests in shallow excavations at the base of tussocks. Habitat thought to be encouraged by not burning long grass.

(10) **Common Planigale** - *Planigale maculata*
Occupies a wide variety of habitats, including Rainforest and Sclerophyll forests, sheltering under rocks, logs and utilising burrows. Given its very wide ecological range it is not expected that the operation will have a significant effect on the species. Retention of filter strips and protection strips, no logging in rainforest and minimisation of disturbance to fallen logs and ground cover will mitigate against loss of habitat.

(11) **Long-nosed Potaroo** - *Potorous tridactylus*
This animal has been sighted approximately 2 km to the west of Cpt 214. A major habitat requirement of the long nosed Potoroo is relatively thick ground cover with light sandy soils. It digs small holes in the ground and eats roots, tubers, fungi, insects and soft bodied animals in the soil. It is recognisable by its long tapering nose.

(12) **Great Pipistrelle** - *Falsistellus tasmaniensis*
A large insectivorous bat occurring in both wet and dry sclerophyll forest, using tree hollows (and caves and buildings) for roosts. Tree retention and filter strip/protection strip prescriptions shall be adhered to.

(13) **Eastern Little Mastiff Bat** - *Mormopterus norfolkensis*
Beccari's Mastiff Bat - *Mormopterus beccarii*
Neither of these bats have been recorded in the immediate area, the former having been recorded in the Dome Mountain area, although they are known to inhabit similar forest on the north coast. Both have requirements for hollows, and adherence to the tree retention and the Wildlife Corridor will mitigate against loss of habitat.

(14) **Greater Broad-nosed Bat** - *Nycticeius rueppellii*
Has not been recorded in the immediate locality, although there are records for dry hardwood forests in the District. It utilises hollows for roosting and is known to favour watercourses and wet gullies for foraging for insects. Adherence to the tree retention and filter strip prescriptions will help mitigate against disturbance to its habitat and food sources.

(15) **Golden-tipped Bat** - *Kerivoula papuensis*
The habitat of this bat ranges from eucalypt to sub-tropical rainforest, and it has been found in Beaury State Forest. Exclusion of logging from rainforest will be beneficial. Adherence to filter/protection strip and tree retention prescriptions are important.

(16) **Large Footed Myotis** - *Myotis adversus*
Usually found in caves, buildings and under bridges, but occasionally roosting in dense foliage. They use nearby permanent water bodies for feeding. Adherence to prescriptions for rainforest, tree retention and filter and protection strips and the provision of the Flora and Fauna and Visual Protection strips are important mitigative measures.

(17) **Queensland Long-eared Bat** - *Nyctophilus bifax*
Has not been recorded in the Urbenville Management Area and generally occurs North of the tropic of Capricorn in a range of habitats. Nests in hollow trees.
If the bat exists in the harvest area the species will be protected by habitat tree prescriptions, and the system of undisturbed retained vegetation along drainage lines.

(18) **Glossy Black Cockatoo** - *Calyptorhynchus lathami*
This bird nests in tree hollows and feeds almost exclusively on Casuarina. All practical attempts shall be made to minimise disturbance to mature seeding forest oaks throughout the logging area. On location of a nest tree the NPWS Forest Conservation Unit Manager is to be informed and logging in the immediate area (within a 100 metre radius) is to cease pending delineation of an appropriate buffer by a joint NPWS/SFNSW inspection.

(19) **Red-tailed Black Cockatoo** - *Calyptorhynchus magnificus*
Found in a variety of habitats, from coastal forests to the arid woodlands. Nests in large hollows, feeding on seeds of eucalypts, grasses and casuarinas. Covers a very large area, and is unlikely to require the Urbenville forests for critical habitat. Adherence to tree retention prescriptions is important, as well as retention of at least three surrounding buffer trees if a nest tree is identified. All practical attempts shall be made to minimise disturbance to mature seeding forest oak throughout the logging area.

(20) **Red Goshawk** - *Erythrotriorchis radiatus*
Not recorded for the District and is thought to be extremely rare. Any nest sites should be reported to a forest officer and a buffer of 250 metre radius immediately placed around the tree pending confirmation of the sighting.

(21) **Wompoo Fruit Dove** - *Ptilinopus magnificus*
Has been widely recorded throughout the District. There has been a positive sighting of the Wompoo Fruit Dove approximately 1km. to the S.E. of Cpt. 214. This bird will not be impacted upon by the operation by virtue of the fact that its habitat is rainforest.

(22) **Superb Fruit Dove** - *Ptilinopus superbus*
A relatively common inhabitant of rainforests, and is known to forage in eucalypt forest. The operation is unlikely to impact on the species.

(23) **Rose-Crowned Fruit Dove** - *Ptilinopus regina*
Common red-crowned pigeon. Inhabits rainforest, wet sclerophyll forests and occasionally open forests. There has been a positive sighting of the Rose-Crowned Fruit Dove approximately 1 km to the south-east of compartment 214. Given this species preferred habitat in rainforest the operation is unlikely to impact on the species.

(24) **Barred or Yellow-eyed Cuckoo Shrike** - *Coracina lineata*
A dark grey bird with yellow eyes and boldly barred abdomen. Preferred habitat is open forest and rainforest particularly where there are native figs and fruit.

(25) **Alberts Lyrebird** - *Menura alberti*
Has been recorded in several areas of the District. Because of its preferred habitat of viney scrub/rainforest the mitigative prescriptions in this Plan in respect of protection of rainforest will protect its habitat.

(26) **Powerful Owl** - *Ninox strenua*
Sooty Owl - *Tyto tenebricosa*
Masked Owl - *Tyto novaehollandiae*

These owls have a wide ranging habitat in NSW, distributed throughout the Great Dividing Range as well as the coastal and escarpment forests. However, despite this wide range they are listed as rare. There are a number of records for these owls in the District.
There has been a positive sighting of the Sooty Owl approximately 1 km to the south-east of the compartment
Prescriptions relating to tree retention, filter and protection strips, and in the case of the Sooty and Masked Owls retention of rainforest, are to be adhered to.

Nesting sites, if located, are to be preserved together with at least 3 surrounding hollow bearing trees, and the location immediately reported to the Foreman or Forester.

(27) **Marbled Frogmouth** - *Podargus ocellatus plumiferus*
This bird has been recorded in Richmond Range and Toonumbar State Forests. It has been sighted to the south east of the compartment. A rainforest inhabitant, it's habitat will be protected through adherence to the prescriptions excluding logging from rainforest.

(28) **Black-breasted Button Quail** - *Turnix melanogaster*
Supervising Foreman and logging contractors have been informed of how to identify Black-breasted Button Quail, their nesting characteristics and their feed scrapings. If any of these are observed during marking or harvesting the National Parks & Wildlife Services Northern Regional Manager is to be informed. Operations within 250 metres of this location are to cease until the level and extent of Black-breasted Button Quail is assessed. A common habitat is reported to be on the fringe between tall moist forest and lantana thicket.

(29) **White-eared Monarch** - *Monarcha leucotis*
Has been recorded Richmond Range State Forest. Requires canopy, preferably dense foliage for nesting, and in these types of forests it is most likely to occupy the ecotone area between hardwood and rainforest. Adherence to tree retention prescriptions, and no logging of rainforest will mitigate against significant disturbance to its habitat.

(30) **Loveridge's Frog** - *Philonia loveridgei*
This frog has been recorded approximately 2 km to the East of this compartment.. Location of boggy/seepage areas may indicate preferred habitat for this frog. Avoidance of ground disturbance in such areas and adherence to filter and protection strip provisions as well as the creek corridor will minimise the disturbance to habitat.

(31) **Barred Frog** - *Mixophyes iteratus*
Stuttering Frog - *Mixophyes balbus*
Neither of these frogs have been recorded in the Management Area. They are terrestrial inhabitants of rainforest and wet sclerophyll forest, requiring water for breeding. Adherence to prescriptions excluding logging from rainforest and the Flora and Fauna and Visual Protection strips and prescriptions for filter and protection strips are important.

(32) **Fleay's Barred River Frog** - *Mixophyes fleayi*
This frog has been recorded in the Richmond range locality. The filter and protection strip prescriptions are to be strictly adhered to in order to protect habitat and water quality, and truck roads shall only cross such gullies in the designated locations. The Flora and Fauna strip will help mitigate any impact on this species.

(33) **Fossirial Skink** - *Coeranoscincus reticulatus*
An inhabitant mainly of rainforests and sometimes moist hardwood, living under leaf litter and rotting logs. This species has been sighted approximately 1 km to the south-east of the compartment. Adherence to tree retention, filter and protection strip prescriptions, and excluding logging from rainforest will assist in reducing habitat loss.

(34) **Stephen's Banded Snake** - *Hoplocephalus stephensii*
There are three records of this snake in Richmond Range State Forest to the south of the compartment. It is a nocturnal partly arboreal snake known to shelter in tree hollows. Tree retention prescriptions, exclusion of logging from rainforest and prescriptions for filter and protection strips are important.

(35) **White-crowned Snake** - *Cacophis harriettae*
A secretive nocturnal dark grey snake to 40 cm long that has a yellowish band at least partially circling the top of its head between the eyes (Cogger 1975 p636). Shelters in leaf litter and fallen timber. Venomous but not dangerous. Eats small lizards.

(36) **Little Bent-wing Bat** - *Minopterus australis*
This species occurs over a range of well timbered habitats where it occupies tunnels and caves during the day (often in association with the Common Bent-wing Bat) and at night forages for small insects beneath the forest canopy. Prescriptions for tree retention, filter/protection strips and other areas excluded from logging are mitigative measures.

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2.5 SOIL EROSION AND WATER POLLUTION CONTROL

Description 11 Site soil and water data and other information

(a) **Location** See Map

(b) **Climate**

Rainfall **Average annual rainfall** **1125 mm**
Average rainfall erosivity $R = 89.31 \times 7.9^{1.74} = 3256$

Monthly rainfall erosivity

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
619	554	391	130	65	98	65	65	195	228	358	488

Average annual rainfall for Urbenville (20 km N.W. of the Compartment is 1082 mm p.a. with a summer rainfall pattern common to the North Coast and Northern Tablelands. There is an average of 130 raindays per year. Average annual rainfall in the Management Area varies from 1400mm in the Richmond catchment to less than 1000mm in the Western Clarence Catchment sector of the area. The rainfall isohyet map (App. 2a UMP) indicates rainfall in cpt 214 of approximately 1125 mm/pa. January-March are the wettest months and May-August the driest. Based on 12 hour duration (ARR) the 2 year Recurrence Interval Intensity is estimated as **7.9 mm/hr** from design rainfall isopleths (ref. below). The heaviest rainfall events are known to occur in January and February and this accounts for 36% of annual rainfall in zone 2.

Temperature
Urbenville (16 km S.W. of the Compartment) is characterised by maxima temperatures ranging from 17° to 29° (July to January) and minima temperatures ranging from 3°to 16°. This combination of reasonably frost free conditions and good ambient temperatures during the wetter periods of the year facilitate the good continuous growth of ground-cover and an expectation of full recovery from disturbance on most sites.

Generally weather conditions will allow harvesting operations to continue throughout the year subject to normal wet weather restrictions. Occasionally operations may be stopped altogether by periods of high rainfall which are likely to occur in January to March..

References Design Rainfall Isopleths of Northern Region. **State Forests of NSW. GIS Branch** 1993.

Rosewall C.J. & Turner J.B. *Rainfall Erosivity in New South Wales*. **Technical Handbook No. 11 (1st Edition), Soil Conservation Service of New South Wales**(1992)

Pilgrim D. H. (ed) *Australian Rainfall and Runoff - A guide to flood estimation,* **The Institute of Engineers of Australia,** (1987)

UMA Urbenville Management Plan. **State Forests of NSW.**

(c) **Geology**

The Compartment is located on Upper Jurrassic medium feldspathic sublabile sandstone & siltstone known as the Woodenbong Beds

Bedding planes
There are no obvious bedding and fracture planes in the area. Similarly this geology is now very stable with no porous rocks or other strata overlying impermeable layers. The geology of the area presents no problems in relation to road maintenance or upgrading.

References 1:250,000 Geological Survey (Map & Commentary) Warwick Sheet.
NSW Dept Minerals & Energy 1972

(d) **Soils**

Soil Landscape Map		Soils Report Urbenville E.I.S. 1993
Map scale		1:125000
Map source		Veness & Associates 1993
Soil type		
Texture class	A horizon	Sandy Clay Loam (10% clay)
	B horizon	Sandy Clay (26% clay)
Method of determination		Soils Report Urbenville E.I.S. 1993
Comment:		
K value	A horizon	.011 to. 031
	B horizon	.019 to .028
Method of determination		Soils Report Urbenville E.I.S. 1993
Comment:		Selected 0.031 for USLE calculation
EAT class	A horizon	no deflocculation (bolus) (Soil Sci. analysis- 1 sample)
	B horizon	no change (crumb) (Soil Sci. analysis- 1 sample)
Method of determination		Approved soil scientist report
EAT class	A horizon	not dispersive (Field Testing - 5 samples)
	B horizon	not dispersive (Field testing. - 5 samples)
Comment:		Confirms Soils Report Urbenville E.I.S. 1993 EPA (Kel Kristiansen) inspected the compartment 1/9/95
Dispersion %	A horizon	20
	B horizon	7
Method of determination:		Soils Report Urbenville E.I.S. 1993
Comment:		Not dispersible

Depth to subsoils and bedrock
Topsoil depth: 10-46 cm. Depth to bedrock: 46-140 cm
Field survey through observation of road batters and from the soil samples showed the predominant depth of the topsoil to be 10-35 cm.

Inherent fertility
Whilst theses soils are of low to moderate fertility, aspect is the major factor effecting vegetative growth. Ground cover establishment will be rapid on moister Eastern and Southern slopes, and particularly dependent on the soil moisture regime following harvesting on the Northern and Western aspects. Post harvest establishment of up to 70% ground-cover is expected within 12 months

Existing erosion
No areas of active or accelerated erosion were evident. Due to the steep slopes most gullies were incised to bedrock as part of normal geomorphological processes.

Reference
Charman, P.E.V. and Murphy, B.E." Soils - Their Properties and Management", Sydney University Press.

Qualified soil scientist
David Morand B.Sc.(Hons. soils) LaWC Casino viewed all soil types along the compartment boundary road and selected a site he considered to exhibit the most dispersive characteristics. He described this soil profile in the field and samples of the soil were collected for laboratory analysis by the modified Emerson Aggregate Test. Field analysis using the modified Emerson Aggregate Test of a further 5 topsoil and 5 subsoil samples was conducted by the Marketing Forester Urbenville and the contract Forester Urbenville while they were taking the EPA on the site inspection. Soil samples locations are marked on the Harvesting Plan map.

(e) Landform

Slope
Slopes are generally convex from the ridge tops down to the limits of the net harvest area. While the ridgetop harvesting areas are largely under 15° the balance of the slopes within the net harvestable area are between 15° and 25°. Areas over 30° cover 2% of the gross area. (See Table 2 under Description 12.)

Terrain
The net harvestable area of the Compartment is predominantly ridgeline, upper slopes and valley sides of what otherwise is semi-mountainous terrain.

Drainage line condition
Drainage lines are well defined, rocky and appear stable.

Aspect
The general aspect of the compartment is North-Westerly with more sheltered areas such as the slopes around gullies taking their own small localised aspects within the general trend.

Rockiness
The compartment has a moderate amount of rock which is both exposed to the surface and through the soil profile. This is particularly so on the lower slopes and in areas of lower site quality.

(f) Hydrology

The Compartment lies within the Duck Creek Catchment and falls to the Duck Creek (1.5 km west) via a system of unnamed gullies and drainage lines. Duck Creek drains into the Clarence River approximately 30 km to the South. Drainage lines within the compartment are well developed. They initiate as drainage depressions from the main ridgelines and upper slopes and due to the mountainous relief quickly become clearly defined, stable and rocky drainage lines. Water was not present in drainage lines at the time of inspection. Other than the unnamed gullies marked on the harvesting plan no prescribed streams, swamps or wetlands are found within the net harvest area. The area is not within 100 metres of a water storage.

Representative water quality monitoring site
Chaelundi State Forest.

Reference Forest Planning Branch *Water quality monitoring program* SF NSW 1994

Previous harvesting and proposed harvesting
The area was harvested for saw logs, poles and girders in 1973/74 over all accessible country. There is also evidence in the form of very weathered stumps that a selective logging operation occurred many years prior to the operation in the 70's.. It is proposed that the compartment be harvested for quota logs , poles, girders and small logs with the aim of silviculturally treating the area to promote growing stock and ensure adequate regeneration. Low impact operations such as small poles and fence post cutting may be used to thin and space superior growing stock in conjunction with the main operation, if the stand structure in specific areas is found to warrant such treatment.

Upstream catchment water use
Forestry and grazing.

Downstream catchment water use
Forestry and grazing for 30 km. This area is not within 100 m of a water storage.

Domestic water use
Duck Creek travels approximately 30 km before entering the Clarence River. While many people use the water from both of these streams for domestic water supplies, human consumption is typically based on rainwater.

(g) Vegetation and ground-cover

Effect on ground-cover during Operations

Harvesting operations are expected to have the potential to temporarily remove less than 20% overall ground-cover and post-harvest burning slash disposal will only remove a further 10%. Ground-cover currently comprises 35 live ground cover, 60% forest litter and 5% natural cover provided by surface rock and stone. Present surface litter is estimated at <5 tonnes per hectare.
Harvest practices will aim at overall retention of 80% of ground-cover immediately after harvesting, and retention of 70% ground-cover after post-harvest burning.

Recovery time

Live ground-cover recovery of grasses, shrubs and tree seedlings would be expected within 12 months over 70% of the area under normal seasonal rainfall conditions.

(h) Proposed operation system [See Condition 4. 7(b)]

Use of existing roads
Log haulage will be North along the track to the West of Bungdoozle Road, South along Upper Duck Creek Road, West through private property and a minor quantity North along Bungdoozle Road. These roads all enter Duck Creek Road which later joins the Bonalbo-Urbenville Road. Poles, piles logs and girders will take this road to Urbenville and Woodenbong. These roads (except the private property road) are permanently maintained roads and will require no upgrading or reopening.

The roads within the compartment and those accessing the Duck Creek Road are mostly on ridgetops and spurlines as such, there are minimal road batters. Where batters do exist their maximum height is generally 0.75 m and they are well vegetated and stable. Higher batters do exist on one section of main track between Dumps E&F where they approach 2m. These batters are approximately 12 years old and were soil tested by the qualified soil scientist cited in 2.5 (d). The emerson aggregate test he conducted showed that the soils were not dispersible. Roads are generally less than 10 degrees even in the steepest parts. Existing road surface drainage uses outfall crossfall drainage, supplemented by rollover crossbank drainage to disperse infall table drain water through stable outlets onto undisturbed ground cover.
The road marked with the short broken dashes on the map North of Dump L is an existing road across a steep and deep depression which would require the construction of a bridge to take log trucks. The gully

is well vegetated and stable and the operation can be organised so that this crossing need not be constructed, and so this section of road will not be reopened or used by trucks in this operation. The condition of existing roads, batters, drainage structures and drainage line crossings will be inspected at regular intervals and maintained to a standard in accordance with the pollution control licence. Drainage structures and erosion mitigation structures will be installed to required standards at the commencement of operations if instances are discovered where they do not comply with the requirements of this harvesting plan.

The stream crossing north of Dump K is a 12 year old crossing on a major road. The crossing is well constructed and raised above the gully, is surfaced and requires no upgrading.

The only road which will require upgrading is the internal compartment road which begins just North of Dump L and runs through dumps M,N,O and exits through the adjoining private property. This road is the old extraction road and it will require reopening within the compartment, but it is in regular use as a farm road on the private property which it passes through. Within the compartment this will involve grading to remove lantana and other small vegetation with minimal soil disturbance. Within the private property this will involve a minor grade with minimal soil disturbance to smooth the existing surface. Existing road drainage is minimal with no evidence of erosion except for a section approximately 50 m long on the private property (marked x on the operational map) which will require crossbanks to be installed. The section of road which rounds the head of the gully to the East of the "point marked x" is stable, has a log retaining barrier on the down hill side and requires no upgrading.

Road construction

Within the Compartment old logging roads will be used. As stated in the above section, rollover crossbanks will be installed on the 50 m section of farm road marked 'x' on the harvest plan map. (Ref. 4.7 (e)).

Harvesting method

The harvesting method proposed for the area is based on currently acceptable operational practices. It comprises:

Selective logging.
Chainsaw felling using directional felling techniques where required;
Snigging of logs using a crawler, bladed tractor up to D8 size and an articulated rubber tyred skidder;
Debarking and loading of logs, poles, piles and girders at dump using the above machines or an.excavator fitted with a log clamp.
Transport of logs from the site using a tandem bogie jinker and prime mover.

The crawler tractor is used for road maintenance and snigging from steeper slopes including winching of logs. The rubber-tyred skidder is used on the flatter upper slope terrain and for snigging smaller logs.

Cover factor

The harvesting operations described above result in a cover factor **C = 0.108.**

References *Lacey S.T. USLE factors for categorising Water Pollution Hazard* **SF NSW (1994)** Unpublished report.

Rosewell C.J. *Procedure for deriving C factor values for forest land* **CaLM/SCS (1994)** Unpublished report.

Location of log dumps

See Harvesting Plan Operational Map. Log dump locations have been selected on ridgetops and natural benches to facilitate uphill snigging, effective drainage of snig tracks, and ridge-top loading wherever possible. Down hill snigging will be used on short sections which have gentle grades and which can be adequately drained by outfall drainage and crossbanks, where it is considered that this will minimise erosion hazard potential. There will be almost no down hill snigging in this compartment.

When snigging needs to cross a road to access a log dump all disturbance and damage to the effective drainage mechanisms must be repaired at the completion of snigging from that area.

Loading will be via excavator or crawler tractor.

Post-harvest burning
See Description 6(b).

Post-harvest rehabilitation
Natural regeneration and natural re-seeding of understorey and ground-cover plants will provide the main source of ground-cover rehabilitation. Roads, log dumps and major snig tracks and their associated batters and drainage structures normally stabilise within 12 months provided crossfall and cross bank drainage is properly installed.

Description 12 Evaluation of soil and water data

(a) Soil Erosion and Water Pollution Hazard Categories

Soil Erosion and Water Pollution Hazard Ratings (SE/WPHR) have been assessed using SOILOSS 5.1. The rating has then been used to determine Soil Erosion and Water Pollution Hazard (SE/WPC) categories for the net harvest area.

SE/WPH Rating = R x K x LS x C x P (5.1) where

R=3256	**$R = 89.31 \times 7.9^{1.74}$**
K=.031	**Topsoil A1/A2 (maximum)**
S=slope	**As factored in SOILOSS 5.1**
L=20 metres	**As agreed with EPA**
C=0.108	**Native forest harvesting "B"**
P=1.0	**Support Practice Factor**

Table 2 Soil Erosion and Water Pollution Categories

Slope Boundaries (degrees)	Water Pollution Hazard Rating	SE/WPH Category	Indicative % of Net Harvest Area	Erosion Hazard Class
<5	< 10	1	15	Low
5 ≤ 19	11 - 49	2	60	Mod
>19-30	50+	3	25	High
Roads/tracks	High	3	n/a	High

The following factors for rainfall erosivity also apply to road construction.

R = 3256 **K = .031**

(b) Dispersibility

Proportion dispersible soil **A horizon 2**
B horizon 2

Method of determination **D% x Clay % / 100**

Comment: Not dispersible

(c) Other factors

There are no other EHSCS/PCL factors which need to be considered in relation to the planned harvesting of this Compartment.

References *Standard Erosion Mitigation Guidelines for Logging in New South Wales* **Soil Conservation Service, CaLM, NSW** 1993

Rosewall C.J. *SOILOSS A program to assist in the selection of management practices to reduce erosion* **Soil Conservation Service Technical handbook No. 11 First Edition** 1990, **2nd Edition** 1993

2.6 FOREST ZONING AND SPECIAL ATTRIBUTES

Description 13 Forest zoning and Special Attributes

(a) Research plots

There are no research or long-term inventory plots in the Compartment.

(b) Special attributes of the area

The Richmond Range State Forest provides a valuable wilderness experience for campers and naturalists who use the area, and is known for the variety of wildlife which exist in the ranges. No special zoning's occur within the net harvest area of the Compartment.

Part 3 AUTHORISATION CONDITIONS

Condition 3.1 Compliance

(a) Area identification

Compartment 214 Richmond Range State Forest No. 610

(b) Third party interests
None

(c) Environmental compliance requirements

This Harvesting Plan is prepared by State Forests of New South Wales (State Forests) under the authority of the Forestry Act 1916. This Harvesting Plan is a condition of all Timber, Forest Products, Contractors and Operators Licences issued in connection with the timber harvesting operations described in the Plan.

All operations conducted under the authority of the Timber Licence and other licences and agreements issued for the area covered by this Harvesting Plan must comply with:

Licence conditions issued by State Forests under the Forestry Act 1916;

the **"Code of Logging Practice for Native Forests - State forests and Crown-timber Lands"** (1993);

the **"Standard Erosion Mitigation Guidelines for Logging in New South Wales" (SEMGL 1993)** issued by the Soil Conservation Service of the Department of Land and Water Conservation (LaWC).

the conditions of Pollution Licence No.4017 issued by the Environment Protection Authority under the Pollution Control Act 1970. Those general conditions which affect licensees are set out in Schedule "A" attached to every Timber, Contractors and Operators Licence.

conditions attached to licences issued by the National Parks and Wildlife Service under the Endangered Fauna (interim Protection) Act 1992 and the National Parks and Wildlife Act 1967 (NPW Act);

conditions resulting from determination of an Environmental Impact Statement;

the regional silvicultural specifications applicable to this operation, Namely, the **"Silvicultural Workshop Notes"** by the Siviculturalist, Forest Planning Branch, November 1994.

the schedule of specifications for the harvesting and utilisation of timber applicable to this operation, in this case, the **"Schedule of compulsory utilisation limits"**

the Code of Procedure for the measurement of timber and other products applicable to this operation, in this case, the **"Code of Procedure for the Measurement of hardwood Logs and other Timber Products-"**

the **"Standing Instructions for Fire Prevention and Control in State Forests-"**

Variations, additions or amendments to the above documents may be made by the responsible authorities at any time, and must be implemented immediately by the State Forest Licensee.

(d) Environmental Planning & Assessment Act requirements

In preparing this Harvesting Plan, the requirements of Part V of the EPA Act (as amended) and Section 92 of the NPW Act have been considered and an Environmental Impact Assessment (EIA) has been prepared.

(e) Breaches and Infringements

Non-compliance with any condition or instruction set out in this Harvesting Plan will be dealt with in accordance with Section 4 of the **"Code of Logging Practice for Native Forests - State forests and Crown-timber Lands"**. Serious breaches may lead to the issue of a Penalty notice, licensee suspension or prosecution.

(f) Variations and amendments to this Harvesting Plan

Conditions and requirements of the Pollution Control Licence cannot be varied in the field without prior written approval from the EPA, other than those areas detailed in condition 5.1 (c).

Variations and other specified approvals detailed in Condition 5.1(c), may be made by the Supervising Forest Officer to this Harvesting Plan, subject to the District Forester's counter approval.

Other approvals may only be made by the Supervising Forester and are also subject to the District Forester's counter approval., and where relevant to the Pollution Control Licence, with prior approval from the EPA.

All approvals must be recorded on a variation advice, attached as Section 6 to all operational copies of this Harvesting Plan.

This Plan must not be amended by a licensee or contractor.

(g) Harvesting Plan availability

Copies of this Harvesting Plan must be held available by the contractor or bush supervisor at the site of timber harvesting operations at all times that felling, snigging or environmental work is being undertaken within the area covered

Condition 3.2 Certification

(a) **Plan Preparation** (by Forester, Forest Assistant)

Prepared by P.J. ST.CLAIR Signature M.L. Harrison (for P. St Clair) contract forester

Title Forester Date 19/9/95

(b) **District Approval** (by District Forester)

I approve the issue of this Harvesting Plan subject to any amendments, endorsements or approval that may be made following submission to the National Parks and Wildlife Service, the Environment Protection Authority and/or the Regulatory and Public Information Committee (constituted under the Timber Industry (Interim Protection) Act, 1992 as amended).

(c) **The date that operations will need to commence is October 1995.**

Signature ..... District Forester. Date 20.9.95
Paul Sharpe

(d) **Receipt of external authority approvals**

(To be completed by the person who originally prepared the Plan who must attach the relevant approvals to the Plan)

Table 3 External Authority Approvals

Name of authority	Date received	Attached to Plan by
NPWS		
EPA		
RaPIC		
Other authority		

I note approval of this Harvesting Plan from the above-mentioned authorities, together with the amendments they have required to be included in the Plan.

These amendments have been added to the final Plan. This Harvesting Plan comprises the Index (page 1) through to Condition 5.6, Checklist and Clearance Certificate attached and the Operational Map marked and referenced to this Harvesting Plan. This is Harvesting Plan No. UMA 95/09.

Signature ..... District Forester. Date .....
Paul Sharpe

(e) **Date for commencement of operations** .....

Condition 3.3 Distribution

RECIPIENT	PARTS	COPIES (Minimum)
Timber Licensee	1,3,4	1
Contractors	1,3,4	1
Operator(s) (where required)	1,3,4	
Supervising Forest Officer [SFO(s)]	All	1
Supervising Forester(s)	All	1
District Forester	All	
District Office Register	All	
Compartment History File (Office Original)	All	1
Regional Office (optional)	All	
Community Groups (at District Forester's discretion)	All	
Spare copy	All	1
Soil Conservationist (Forestry)	All	1

Forest Planning Branch, Head Office, for distribution to:

Regulatory and Public Information Committee	All	3
National Parks and Wildlife Service	All	2
Environment Protection Authority	All	3
Department of Conservation & Land Management (for harvesting on areas within other Crown-timber lands)	All	

Condition 3.4 Industry endorsement

I endorse the harvesting plan on behalf of industry and look forward to some logs

Signature ..... Licence No. .....Date .....

Position ..... Company

Condition 3.5 Industry Field Supervisor/Bush Supervisors acknowledgement

I acknowledge that I have received a copy of Harvesting Plan No UMA 95/09 and that I understand the Conditions of the Plan as explained to me by a State Forests officer.

Signature Licence No. Date

Position

Signature Licence No. Date

Position

Part 4 OPERATIONAL CONDITIONS

Condition 4.1 Harvesting Activity Description

Selective harvesting operations in mature native hardwood forest, producing quota and ex-quota quality hardwood sawlogs, poles, piles and girders. Operations are aimed at initiating regeneration of regrowth forest stands where possible and selective harvesting of other areas to promote growth of retained trees.

Condition 4.2 Tree-marking and Harvest Regulation

The Tree-marking Code shown in this Plan will be used to apply other Conditions of this Plan as required. All necessary tree-marking in the field will be carried out before and during the harvesting operation by the SFO.

Marking will generally be for trees to be harvested since the number of trees that remain generally exceeds the number harvested. **This also ensures boundaries, filter, protection and buffer strips and wildlife corridors are protected since the SFO is responsible for each tree felled.** There is **provision** to mark **non-harvest areas** with **blue paint** but this is on a **"needs only" basis at the discretion of the SFO.** Minimisation of spray marking is safer for the SFO, and improves the appearance of the forest following harvesting.

TREE-MARKING CODE

RETAINED TREES AND NON-HARVEST AREAS

Marking as required to convey the message to the operator.

Boundary not to be crossed	Blue line
Line not to be crossed or disturbed by fallers or harvesting machinery at any time	Blue line
Private property boundary	Blue line
National Park or Flora Reserve boundary	Blue line
Filter strip [PCL Sch2 Div3, C10,14]	3 Pink h.lines
Protection strip [PCL Sch2 Div, C10]	2 Pink h.lines
Drainage depression buffer strip	Not marked
Wildlife refugia/wildlife corridor	Blue line
Other no entry areas for current operation	3 Pink h lines
Areas where disturbance by harvesting is allowed but machinery access is prohibited	Not applicable
Retained tree for wildlife habitat	Pink "H"

TREES TO BE REMOVED

Individual sawlog, pole or girder	Pink dot, "P" or "G"
Directional felling mark	Pink arrow
Tree jacking mark	Pink arrow, plus "J"
Tree to be removed at dump	Pink dot
Tree to be removed during road line/snig track alignment	Pink dot
Cancellation mark	Pink cross

TREES MARKED FOR INFORMATION

Compartment boundary	Blue line
Distance indicator/buffer strip from filter strip	Blue number
Slope angle indication (for operators guidance)	Pink number
Approved dump sites	Pink "D'
Road line	Orange line or tape
	Inventory plot trees
	White line

Condition 4.3 Order of Working

Generally commencing at Dump A and harvesting to dumps in alphabetical order. Logging areas with dumps marked appropriately on the Operational Map should be retained in reserve for wet weather harvesting as required

Condition 4.4 Silviculture

(a) General

All mature trees suitable for the production of hardwood sawlogs, poles, piles and girders will be marked for removal, unless required for subsequent cutting cycles, promotion of vigorous forest regeneration **or** to meet flora, fauna and soil prescriptions.

(b) Canopy gaps

Canopy gaps may be created where marked by the SFO. The silvicultural aspects of the "gap and cluster" treatment are discussed by Horne (1995). Specifically:

- The gaps will be approximately 80 meters in diameter in Type 62a and reduced to 40-50 meters in drier and less productive areas since tree height is lower.
- Canopy gaps must not intrude into protection strips or filter strips and shall be limited to slopes less than 18.
- Maximum area to be gapped is 25% of the net harvest area.
- Soil disturbance within the gaps will be 100% but will regenerate quickly.
- Gaps will be created by tree felling, tree pushing and subsequent burning.
- Existing soil erosion protection guidelines will be adequate.

(c) Harvesting debris

Harvesting debris within gaps shall be heaped for burning as specified in the field by the SFO, and they should be greater than 10 m from gap boundaries. Debris from selective harvesting between canopy gaps must be removed from the butts of retained habitat trees and future crop trees to minimise later bark scorch during post-logging burning operations, or in the event of any wildfire. These standard prescriptions may be modified by habitat prescriptions required by other regulatory authorities.

(d) Directional felling

Directional felling must be carried out where specified by the SFO.

Condition 4.5 Flora Protection

(a) Endangered flora species protection

No endangered or threatened Australian plant species (ROTAPS) are likely to be encountered in the net harvest area.

(b) Rainforest protection

Logging activity is excluded from rainforest stands. Trees outside the rainforest may not be felled where they are likely to damage the rainforest or necessitate entry into the rainforest to facilitate their removal.

Condition 4.6 Fauna Protection

(a) Sightings of fauna

See Description 10 (a) Fauna Protection Strategy

(b) Habitat Tree retention

See Description 10 (b) Habitat Tree prescription

(c) Non-harvest and modified harvest areas

Wildlife Corridor

Wildlife movement along gully sides and to the ridges will be facilitated by the filter strip system.

Condition 4.7 Soil erosion and water pollution control

(a) Basic Water Pollution Hazard Categories

Slope Ranges Degrees	SE/WPH Category	
<5°	1	(Low)
$5^0 \leq 19°$	2	(Moderate)
19° - 30°	3	(High)
Roads/tracks	3	(High)

(b) Approved timber harvesting and extraction method

Chainsaw felling using directional wedging/felling techniques where required;

Snigging of logs using a crawler, bull bladed type tractor up to D8 size and/or a rubber tyred wheeled skidder with bull blade, fitted with grapple and/or winch;

Debarking and loading of logs at dump using a tracked excavator tractor.

(c) Marking and location of soil protection and water pollution control measures

The marking of soil protection and water pollution control measures in the field will be in accordance with Condition 4.2. Their location is also indicated on the Harvesting Plan Operational Map.

(d) Wet weather controls

Harvesting operations may be conducted throughout the year subject to the application of normal wet weather closure procedures and restriction to wet weather areas as set out in Condition 4.4. Operations may be stopped altogether for safety reasons for short periods of time because of heavy rainfall. Areas adjacent to the main gravel roads will be retained for wet weather as required.

During wet weather, the controls for road usage and for snigging set out in the Code of Logging Practice will apply. In particular:

1. **Haulage must cease** on natural surface roads where **runoff occurs from a road surface.**

2. **Snig tracks must not be used** where there is **runoff from a snig track** surface.

(e) Road Construction

No new roading is required in the Compartment. A section of approximately 50 m on the existing farm road marked 'x' on the harvest plan map will have rollover crossbanks installed.

Design
NA

Grade
NA.

Survey
NA

Clearing
NA

Batters
NA

Road Surface Drainage
The existing roads utilise outfall crossfall drainage. Where outfall drainage is not practical, rollover crossbanks will be spaced at maximum intervals as per Figure 1 Division 3 Schedule 2 dependant on road grade and K factor and based on peak flow 1 in 5 year storm event. Cross bank spacing should avoid unnecessary soil disturbance cognisant of the previous calculations.

The banks must have a minimum designed vertical height from spillway to bank top of 25 cm which permits vehicle traffic to pass over. In this compartment crossbanks will be spaced at a maximum of 200 m where track grade is lees than 5 degrees, at 60 m where track grade is 5-10 degrees, and at 40 m for any short sections which exceed 10 degrees.

Rollover crossbanks must drain onto undisturbed vegetation or where not immediately accessible to the outfall, sediment trap fences must be installed across the outlet. Rollover banks will be replaced on all reused existing roads, except for the main forest access roads which have conventional culverts installed.

Crossing of Drainage Features
Crossing of drainage features will be in dry weather only. Existing rock crossings are to be utilised.

Revegetation and rehabilitation
Natural regeneration will generally provide stabilisation of any disturbed topsoil areas.

Patch gravelling
Existing natural surfaces are adequate.

Borrow pits and gravel pits
Not required in the Compartment.

(f) Slope limits for the area

Maximum slope for harvesting	30°.
Maximum slope for snig track construction	30°.
Maximum side slope for snig track construction	30°.
Maximum road grade permitted	10°.
Maximum side slope for road construction without engineering design	30°.

(g) Drainage feature protection

Filter strips, protection strips and drainage depression buffer strips must be retained along all watercourses, drainage lines and drainage depressions within the net harvest area of the Compartment, at the minimum widths as indicated in Table 6.

Filter strips will only be marked in the field where it is necessary to convey a particular message to an operator which cannot be done verbally or in the tree marking for removal strategy. The Supervising Forest Officer will be responsible for marking filter strips in the field progressively and prior to the commencement of operations into that section of the harvest area. The licensee or contractor will be responsible for measuring offsets to a filter strip as indicated by the Supervising Forest Officer to determine the width of the protection strip adjacent to that filter strip.

Table 6 Filter strip and protection strip widths

SOIL EROSION AND WATER POLLUTION HAZARD CAT.	CATCHMENT & SLOPE	FILTER STRIP (Width on each side of drainage feature)	PROTECTION STRIP
1	< 100 ha catchment	5m	
2	< 100 ha catchment < 18 degrees slope	10m	
2	< 100 ha catchment > 18 degrees slope	10m	10m
2	> 100 ha catchment < 18 degrees slope	10m	5
2	> 100 ha catchment > 18 degrees slope	10m	10m
3	< 40 ha catchment < 18 degrees slope	10m	10m
3	< 40 ha catchment > 18 degrees slope	15m	10m
3	>40 ha catchment < 18 degrees slope	na	na
3	>40 ha catchment > 18 degrees slope	20	10

In addition buffer strips 5 metres wide on either side of drainage depressions must be maintained.

(h) Tree marking rules for filter and protection strips, and buffer strips

Filter and protection strips will only be marked in the field where it is necessary to convey a particular message to an operator which cannot be done verbally or in the tree marking for removal strategy. Where marking is used the Supervising Forest Officer will be responsible for marking filter and protection strips in the field progressively and prior to the commencement of operations into that section of the harvest area. The licensee or contractor will be responsible for measuring offsets to a protection strip as indicated by the Supervising Forest Officer to determine the boundary of the filter strip adjacent to that protection strip (See also 4.2, 5.2).

Contractors and operators will be responsible for identifying drainage depressions encountered in the field and taking appropriate protective action within the buffer strip area whilst operating or traversing the drainage depression. (See also 5.2.)

(i) Felling and extraction from filter strips

Directional felling must be used to avoid felling of trees into filter strips.

Trees which are marked for removal inside protection strips must only be felled if they can be directed out of the strip.

Machinery must not enter a filter strip or protection strip except for the construction and use of a road or snig track crossing.

Where trees are felled out of a protection strip or felled into a protection strip, logs must be extracted in the line of the log so as to minimise damage to vegetation and ground cover.

Any furrows resulting from log removal from protection strips must be diverted at the edge of the strip by harvesting debris or earth.

(j) Extraction from drainage depression buffer strips

Soil disturbance in drainage depressions must be minimised by use of the following techniques:

(1) No snigging along drainage depressions;
(2) Minimal use of blades;
(3) Approach logs to be snigged in reverse and minimise change of direction whilst reversing or snigging out of drainage depressions.

(k) Snig tracks

Snig tracks must be located on ridges to ensure free crossfall drainage wherever practicable Side cut tracks must have crossfall drainage and no track should be located immediately adjacent to and parallel to a protection strip.

Snig tracks must be drained within 2 days of the completion of use, or where operations are temporarily suspended for more than 3 days (SE/WPHC 3), or 5 days (SE/WPHC1 & 2)

Where earth banks are required, they must be constructed to a minimum consolidated height of 35cm, with spacing in accordance with Table 7.

TABLE 7 Maximum earth bank spacing

Track grade (degrees)	General Slope of land (SE/WPHC)		
	1 (<5°)	2 (5° ≤ 19°)	3(>19°)
5	200	150	
10	100	60	
15	60	40	25
20	40	25	20
25	20	20	15

The above space is the maximum and should be varied to utilise the most suitable outlet point. Cross banks must discharge into undisturbed vegetation or logging debris.

(l) Downhill snigging

Where downhill snigging is proposed, measures to prevent concentrated water flow must be taken. The following techniques must be used by tractor and skidder operators:

(1) Crossfall drainage where practicable;

(2) Tracks approaching log dumps should be located so as to direct water away from the dump immediately before reaching it by entering the dump from the side or from below and if possible by using a short length of uphill track. Where this is not possible a crossbank immediately above the dump must be reinstated at the end of each days operations.

(m) Snig track drainage line crossings

All crossings must be approved by the SFO before construction. Where natural rock crossings are not available, hollow logs or recoverable steel pipes may be used provided they are of sufficient capacity to allow free flow of drainage water. Crossings must be removed after use, all loose material removed from the channel and the crossing point reshaped to its original condition as far as practicable.

(n) Log dumps

Log dumps will be located as indicated on the Harvesting Plan Operational Map. Drainage of log dumps and stabilisation must include the following:

Field location of log dumps must utilise the most level site available, consistent with the location indicated on the Operational Map.

Before use, sufficient topsoil must be stripped and stockpiled for subsequent respreading at the completion of operations.

Dumps must be constructed with outfall drainage prior to dump operation to ensure runoff is dispersed onto undisturbed vegetation.

Drainage

Log dumps must be drained during operations and upon completion of operations, in order to;

minimise the flow of runoff from roads, tracks and other areas above the dumps;

minimise water logging and pooling of water on the dump sites;

minimise runoff from the dump directly onto roads and tracks.

Where runoff cannot be diverted from roads and tracks, the road or track will be drained as soon as practicable below the dump.

Condition 4.8 Research and Inventory Plots

There are no research or inventory plots are present in the Compartment.

Condition 4.9 Modified harvest conditions for special emphasis areas

Care to be taken of fence lines, wildlife corridors and rainforest gullies previously mentioned.

Condition 4.10 Specification of type of Hardwood products to be removed

Product 1	Quota sawlogs	Minimum length 2.4 metres See maximum defect levels specified in the "Schedule of compulsory utilisation for Urbenville District."
	Large	40 cm cdub minimum
	Thinnings	30 cm cdub to 39 cm cdub. Minimum toe 25cm dub, Minimum butt 36 cm dub
Product 2	Ex-quota sawlogs	Logs not meeting above specification
Product 3	Poles, Piles, Girders	Specifications as per Hardwood Pole, Pile and Girder Sales System (1992) and Timber Poles for Overhead Lines (AS2209-1979)
Product 4	Round and Split Posts	Logs not meeting specifications for compulsory sawlogs that have been marked for post utilisation.

Yield information

Product	Volume (cubic metres)
Quota sawlogs (assessed)	4000
Thinnings	500
Poles, piles and girders	400

No analysis of volumes by species or size classes is available.

Part 5 CONDITIONS FOR SUPERVISING FOREST OFFICERS (SFOs)

Condition 5.1 SFO authority to supervise harvesting operations

(a) General

The Supervising Forest Officer responsible for the direct field supervision of this harvesting operation, including tree-marking, log measuring and/or log check measurement, safety, implementation of wet weather controls, and monitoring and reporting generally will be a nominated Hardwood Marketing Foreman of the Urbenville District. The intention is that an individual Marketing Foreman will be responsible for the entire operation within the compartment from commencement to completion.

(b) Relieving SFOs

Relieving SFOs, if required, will be Urbenville District staff that operate in the capacity of Marketing Foreman, Forest Assistant (Marketing) or Marketing Forester.

(c) SFOs authority

The SFO has authority to approve:

(1) The blading off of natural surface roads provided that damage will be minimal and the removed material is recoverable for respreading;

(2) Downhill snigging routes where provided for in the Harvesting Plan;

(3) The exact field location of topsoil stockpiles for later recovery and use;

(4) Use of natural surface roads for snig track crossings or as snig tracks or timber extraction tracks to dumps provided restoration of the road for wheeled traffic is undertaken as necessary and use of the road significantly reduces soil disturbance.

(5) The exact location and type of drainage line crossings for snig tracks

(6) Specific location of log dumps.

All approvals must be noted on a Harvesting Plan Variation Form and copies attached to the relevant master copies of the Harvesting Plan.

Condition 5.2 Tree-marking and other harvesting control requirements

(a) Tree marking for forest management and silviculture

Normal District practices for tree-marking will apply. (See also condition 4.2.)

Canopy gaps for regeneration

Canopy gaps for regeneration will be approximately 80 metres in diameter. This silvicultural treatment shall be limited to slopes less than 18°. Gaps must not intrude into protection strips or filter strips. Tree-marking should aim at a creating sufficient gaps to occupy a minimum 15% of the net harvest area. (See condition 4.4(b).)

Tree marking of habitat trees and habitat recruitment trees for faunal protection

Since the SFO is marking for removal, habitat and habitat recruitment trees will only be marked as is necessary to alert a harvesting contractor. Prescription is specified in Description 10 (b) and is as follows:

Habitat tree retention in dry hardwood and moist hardwood forests with a xeromorphic understorey shall be four trees per hectare. For the purposes of this prescription a xeromorphic understorey is considered to be one composed predominantly of grasses, heath and/or shrubs with sclerophyllous leaves.

Habitat tree retention in dry hardwood and moist hardwood forests with a mesic understorey shall be six trees per hectare. For the purposes of this prescription a mesic understorey is considered to be one composed predominantly of moist elements such as vines shrubs with mesophyllous leaves and/or rainforest ferns.

Habitat trees will be hollow bearing trees. They are to be well spaced throughout the Compartment being harvested consistent with the size of canopy gaps required for adequate regeneration and growth for the species of these forest types. Where the specified density of habitat trees is not present the existing density is to be retained. Sufficient recruitment habitat trees to sustain the retained density of habitat trees into perpetuity are also to be retained. Stags shall not be counted as habitat trees.

In addition, all practical precautions shall be taken to protect identified habitat trees during logging (harvesting) operations. The following shall be adhered to:

1. All practical precaution shall be taken to avoid tree heads landing adjacent to identified habitat trees. In gapping operations tree heads shall be moved to the centre of gaps prior to burning.

2 In forests with a mesic understorey heads of trees within a radius of 10 metres of identified habitat trees are not to be spot burnt.

3. Alternatively, if a ground burn can be carried out in this forest type then burn conditions shall follow those agreed upon for xeromorphic understorey.

4. In forests with a xeromorphic understorey heads of trees will be removed from within approximately a 5 metre radius of identified habitat trees prior to the general ground burn.

5. Tree heads shall be removed with minimum disturbance to understorey vegetation and ground logs.

Tree marking for non-harvest areas and modified harvest areas

Flora and fauna protection
See Flora Protection Strategy, Condition 2; Descriptions 7, 8, 9.10,11 and tree marking code.

(b) Soil erosion and water pollution control requirements - marking of filter and protection strips.

Filter strips, protection strips and drainage depression buffer strips must be retained along all drainage features at the minimum widths as indicated in Table 6 in condition 4.7(g).

Filter strips will only be marked in the field where it is necessary to convey a particular message to an operator which cannot be done verbally or in the tree marking for removal strategy. Filter strips should be marked in the field progressively and prior to the commencement of operations into that section of the harvest area.

Filter strips within the Compartment will be 10 metres wide except for slopes over 19° where they will be either 15 or 20 metres wide in recognition of WPHC 3. Filter strips must be marked at every point where there is a change in filter strip width. The nett area with slopes less than 5 degrees is WPHC 1 and contains no drainage features.

Protection strips are not required in areas of the Compartment with slopes under 18° (WHPC 1 or WHPC 2) . Protection strips 10 metres are required where slope exceeds 18° (WHPC 2 or WHPC 3) outside filter strips. Retention of 50% canopy within protection strips should where possible, be met by not marking for removal any wildlife habitat trees and habitat recruit trees.

The licensee or contractor will be responsible for measuring offsets to a filter strip as indicated by the Supervising Forest Officer to determine the width of the protection strip adjacent to that filter strip. The SFO is responsible for ensuring that the licencee or contractor is correctly measuring offsets to a protection strip.(See also 4.2, 5.2.)

(c) Drainage depression buffer strips

The SFO is responsible for ensuring that contractors and operators are detecting drainage depressions in the field and taking appropriate protective precautions within the buffer strip area whilst operating or transversing the drainage depression. (See also 4.7 (g))

Rye Grass seeding operations
Not required as a general prescription except on batters, but will be used where warranted at 20 kg/ha.

Condition 5.3 Monitoring and reporting

(a) Daily and Fortnightly reporting

The standard Regional procedures for daily and fortnightly reporting on the conduct of operations must be followed.

(b) Faunal reporting and temporary tree-marking

Reports of sightings of any endangered fauna as required in conditions 4.6(a) must be made to District Office within 24 hours of the sighting being made. Immediate action should be taken to place tape-marks for retention of Koala, Yellow-bellied Glider, Owl or Black Striped Wallaby habitat if a sighting or evidence of presence is encountered. (See 4.6.)

(c) Soil erosion and water pollution control conditions

The SFO must report the following matters and record their location if necessary on their copy of the Harvesting Plan Operational Map, or the recording map attached to the Plan for that purpose:

any accidental felling into filter strips and remedial action taken.

any approval to leave spoil from road and track construction in drainage lines or watercourses where attempts at removal would have resulted in excessive damage.

any approval to defer stabilisation works at a drainage feature crossing beyond five days.

any approval to leave a snig track drainage feature crossing structure in place and the reason for it to be left in situ.

any instances where effective cross bank drainage of a snig track is not effected within two days of completion of snigging from the area served by the track.

(d) Sowing of constructed road batters

Old roads to be used have stable batters.

(e) Sowing of crossing approaches during road construction and snig track crossing construction

Any crossing approaches will be stable due to the amount of surface rock. Natural regeneration of native grasses, shrubs and trees should be sufficient but where this is in doubt direct seeding is to be used. Where rye grass seeding takes place a sowing rate of 20 kg/ha is to be used. The satisfactory completion of stabilisation and/or sowing operations should be recorded in the fortnightly report.

Condition 5.4 Pre-and-post-harvest burning

(a) Pre-harvest burning

There will be no pre-harvest burning associated with the harvesting in this area.

(b) Post-harvesting Burning Plan

Objectives
The post-harvesting burning plan for this area has the following objectives:

(a) Integration of this post-logging burning with other priorities set down in the Fuel Management Plan for Urbenville District;
(b) Removal of sufficient fine fuels and debris generated by harvesting to ensure that regeneration and retained stems are not damaged during possible wildfire events;

Fuel reduction will reduce the chances of wildfire spreading through the area and damaging surrounding forest and fauna; increase the chances of effective wildfire control, and promote good seedbed conditions for regeneration within gaps.

Ignition
Burning will be undertaken by the lighting of individual heaps of harvesting slash and debris within canopy gaps under mild weather conditions. Lighting of debris and flash fuels associated with log dumps and other areas outside gaps will be carried out to minimise removal of surface litter and damage to habitat trees. The SFO or the Operations Forester and Operations Foreman will be responsible for ignition, subject to the fire-safety and other requirements of the District Fuel Management Plan.

Preferred season of burn
March to November depending on fire weather and fuel conditions.

Recording of burning activities
All post-harvesting burning activities must be recorded on the Day of the Burn Checklist on a daily basis and reported on the Post-Burning Checklist.

Condition 5.5 Other instructions

Ensure that the SFO and contractors are aware of any subsequent amendments to the Harvesting Plan that may be imposed by Rapic, NPWS or EPA. These appear as amendments to the Harvesting Plan.

The SFO should direct any queries to the Marketing Forester.
There are no other instructions concerning the supervision of harvesting this area.

Condition 5.6 SUPERVISING FOREST OFFICERS ACKNOWLEDGMENT

I acknowledge that I have received a copy of Harvesting Plan for Compartment 214 and that I have been briefed on the Conditions of the Plan and the supervision and operational control requirements as explained to me by the District Marketing Forester.

Signature Date

Position
Forest Officer

Signature Date

Position
Relieving Supervising Forest Officer

HARVESTING PLAN PREPARATION CHECKLIST

FLORA AND FAUNA CONDITION CHECKLIST

There have been positive sightings of Wampoo Fruit Dove, Rose-crowned Fruit Dove, Sooty Owl, Parma Wallaby, Red-legged Pademelon, Marbled Frogmouth, Stephen's Banded Snake, Yellow-bellied Glider, Fossirial Skink, Long-nosed Potoroo and Loveridge's Frog within a 2 km. arc of the Southern tip of Compartment 214
Provision for this is covered in the Fauna Protection Strategy. Any occurrences within the harvest area will be dealt with as required during harvesting.

HARVESTING PLAN PREPARATION CHECKLIST

POLLUTION CONTROL LICENCE CONDITION CHECKLIST
PLAN PREPARATION PCL Sch2 Div 3

Condition No.	Condition Title/Enquiry	Entry Needed?	Plan Ref.
C 42	Representative water monitoring site	Yes	D12(f)
	Have the Water Pollution Hazard Categories (WHPC)s and the Proportion of Dispersible Soil (PDS) been calculated for the area?	Yes	D13(a) D13(b)
	Method for soil sampling for K factor	Yes	D12(d)
	Field sampling - sites?	Yes	Map
	- lab analysis?	Yes	
	- field analysis?	No	
1b	Site specific conditions	No	D13(b)
4.	Are areas >30° outside net harvest area?	Yes	Map D12(e)
5.	Are areas in WHPC4 outside net harvest area?	Yes	Map D12(e)
6.	Drainage feature protection	Yes	D12(f) D13(a) C4.7(g)
7.	Any major water storage?	No	D12(f)
8.	DDBS conditions included?	Yes	D13(c)
9.1(c)	Filter strip on Map?	Yes	Map
9.2	Protection strip on Map?	Yes	Map
10.	Conditions for marking/ identifying:		
	- filter strips	Yes	C4.2
	- protection strips		C4.7(h)
	- buffer strips		C4.7(h)
	in the field		C5.2(d)
13.	Reporting accidental felling into filter strips	Yes	C5.3(c)
14.,20.,22.	See 10		
24.	Specify techniques in DDBS	Yes	C4.7(i)

Condition No.	Condition Title/Enquiry	Entry Needed?	Plan Ref.
47.	Road design, etc. for 1:10 yr. storm event: What techniques for 12 month stabilisation?	No	D14(d) C4.7(e)
48.	Are roads shown on Map?	Yes	Map
49.	If road traverses area over 30° what techniques for 1:10 storm event?	No	D12(h)
	What techniques for 6 month stabilisation of road?	No	D12(h)
50.(a),(b)	What is maximum road grade?	Yes	C4.7(f)
51.	Who will mark roads in field?	Yes	C4.7(e)
52.	What is maximum clearing width for road formation?	Yes	C4.7(e)
53.	Is any roadside clearing proposed? If so what techniques for 70% ground-cover within 12 months?	No	D12(h)
57.	Any borrow or gravel pits? If so what batter and stabilisation techniques are required?	No	D12(h) C4.8(e)
60.	What design criteria for stable road batters within 12 months?	Yes	C4.7(e)
63.	Do road drainage techniques specify - peak flow 1:5 year storm capacity? - stable surface water diversion? - minimisation of unchecked flow? - use of sediment traps if necessary?	No	C4.7(e)
64.	What is spacing and type of road drainage structures?	Yes	C4.7(e)
65.	Is an alert condition needed for cutting of roadside waterholding windrows?	No	
66.	Is an alert condition needed to emphasise 2 day removal of debris from drainage structures?	No	
67.	Is an alert condition needed for reporting of blading off approvals?	No	

Condition No.	Condition Title/Enquiry	Entry Needed?	Plan Ref.
71.	Are drainage feature crossing structures for roads specified for location, type and capacity?	Yes	C4.7(e)
74.	Is a report condition included to cover spoil non-removal from drainage features?	Yes	C5.3(c)
76.	Is a report condition included to cover reporting that crossing stabilisation is not completed within five days?	Yes	C5.3 (c),.
77.	Are techniques listed to leave crossing sites stable?	Yes	C4.7(e)
78	Are techniques specified for stabilisation of roads that are no longer required?	Yes	D12(e), C4.7(e)
79.	Have any old roads been evaluated?	Yes	C4.7(e)
80	Are alert conditions required for dispersible soils?	No	D13(b)
81.	Are protection techniques spelt out for roads traversing dispersible soils?	No	D13(e)
82.	Are alert conditions for wet weather restrictions included for roads?	Yes	C4.7(a)
83.	Is a report condition included to cover crossing stabilisation not being completed within 5 days?	Yes	C5.3(c)
84.	Are techniques listed to leave crossings stable?	Yes	C4.7(e) C5.3(e)
85.	Is a report condition needed to cover none removal of temporary crossings?	Yes	C5.3(d)
86.	Are there any crossings of drainage features other than drainage depressions by snig tracks?	Yes	C4.7(m) C5.1(d)
	Are snig track crossing locations type and capacity specified?	Yes	C5.1(c)

Condition No.	Condition Title/Enquiry	Entry Needed?	Plan Ref.
	Is a reporting condition included for SFO approvals for crossings?	Yes	C5.1(c)
	is a report condition included for non-removal of spoil from drainage features?	Yes	C5.3(c)
89.	What conditions are specified for effective snig track drainage?	Yes	C4.7(h)
92.	Is an alert condition needed for snigging along roads?	No	
93	Are alert conditions for wet weather restrictions included for snig tracks?	Yes	C4.7(d)
99	Do specifications for drainage of snig tracks include: - capacity for peak flow in a 1:2 year storm event? - diversion onto stable surfaces? - minimise unchecked flow into drainage features? - divert water at minimum damage to structure?	 No No	C4.7(k)
103.	Is minimum specification for bank height used?	Yes	C4.7(k)
105.	Is a reporting condition needed for non-drainage of snig tracks over two days after use has ceased?	Yes	C5.3(c)
107.	Is an alert condition for temporary cessation of use drainage condition required?	Yes	C4.7(k)
109.	If downhill snigging is specifed, are specifications for preventing concentrated water flow included?	Yes	C4.7(l)
112	Is snigging being undertaken on dispersible soils?	Yes	D12(d) D13(a)
	If so, have alert conditions have been included?	Yes	
119	Have specifications for log dump location and drainage been included?	Yes	C4.7(m)

Condition No.	Condition Title/Enquiry	Entry Needed?	Plan Ref.
120	Is an alert condition for the use of traxcavators and wheeled loaders in relation to wet weather necessary?	No	
125	If pre- or post-logging burning proposed, have burning conditions been included?	Yes	C5.4(a) C5.4(b)
	What other conditions listed in Sch 2 Div 3 need to be included as alert conditions in this Plan?	None	
	Are any appendices required?	No	

NOTES

CLEARANCE CERTIFICATE

HARVESTING PLAN No. **UMA 95/09**

COMPARTMENT **214 Richmond Range SF 610**

DISTRICT **URBENVILLE**

To M.....Supervising Forest Officer

I request approval for me to move my logging crew and all associated machinery from the above mentioned area to the next Compartment (Section or Coupe) in accordance with Section 3.5 of the Code of Logging Practice.

I certify that:

(a) all permanent roads, trails and mitre drains have been cleared of harvesting debris;
(b) butt damage to retained trees has been kept to acceptable limits;
(c) all trees marked for removal have been felled;
(d) utilisation limits have been satisfactorily met;
(e) stump heights conform to requirements;
(f) all hanging trees have been felled and brought down;
(g) all log dump sites/landings/log stack sites have been satisfactorily restored as required;
(h) harvesting debris is not accumulated around retained trees;
(I) all accumulated litter has been disposed of properly;
(j) all filter, protection and buffer strip requirements have been complied with;
(k) all snig track, extraction track and temporary logging road drainage has been installed satisfactorily and other required rehabilitation work has been completed;
(l) all necessary repairs to damaged roads, signs, fences and other structures have been carried out.

I believe that I have met all my obligations under the conditions of the Timber Licence, the Pollution Control Licence, and/or any licence issued under Section 120 of the National Parks and Wildlife Act, which apply to the Compartment (Section, Coupe) just completed, as stated in this Harvesting Plan.

Signature.....Licence No.....Date .....
Contractor/licensee

As a result of inspections of the logging operations made in accordance with this Harvesting Plan, I am satisfied that, to the best of my knowledge, the licensee/ contractor responsible for this harvesting operation has satisfactorily completed all work and approval is given for her/him to remove her/his machinery and equipment and leave the area/ commence operations in another Compartment. (Compartment.....).

This clearance does not release the licensee/contractor from any obligation to undertake any remedial work if subsequent deficiencies are shown to result from inadequate practices during the harvesting operation, which are found during any inspections of the area made within 12 months of the date of this post- harvesting inspection.

Last inspection was made on .....(Date)

Signed (Supervising Forest Officer).....(Date).....

Appendix: Erosion Hazard Assessment

Soil Erosion Hazard Ratings have been assessed using SOILOSS high. The rating has then been used to determine Soil Erosion Hazard (SEH)categories for the net harvest area.

SE/WPH Rating = R x K x LS x C x P high where

R=3256	**$R = 89.31 \times 7.9^{1.74}$**
K=.031	**Topsoil A1/A2 (maximum)**
S=slope	**As factored in SOILOSS high**
L=10 metres	**As agreed**
C=0.45	**Native forest harvesting "B"**
P=1.0	**Support Practice Factor**

Soil Erosion Categories

Slope Boundaries (degrees)	Erosion Hazard Class	Indicative % of Net Harvest Area
≤6	Low	25
> 6≤25	Mod	70
>25≤30	High	5
na	extreme	n/a

95% of the area is in low to moderate Erosion Hazard Classes

(b) Special Conditions

No special conditions, other than the following are required as the conditions for use with Harvesting Plans, Schedule 2, Division3, of the EPA Pollution Control Licence (PCL) for 1994/95, are adequate to address the erosion and pollution risk.

No special conditions, other than the following are required as the conditions for use with Harvesting Plans, Schedule 4, Division3, of the EPA Pollution Control Licence (PCL) for 1995/96, are adequate to address the erosion and pollution risk.

(a) In areas of high erosion hazard, the grades of snig tracks and extraction tracks must no exceed 25°.

(b) Snigging and extraction of timber from areas with an extreme erosion hazard is not permitted if snig track construction is required. Techniques to reduce erosion hazard to a lower erosion hazard classification may be employed. Snigging and extraction of timber may then be allowed.

(Conditions derived above are to be inserted into the harvesting plan at Condition 4.7. Soil erosion and pollution control, (d) Wet weather controls- Seasonal operations and safeguards and (k) Extraction tracks and snig tracks when necessary).

Appendix: Interim Assessment For Old Growth Forest

District	Urbenville
Management Area	Richmond Range State Forest 610
Compartment	214
API Interpreter	Murray Harrison
Date Completed	13/9/95

Results Summary (ocular estimate)

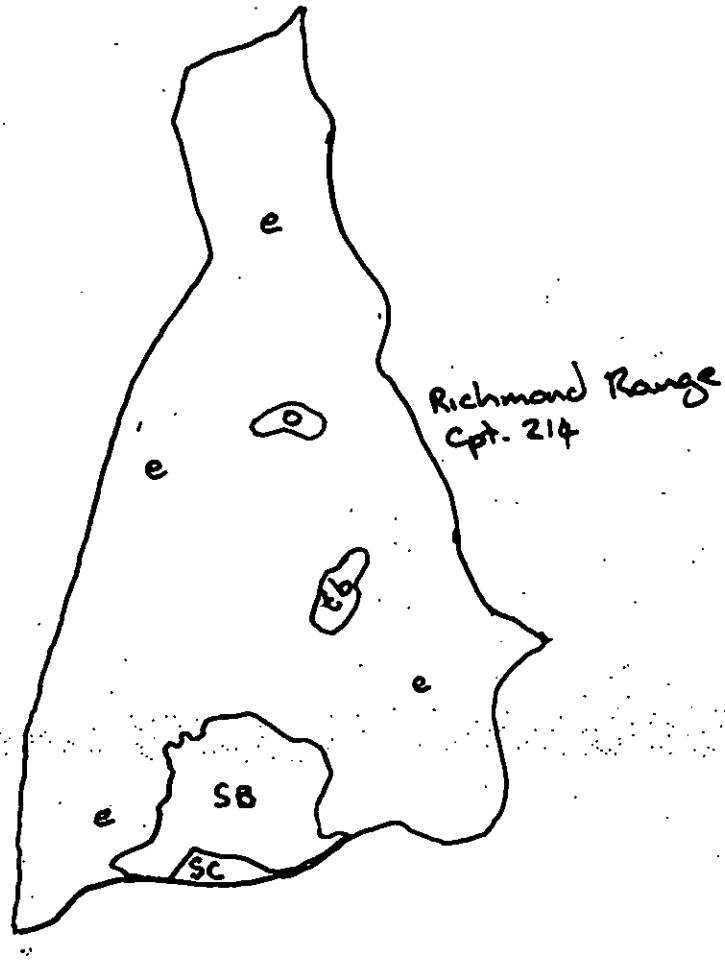
Candidate OGF	Whole Cpt.	Net Loggable Area
Total	1.1%, 3 Ha.	0.7%, 2 Ha.
Polygons > 25 ha.	0%, 0 Ha.	0%, 0 Ha.
Contiguous Areas > 25 ha	0%, 0 Ha.	0%, 0 Ha.

Mapping Required? No

API Results – O.G.F. Mapping.

MT. LINDESAY-BONALBO
1:25000 1984
Run 9 294/95
Run 10 328/30

13/9/95
M. Harrison



RICHMOND CATCHMENT SOIL LANDSCAPES Profile No. 2

MAP REFERENCES:
1:100 000 sheet no:9440 BONALBO
Scale of Mapping:1:25 000
AMG Eastings:470300
AMG Zone:56
AMG Northings:6836300

SURVEY DETAILS:
Described by:D Morand
Date:03/08/95
Site Location:GOANNA CK RD-PARALLEL TO BUNGDOOZLE RD
No of layers described: 3
Methods of exposure:batter

SOIL and MAP CODES:
Great Soil Group:YP, Yellow podzolic soil
Geology Map Code:Js

AUST. SOIL CLASS.:
Haplic, Dystrophic, Brown, Kurosol;Thin, Non Gravelly, Loamy, Clayey, Deep.
Confidence level: 3

TOPOGRAPHY:
Slope:20%, estimated
Aspect:N
Elevation (m):550

LANDFORM:
Site Process:transportational
Site Morphology:mid-slope
Local Relief:high(90-300 m)
Landform Pattern:hills
Landform Element:hillslope

VEGETATION:
Vegetation Community:dry sclerophyll forest
Vegetation Form:tree, sod grass

SITE CONDITION:
Ground Cover:95%
Expected Dry Condition:hardsetting
Current Condition:hard set
Site Disturbance:limited clearing

LITHOLOGY:
ID Method:both assessment & map
Substrate Material:lower solum parent mat.
Substrate Strength:moderately strong
Weathering & Alter:mod. weathered rock
Upper Solum PM:sandstone-lithic
Substrate:sandstone-lithic

LAND USE:
Site:logged native forest
General Area:logged native forest

HYDROLOGY:
Run Off:high
Run On:high
Permeability:moderately permeable
Profile Drainage:imperfectly drained
Free Water Presence:none

EROSION:
none

EROSION HAZARD: moderate

SALINITY: no salting evident

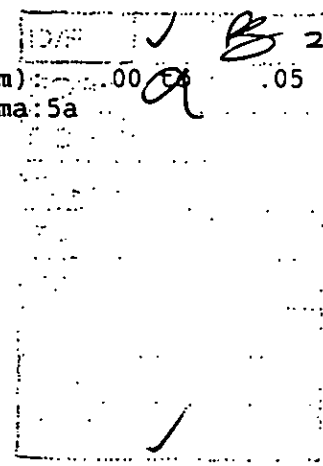
FIELD NOTES:
Very wormy surface.

LAYER: 1 A1
Depth (m): .00 .05
COLOUR: moist:10YR 2/3 (brownish black)
value/chroma:5a
TEXTURE: coarse sandy loam

CONSISTENCE:
soil water status:dry

STRUCTURE:
grade:massive
fabric:earthy

ROOTS:



medium (2-5 mm):few(1-2/10x10 cm)
ERODIBILITY: high
CHEMICAL TESTS:
pH: 5.5 ()
SAMPLE(S) TAKEN: none
BOUNDARY:
distinctiveness:gradual (50-100 mm)

LAYER: 2 A2j Depth (m): .05 to .30
COLOUR: moist:10YR 3/3 (dark brown) value/chroma:5a
dry:10YR 6/2 (greyish yellow brown)
TEXTURE: loamy coarse sand
CONSISTENCE:
soil water status:dry
STRUCTURE:
grade:massive
fabric:earthy
SOIL FAUNA ACTIVITY:
degree:low (< 10%)
type:cyl. burrows/krotovinas
ROOTS:
medium (2-5 mm):few(1-2/10x10 cm)
ERODIBILITY: high
CHEMICAL TESTS:
pH: 5.0 ()
ERODIBILITY TESTS:
bolus:no deflocculation
SAMPLE(S) TAKEN: disturbed
BOUNDARY:
distinctiveness:sharp (<5 mm) shape:wavy

INDICATES NOT DISPERSIVE (BUT CERTAINLY NOT CONCLUSIVE).

LAYER: 3 B Depth (m): .30 to .80
COLOUR: moist:7.5YR 3/4 (dark brown) value/chroma:5a
TEXTURE: sandy medium clay
CONSISTENCE:
soil water status:dry
STRUCTURE:
grade:weak pedality
dominant peds:20-50 mm, polyhedral
fabric:rough-faced peds
CRACKS:
fine (<5 mm):evident
COARSE FRAGMENTS:
type:as parent material amount:common(10-20%)
weathering:strongly weathered
shape:sub-rounded
size:cobbles(60-200 mm)
ROOTS:
medium (2-5 mm):few(1-2/10x10 cm)
ERODIBILITY: high
CHEMICAL TESTS:
pH: 5.0 ()
SAMPLE(S) TAKEN: disturbed
FIELD NOTES:
Layer continues.

RICHMOND CATCHMENT SOIL LANDSCAPES Profile No. 1

MAP REFERENCES:
1:100 000 sheet no:9441 MOUNT LINDESAY Scale of Mapping:1:25 000
AMG Eastings:470850 AMG Zone:56
AMG Northings:6863750
SURVEY DETAILS:
Described by:D Morand Date:04/08/95
Site Location:NEW ROAD, 900M SW OF MT LINDESAY RD
No of layers described: 5
Methods of exposure:batter
SOIL and MAP CODES:
Great Soil Group:C, Chocolate soil
Geology Map Code:Tml
AUST. SOIL CLASS.:
Haplic, Mesotrophic, Red, Ferrosol;Medium, Moderately Gravelly, Clayey, Clayey, Moderate.
Confidence level: 3
TOPOGRAPHY:
Slope:15%, measured Aspect:SW
Elevation (m):400
LANDFORM:
Site Process:transportational Site Morphology:mid-slope
Local Relief:high(90-300 m) Landform Pattern:hills
Landform Element:hillslope
VEGETATION:
Vegetation Community:wet sclerophyll forest
Vegetation Form:tree
SITE CONDITION:
Ground Cover:100% Expected Dry Condition:self mulching
Current Condition:self mulched
Site Disturbance:limited clearing
LITHOLOGY:

ID Method:both assessment & map
Upper Solum PM:basalt
Substrate:basalt, ash
LAND USE:
Site:logged native forest
General Area:national/state parks, logged native forest
HYDROLOGY:
Run Off:moderate Run On:high
Permeability:moderately permeable Profile Drainage:well drained
Free Water Presence:none
EROSION:
none
EROSION HAZARD: moderate
SALINITY: no salting evident

LAYER: 1 A11 Depth (m): .00 to .05
COLOUR: moist:5YR 2/3 (very dark reddish brown)value/chroma:5a
MOTTLES: Dominant: type:not evident
TEXTURE: clay loam
CONSISTENCE:
soil water status:dry
STRUCTURE:
grade:strong pedality
dominant peds:2-5 mm, polyhedral
ERODIBILITY: low
CHEMICAL TESTS:

pH: 6.5 ()
SAMPLE(S) TAKEN: none
FIELD NOTES:
This is a self-mulched layer.
BOUNDARY:
distinctiveness:clear (20-50 mm) shape:smooth

LAYER: 2 A12 Depth (m): .05 to .15
COLOUR: moist:5YR 2/3 (very dark reddish brown) value/chroma:5a
MOTTLES: Dominant: type:not evident
TEXTURE: light clay
CONSISTENCE:
soil water status:dry
STRUCTURE:
grade:strong pedality
dominant peds:10-20 mm, polyhedral
subdominant peds:5-10 mm, polyhedral
SOIL FAUNA ACTIVITY:
degree:moderate(10 - 50%)
type:termite channelling
COARSE FRAGMENTS:
type:as parent material amount:common(10-20%)
size:cobbles(60-200 mm)
ROOTS:
medium (2-5 mm):common(2-5/10x10cm)
ERODIBILITY: low
CHEMICAL TESTS:
pH: 5.5 ()
ERODIBILITY TESTS:
crumb:no change (THIS IS THE MODIFIED EMERSON AGGREGATE TEST).
SAMPLE(S) TAKEN: disturbed
BOUNDARY:
distinctiveness:clear (20-50 mm) shape:smooth

LAYER: 3 A13 Depth (m): .15 to .25
COLOUR: moist:7.5YR 3/2 (brownish black) value/chroma:1
MOTTLES: Dominant: type:not evident
TEXTURE: light clay
CONSISTENCE:
soil water status:dry
STRUCTURE:
grade:strong pedality
dominant peds:20-50 mm, polyhedral
subdominant peds:5-10 mm, polyhedral
SOIL FAUNA ACTIVITY:
degree:moderate(10 - 50%)
type:cyl. burrows/krotovinas, termite channelling
COARSE FRAGMENTS:
type:as parent material amount:common(10-20%)
weathering:strongly weathered
shape:sub-rounded
size:fine gravel(2-6 mm)
ROOTS:
medium (2-5 mm):common(2-5/10x10cm)
ERODIBILITY: low
CHEMICAL TESTS:
pH: 6.0 ()
ERODIBILITY TESTS:
crumb:no change
SAMPLE(S) TAKEN: disturbed

BOUNDARY:
distinctiveness:clear (20-50 mm) shape:smooth

LAYER: 4 B21 Depth (m): .25 to .55
COLOUR: moist:5YR 3/4 (dark reddish brown) value/chroma:5a
MOTTLES: Dominant: type:not evident
TEXTURE: medium-heavy clay
CONSISTENCE:
soil water status:dry
STRUCTURE:
grade:strong pedality
dominant peds:50-100 mm, polyhedral
ped coatings:common (10-50%) distinct clay
SOIL FAUNA ACTIVITY:
degree:moderate(10 - 50%)
type:termite channelling
COARSE FRAGMENTS:
type:ironstone
shape:sub-rounded
size:fine gravel(2-6 mm)
ROOTS:
medium (2-5 mm):common(2-5/10x10cm)
ERODIBILITY: moderate
CHEMICAL TESTS:
pH: 5.5 ()
ERODIBILITY TESTS:
crumb:no change
SAMPLE(S) TAKEN: disturbed
BOUNDARY:
distinctiveness:clear (20-50 mm) shape:smooth

LAYER: 5 2B22 Depth (m): .55 to .75
COLOUR: moist:7.5YR 3/4 (dark brown) value/chroma:5a
MOTTLES: Dominant: type:not evident
TEXTURE: medium-heavy clay
CONSISTENCE:
soil water status:moderately moist
STRUCTURE:
grade:massive
ROOTS:
medium (2-5 mm):common(2-5/10x10cm) coarse (>5 mm):few(1-2/10x10 cm)
ERODIBILITY: moderate
CHEMICAL TESTS:
pH: 6.0 ()
ERODIBILITY TESTS:
crumb:no change
SAMPLE(S) TAKEN: disturbed
FIELD NOTES:
Possibly pedal when dry.
Appears to be forming on tuff.
BOUNDARY:
distinctiveness:abrupt (5-20 mm) shape:smooth

STATE FOREST Richmond Range

COMPARTMENT 214

EMERSON AGGREGATE TEST

SAMPLE	TOPSOIL	SUBSOIL
1	Not dispersive	Not dispersive
2	Not dispersive	Not dispersive
3	Not dispersive	Not dispersive
4	Not dispersive	Not dispersive
5	Not dispersive	Not dispersive

COMMENTS: Field Testing using modified Emerson Aggregate Test - Conducted by Peter St Clair (Marketing Forester Urbenville) & Murray Harrison (Contract Forester Urbenville)

I have performed the modified Emerson Aggregate Test on the above samples supplied to me by State Forests Urbenville.

SIGNED: M.L. Harrison DATE: 1/9/95

EPA

Environment Protection Authority
New South Wales

Chifley Tower
Cnr of Jacobs Street
and Rickard Road
Locked Bag 1502
Bankstown
NSW 2200

Telephone .02. 795 5000
Facsimile .02. 795 5002

Dr H Drielsma
Managing Director
State Forests of NSW
Locked Bag 23
Pennant Hills NSW 2120

Our Reference: 600000D1

Your Reference: FPB 70846

8 December 1995

NOTICE UNDER SECTION 17D(3)
OF THE POLLUTION CONTROL ACT 1970

WHEREAS -

(a) FORESTRY COMMISSION OF NSW trading as STATE FORESTS OF NSW is the holder of licence number 004017 in respect of premises situated on LAND IN THE NORTHERN REGION - which expires on 7 August 1996

TAKE NOTICE THAT -

in accordance with the powers vested in the Environment Protection Authority (EPA) under Section 17D(3) of the Pollution Control Act 1970, the EPA with respect to licence number 004017 from the date of this Notice varies the licence as set out below.

1. The harvesting plan for Compartment 214, Richmond Range State Forest No. 610, (prepared by State Forests of NSW, and received by the EPA on 10 October 1995, as amended by Notice under section 17D(3) of the Pollution Control Act 1970 issued by the EPA on 17 November 1995) is further amended by:

   a) inserting the attached additional harvesting plan operational map, received by the EPA on 1 December 1995, and certified by Geoff Noonan.

NEIL SHEPHERD
Director-General

Per.....
GEOFF NOONAN
Manager, Waters and Catchments Policy
(by Authorisation)

FOR ACTION OR NOTING BY	
ORIGINATOR	
1.	
2.	
3.	
4.	

SUBMM41-7868-KG

FACSIMILE TRANSMISSION

To	Dr. Neil Shepherd, Environment Protection Authority P O Box 1135 CHATSWOOD NSW 2057		
Attention	Mr Geoff Noonan Catchments Branch	**Date**	8 December 1995
Your Fax		**Our Fax**	(02) 980 7042
From	Kris Gounder Forest Planning Branch	**Phone**	(02) 980 4217 (015) 271 625
No of Pages	1 (including this cover page)		

STATE FORESTS
MANAGING · CARING · SUSTAINING

State Forests of
New South Wales
Building 2
423 Pennant Hills Road
Pennant Hills NSW
2120
Phone (02) 980 4100

RE: NOTICE UNDER SECTION 17D(3) OF THE POLLUTION CONTROL ACT 1970

In terms of Clause 13(b) of the Pollution Control Regulations, State Forests of New South Wales hereby notifies you that no appeal will be made against EPA's decision to vary amendment to Licence No. 4017 on 8 December 1995 to include the following area:

Compartments	**State Forest**	**Management Area**
214	Richmond Range	Urbenville

A. HOWE
Manager
Forest Planning Branch

For State Forests Use Only (Page 1 of 3)

District Forester Urbenville.

As required under the above legislation we advised EPA about our intention not to appeal against this Licence amendment **on 8 December 1995**. Accordingly you may start logging this compartment **on 10 December 1995**.

Manager, Forest Planning Branch

filename: N:\CATHERIN\AMENDMEN\RRAN214.AMD

EPA

Dr H Drielsma

Managing Director
State Forests of NSW
Locked Bag 23
Pennant Hills NSW 2120

Environment
Protection
Authority
New South Wales

Civic Tower
Cnr of Jacobs Street
and Rickard Road
Locked Bag 1502
Bankstown
NSW 2200

Telephone .02. 795 5000
Facsimile .02. 795 5002

Our Reference: 600000D1

Your Reference: FPB 70846

17 November 1995

NOTICE UNDER SECTION 17D(3)
OF THE POLLUTION CONTROL ACT 1970

WHEREAS -

(a) FORESTRY COMMISSION OF NSW trading as STATE FORESTS OF NSW is the holder of licence number 004017 in respect of premises situated on LAND IN THE NORTHERN REGION - which expires on 7 August 1996

TAKE NOTICE THAT -

in accordance with the powers vested in the Environment Protection Authority (EPA) under Section 17D(3) of the Pollution Control Act 1970, the EPA with respect to licence number 004017 from the date of this Notice varies the licence as set out below.

1. Insert the following compartment description, corresponding water pollution hazard categories, special conditions, representative water quality monitoring site and date of licence variation into Schedule 1:

"**Compartment Description:**

Compartment 214
Richmond Range State Forest No. 610

Water Pollution Hazard Category:

Water Pollution Hazard Category	Slope Ranges (degrees)
1	Less than 5
2	Greater than or equal to 5 and less than or equal to 19
3	Greater than 19 and less than or equal to 30
4	Not applicable.

Proportion of dispersible soils A horizon: 2.0%
Proportion of dispersible soils B horizon: 2.0%

Special Conditions:

Special conditions are those conditions in the harvesting plan for Compartment 214, Richmond Range State Forest, prepared by State Forests of NSW, and received by the EPA on 10 October 1995, as amended by addendum 1 received by the EPA on 15 November 1995.

Water Quality Monitoring Site:

Chaelundi State Forest

Date of licence variation:

17 November 1995."

2. Insert the following compartment description, corresponding water pollution hazard categories, special conditions, representative water quality monitoring site and date of licence variation into Schedule 1:

"Compartment Description:

Compartment 223
Forestland State Forest No. 529

Water Pollution Hazard Category:

Water Pollution Hazard Category	Slope Ranges (degrees)
1	Less than or equal to 4
2	Greater than 4 and less than or equal to 16
3	Greater than 16 and less than or equal to 30
4	Not applicable

Proportion of dispersible soils A horizon: 0%
Proportion of dispersible soils B horizon: 8.0%

Special Conditions:

Special conditions are those conditions in the harvesting plan for Compartment 223, Forestland State Forest prepared by State Forests of NSW, and received by the EPA on 6 November 1995, as amended by addendums 1 and 2 received by the EPA on 10 November 1995 and 15 November 1995 respectively.

Water Quality Monitoring Site:

Chichester State Forest

Date of licence variation:

17 November 1995."

NEIL SHEPHERD
Director-General

Per.................................
GEOFF NOONAN
Manager, Waters and Catchments Policy
(by Authorisation)

FOR ACTION OR NOTING BY	
ORIGINATOR	[illegible] 17/11/95
1. [illegible]	JW 17/11/95
2. BWCP	SW 17/11/95
3.	
4.	

SUBMM41-7868-KG

FACSIMILE TRANSMISSION

To	Dr. Neil Shepherd, Environment Protection Authority P O Box 1135 CHATSWOOD NSW 2057		
Attention	Mr Geoff Noonan Catchments Branch	**Date**	17 November 1995
Your Fax		**Our Fax**	(02) 980 7042
From	Kris Gounder Forest Planning Branch	**Phone**	(02) 980 4217 (015) 271 625
No of Pages	1 (including this cover page)		

STATE FORESTS

State Forests of New South Wales
Building 2
423 Pennant Hills Road
Pennant Hills NSW 2120
Phone (02) 980 4100

RE: NOTICE UNDER SECTION 17D(3) OF THE POLLUTION CONTROL ACT 1970

In terms of Clause 13(b) of the Pollution Control Regulations, State Forests of New South Wales hereby notifies you that no appeal will be made against EPA's decision to vary Licence No. 4017 on 17 November 1995 to include the following area:

Compartment	**Sate Forest**	**Management Area**
214	Richmond Range	Urbenville

A. HOWE
Manager
Forest Planning Branch

For State Forests Use Only (Page 1 of)

District Forester Urbenville

As required under the above legislation we advised EPA about our intention not to appeal against this Licence amendment **on 17 November 1995**. Accordingly you may start logging this compartment **on 19 November 1995**.

Manager, Forest Planning Branch

HARVEST PLAN DESK AUDIT CHECK LIST

Register No. 346 Date Received 10 / 10 / 95

State Forest RICHMOND RANGE Compartment/Age Class 214
District URBENVILLE Region NORTH
Native Forest/Native Plantation/Softwood Plantation* Harvest/Thin*
* Delete inappropriate

WATER POLLUTION HAZARD CATEGORY (WPHC) AND PROPORTION DISPERSIBLE SOIL (PDS)

Factor	Provided		Relevant Method used		Comments H.P. PAGE #
	Yes	No	Yes	No	
R	✓				24 3256
K	✓				24 .031
S	✓				24 5 - 30
L	✓				24 20
C	✓				24 0.108
PDS	✓				24 PDS = 2 (4 & 8)

Sampling personnel named and approved (Yes)/No

CALCULATION OF WATER POLLUTION HAZARD CATEGORIES

1. Calculations provided (Yes)/No
2. Verified against Soiloss (Yes)/No
3. Appropriate WPHCs assigned (Yes)/No
4. Slopes associated with WPHC provided (Yes)/No
5. % Cpt per WPHC provided (Yes)/No

Fill in the table below

Category	Y/N	% Cpt	Slopes	Catchment Size
WPHC 1				
WPHC 2				
WPHC 3				
WPHC 4				

DRAFT

HARVEST PLAN DESK AUDIT CHECKLIST

Cond No.	Condition	Comply Yes/No	Comments H.P. PAGE #
1 b	**Site specific conditions** Attach site specific conditions to HP	YES	NO S.S. CONDITIONS
6	**Minimum protection widths for drainage in native forests** Any prescribed streams, swamps and wetlands present detailed	YES	35
7	Any major water storage present detailed	YES	20
9 1c	**Minimum protection widths** Show filter(F)strips on HP	YES	30, MAP
9 2	Show protection(P) strips on HP	YES	30, MAP
10	Prescriptions for marking F, P & B strips in field	YES	30
20	Operation within Native Forest protection strips Person responsible for identifying P strip in the field	YES	30
22	Operation in Native Forest buffer strips Person responsible for identifying B strips in the field	YES	36
24	Specification of techniques for minimising soil exposure and that any disturbance will no cause channelised flow in buffer strips	YES	36
25	**Minimum protection widths for drainge features in native plantations** as per 6 and 7	N/A	
32	**Operations within Native Plantation Protection strips** as per 20	N/A	
3	**Operations within Native Plantation buffer strips** as per 22 and 24	N/A	

34	**Minimum protection widths for drainage features in softwood plantations** as per 6 and 7	N/A	
40	Operation in Softwwod Plantation Filter Strips Person responsible for determining 5 metre machinery exclusion zone in plantation F strip	N/A	
46	**Operations within Softwood Plantation buffer strips** as per 22 and 24	N/A	
47	**Road, design, construction and maintenance** Specify techniques for the road design, construction and maintenance that ensures that road surfaces, batters and drainage structures are stable in 12 months of construction for 1:10 year storm event.		No New ROADS
48	Proposed road locations are shown on HP	YES	MAP
49	**Maximum slopes for road construction** Specify techniques for road stabilisation within 6 months of construction for roads built on slopes > 30°	N/A	
53	**Road Clearing** Specify techniques for clearing areas adjacent to roads with minimal disturbance to groundcover and topsoil and with 70 % groundcover attained in 12 months.		No NEW ROADS
57	**Borrow pits and Gravel pits** Specify techniques for 1.construction of stable batters for gravel and borrow pits 2.stabilising gravel and borrow pits at the completion of operations	N/A	
60	**Road Batters** Specify road batter stabilisation tecniques	No	34 SEE COMMENT

63	**Road drainage** Specify road drainage structures to be used and techiques for 1. conveying peak flow in 1:5 year event 2. diverting water onto stable surface 3. minimising unchecked flow of water from table drains directly to watercourses and drainage lines, snig tracks, extraction tracks and log dumps 4. discharging onto surfaces or structures which provide efficient sediment trapping	YES	34
71	**Crossing of drainage features** Specify location and type of crossings at drainage features		34
78	**Roads no longer required** Specify techniques to be used to stabilise roads that are no longer required	YES	23
81	**Dispersible Soil** Specify techniques used to protect roads and dispose of spoil that is dispersible	N/A	
89	**Snig Track construction** Specify criteria for ensuring that snig tracks are located and constructed where they can be drained effectively	YES	36
99	**Drainage of extraction tracks and snig tracks** Specify techniques to 1. convey peak flow in a 1:2 year storm event 2. divert water onto stable surfaces 3. minimise unchecked flow directly into watercourses, drainage lines, roads and log dumps 4.divert water at a velocity which minimises damage to the structure	YES	36
109	Specify measures to prevent concentrated water flow where down hillsnigging occurs	YES	37
112	**Extraction tracks and snig tracks and dispersible Soils** Specify measures to protect dispersible soils if present	N/A	

115	**Log dumps** Specify location of log dumps	YES	MAP
119	Specify techniques for 1.drainage of log dumps during and at completion of operations so that runoff is dispersed onto stable surfaces and not discharged directly into water courses etc 2. log dump being left in a stable condition at the completion of operations	YES	37
125	**Burning** Specify key and strategic and operational details including 1. objective of burn 2. method of ignition 3. preferred season of burn	YES	42

****
********** Environment Protection Authority of NSW **********
****

SOIL LOSS ESTIMATION

The computer program, SOILOSS, uses the procedures of the Universal Soil Loss Equation (USLE) to predict the average annual soil loss due to sheet and rill erosion. It is based on extensive research in the United States and by the Soil Conservation Service in New South Wales.

The following report was prepared by SOILOSS:

==========

Estimation prepared for : RICHMOND RANGE 214
Date : 12-10-1995 Time : 15:46 Report Number : 1

A = R x K x L x S x P x C

Rainfall Erosivity:	Rainfall Zone: 2		R = 3256
Soil Erodibility :	User supplied		K = 0.031
Topography :	Slope: 5.0% / Slope Length: 20 m		LxS = 0.922
Support Practice :	No cultivation (P = 1)		P = 1.000
Management :			
Rotation :			
Cultivations :			
Cover Management :	- User Supplied		C = 0.1080

Long-term average annual soil loss: A = 10 t/ha

Soil Loss Targets :

There is very little information to indicate target levels of soil loss for Australian soils. The following are suggested as a guide:

Very deep and fertile soils	<10 t/ha.a
Moderately deep and fertile soils	<5 t/ha.a
Shallow or infertile soils	<1 t/ha.a

Management Options :

To reduce soil loss from 10 to 5 t/ha.a the options are :
* Reduce C to 0.0537

****

****
********** Environment Protection Authority of NSW **********
****

SOIL LOSS ESTIMATION

The computer program, SOILOSS, uses the procedures of the Universal Soil Loss Equation (USLE) to predict the average annual soil loss due to sheet and rill erosion. It is based on extensive research in the United States and by the Soil Conservation Service in New South Wales.

The following report was prepared by SOILOSS:

==========

Estimation prepared for : RICHMOND RANGE 214
Date : 12-10-1995 Time : 15:47 Report Number : 2

A = R x K x L x S x P x C

Rainfall Erosivity: Rainfall Zone: 2 R = 3256
Soil Erodibility : User supplied K = 0.031
Topography :Slope: 19.0% Slope Length: 20 m LxS = 4.472
Support Practice : No cultivation (P = 1) P = 1.000
Management :
Rotation :
Cultivations :
Cover Management : - User Supplied C = 0.1080

Long-term average annual soil loss: A = 49 t/ha

Soil Loss Targets :

There is very little information to indicate target levels of soil loss for Australian soils. The following are suggested as a guide:

Very deep and fertile soils	<10 t/ha.a
Moderately deep and fertile soils	<5 t/ha.a
Shallow or infertile soils	<1 t/ha.a

Management Options :

To reduce soil loss from 49 to 10 t/ha.a the options are :
* Reduce C to 0.0222

****

****
********** Environment Protection Authority of NSW **********
****

SOIL LOSS ESTIMATION

The computer program, SOILOSS, uses the procedures of the Universal Soil Loss Equation (USLE) to predict the average annual soil loss due to sheet and rill erosion. It is based on extensive research in the United States and by the Soil Conservation Service in New South Wales.

The following report was prepared by SOILOSS:

==========

Estimation prepared for : RICHMOND RANGE 214
Date : 12-10-1995 Time : 15:47 Report Number : 3

A = R x K x L x S x P x C

Rainfall Erosivity:	Rainfall Zone: 2		R = 3256
Soil Erodibility	: User supplied		K = 0.031
Topography	:Slope: 30.0% Slope Length: 20 m		LxS = 6.639
Support Practice	: No cultivation (P = 1)		P = 1.000
Management	:		
Rotation	:		
Cultivations	:		
Cover Management	:	- User Supplied	C = 0.1080

Long-term average annual soil loss: A = 72 t/ha

Soil Loss Targets :

There is very little information to indicate target levels of soil loss for Australian soils. The following are suggested as a guide:

Very deep and fertile soils	<10 t/ha.a
Moderately deep and fertile soils	<5 t/ha.a
Shallow or infertile soils	<1 t/ha.a

Management Options :

To reduce soil loss from 72 to 10 t/ha.a the options are :
* Reduce C to 0.0149

****

Request for additional information on Harvesting Plan for Richmond Range State Forest, Compartment 214

14 November 1995

The EPA acknowledges the effort that has gone into producing this harvesting plan. A number of points, however, require clarification. It is not possible to approve the plan on the basis of the information provided, and the plan is accordingly rejected. A new updated plan will need to be submitted or amendments to the existing plan submitted, along with a request for the old plan to be reconsidered with the amendments.

The points requiring clarification are as follows:

* The EPA requests, in accordance with the ministerial moratorium on the use of canopy gapping, that State Forests remove all references and operational conditions for the creation of canopy gaps.

* Condition 4.7 (e), "Road Surface Drainage", page 34 - The EPA requests further information regarding techniques to be used to prevent erosion of fill batters at cross bank outlets, particularly where longer batter lengths are involved. The sediment trap fences proposed to be installed will trap sediment at the bank outlet but unprotected fill batters below the outlet will still be vulnerable to erosion until revegetation has occurred.

The EPA requires that State Forests provide responses to this request for additional information in the form of amended harvesting plan pages which can be inserted into the plan currently being considered.

Environment
Protection
Authority
New South Wales

Civic Tower
Cnr of Jacobs Street
and Rickard Road
Locked Bag 1502
Bankstown
NSW 2200

Telephone .02. 795 5000
Facsimile .02. 795 5002

Mr A.J. Howe
Manager
Forest Planning Branch
State Forests of NSW
Locked Bag 23
Pennant Hills NSW 2120

Our Reference:

Your Reference: FPB 70846

Dear Mr. Howe,

I refer to State Forests' application received by the EPA on 10 October 1995 to vary the Pollution Control Licence for the Northern Region. The EPA has considered the harvesting plan listed below and rejects the application.

Compartment No.	State Forest	District
214	Richmond Range	Urbenville

The above compartment requires the submission of additional information before the Pollution Control Licence can be varied to include them. Details of the additional information required are attached.

Yours sincerely

GEOFF NOONAN
Manager, Waters and Catchments Policy

14/11/95

filename: N:\CATHERIN\LETTERS\REJEC3

EPA

Environment
Protection
Authority
New South Wales

Civic Tower
Cnr of Jacobs Street
and Rickard Road
Locked Bag 1502
Bankstown
NSW 2200

Telephone .02. 795 5000
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Mr A.J. Howe
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214	Richmond Range	Urbenville

The above compartment requires the submission of additional information before the Pollution Control Licence can be varied to include them. Details of the additional information required are attached.

Yours sincerely,

GEOFF NOONAN
Manager, Waters and Catchments Policy

FOR ACTION OR NOTING BY	
ORIGINATOR	CL 14/11/95
1. A/HWCP	JW 14/11/95
2. MKCP	14/11/95
3.	
4.	

RECEIVED
1/12/95

1 DEC-95 FRI 13:44

30/11/95

Kris Gounder

Forest Planning Branch

State Forests NSW

Building 2, 423 Pennant Hills Road

Pennant Hills 2120

RE: REQUEST TO EPA FOR HARVEST PLAN AMENDMENT

Richmond Range State Forest 610, Cpt. 214

Urbenville District, Northern Region

Dear Kris,

ADDITIONAL DUMP LOCATIONS

In the tree marking process we have identified the need for 4 additional dump locations. Please forward this request to the EPA urgently since two contractors are starting in the vicinity on Monday 4 th December 1995 to avoid standdown due to various licencing difficulties with other compartments.

Three of these new Dumps shown on the map (attached) as P, Q & R are located on well used existing roads. Dump O is located on an old road that currently carrying grass cover 25cm high. No construction is necessary. All sites are stable and there is no sign of erosion.

The four additional Dump locations minimise snig distance thereby resulting in less soil disturbance and a more efficient and environmentally sensitive operation.

Yours sincerely

Paul Sharpe

District Forester Urbenville

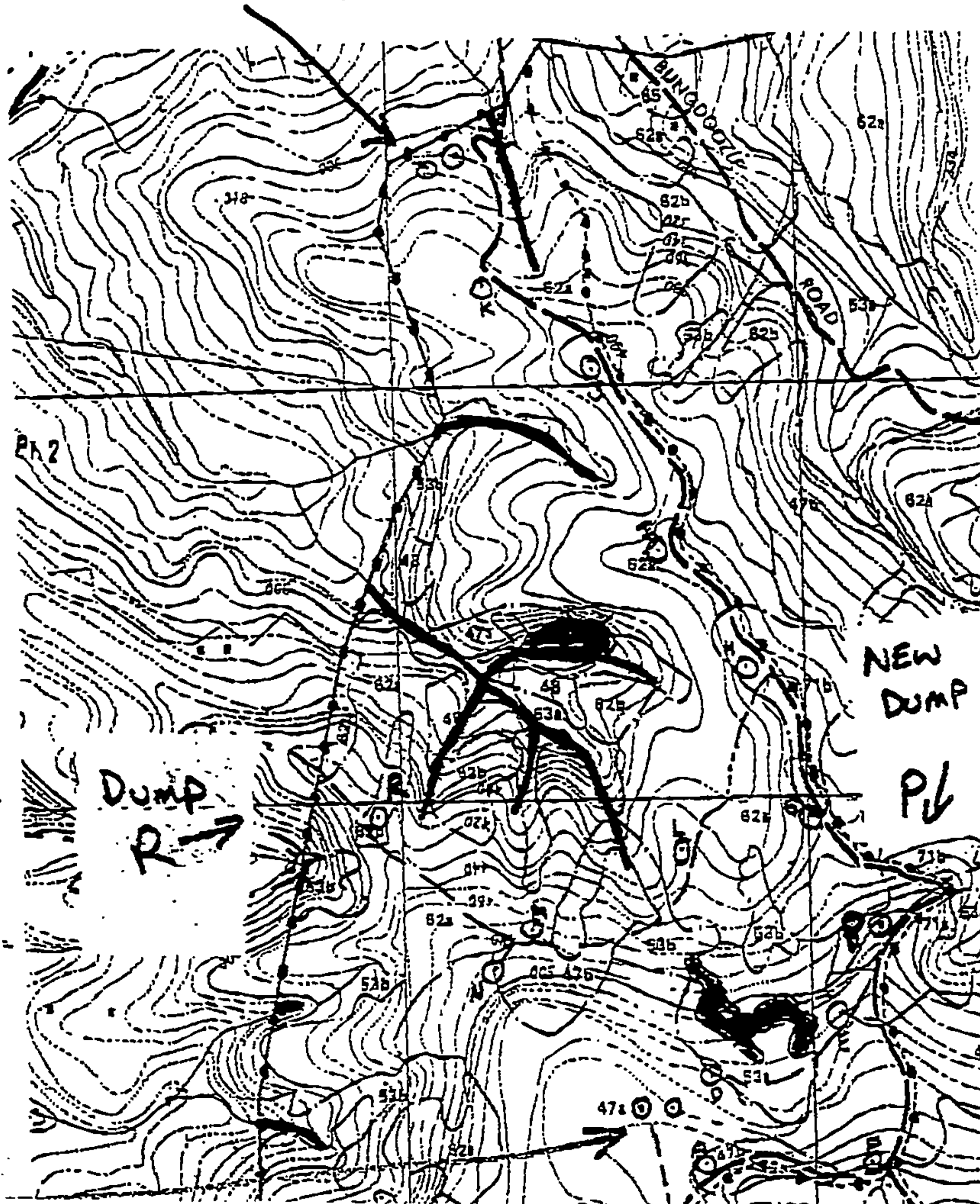
per Peter St.Clair Marketing Forester

HARVESTING PLAN OPERATIONAL MAP
RICHMOND RANGE STATE FOREST No.610
COMPARTMENT 214

Map Reference: Capeen 9440-4-N

AMG NW Cnr 469000E 6838500N SE Cnr 473000E 6836200N

New Dump Q.



certified true copy
[signature] 1/12/95

Description 6. Harvesting Conditions to be determined

(a) Silviculture

The silvicultural prescriptions in the Urbenville Management Plan 1986 and the Silvicultural Workshop notes prepared by the Silviculturist, Forest Planning Branch 1994, should be followed in determining silvicultural conditions.

Harvesting should aim at optimising the production of quota and ex-quota sawlogs, poles, piles and girders. The long term timber production potential will be increased as a result of the harvesting operation. In the Forest Types 47ab, 48, 53ab, 62ab and 71ab selective felling should promote growth on retained sub-merchantable stems.

This will be achieved by:

1. Removing all mature trees suitable for production of hardwood sawlogs.

3. Retaining sufficient trees to meet habitat requirements.

(b) Fire protection

In addition to silvicultural needs, fuel management of logging debris resulting from the harvesting operations is also needed to ensure that forest areas are adequately protected through reduction of fire fuel hazards. State Forests has to meet its obligations under the Bush Fires Act to ensure that forest fuel levels are kept at strategically low levels to allow effective control of wildfire. Pre-harvesting burning is not required but post-harvesting burning is needed to ensure:

(1) Reduction of flash fuel and log debris levels to an acceptable fuel loading throughout the Compartment to make fire control feasible under worst expected seasonal conditions during the Bush Fire Danger Period;

(2) co-ordination of post-harvest burning with other fuel management burning in accord with the **Urbenville District Fuel Management Plan** 1994;

(3) sufficient post-harvest burning of logging slash to allow regeneration, leaving sufficient unburnt litter and slash in other areas to, minimise potential soil erosion and control water pollution, and maintain wildlife ground-cover requirements with minimal damage to retained trees and sensitive habitat;.

(4) protection of the cattle grazing interests and property of the lessees

Mean monthly rainfall erosivity (Rm) does not exceed 500 in June to November, and post-harvest burning can be scheduled satisfactorily in this period.

Fauna species that are known or likely to occur in the subject area are documented in Appendix 5 of the Urbenville Management Plan. In respect of Protected species (not listed in Schedule 12 of the NPWS Act), the selective logging operation is not expected to impact in any significant way on their habitat or population status in the locality.

The Faunal Impact Statement associated with the Urbenville EIS is being prepared by the Australian Museum and will be released in 1995.

Fauna protection measures include adoption of other non-harvest areas such as steep areas (slopes generally over 30°) as contributing to wildlife habitat because of minimal disturbance. These inaccessible areas within the Compartment forms a large contiguous area that will be undisturbed by harvesting and therefore constitute an important conservation resource.

It is also necessary to report and record confirmed sightings of Schedule 12 species to the NPWS through the appropriate channels.

(b) Habitat trees

The following prescription should be followed on the basis that the nett harvestable areas of the Compartments contain predominantly dry eucalypt forest with a xeromorphic understorey and small areas of dry and moist hardwood forest with a mesic understorey.

Habitat tree retention in dry hardwood and moist hardwood forests with a xeromorphic understorey shall be four trees per hectare. For the purposes of this prescription a xeromorphic understorey is considered to be one composed predominantly of grasses, heath and/or shrubs with sclerophyllous leaves.

Habitat tree retention in dry hardwood and moist hardwood forests with a mesic understorey shall be six trees per hectare. For the purposes of this prescription a mesic understorey is considered to be one composed predominantly of moist elements such as vines shrubs with mesophyllous leaves and/or rainforest ferns.

Habitat trees will be hollow bearing trees. They are to be well spaced throughout the Compartment being harvested consistent with the requirements for adequate regeneration and growth for the species of these forest types. Where the specified density of habitat trees is not present the existing density is to be retained. Sufficient recruitment habitat trees to sustain the retained density of habitat trees into perpetuity are also to be retained. Stags shall not be counted as habitat trees.

In addition, all practical precautions shall be taken to protect identified habitat trees during logging (harvesting) operations. The following shall be adhered to:

1. All practical precaution shall be taken to avoid tree heads landing adjacent to identified habitat trees.

2 In forests with a mesic understorey heads of trees within a radius of 10 metres of identified habitat trees are not to be spot burnt.

3. Alternatively, if a ground burn can be carried out in this forest type then burn conditions shall follow those agreed upon for xeromorphic understorey.

4. In forests with a xeromorphic understorey heads of trees will be removed from within approximately a 5 metre radius of identified habitat trees prior to the general ground burn.

5. Tree heads shall be removed with minimum disturbance to understorey vegetation and ground logs.

TREES TO BE REMOVED

Individual sawlog, pole or girder	Pink dot, "P" or "G"
Directional felling mark	Pink arrow
Tree jacking mark	Pink arrow, plus "J"
Tree to be removed at dump	Pink dot
Tree to be removed during road line/snig track alignment	Pink dot
Cancellation mark	Pink cross

TREES MARKED FOR INFORMATION

Compartment boundary	Blue line
Distance indicator/buffer strip from filter strip	Blue number
Slope angle indication (for operators guidance)	Pink number
Approved dump sites	Pink "D'
Road line	Orange line or tape
	Inventory plot trees
	White line

Condition 4.3 Order of Working

Generally commencing at Dump A and harvesting to dumps in alphabetical order. Logging areas with dumps marked appropriately on the Operational Map should be retained in reserve for wet weather harvesting as required

Condition 4.4 Silviculture

(a) General

All mature trees suitable for the production of hardwood sawlogs, polos, piles and girders will be marked for removal, unless required for subsequent cutting cycles, promotion of vigorous forest regeneration or to meet flora, fauna and soil prescriptions.

(b) Canopy gaps

Will not be used in this operation.

(c) **Harvesting debris**

Debris from selective harvesting must be removed from the butts of retained habitat trees and future crop trees to minimise later bark scorch during post-logging burning operations, or in the event of any wildfire. These standard prescriptions may be modified by habitat prescriptions required by other regulatory authorities.

(d) **Directional felling**

Directional felling must be carried out where specified by the SFO.

Condition 4.5 Flora Protection

(a) **Endangered flora species protection**

No endangered or threatened Australian plant species (ROTAPS) are likely to be encountered in the net harvest area.

(b) **Rainforest protection**

Logging activity is excluded from rainforest stands. Trees outside the rainforest may not be felled where they are likely to damage the rainforest or necessitate entry into the rainforest to facilitate their removal.

Condition 4.6 Fauna Protection

(a) **Sightings of fauna**

See Description 10 (a) Fauna Protection Strategy

(b) **Habitat Tree retention**

See Description 10 (b) Habitat Tree prescription

(c) **Non-harvest and modified harvest areas**

Wildlife Corridor

Wildlife movement along gully sides and to the ridges will be facilitated by the filter strip system.

Survey
NA

Clearing
NA

Batters
NA

Road Surface Drainage
The existing roads utilise outfall crossfall drainage. Where outfall drainage is not practical, rollover crossbanks will be spaced at maximum intervals as per Figure 1 Division 3 Schedule 2 dependant on road grade and K factor and based on peak flow 1 in 5 year storm event. Cross bank spacing should avoid unnecessary soil disturbance cognisant of the previous calculations.

The banks must have a minimum designed vertical height from spillway to bank top of 25 cm which permits vehicle traffic to pass over. In this compartment crossbanks will be spaced at a maximum of 200 m where track grade is lees than 5 degrees, at 60 m where track grade is 5-10 degrees, and at 40 m for any short sections which exceed 10 degrees.

Rollover crossbanks must drain onto undisturbed vegetation or where not immediately accessible to the outfall, sediment trap fences must be installed across the outlet. Unprotected fill batters below the outlet will be sown with rye grass at a rate of 25 kg per ha where adequate protection from existing vegetation does not exist. Rollover banks will be replaced on all reused existing roads, except for the main forest access roads which have conventional culverts installed.

Crossing of Drainage Features
Crossing of drainage features will be in dry weather only. Existing rock crossings are to be utilised.

Revegetation and rehabilitation
Natural regeneration will generally provide stabilisation of any disturbed topsoil areas.

Patch gravelling
Existing natural surfaces are adequate.

Borrow pits and gravel pits
Not required in the Compartment.

(f) **Slope limits for the area**

Maximum slope for harvesting	30°.
Maximum slope for snig track construction	30°.
Maximum side slope for snig track construction	30°.
Maximum road grade permitted	10°.
Maximum side slope for road construction without engineering design	30°.

Tree marking of habitat trees and habitat recruitment trees for faunal protection

Since the SFO is marking for removal, habitat and habitat recruitment trees will only be marked as is necessary to alert a harvesting contractor. Prescription is specified in Description 10 (b) and is as follows:

Habitat tree retention in dry hardwood and moist hardwood forests with a xeromorphic understorey shall be four trees per hectare. For the purposes of this prescription a xeromorphic understorey is considered to be one composed predominantly of grasses, heath and/or shrubs with sclerophyllous leaves.

Habitat tree retention in dry hardwood and moist hardwood forests with a mesic understorey shall be six trees per hectare. For the purposes of this prescription a mesic understorey is considered to be one composed predominantly of moist elements such as vines shrubs with mesophyllous leaves and/or rainforest ferns.

Habitat trees will be hollow bearing trees. They are to be well spaced throughout the Compartment being harvested consistent with the requirements for adequate regeneration and growth for the species of these forest types. Where the specified density of habitat trees is not present the existing density is to be retained. Sufficient recruitment habitat trees to sustain the retained density of habitat trees into perpetuity are also to be retained. Stags shall not be counted as habitat trees.

In addition, all practical precautions shall be taken to protect identified habitat trees during logging (harvesting) operations. The following shall be adhered to:

1. All practical precaution shall be taken to avoid tree heads landing adjacent to identified habitat trees.

2 In forests with a mesic understorey heads of trees within a radius of 10 metres of identified habitat trees are not to be spot burnt.

3. Alternatively, if a ground burn can be carried out in this forest type then burn conditions shall follow those agreed upon for xeromorphic understorey.

4. In forests with a xeromorphic understorey heads of trees will be removed from within approximately a 5 metre radius of identified habitat trees prior to the general ground burn.

5. Tree heads shall be removed with minimum disturbance to understorey vegetation and ground logs.

Tree marking for non-harvest areas and modified harvest areas

Flora and fauna protection
See Flora Protection Strategy, Condition 2; Descriptions 7, 8, 9.10,11 and tree marking code.

(b) Soil erosion and water pollution control requirements - marking of filter and protection strips.

Filter strips, protection strips and drainage depression buffer strips must be retained along all drainage features at the minimum widths as indicated in Table 6 in condition 4.7(g).

Filter strips will only be marked in the field where it is necessary to convey a particular message to an operator which cannot be done verbally or in the tree marking for removal strategy. Filter strips should be marked in the field progressively and prior to the commencement of operations into that section of the harvest area.

(d) **Sowing of constructed road batters**

Old roads to be used have stable batters.

(e) **Sowing of crossing approaches during road construction and snig track crossing construction**

Any crossing approaches will be stable due to the amount of surface rock. Natural regeneration of native grasses, shrubs and trees should be sufficient but where this is in doubt direct seeding is to be used. Where rye grass seeding takes place a sowing rate of 20 kg/ha is to be used. The satisfactory completion of stabilisation and/or sowing operations should be recorded in the fortnightly report.

Condition 5.4 Pre-and-post-harvest burning

(a) **Pre-harvest burning**

There will be no pre-harvest burning associated with the harvesting in this area.

(b) **Post-harvesting Burning Plan**

Objectives
The post-harvesting burning plan for this area has the following objectives:

(a) Integration of this post-logging burning with other priorities set down in the Fuel Management Plan for Urbenville District;
(b) Removal of sufficient fine fuels and debris generated by harvesting to ensure that regeneration and retained stems are not damaged during possible wildfire events;

Fuel reduction will reduce the chances of wildfire spreading through the area and damaging surrounding forest and fauna; increase the chances of effective wildfire control, and promote good seedbed conditions for regeneration.

Ignition
Burning will be undertaken by the lighting of individual heaps of harvesting slash and debris under mild weather conditions. Lighting of debris and flash fuels associated with log dumps and other areas will be carried out to minimise removal of surface litter and damage to habitat trees. The SFO or the Operations Forester and Operations Foreman will be responsible for ignition, subject to the fire-safety and other requirements of the District Fuel Management Plan.

Preferred season of burn
March to November depending on fire weather and fuel conditions.

Recording of burning activities
All post-harvesting burning activities must be recorded on the Day of the Burn Checklist on a daily basis and reported on the Post-Burning Checklist.

Condition 5.5 Other Instructions
Ensure that the SFO and contractors are aware of any subsequent amendments to the Harvesting Plan that may be imposed by Rapic, NPWS or EPA. These appear as amendments to the Harvesting Plan.

The SFO should direct any queries to the Marketing Forester.
There are no other instructions concerning the supervision of harvesting this area.