ROADING

MISSION AND OBJECTIVES – 1999-1997

CALM Annual Report 1998/1999. 1999
CALM Annual Report 1997/1998. 1998
CALM Annual Report 1996/1997. 1997

NOTE: REFER TO ENTRY UNDER ANNUAL REPORT 1992/1993 – SIMILAR WORDING

SILVICULTURAL GUIDELINE - 1997

Silvicultural guideline 3/97 : Establishment Guidelines for Karri Forest Regeneration Following Harvesting

6.1. Specifications for Site Preparation
6.1.4 Access Tracks
"*Where regeneration is to be by planting, temporary access tracks are required every 150 to 200 metres apart through the coupe. Access tracks are to be roughly constructed 3 metres wide and cleared of debris.*

As these tracks will be planted as planting of the coupe progresses movement of topsoil is to be minimised. Access tracks are to be positioned to minimise the risk of erosion. Erosion control measures will be installed as per section 5 of the 'Timber Harvesting Manual in W.A.'"(p. 3-4

MISSION AND OBJECTIVES – 1996

CALM Annual Report 1995/1996. 1996

NOTE: REFER TO ENTRY UNDER ANNUAL REPORT 1992/1993 – SIMILAR WORDING

TIMBER HARVESTING … 1996 ED. – 1996

Timber Harvesting in Western Australia … 1996 Ed. 1996

PART ONE : CODE OF HARVESTING PRACTICE

Section 2 : General
NOTE: REFER TO ENTRY UNDER 1988 EDITION (SIMILAR WORDING)

Section 4 : Extraction
NOTE: REFER TO ENTRY UNDER 1988 EDITION (SIMILAR WORDING)

Section 5 : Roading
NOTE: REFER TO ENTRY UNDER 1988 EDITION (SIMILAR WORDING)

Section 6 : Loading and Delivery
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)

PART TWO : MANUAL OF HARVESTING SPECIFICATIONS

Section 1 : Planning and Monitoring
Specification 1.1 : Harvesting and Regeneration Plans

1. Responsibilities

NOTE: REFER TO ENTRY UNDER 1990 EDITION SIMILAR WORDING

2.3 Short Term Integrated Harvesting and Regeneration Plan

"*This is the tertiary level integrated harvesting plan which shows in detail proposed harvesting ares over a one or two year period. The short term plan takes into account the principles contained in 'Guidelines for Integrated Forest Harvest Planning and Design.'*" (p. 16)

7. Field Plans

"*In most cases it is necessary for the forest Officer in Charge of a harvesting operation to be in possession of a relatively large scale field plan. The field plan is used to record the progress of cutting and extraction, and the progress of any silvicultural treatments.* […]" (p. 17)

8. Records

"*SFRBU or District staff must maintain up-to-date field records of areas cut over and silviculturally treated. Forms for inputs into the computer system 'SILREC' will be collated every six months with assistance from Forest Management Branch.*" (p. 17)

Specification 1.2 : Dieback Hygiene Evaluations

"*3. A DHE must be prepared for any proposed roadworks or timber harvesting operation. DHEs must be prepared by Business Unit or District staff in conjunction with the preparation of data for the short term integrated harvesting and regeneration plans.*" (p. 22)

Specification 2.1 : Road Planning
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)
***EXCEPT* THAT *ALL THE ENTRIES* IN THE *RESPONSIBILITY* AND *ACTUAL WORK* DONE *BY* COLUMNS HAVE CHANGED IN THE 1996 EDITION TO –**
***"SFRBU"* STAFF**

Specification 2.2 : Road Selection
NOTE: REFER TO ENTRY UNDER 1990 EDITION (SIMILAR WORDING)
***EXCEPT* FOR –**

"*1. The responsibilities for planning of log haul routes is covered under Spec. 2.1. Using this information, and subject to Dieback Hygiene Evaluations, the precise alignment of proposed log haul routes is determined.*" (p. 26)

Specification 2.3 : Road Construction
Part A : Hardwood
NOTE: REFER TO ENTRY UNDER 1992 EDITION (SIMILAR WORDING)
***EXCEPT* FOR –**

"*(e) Cut and Fill Slopes:*

[…]

The following tables are offered as a guide to ***maximum*** *cut and fill slopes. More gentle slopes are desirable.*

CUT SLOPE

Material	***Maximum Slope (degrees)***
Sand	*22 ½*
Wet clay, loose gravel	*30*
Loam, ordinary clay	*45*
Firm tough soil, compact gravelly	

soil, towards road, tight cemented	
gravel	*60*
Solid well-bedded rock	*Vertical*

FILL SLOPE	
Material	***Maximum Slope (degrees)***
Loose sand and soft clay	*12-22 ½*
Ordinary earth	*30*
Loose rock	*40*
Hand placed rock filling	*45*

[…]" (p. 30)

Specification 2.4 : Road Maintenance
NOTE: REFER TO ENTRY UNDER 1992 EDITION (SIMILAR WORDING)
***EXCEPT* FOR –**

"*3. Road maintenance using earth moving machinery must conform with an approved Dieback Hygiene Evaluation.*" (p. 32)

Specification 2.5 : Gravel Pit Management
NOTE: REFER TO ENTRY UNDER 1993 EDITION (SIMILAR WORDING)

Section 4 : Coupe Management
Specification 4.1 : Coupe Demarcation
NOTE: THIS ENTRY HAS BEEN AMENDED TO THE FOLLOWING-

"*3 Sensitive boundaries including river, stream and fixed travel route (road) zone boundaries must be identified prior to cutting in the same way as coupe boundaries, that is with white painted crosses facing the cutting area. Diverse ecotype zones will be similarly marked where appropriate. The exact location of boundaries of river, stream and fixed travel route zones is decided by the Forest Officer in Charge, using the following guidelines:-*

3.1 *River and Stream (Riparian) Zones*
Native Hardwood Forests:-

STREAM ORDER	***WIDTH EITHER SIDE (APPROX.) (M)***	***TOTAL WIDTH (APPROX.) (M)***	***MINIMUM WIDTH EITHER SIDE (M)***
First	*30*	*60*	*20*
Second	*30*	*60*	*20*
Third	*30*	*60*	*20*
Fourth	*75*	*150*	*50*
Fifth upwards	*200*	*400*	*100*

(p. 37)

3.2 Travel Route Zones (formerly road zones)
"*Fixed travel route zone widths are applicable in the Southern Forest Region on what are known as 'Level 1' and 'Level 2' travel routes.*

For Level 1 travel routes the width must be 200m on both sides. For Level 2 travel routes the width must be 100m on both sides.

For all other roads in State forest, any adjacent harvesting is to be carried out in accordance with appropriate VLM principles." (p. 37)

3.3 Diverse Ecotype Zones
"*The mosaic of heath, sedge and herb vegetation, rock outcrops, swamps, lakes, wetlands and woodland formations which occur throughout the forest are important sites for wildlife conservation and are often significant landscape features.*

To protect these sites:
(i) Diverse vegetation communities must be excluded from timber harvesting. Associated activities such as roading must be minimised. Rock outcrops (>0.2 hectares in size), lakes, swamps and other wetlands, heath, sedge, herb and woodland communities must be kept free of disturbance apart from necessary roading.
(ii) Transitional vegetation (ecotones) must be kept undisturbed for a distance of up to 50m from the edge of the feature and ecological characteristics must be used to determine the boundary of these zones." (p. 38)

Section 4 : Coupe Management
Specification 4. 3 Extraction
NOTE: REFER TO ENTRY UNDER 1993 EDITION (SIMILAR WORDING)
***EXCEPT* FOR THE FOLLOWING-**
"*9. An alternative to split phase harvesting will be progressively implemented commencing in karri forest based on the following guidelines.*
[…]
- *in coupe roads within the discrete area may not be low in profile if risk of transporting infested soil is further minimised*." (p. 44)

MISSION AND OBJECTIVES – 1995

CALM Annual Report 1994/95. 1995

NOTE: REFER TO ENTRY UNDER ANNUAL REPORT 1992/93 – SIMILAR WORDING

GUIDELINE - 1995

Guidelines For Forest Landing & Snig Track Design & Management. 1995

Introduction
"*The following set of guidelines provides instructions for all phases of landing, snig track and in-coupe shunt operations from planning through to rehabilitation. They integrate measures of protected the visual landscape values …*" (p. 1)

Planning And Design
- "*Landings will be located outside the possible area of influence of reserves and special care zones as defined in the Regional Management Plans and Manual of Timber Harvesting in Western Australia. Areas of influence being that area likely to be affected by mud overflow into reserve, damage by burning off operations, etc.*

- *Landings will be located where topography or vegetation provides a visual screen from primary viewer positions.*

- *Landing size will depend on applied log loading technique, volume and number of products required, and Visual Landscape Management classifications.* […]" (p. 1)

- "*Landings will be located in natural forest openings, where possible, with no unduly impact on environmental values.* […]

- *Season of logging will be considered when selecting landing sites.* […] *Landings will be located where they can withstand the required traffic.*

- *Landings will not be located in natural drainage lines or depressions.* […]

- […] *however in steeper slopes care will be taken to ensure that snig track's don't cause water to collect and lead to track erosion and ponding on landings.* […]

- *Drainage from the landing catchment area must be considered and provided at the lowest point of the landing. This will generally be at the front where water can be diverted into the road drainage system.*

[…]
- *A number of options are available to reduce the visual impact of landings and snig tracks. Refer sketches.*

A. Landings will be accessed from in-coupe roads or from public roads within Visual Landscape Management Zone (VLMZ) C areas.
[…]
C. The depth of adequate roadside vegetation screening will vary according to vegetation site types." (p. 1)

Landings, Debris Heaps & In-Coupe Roading Design Cont'd

NOTE: REFER TO ACTUAL DOCUMENT FOR ACCOMPANYING ILLUSTRATION

"*Curve coupe access roads through roadside vegetation. Ensure screening of debris heaps in VLMZ's A & B.*" (p. 2)

Location of Landings

NOTE: REFER TO ACTUAL DOCUMENT FOR ACCOMPANYING ILLUSTRATION

"*Minimise the size of visible roadside landings (VLMZ Careas) with the thinnest boundary (max. 20 metres) facing the road.*" (p. 2)

Replanting Of Landings

NOTE: REFER TO ACTUAL DOCUMENT FOR ACCOMPANYING ILLUSTRATION

"*Replant landings at irregular intervals in the rip lines, and in areas partially beyond the landing boundaries.*" (p. 2)

In-Coupe Roading Design

NOTE: REFER TO ACTUAL DOCUMENT FOR ACCOMPANYING ILLUSTRATIONS

"*Avoid aligning tracks vertically or parallel to the principal direction of views.*" (p. 2)
Construction
- "*Scrub and ground log debris will be stacked into tight soil free heaps in a suitable forest opening as nominated by the FOIC or his/her representative.* […]
- *Where trees exist on clearing sites, they will be pushed to fell within the confines of the allowable clearing wherever possible. This is not applicable to clearfell areas.*" (p. 2)

- "*Merchantable timber will immediately be cut from trees pushed during clearing operations. Non merchantable trees will be cut into lengths that allow confined stacking and eventual removal by salvaging or burning.*
- *All debris resulting from tree removal will be stacked a minimum of 5 metres away from retained stems in tight, soil free, tall rather than broad heaps, as noted above.*
- *With the exception of sheet laterite areas, top soil will be stripped from the entire landing clearing (to a minimum depth of 100 mm where soil depth allows) and stockpiled in screened areas, clear of site operations. No heavy woody debris will be mixed with or strewn over stockpiled top soil.* […]" (p. 2)

- "*No woody debris will be pushed closer than 1 metre to retained vegetation. No debris will be heaped within 5 metres of retained vegetation. Retained vegetation refers to vegetation planned for retention, i.e. – crop & habitat trees, visual amenity vegetation, etc.*" (p. 3)

- "*See Appendix 2 for details of landing dimensions.*

- *See Appendix 3 for sequence and timing of operations."* (p. 3)

Operation Phase
Entry Points For Skidding and Forwarding
"*Two entry points at the rear of landings are generally preferred for efficient skidding and forwarding.* […]" (p. 3)

Operation Phase
Entry Points For Skidding and Forwarding
"*Two entry points at the rear of landings are generally preferred for efficient skidding and forwarding.* […]" (p. 3)

Protection Of Retained Landscape Elements
- "*Damage to retained trees, including vegetation screens, rock outcrops and landform immediately surrounding landings and in-coupe roads is to be avoided.*" (p. 3)

Landing Rehabilitation
- "*Landings will be rehabilitated with the aim of restoring natural landforms and drainage patterns and vegetation species.*

- *The following sequence of rehabilitation measures will be fully implemented as soon as possible, preferably at the same time, following the harvest operations and as soil conditions allow (see Appendix 3). Partial rehabilitation measures will be implemented if the overall coupe operations extend over long time periods. If the coupe is to be inactive for more than 14 days then drainage structure will be established.*" (p. 3)

Rehabilitation Sequence
- "*All unmerchantable debris heaps resulting from landing and in-coupe road clearing, including ramp logs will be removed from the screened area and pushed into a tight heap in the middle of the landing, avoiding the boundaries or edges of the landing.* […]

[…]
- *The landing area will be regraded to original land contours.* […]
- *Original top soil will be returned & evenly spread over the areas disturbed.*
- *Using a winged ripper, the landing, and where possible-areas immediately adjacent to the landing, will be deep ripped to 0.5 metre (max.) at 1.0 metre intervals, along the contour, avoiding geometrical like patterns or shapes.*
- *Drainage from snig tracks will be diverted to ensure that water does not run onto the landing site. Refer to MHLS Specification Section 5.2, Part 2.*

- *Trees of suitable indigenous species will be planted at irregular intervals (+/-3 x 2 metres) in the rip lines and in areas partially beyond the landing boundaries.* […]" (p. 3)

Snig Tracks & In-Coupe Shunt Rehabilitation
- "*Rip snigs tracks & in-coupe shunts to 0.7 metres (max.), at 1.0 metre intervals.* […]" (p. 4)

MISSION AND OBJECTIVES – 1994

CALM Annual Report 1993/94. 1994

NOTE: REFER TO ENTRY UNDER ANNUAL REPORT 1992/93 – SIMILAR WORDING

MANAGEMENT PLAN - 1994

Forest Management Plan 1994-2003. 1994

Diverse Ecotype Zones
"*Timber harvest will be excluded from all diverse ecotype zones, and road construction and vehicle access will be restricted to the absolute minimum. The extensive nature of some of the occurrences of heath and sedge in the Southern Forest Region will make it impossible to avoid them crossing in some situations. Existing roads within these zones will be relocated and rehabilitated if the opportunity arises.*

Preferred road alignments will be located in tall open forest communities." (p. 42)

LEGISLATION – 1993

Forest Management Regulations 1993

Part 14. Marking out of Mining Tenements in State Forests and Timber Reserves
Conditions upon entering State forest or timber reserve
"*95. A person who is within any State forest or timber reserve in the South West Division for the purpose of, or in connection with, marking out, shall ensure that –*
[…]

> *(c) no excavation or other movement of earth soil or rock in the State forest or timber reserve is carried out, whether by hand tools or machinery except with the approval of a forest officer and in accordance with the terms of that approval;*
>
> *(d) any vehicle used in connection with the marking out does not take a route through the State forest or timber reserve other than a route approved by a forest officer.*" (p. 1160)

MISSION AND OBJECTIVES – 1993

CALM Annual Report 1992/93. 1993

"***CALM's mission :***

We conserve and manage Western Australia's wildlife and the lands, waters and resources entrusted to the Department for the benefit of present and future generations." (p. i)

POLICY STATEMENT- 1993

Policy Statement No. 2. Local Government Authority Access to Basic Raw Materials from State Forest and Timber Reserves. 1993

Procedures
"*11. Existing lease to LGA for roads on State forest will continue to be renewed subject to District and Regional approval. In the renewal of the lease CALM Guidelines for Gravel Pit Rehabilitation (1992) will be made a condition and attached to the lease document sent to the LGA.*" (p. 5)

TIMBER HARVESTING … 1993 ED. – 1993

Timber Harvesting in Western Australia … 1993 Ed. 1993

PART 1 : CODE OF LOGGING PRACTICE

Section 2 : General
NOTE: REFER TO ENTRY UNDER 1988 EDITION (SIMILAR WORDING)

Section 4 : Extraction
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)

Section 5 : Roading
NOTE: REFER TO ENTRY UNDER 1988 EDITION (SIMILAR WORDING)

Section 6 : Loading and Hauling
NOTE: REFER TO ENTRY UNDER 1987 EDITION, *CODE OF HARDWOOD LOGGING PRACTICE* (SIMILAR WORDING)

PART 2 : MANUAL OF LOGGING SPECIFICATIONS

Section 1 : Planning and Monitoring
Specification 1.1 Harvesting and Monitoring and Regeneration Plans
Part A : Hardwood
"*Complete details are contained in the Department's 'Provisional Manual of Hardwood Logging Planning'. The following is a summary.*" (p. 20)

1. Responsibilities
NOTE: REFER TO ENTRY UNDER 1990 EDITION (SIMILAR WORDING)

Specification 1.3 Issue of Quarantine Entry Permits
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)

7. Field Plans and Checklists
NOTE: REFER TO ENTRY UNDER 1990 EDITION (SIMILAR WORDING)

8. Monitoring and Records
NOTE: REFER TO ENTRY UNDER 1992 EDITION (SIMILAR WORDING)

Section 2 : Roading
Specification 2.1 : Road Planning
NOTE: REFER TO ENTRIES UNDER 1987 EDITION (SAME WORDING)

Specification 2.2 : Road Selection
NOTE: REFER TO ENTRY UNDER 1990 EDITION (SIMILAR WORDING)

Specification 2.3 : Road Construction
Part A : Hardwood
NOTE: REFER TO ENTRY UNDER 1992 EDITION (SIMILAR WORDING)

Specification 2.4 : Road Maintenance
NOTE: REFER TO ENTRY UNDER 1992 EDITION (SIMILAR WORDING)

Specification 2.5 : Gravel Pit Management
"*2. Contractors involved in gravel extraction, including CALM logging contractors, are required to work to the guidelines set out in the CALM booklet: 'Guidelines for Management and Rehabilitation of Gravel Pits – South West Forest Areas'. This booklet is undated but was released in 1992.*" (p. 54)

Section 4 : Coupe Management
Specification 4.3 : Extraction
NOTE: REFER TO ENTRIES UNDER 1990 EDITION (SIMILAR WORDING)
***EXCEPT* FOR THE FOLLOWING –**
"*4. Landings must, whenever possible, be created in existing gaps within the forest. Clearing debris must be neatly heaped to the side or rear of landings, at least 5m away from retained crop trees. For landings to be used in wet weather conditions, any topsoil present must be neatly stockpiled to one side to avoid mixing with subsoil horizons.*" (p. 66)

8.1 Separation of Extraction and Loading in Time
NOTE: REFER TO ENTRY UNDER 1989 EDITION (SIMILAR WORDING)

8.3 Separation of Extraction and Loading by a Physical Barrier at the Rear of a Landing
NOTE: REFER TO ENTRY UNDER 1990 EDITION
EXCEPT THERE IS AN ADDITIONAL PHRASE ADDED-
"*… such as a log not less than 400mm in diameter …*" (p. 68)

8.4 Separation of Extraction and Loading by a Physical Barrier at the Front of a Landing
NOTE: REFER TO ENTRY UNDER 1990 EDITION
***EXCEPT* THERE IS AN ADDITIONAL PHRASE ADDED-**
"*… such as a log not less than 400mm in diameter …*" (p. 68)

Points 9-12
NOTE: REFER TO ENTRY UNDER 1990 EDITION (SIMILAR WORDING)
***EXCEPT* THAT IN PREVIOUS EDITIONS NUMBER 9 HAS INCLUDED FACTORS FOR EVALUATION**
AND
Snig Tracks
"*11. At the completion of extraction, all major snig tracks in dieback-free forest must be blocked by a physical barrier such as a log of at least 400mm in diameter.*" (p. 70)

Section 4.4 : Loading and Hauling
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)

OPERATIONS MANUAL – 1993

Fire Operations Manual : Volume 3 : Fire Protection Instructions

Fire Protection Instruction 46 : Post Harvest and Regeneration Burning Prescription Preparation

6. Technique (Field)

"*After consulting the data set for stream reserves, research trials, and other non burn areas, drive around the slash and buffer areas observing the following and noting on the plan:*

[…]

(b) Road construction/ improvement requirements (for burning, plus future regeneration and protection needs). Allocate temporary names for unnamed roads and tracks. […]" (p. Forest Protection Instruction 46 : p. 3) Issued 09/15/93

Fire Protection Instruction 54 : Standards for Coupe Preparation for Post Harvest and Regeneration Burning

3.Preplanning and Training

"*With sufficient forethought and planning before and during logging operations many benefits will be assured.*

[…]

Coupe Location – avoid untrafficable boundaries at all times.

[…]

Use Existing Roads Where Possible – avoid additional expenditure and duplication. Locate major snig tracks in a location which will suit internal access requirements." (Forest Protection Instruction 54 : p. 1) Issued 21/09/93

Safety

5.1 Roading

"*It is extremely important that no roads or tracks 'dead end'. If this cannot be avoided due to topographical reasons (an impassable gully with steep slopes etc.) it is vital that such a track is well sign posted and a turnaround provided. It must be clearly marked on plans, and brought to the attention of all personnel before the burn.*

*a**) External roads** - are primarily for fire control and access purposes only. As such, they will generally be built to spring access standards only but will be drained and piped to avoid deterioration, and provide winter access if possible. Gravelling or shaling will not be used except where unavoidable, to provide future permanent access.*

Formed surface of boundary tracks clearing width will be 5-6m with 4m running surface and trafficable by 4x4 trucks. These roads will form the basis for future access and fire control requirements.

To ensure rapid and safe turnaround times for fire trucks (especially in smoke) turnaround bays must be constructed every 150m around a slash burn boundary, or where a position is available. No turnaround bay is required where a road intersection occurs in a suitable location. […]

The dozer operator repairing the boundary needs to ensure that sufficient openings are available for the grader to construct offshoot drains.

*b) **Internal roads*** –[…]. *These roads usually have a 5-6m clearing with a minimum 4 m running surface.* […]" (Fire Protection Instruction 54 : p. 3) Issued 22/09/93

"*c)* ***Buffer tracks*** *– these are for temporary use only and as such need only be constructed to minimum, but safe standards.* […]"(Fire Protection Instruction 54 : p. 4) Issued 21/09/93

5.2 Cell Formation
"[…] *The cell size will obviously depend on the topography and the location of existing tracks…* […]"(Fire Protection Instruction 54 : p. 4) Issued 21/09/93

Burn Prescription – CLM 873
Roadworks
"*Give details of perimeter roads that require maintenance, upgrading, condition of bridges etc.*" (Burn Prescription – CLM 873 : p. 5) Issued 22/09/93

LEGISLATION – 1992

Alumina Refinery (Worsley) Agreement Amendment Act 1992 : No. 63 of 1992

"*(10) Clause 9 (2) –*

(a) paragraph (a) –
(i) by inserting after 'such road' the following -
' intersecting with roads used or capable of use by the public or which the public are authorised or permitted to use by law or intersecting with railways' ;'" (p. 1595)

"*(ii) by deleting the following –*
' at all intersections with public roads and railways' ;

(b) paragraph (b) –
by inserting after 'alignments' and also after 'any road' the following –
' on Crown land'." (p. 1596)

POLICY STATEMENT - 1992

Policy Statement No. 41 : Beekeeping on Public Land. 1992

Strategies
"*3. Locate/relocate apiary sites at acceptable intervals, taking account of constraints such as the following:*

3.1 That suitable vehicular access to the apiary site exists or can be constructed consistent with guidelines." (p. 4)

MANAGEMENT PLAN - 1992

Walpole-Nornalup National Park Management Plan 1992-2002. 1992

Visual Landscape Management
Objective
"*Ensure that all uses and management activities are planned and implemented to complement rather than detract from the visual qualities of the Park's landscapes.*" (p. 16)

Actions
"*2. Ensure the following guidelines are incorporated in the development or alteration of moderate visual quality zones:*
[…]
10. Ensure all road construction is carried out in a visually sensitive manner." (p. 17-18)

Fire Prevention
Actions
"*7. Define roads required for fire control and essential management activities. Those roads considered unsuitable for public use will remain closed to the public.* […]" (p. 36)

Recreation Management
Objectives
- "*Ensure that roads and tracks are built to support current and future levels of use.*" (p. 53)

TIMBER HARVESTING … 1992 ED. – 1992

Timber Harvesting in Western Australia … 1992 Ed. 1992

PART 1 : CODE OF LOGGING PRACTICE

Section 2 : General
NOTE: REFER TO ENTRY UNDER 1988 EDITION (SIMILAR WORDING)

Section 4 : Extraction
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)

Section 5 : Roading
NOTE: REFER TO ENTRY UNDER 1988 EDITION (SIMILAR WORDING)

Section 6 : Loading and Hauling
NOTE: REFER TO ENTRY UNDER 1987 EDITION, *CODE OF HARDWOOD LOGGING PRACTICE* (SIMILAR WORDING)

PART 2 : MANUAL OF LOGGING SPECIFICATIONS

Part A : Hardwood
"*Complete details are contained in the Department's 'Manual of Hardwood Harvesting and Regeneration Planning'. The following is a summary.*" (p. 23)

Section 1 : Planning and Monitoring
Specification 1.1 : Harvesting and Regeneration Plans
1.1 Responsibilities
NOTE: REFER TO ENTRIES UNDER 1990 EDITION (SIMILAR WORDING)

7. Field Plans and Checklists
NOTE: REFER TO ENTRIES UNDER 1990 EDITION (SIMILAR WORDING)

8. Monitoring and Records
"*District staff must maintain up-to-date field records of areas cut over and silviculturally treated. For each coupe, a Coupe Silvicultural Report (CLM 160) must be completed as quickly as possible following the completion of harvesting. (Refer Attachment 1.1.2)*

A Post Operation Checklist (CLM 813) must be completed between 12 and 24 months following the completion of harvesting. (Refer Attachment 1.1.3)" (p. 27)

Section 2 : Roading

Specification 2.1 : Road Planning
NOTE: REFER TO ENTRIES FOR THE ABOVE UNDER 1987 EDITION UNDER SECTION 1 : PLANNING, SPECIFICATION 1.4 : ROADING PLANS

Specification 2.2 : Road Selection
NOTE: REFER TO ENTRIES FOR THE ABOVE UNDER 1990 EDITION

Specification 2.3 : Road Construction
Part A : Hardwood

"*1. The responsibility for road construction lies with CALM. The actual work of road construction is done by companies contracted to CALM.*
2. Road construction must be carried out in accordance with an approved 7-Way Test.
3 Standard Specifications for new roads and upgrading of existing roads are listed in the table below." (p. 52)

NOTE: REFER TO TABLE AND LISTING UNDER 1990 EDITION (SIMILAR WORDING)

"*(e) Cut and Fill Slopes:*
[…]
1. All road clearing debris must be neatly heaped in natural gaps alongside the road, with due consideration given to the protection of crop trees, and burnt in suitable weather conditions.
2. The location and use of gravel pits must be approved by the District Manager. Gravel for use on roads in dieback-free forest must be obtained from uninfected gravel pits, or as per an approved 7-Way Test. […]
3. If, during road construction in dieback-free forest, water is required to settle dust or bind the road surface, such water must be treated with sodium hypochlorite at the rate of 1:2000. (See also Specification 5.1, paragraph 3.4)." (p. 51)
NOTE: REFER TO 1990 DOCUMENT FOR OTHER SECTIONS OF THE ABOVE LISTING

Specification 2.4 : Road Maintenance
Part A : Hardwood
"*1. The responsibility for road construction lies with CALM. The actual work of road construction is done by companies contracted to CALM.*
[…]
3. Road maintenance, using earth moving machinery, must conform with an approved 7 Way Test.
4. […] *By-passes must not be constructed to avoid boggy sections of road.*
[…]
6. Roadside scrub clearing must be carried out according to TIR Act requirements.
7. The edge windrow of gravel resulting from maintenance grading operations must be broken frequently to allow water entry to table drains, off shoots, culverts or intacted vegetation.
[…]" (p. 47)

Section 4 : Coupe Management
Specification 4.1 : Coupe Demarcation

3.1 River and Stream Reserves

In the area known originally as the Woodchip Licence Area

Elsewhere

3.2 Road Reserves

In the area known originally as the Woodchip Licence Area

Elsewhere
NOTE: REFER TO ENTRY UNDER 1990 EDITION (SIMILAR WORDING)

Specification 4.3 : Extraction
NOTE: REFER TO ENTRY UNDER 1990 EDITION (SIMILAR WORDING)

10.1 Separation of Extraction and Loading in Time
NOTE: REFER TO ENTRY UNDER 1989 EDITION (SIMILAR WORDING)

13. Snig Tracks
NOTE: REFER TO ENTRY UNDER 1990 EDITION (SIMILAR WORDING)

Section 4.4 : Loading and Hauling
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)

LEGISLATION - 1991

Conservation and Land Management Amendment Act No. 20 of 1991

"*AN ACT to amend the Conservation and Land Management Act 1984, and to consequently amend certain other Acts.*

[Assented to 25 June 1991.]" (p. 1)

Section 33 Amended
"*21. Section 33 of the principal Act is amended –*

(a) in subsection (1) –
[…]
(dc) to promote the conservation of water, as to both quantity and quality, on land referred to in paragraph (a);

(ii) in paragraph (e) by deleting subparagraphs (i) and (ii) and substituting the following subparagraphs -

' (i) the management of land to which this Act applies;" (p. 12)

"*(ii) the conservation and protection of flora and fauna; and*
(iii) the taxonomy of flora and introduced plants,';
and
(iii) in paragraph (f) by inserting after 'other person' the following -
' , whether in the State or elsewhere';

(b) in subsection (3), by deleting paragraph (b) and substituting the following paragraph –

(i) in the case of nature reserves and marine nature reserves, in such a manner that only necessary operations, within the meaning in section 33A (1) are undertaken;

(ii) in the case of national parks, conservation parks and marine parks, in such a manner that only compatible operations, within the meaning in section 33A(2), are undertaken; or

(iii) in any other case, in accordance with the provisions of section 56 applicable to the land.'.

and

(c) by deleting subsection (4)." (p. 13)

Section 33A Inserted
"*22. After section 33 of the principal Act the following section is inserted-*

Definition of 'necessary operations' etc.
' 33A. (1) In section 33 (3) (b) 'necessary operations' means those that are necessary for the preservation or protection of persons, property, land, flora or fauna, or for the preparation of a management plan." (p. 13)

Section 55 Amended
"*27. Section 55 of the principal Act is amended by inserting after subsection (1) the following subsection (1) the following subsection-*

' (1a) A management plan for an indigenous State forest or timber reserve shall specify the purpose, or combination of purposes, for which it is reserved being one or more of the following purposes-

(a) conservation;
(b) recreation;
(c) timber production on a sustained yield basis;
(d) water catchment protection; or
(e) other purpose being a purpose prescribed by the regulations.'." (p. 17)

Section 56 Amended
"*28. Section 56 of the principal Act is amended-*

(a) in subsection (1)-

(i) by repealing paragraph (a) and substituting the following paragraph-

' (a) in the case of indigenous State forests or timber reserves, to achieve the purpose, or combination of purposes, provided for in the proposed management plan under section 55 (1a);';

(ii) in paragraph (c) by inserting after 'national parks' the following-

' and conservation parks';

and

(iii) in paragraph (d) by inserting after 'and fauna' the following-

' , and to preserve any feature of archaeological historic or scientific interest';

and

(b) *by repealing subsection (2).*" (p. 17)

POLICY STATEMENTS – 1991

Policy Statement No. 40 : Road Management. 1991

Objectives

- "*Integrate and apply appropriate standards to all roads on CALM managed public lands whether the roads are managed by CALM or other agencies or authorities.*

- *Maintain the conservation, social and economic values of CALM lands while providing public and management access.*" (p. 1)

Definitions

"*CALM roads are those roads on lands which are managed by the Department of Conservation and Land Management and which may be used by the public unless closed for a particular reason. Other roads gazetted for public use that occur within lands managed by CALM, are controlled by either the Main Roads Department or a local government authority.*

Conservation and environmental values include viewscapes, water quality and quantity, threatened flora, fauna and vegetation." (p. 1)

Background

"[…] *and roads in State forests provide access for catchment protection, management, timber harvesting, regeneration and research as well as public recreation. Maintaining these roads involves substantial resources.*

Roads affect the natural values, management costs and public use of lands managed by CALM. Local government authority and Main Roads Department roads located on CALM managed lands impinge either directly or indirectly on land management and the allocation of resources. They also impact on an area's flora, fauna and landscape values and on the protection of these values.

The construction of roads on CALM managed lands varies according to their planned use. With the increase in visitor numbers to popular locations some roads are physically incapable of coping with increased traffic loads and visitor amenity is being impaired. In some cases new roads will have to be built and existing roads upgraded to meet increased use of CALM managed lands over the foreseeable future." (p. 1)

"*Planning and construction of roads on CALM managed lands will take into account conservation values such as viewscapes, fauna and flora populations (particularly of threatened species) and potential direct or indirect impacts of the spread or introduction of plant diseases (especially dieback) and on water quality and flow.*

CALM's road construction program is financed from three sources. Roads for management purposes are funded by CALM; roads for public access to parks and forests are funded by Main Roads Department tourist road grants; and roads for logging are funded by commercial operators." (p. 2)

Policies

"*In pursuit of the objectives outlined in this policy the Department will:*

1. *Ensure that during all road construction and maintenance activities on CALM managed lands, conservation and environmental values are maintained and where possible improved.*

2. *Locate and design roads to minimise visual impact on the areas they traverse and to maximise their scenic appeal for road users, subject to policy 1 above.*

3. *Ensure the construction of new roads is kept to a minimum and that all proposals and requirements for roads are included as an integral part of the strategic planning for CALM managed lands.*

4. *Allocate annual priorities and budgets for all road construction and maintenance.*

5. *Apply uniform standards to construct and upgrade roads according to approved classifications and environmental and engineering specifications.*

[…]

7. *Inspect and maintain bridges, culverts and crossings under CALM control in a safe and trafficable condition, for their intended use.*

[…]

9. *Train staff to ensure they possess adequate knowledge and skills to be able to oversee construction of and to manage and maintain CALM roads effectively in line with the appropriate technical and management guidelines.*

[…]

11. *On roads not controlled by CALM but that traverse or influence CALM managed lands, liaise with the Main Roads Department and relevant Local Government Authorities to ensure that agreed engineering and environmental standards are applied.*" (p. 2)

Strategies

"*In order to achieve its objectives and implement its roading policies the Department will adopt the following strategies:*

1. *A staff member with appropriate requisite skills and experience will be made responsible to establish and monitor standards and procedures for road planning, design, budgeting and contract administration.*

2. *Regional and District Managers will be responsible for implementing CALMS road building policy.*

3. *A Road Management Manual will be compiled to provide comprehensive guidelines on:*

   - *strategic programming and prioritising of road construction and maintenance;*
   - *road planning and design principles;*
   - *road engineering specifications and methods for selection, design construction and maintenance;*
   - *visual resource management;*
   - *nature conservation;*
   - *environmental protection and dieback disease management;*
   - *user safety;*
   - *access to sensitive areas;*
   - *administration and funding programs;*
   - *access for fire control; etc.*
   - *maintenance of a road information base;*
   - *signs*

   (Guidelines to Road Specifications - Appendix 2)." (p.3)

4. *Regional Managers will prepare a rolling 5 year road construction and maintenance program based on identified essential access needs. Proposed work will be prioritised and include the results from monitoring of performance indicators on construction and maintenance work accomplished in previous years.*

   Within the framework of this program a road classification system which identifies such issues as road status (permanent or temporary), need for upgrading, maintenance and signposting will be developed. Road management programs will be developed from management plans and interim protection guidelines as required.

[…]" (p. 3)

Performance Indicators
"*Successful implementation of this policy will be assessed on the basis of the extent to which:*

4. Nature conservation values are maintained and enhanced." (p. 3)

"*2. Visual resource values are maintained and enhanced.*

3. Any other values specified in the purpose of the reserve are maintained and enhanced.

4. Road accidents cannot be attributed to either inconsistent and unsafe conditions of roads or the absence of signs and other information.

5. Declared threatened fauna and flora are not disturbed by road construction and maintenance programs.

6. Dieback disease introduction and spread cannot be attributed to road construction and maintenance operations.

7. Only essential roads are constructed and maintained, and non-essential and temporary roads are identified, closed and the formation rehabilitated.

8. Soil erosion is minimised in road construction and maintenance.

9. The spread of weeds by road construction or maintenance is minimised.

11. Road programs follow Departmental priorities as laid down by Corporate objectives in policies and plans." (p. 4)

Appendix 1 : Relevant Legislation, Standards and Polices
Legislation
"*2.3* ***Engineering Standards***
Rural Road Design – Austroads 1989 Guide to Geometric Design of Roads provides engineering standards and specifications used by Main Road agencies Australia-wide. […]" (p. 2)

NOTE: REFER TO DOCUMENT FOR - Appendix 2 : Design Guidelines for Road Classification on CALM Lands

<u>Policy Statement No. 18 : Recreation. 1991</u>

1.8 Public Access
"*There are some areas restricted to the public for reasons of safety, disease control, water quality, protection of species, maintenance, etc.*" (p. 17)

STRATEGIC PLAN – 1991

<u>CALM Annual Report 1 July 1990 to 30 June 1991. 1991</u>

NOTE: THE STRATEGIC PLAN 1989-1993 IS REPRINTED WITH AN ADDITIONAL CLAUSE (THE FINAL ONE UNDER THE FOLLOWING HEADING) –

"*To achieve the primary objectives the Department will:*" (p. 11)

"***Prepare and implement management plans for lands and waters entrusted to the Department.***

This will involve:

- *Establishing priorities for management plan preparation according to set criteria.*
- *Preparing and implementing management plans according to agreed priorities.*
- *Developing and implementing 'Interim Guidelines for Operations', according to an approved procedure and format, where there is a need for protection of people, property, land, flora and where there is no approved management plan.*" (p. 14)

MANAGEMENT PLAN – 1990

Lane Poole Reserve Management Plan 1990-2000. 1990

Recreation Zone
(ii) Natural Area
[…]*Development of further public vehicle access (including off-road vehicles) will not be permitted and where necessary, roads will be closed. Recreational activities, consistent with the philosophy of this plan, are to be promoted.* […]" (p.75)

C3 Zoning
Recreation Zone
"*(ii) Natural Area*
This area will remain in its natural state. […] *Development of further public vehicle access (including off-road vehicles) will not be permitted and where necessary, roads will be closed.* […]" (p. 75)

Conservation Zone
"[…] *Vehicle access on other than designated roads will be for management or approved research purposes only.*" (p. 77)

C7 Protection
Fire Prevention
"*5. Define roads required for fire control and essential management activities. Those roads considered unsuitable for public use will be closed to the public and management vehicles will be subject to hygiene requirements when using closed roads.*" (p. 88)

C9 Access
"*The 2 objectives are:*

To provide varying levels of access within the Reserve.
To rationalise the existing access network to allow more effective management." (p. 98)

Background
"*The provision of vehicle access needs to be carefully planned so as to minimize damage to vegetation.* […]" (p. 98)

"*The level of access required for any future mining or logging operations is currently unknown. Managers, however, need to be aware of possible future demands and plan the road network accordingly.*

Following consideration of these factors, access routes within the Reserve were divided into three categories: those which will remain open to the public, those which will be retained for management or research purposes only and those which will be closed." (p. 98)

Management Roads
"*A network of roads for management will be compiled which, once accepted by local districts, will be the only non public roads for these purposes other than emergencies. New roads will not be constructed unless necessary for management.*" (p. 100)

Roads to be Closed
"*Access routes that are not needed for public access or management are to be closed and rehabilitated. This will reduce management problems and environmental damage, particularly in sensitive and dieback susceptible areas, such as Plavins MPA.*" (p. 100)

Prescriptions
"*2. Licenced vehicles (including motorbikes, four wheel drives and buses) will be permitted on all public roads, but unlicenced vehicles and trail bikes will not.*" (p. 100)

"*3. Principal access to the Reserve will continue to be at the Nanga Road entry point near Nanga Bridge.*
[…]
5. Future access for logging operations will be designed to minimise negative effects on reserve values and inconvenience to users.

6. A network of roads essential for management (especially fire control) and research will be retained. These will be the only non public roads for these purposes except for emergencies. No new roads are to be constructed unless absolutely necessary for management.
[…]
8. Roads and temporary firebreaks that are not required for public access or management are to be closed as soon as possible and rehabilitated.

9. Road maintenance will be controlled by CALM District Staff and will be compatible with conservation, safety and aesthetic objectives. It will reflect the numbers and expectations of users.

10. The Department will strictly enforce regulations controlling vehicle access. The powers of the forest diseases legislation (where applicable) and Section 16 of the Control of Vehicles (off road areas) Act (1978) will be employed." (p. 101)

C13.2 Timber Utilization
Prescriptions
"*6. CALM will compile a balanced cutting and regeneration program for the Recreation Zone which integrates cutting and regeneration in the Reserve with that outside it and uses silviculture to upgrade fire degraded or dieback damaged jarrah stands. This program will also optimise the sequence of timber cutting with existing roads suitable for log hauling and public safety.*" (p. 120-21)

MANUAL OF LOGGING … 3rd ED. – 1990

<u>Manual of Logging Specifications … 3rd Ed. 1990</u>

Section 1 : Planning
Specification 1.1 : Logging Plans
1. Responsibilities
"*In all cases, planners must produce fully integrated plans and consult with Regional staff, District staff, Specialist Branch staff and where relevant Timber Industry Representatives during plan preparation.*" (p. 1)

4. Monitoring and Records
"*Logging cannot commence until an approved logging plan has been issued and CLM 109 has been signed by the Regional Manager (ref Part 6 of this Specification).*

District staff must maintain up-to-date field records of area cut over and silviculturally treated. This information must be ready when inventory officers visit Districts within one month of the close of the logging season (refer to revamped HOCS – issued from SOHQ on 14/8/90 and CLM 160 – Coupe silviculture report – Jarrah – refer Attachment 1.1.2." (p. 3)

8. Field Plans and Checklists
"*In most operations it is necessary for the Forest Officer in Charge of the operation to prepare a checklist of work required in the field before and during logging, and to prepare a sketch diagram of the coupe (commonly referred to as a 'blown-up HOCS sheet'). The sketch diagram is drawn sufficiently large to show the following information:*
[…]
** all access roads.*
[…]
** major snig tracks.*
[…]

These sketch diagrams or plans are used to record the progress of cutting and extraction, and silvicultural treatment. […]" (p. 5)

Section 2 : Road Construction and Maintenance
Specification 2.1 : Selection of Log Haul Routes
Part A : Hardwood
NOTE: REFER TO ENTRIES FOR THE ABOVE UNDER 1987 EDITION (SAME WORDING)

Specification 2.2 : Road Construction
Part A : Hardwood
"*1. The responsibility for road construction lies with CALM. The actual work of road construction is done by companies contracted to CALM.*
[…]
5. Standard Specifications for new roads and upgrading of existing roads are listed in the table below.

(Note: these specifications may be subject to amendment or alteration in particular roading tenders or particular areas of the South West.)

Major Haul Roads			*Other Roads Including InCoupe Roads*	
	For dry soil use	*For moist soil use*	*For dry soil use*	*For moist soil use*
Minimum Clearing width	*14 m*	*14m*	*7m*	*7m*
Road Formation width	*8m*	*8m*	*4m*	*4m*
Gravel thickness	*Nil or as required*	*Min 15cm*	*Nil or as required*	*Min 15cm*
Culvert spacing	*See (a) Next page*	*See (a) Next page*	*See (a) Next page*	*See (a) Next page*
Culvert size	*See (b) Next page*	*See (b) Next page*	*See (b) Next page*	*See (b) Next page*
Table drain depth	*20cm*	*20cm*	*10cm*	*20cm*
Major stream crossings	*See (c) Next page*	*See (c) Next page*	*See (c) Next page*	*See (c) Next Page*
Off-shoots	*See (d) Next page*	*See (d) Next page*	*See (d) Next page*	*See (d) Next page*
Maximum grade	*7 degrees*	*5 degrees*	*10 degrees*	*8 degrees*
Curves – recommended radii Should be > (m)	*350*	*200*	*350*	*200*
Design speed km/hr	*80*	*60*	*80*	*60*

(p. 29)

Major Haul Roads			*Other Roads Including InCoupe Roads*	
	For dry Soil use	*For moist Soil Use*	*For dry Soil use*	*For moist Soil use*
<u>Stopping Sight</u> Distance to object (from 1.15m eye level to 0.2m object) (m)	*115*	*75*	*75*	*115*
<u>Stopping Sight</u> Distance to another oncoming vehicle (from 1.15m eye level to 1.15m object) (m)	*160*	*150*	*160*	*150*
Sight Distance to intersection (from 1.15m eye level to 1.15m object) (m)	*175*	*115*	*175*	*115*

(p. 30)

"*(a) Culvert Spacing:*
Culvert spacing depends on:
* *grade*
* *erodibility of soil type*

* *catchment size*
* *time of concentration*
* *return period used in design.*" (p. 30)

(b) Culvert size:
"*The size of culvert required depends on the anticipated peak flow which is dependent on design return period, rainfall intensity and duration, and time of concentration. Time of concentration is dependant on catchment size and cover conditions and the amount of water already stored in the soil (field capacity) . It must also be remembered that under full flow conditions culverts will only run at 1/3 of full capacity due to vacuation at the outlet end.*

The programme 'Drainman' is available to all Districts and can calculate the culvert size required in various circumstances. […]" (p. 31)

"*(c) Major Stream Crossing:*
* *Must be constructed with pipes or a bridge with a minimum design period of 1:50 years. Full earth/log fills are not permitted.*
* *Borrow areas must not be located within river or stream reserves.*
* *Water from borrow areas must be directed into silt trap or vegetative filter.*
* *Fill must be consolidated to minimise erosion of loose soil and risk of slumping.*" (p. 31)

* "*Embankments must be left rough surfaced or corrugated and at an angle at least equal to the natural angle of repose for the soil type (see also (e) below).*
* *Machine activity in the watercourse and disturbance of stream vegetation must be minimised.*
* *No heaps of debris to be created within 40m of watercourse.*
* *A compacted, gravel pavement must be created on both sides of a stream crossing (In some specific instances this may have to be sealed.)*

(d) Off-Shoots:
* *Off-shoots must be < 1.5degrees fall.*
* *Off-shoots must be sufficient in number to prevent table drain erosion. Spacing is the same as for culverts [see (a)].*
* *Off-shoots into dieback-free forest must be approved by the FOIC.* […]
* *Off-shoots must have a level sill outlet into a vegetation filter strip or silt sump, so that water is not directed immediately into a stream.*
* *Care must be taken when locating off-shoots near stream zones, to ensure adequate vegetation filter to prevent stream siltation.*

(e) Cut and Fill Slopes:
* *The gradient of cut and fill slopes will depend upon the soil type and the amount of established plant growth beside the area to be regraded. The reasons for sloping these banks are:*

- *to control erosion by minimising soil movement on the slope;*
- *assist the establishment of new plant cover;*
- *to make the grade alteration appear as natural as possible.*

*The following tables are offered as a guide to **maximum** cut and fill slopes. More gentle slopes are desirable.*

CUT SLOPE

Material	***Maximum Slope (%)***
Sand	*50*
Wet clay, loose gravel	*66*

Loam, ordinary clay	*100*
Firm tough soil, compact gravelly soil, towards road, tight cemented gravel	*133*
Solid well-bedded rock	*Vertical*" (p. 32)

"*FILL SLOPE*

Material	***Maximum Slope (%)***
Loose sand and soft clay	*25-50*
Ordinary earth	*66*
Loose rock	*80*
Hand placed rock filling	*100*

(Slope % = rise / distance x 100 / 1

[…]" (p.33)

"*4. All road clearing debris must be neatly heaped in natural gaps alongside the road, at distances not less than 5m from crop trees, and burnt in suitable weather conditions.*

5. The location and use of gravel pits must be approved by the FOIC. Gravel for use on roads in dieback-free forest must be obtained from uninfected gravel pits. […]

6. If, during road construction, water is required to settle dust or bind the road surface, such water must be treated with sodium hypochlorite at the rate of 1: 2000. (See also Specification 5,1, paragraph 3.4).

[…]

8. Road signposting must meet the requirements of the TIR Act and conform to MRD and CALM sign manual standards.

9. Road names must be approved by the Department's Geographic names Committee.

10. *Appropriately timed rare and endangered flora and fauna surveys must be consulted as advised by specialist CALM staff.*" (p. 33)

Specification 2.3 : Road Maintenance
Part A : Hardwood

"*1 The responsibility for strategic road maintenance resulting from normal wear tear lies with CALM.* […]

3. Road maintenance, using earth moving machinery, must conform with an approved 7 Way Test. Only dieback-free gravel may be used, in dieback-free forest.

4. […] *By-passes must not be constructed to avoid boggy sections of road.*

[…]

6. Roadside scrub clearing must be carried out according to TIR Act requirements.

7. All roads must be pegged for dieback before any maintenance operation begins.

8. The edge windrow of gravel resulting from maintenance grading operations must broken frequently to allow water entry to table drains, off-shoots, culverts intacted vegetation.

[…]" (p. 34)

Section 4 : Coupe Management
Specification 4.1 : Coupe Demarcation

"*3. Sensitive boundaries including stream reserve, road reserve and amenity reserve boundaries must be identified prior to cutting in the same way as coupe boundaries, that is with white pained crosses facing the cutting area. The exact location of boundaries of stream, road and amenity reserves is as decided by the Forest Officer in Charge, using the following guidelines:-*

In the area known originally as the Woodchip Licence Area:

- Width of a river reserve must be at least 200m on each side of the river.

- *Width of a stream reserve must be at least 100m on each side of the stream.*" (p. 53)

Elsewhere:
"*- For all second or third order (or higher) watercourses within 3km of a catchment reservoir, the width of the stream reserve must be, a minimum of 100m on each side of the watercourse, and a minimum for other streams. (See fig.4.1.1 for explanation of stream orders).*

- For watercourses outside the 3km zone, but within harnessed catchments, the respective minimum widths must be 50m and 25m.

- For watercourses in non-harnessed catchments, stream reserve w-,~-, will be at the discretion of the Forest Officer in Charge.

3.2 Road Reserves
General:
- The purpose of road reserves is to screen the unsightly aspects of logging operations from view on major roads and to act as habitat and movement corridors for fauna.

In the area known originally as the Woodchip Licence Area:
- Width of road reserves must be at least 400m on both sides of main roads.

Elsewhere:
- Width of road reserves must be 100 to 200m on both sides of main roads.
- Width of road reserves must be between 0 and 100m on both sides of other roads
[…]" (p. 54)

Specification 4.3 : Extraction
"*2. Snig track patterns in individual faller's block or sub coupes must be planned …*

3. When applicable the location of landings must be planned and marked at the time of road construction. This allows road drainage to be diverted and the avoidance of large table drains and batters which make loading away from landing sites difficult. It allows the landing to be located away from any disturbance caused by roading activity and so avoids cross contamination from road to landing of dieback.

4. Landings must use existing gaps in the forest whenever possible. Topsoil must be stockpiled to one side of a landing and clearing debris must be heaped at least 5m away from retained crop trees. One or two large heaps or windrows is preferred to a number of smaller heaps.
[…]
7. Landings must be planned and marked (using the same techniques for snig tracks) by the contractors foreman or supervisor, subject to approval by the Forest Officer in Charge.

8. Whenever applicable 100-150mm of topsoil must be stockpiled to one side of the landing. Any additional overburden must be stored separately. Topsoil and overburden must not contain slash and logging debris and must not impede drainage from the landing." (p. 59)

10.1Separation of Extraction and Loading in Time
NOTE: REFER TO ENTRY UNDER 1989 EDITION (SIMILAR WORDING)

Snig Tracks
"*8. At the completion of extraction, all major snig tracks in dieback-free forest must be blocked by a physical barrier such as a log.*" (p. 40)

Section 4.4 : Loading and Hauling
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)

CODE OF LOGGING … - 1990

Code of Logging Practice. 1990

Introduction
"*The 'Code of Logging Practice' is a concise set of rules governing the conduct of timber harvesting (logging) operations on state forest and other Crown lands managed by the Department of Conservation and Land Management, and on private property where CALM is in control of the logging operation.*

The Code, which applies to both hardwood and softwood logging operations, is part of a hierarchy of rules relevant to logging operations controlled by CALM :

- *CALM Act (1984) and other relevant Acts*
- *Regulations under the CALM Act and other relevant Acts*
  (Note : Forest Resource Management Regulations under the CALM Act are currently being prepared. Until they are endorsed by Parliament regulations under the Forests Act (1918) apply)
- *Code of Logging Practice*
- *Manuals of Logging Specifications and other guidelines relevant to logging*
- *Log Supply Contracts between CALM and Logging Contractors, and Forest Produce harvesting or collection licences.*" (p. [i])

Section 2 : General
NOTE: REFER TO ENTRY UNDER 1988 EDITION (SIMILAR WORDING)

Section 4 : Extraction
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)

Section 5 : Roading
NOTE: REFER TO ENTRY UNDER 1988 EDITION (SIMILAR WORDING)

Section 6 : Loading and Hauling
NOTE: REFER TO ENTRY UNDER 1987 EDITION, *CODE OF HARDWOOD LOGGING PRACTICE* (SIMILAR WORDING)

STRATEGIC PLAN – 1989-1993

Strategic Plan For the Period 1989-1993. 1988

General Principles/Philosophy
"*The Department is committed to the principle that it is managing public land and natural resources, and conserving indigenous wildlife on behalf of the public of Western Australia. Consequently, particular importance is placed on informing the public of the Department's activities and wherever possible involving the public.*

The regional system of management as adopted by the Department ensures that its officers develop a detailed knowledge of the area of their operations, are available to interact with local communities and resolve problems associated with local conservation and land management operations. […]" (p. 10)

5. Mission
"*Western Australia has a beautiful and diverse natural environment which provides material, aesthetic and spiritual benefits. The natural environment is an essential component of the quality of life for West Australians. The statement of mission for the Department of Conservation and Land Management is therefore:-*

> *TO CONSERVE WESTERN AUSTRALIA'S WILDLIFE AND MANAGE LANDS AND WATERS ENTRUSTED TO THE DEPARTMENT FOR THE BENEFIT OF PRESENT AND FUTURE GENERATIONS*" (p. 11)

6. Primary Objectives
"*Five primary objectives have been established:-*

- *MANAGEMENT*
  To protect, restore and enhance the value of resources entrusted to the Department so as to meet, as far as possible, the diverse expectations of the community." (p. 12)

10. The Organisation
10.3 Planning
"*Detailed planning of conservation and land management activities is a key function in the Department.*

Under the Conservation and Land Management Act, there is a responsibility to prepare management plans for all land and water vested in either the Lands and Forest Commission or the National Parks and Nature Conservation Authority. Such plans must be available to the public for comment for a period of at least two months. They apply for a maximum period of ten years.

Two levels of this planning are undertaken. These are regional and area management plans.

Regional management plans are to be prepared for each CALM administrative region. They will cover all categories of land and water entrusted to the Department. Each plan will described the management objectives to be achieved over the life of the plan and the strategies for implementation which are to be adopted.

Area management plans will apply to specific areas such as a national park, marine park, nature reserve, marine nature reserve. State forest, or other reserve. These are more detailed than regional management plans. Area management plans will be prepared only where there are requirements that cannot be adequately considered by a regional management plan. Each area management plan will also describe management objectives and strategies for implementation." (p. 31)

"*Other major plans prepared by the Department are issue plans that are either a follow up to an approved management plan, or consist of interim guidelines for necessary operations where there is not yet an approved management plan. Issue plans cover all relevant topics, such as site plans, fire plans, dieback plans, recreation plans, resource allocation plans and wildlife management programs. Issue plans are generally prepared by district or regional staff in conjunction with research and other specialist branches within the Department.* […]" (p. 32)

In addition, the Department prepares operational guidelines, manuals and prescriptions. These draw on the results of research and experience and are used to implement the works and activity programmes derived from the planning process." (p. 32)

10.4 Regionalisation
"*The Department is extensively regionalised in a way which provides the benefits of small autonomous organisations in close proximity to their area of operations while providing access to services that are best provided by a larger integrated organisation. Regions are responsible for the management of all departmental lands and waters and for conservation of flora and fauna within their boundaries. According to the intensity of activity regions are subdivided into districts.*" (p. 32)

"*The general responsibilities allocated to regions are to:*

- "*ensure the conservation of indigenous flora and fauna;*
- *supervise and regulate industry (e.g. wildflower pickers, apiarists, timber and mining operations) on departmental and some other land;*
- *preserve or restore the natural environment on departmental land and water;*
- *provide information and advice on land management and conservation to people in the region; promote conservation and good land and marine area management;*" (p. 33)

STRATEGIC PLAN (SOUTHERN REGION) – 1989

Strategic Plan : Southern Forest Region. 1989

3. Regional Strategic Goals
"*The goals listed below are broad statements largely drawn from goals set by the amalgamating agencies before CALM. These goals are not specific, quantifiable or measurable but provide the basis for formulating KEY RESULT OBJECTIVES which is the next stage of the Strategic Planning process.*" (p. 7)

3.2 Commercial Resources
"[…]
Logging
To minimize the impact of logging operations on environmental values. To maximize the Department's control of roading and logging operations through contractural arrangements incorporating Codes of logging practice. […]

[…]" (p. 8)

Key Result Objectives
Site Rehabilitation
"*Objective*
1. Ensure all sites disturbed as a result of logging, roading recreation and other works are rehabilitated promptly with endemic species wherever possible. […]

Measure of Performance
'Priority'
1. All snig tracks, landings, and borrow pits to be rehabilitated (at least to earthworks stage) within one year of operation completion.
2. Liaise with Timber Production Branch to ensure
a) rehabilitation requirements
b) *road building specifications are incorporated into I.C.M. by June annually.*" (p. 46)

Roads
Responsibility for Roading
"*Objective*
1. Assume responsibility for road construction for logging purposes
Costs to be recouped from log customers.

Measure of Performance
'Priority'
1. Aim to have CALM responsible for all roading by December, 1989, in line with Timber Strategy.
Objective
2. *Review current roading prescriptions and evaluate whether modifications are required.*

Objective
1. Develop conceptual roading plans for all unroaded forest blocks with Timber Production priority.
Measure of Performance
'Priority'
1.Three forest blocks in each District to be completed annually." (p. 60)

Coupe Roading
"*Objective*
1. Ensure industry submit advance plans for road construction on schedule.
Industry to select approved alignments in the field." (p. 61)

Environmental Protection
"*1. Continue to refine prescriptions for road construction to minimise erosion and sedimentation.*

2. Liaise with Water Authority to develop standard drainage prescriptions, especially near stream crossings." (p. 61)

MANUAL OF HARDWOOD … 2ND ED. – 1989

Manual of Hardwood Logging Specifications … 2nd Ed. 1989

Specification 1.1 Logging Plans
1. Responsibilities
"*The preparation and distribution of logging plans is the responsibility of the Regional Inventory Branch Offices. These plans are prepared for each Supply Area and include:*
i) a one or two year logging plan (short-term)
ii) a four or five year logging plan (medium term)
and
iii) a long term (eg. 15 years) logging plan (long term).

These plans are produced after consultation with District staff, Regional staff and specialist branch staff, and timber industry representatives where necessary. The plans must be integrated with all other operational plans including plans for roading, silviculture, mining, fire control and visual resource management." (p. 1)

6. Monitoring and Records
"*Logging must not commence until plans are issued. If during a year additional areas of forest are to be cut, additional or amended plans must be issued by the relevant Inventory Office. Districts supervising logging must keep accurate records of areas cutover and quantities of log products removed and forward such information to the relevant Inventory office as required.* […]" (p. 2)

Section 2 - Roading

Specification 2.1 : Selection of Log Haul Routes
NOTE: REFER TO ENTRIES UNDER 1987 EDITION (SIMILAR WORDING)

Specification 2.2 : Road Construction
NOTE: REFER TO ENTRIES UNDER 1987 EDITION (SIMILAR WORDING)

Specification 2.3 : Road Maintenance
NOTE: REFER TO ENTRIES FOR THE ABOVE UNDER 1987 EDITION (SIMILAR WORDING)

EXCEPT FOR –

"*1. The responsibility for road maintenance resulting from normal wear and tear lies with CALM. The actual road maintenance work will be done by companies contracted to CALM.*" (p. 22)

Section 4 : Coupe Management

Specification 4.1 : Coupe Demarcation
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)

Specification 4.3 Extraction
NOTE: REFER TO ENTRY UNDER 1987 EDITION (SIMILAR WORDING)

5. Split Phase Logging

5.1 Separation of Extraction and Loading in Time

"[…] *in this technique, extraction in a sub coupe or faller's block must be completed before loading and hauling commences. That is, once loading and hauling commences, a skidder must not return to the sub coupe or faller's block and all snig tracks must be blocked at the landing.* […] *The number of times a machine is permitted to enter a sub-coupe of faller's block must be kept to a minimum.* […]" (p. 60)

Specification 4.4 : Loading and Hauling
NOTE: REFER TO ENTRIES FOR THE ABOVE UNDER 1987 EDITION (SIMILAR WORDING)

MINING ON C.A.L.M. – 1989

<u>Mining on C.A.L.M. Lands Guidelines. 1989</u>

Guidelines to CALM Staff for Assessing Exploration Programmes on Conservation Lands
Guidelines for Approval : Tracks, Survey Lines, Geophysical Lines

"*1. Clearing limited to absolute essentials for operation.*

2. Existing access to be used wherever possible.

3. Construction of new baseline tracks to be limited to pushing or grading the vegetation aside, with a minimum of disturbance to the soil and root systems.

4. Alignment of new baseline tracks to avoid fragile areas and special features, eg,
- *granite rocks and surrounding vegetation;*
- *thickets of timber;*
- *areas prone to erosion such as sand dunes, steep slopes, watercourse banks and beds;*
- *wetlands;*
- *Heritage areas.*" (p. 20)

"*5. Guidelines to be surveyed with line of sight only (1m width).*

6. Access tracks to drill sites etc on gridlines to be via least damaging route and method, preferable constructed by rolling vegetation (except when this would create unacceptable in tussock grassland (spinifex), heathland, saltbush. If vegetation type excludes this, clearing to be according to 3 above." (p. 21)

Rehabilitation Techniques

"*1. <u>Roads and Tracks</u> – Roads and tracks to be ripped (if compacted) and windrows graded back.*

3. <u>Drills Pads</u> – Topsoil to be pushed back, site ripped and debris returned.

4. *Costeans – Topsoil returned and lightly ripped or tyned.*" (p. 22)

POLICY STATEMENT– 1988

Administrative Instruction No. 39 : Fire break Construction. 1988

"*Admin Instruction 39 currently requires the approval of the Divisional Manager Operations for necessary operations involving new fire break construction.*

For the purposes of this instruction the activity – Fire Break Construction can be considered in two parts.

1. Perimeter Fire Break construction.
2. Internal Fire Break construction.

The Level of approval for Part 1, perimeter fire break construction, is hereby devolved to the Regional Manager.

The level for approval for Part 2, internal fire break construction, remains with the Divisional Manager Operations." (p. 1)

Levels For Approval For Necessary Operations In National Parks, Nature Reserves and Conservation Parks : November 1988

[…]
"*Access:*

maintenance	*RM*
closure	*RM*
new construction	*Gen M*" (p. 3)

CORPORATE MISSION AND OBJECTIVES - 1988

CALM Annual Report 1st July 1987 to 30th June 1988. 1988

NOTE: REFER TO ENTRY UNDER ANNUAL REPORT FOR 1986/87 AND 1985/86, ENTRY IS SIMILAR EXCEPTING THAT THE MISSION STATEMENT HAS CHANGED (THE SCOPE HAS BECOME THE STATEMENT OF MISSION)

"*TO CONSERVE WESTERN AUSTRALIA'S WILDLIFE AND MANAGE LANDS AND WATERS ENTRUSTED TO THE DEPARTMENT FOR THE BENEFIT OF PRESENT AND FUTURE GENERATIONS.*" (p. 6)

STRATEGIC PLAN – 1988?

Central Forest Region Strategic Plan. 1988?

Environmental Protection : Landscape
Objective
"*6. To ensure all land uses and activities on CALM land are planned and carried out in ways to complement the natural environment.*" (p. 105)

Strategy
"*iv) Locate and design roads and utility corridors to minimise both environmental and social impacts on the areas they traverse.*" (p. 106)

CONTROL OF LOGGING PRACTICE – 1988

Code of Logging Practice. 1988

Section 2 : General
NOTE: REFER TO ENTRY UNDER 1987 EDITION – *CODE OF HARDWOOD LOGGING PRACTICE* (SIMILAR WORDING)
***EXCEPT* FOR AN ADDITIONAL PARAGRAPH UNDER 2.2 –**
"*The 'Forest Regulations' made under the Forests Act will continue to apply to all operations by virtue of Section 149 of the Conservation and Land Management Act 1984 until such time as new regulations are made under that Act.*" (p. 5)

Section 4 : Extraction
NOTE: REFER TO ENTRIES 4.3 AND 4.4 UNDER 1987 EDITION – *CODE OF HARDWOOD LOGGING PRACTICE* (SIMILAR WORDING)

Section 5 : Roading
"*5.1 Unless otherwise decided the location, construction maintenance standard of all logging roads shall be determined and directed by the F.O.I.C.*" (p. 15)

NOTE: REFER TO ENTRIES 5.5 AND 5.6 UNDER 1987 EDITION, *CODE OF HARDWOOD LOGGING PRACTICE* (SIMILAR WORDING)

Section 6 : Loading and Hauling
NOTE: REFER TO ENTRIES UNDER 1987 EDITION, *CODE OF HARDWOOD LOGGING PRACTICE* (SIMILAR WORDING)
***EXCEPT* FOR –**
"*6.3 A contractor is required to confine his loading and hauling activity to certain defined coupes, subcoupes and/or faller's blocks within the cutting area. Produce from these defined areas must be loaded and hauled to the satisfaction of the F.O.I.C. before further areas will be made available for loading and hauling.* […]" (p. 16)

POLICY STATEMENT - 1987

Policy Statement No. 18 : Recreation. 1987

1.8 Public Access
"*1.8.5 Vehicle access will be generally determined within the constraints of Section 33 of the CALM Act. In most areas a system of roads and/or tracks exists before a management plan is prepared.* […] *In general vehicular access to nature reserves will be discouraged.*" (p. 17)

NOTE: Section 33 is '*Functions of Department*'

"*1.8.9 Access by vehicles off roads and tracks will be limited to designated areas.*" (p. 18)

CORPORATE MISSION AND OBJECTIVES - 1987

CALM Annual Report 1st July 1986 to 30th June 1987. 1987

NOTE: REFER TO ENTRY UNDER ANNUAL REPORT FOR 1985/1986, ENTRY IS SIMILAR

TIMBER STRATEGY – 1987

Timber Production in Western Australia : A Strategy to take W.A.'s South-West Forests into the 21st Century. 1987

Logging
"*As part of the new hardwood integrated logging procedure the Department will progressively assume responsibility for log road construction and maintenance through its logging contracts. All log buyers will be charged an appropriate fee to cover the use of these roads.*[…]" (p. 32)

MANAGEMENT PLAN – 1987

Shannon Park and D'Entrecasteaux National Park Management Plan 1987-1999. 1987

1.0 Management Objectives For National Parks
"*The following management objectives for national parks are derived from the Conservation and Land Management Act (1984) and departmental polices for management. The objectives are to:*
[…]
4.Regulate use to be consistent with the maintenance and protection of natural resource values and to minimise conflict between uses.
[…]" (p. 47)

2.0 Management Objectives For the Shannon Park and D'Entrecasteaux National Park
"*Management objectives specific to the two Parks were derived from: the above general objectives; the dual purpose of 'national park and water'; and the information provided in B. Description of the Parks. The following background information is most relevant to the determination of specific objectives –*
[…]

- *Several areas contain important biological and physical features.*

- *Some areas have been disturbed by human activities and this disturbance is likely to spread unless the areas are actively managed and rehabilitated.*

- *Many areas in the Park are capable of sustaining very little public use without irreparable environmental damage.*

[…]" (p. 48)

"*The specific management objectives for the Parks are to:*

1. Protect the biological and physical environment and the cultural and scientific features of the Parks.
[…]" (p. 48)

1.0 Introduction and Methodology
"[…] *In planning for the future management of this Park system, the intrinsic character and wilderness of this region must not be jeopardised through insensitive development and use. This requires a delicate balance between preservation and use.*

Unfortunately, there are no magical formulae for determining what constitutes an effective and acceptable balance. However, the network of access tracks and facility developments recommended in this plan will cater for management growth in visitor use without jeopardising existing conservation and recreation values." (p. 52-53)

2.2 Park Boundaries
Objective
"*1. To adjust the boundaries of the Parks over the period of the plan to achieve a more complete representation of land systems and more efficient management of the Parks.*" (p. 56)

Prescriptions
"[…]
3. Existing management tracks will be used to establish a system of Park boundary roads (Map 8). This will not involve clearing additional forest land.

4. The boundary between the two Parks will follow Chesapeake and Pingerup Roads (Maps 3 and 8)." (p. 58)

2.4 Shire Reserves
Prescriptions
"*5. Work on the Windy Harbour road will take into account the risk of introducing or spreading dieback and the landscape amenity of the road.*" (p. 61)

3.4 Rehabilitation
Background
"*There are many areas in both Parks where the biological or physical environment has been modified or degraded as a result of human activities.*

Some roads and tracks in the Parks have been placed on alignments which may cause soil erosion or exacerbate the spread of dieback. Other roads have been built on straight alignments which has significantly reduced their scenic value." (p. 70)

Prescriptions
"*1. All roads and tracks that are poorly located, resulting in soil erosion, degradation of wetlands or impairment of scenic values will be rehabilitated, relocated or closed.*

2. Designated public access routes that have been constructed at an inappropriate scale or following alignments with low scenic amenity will be systematically realigned to more appropriate routes, subject to the development of approved design plans (eg. Deeside Coast Road, Chesapeake Road)." (p. 70)

6.2 Dieback and Disease
Prescriptions
"*All management activities in the Parks will be carried out according to the Dieback Hygiene Manual (CALM 1986). In addition, the following prescriptions also apply.*

1. *A basic road and firebreak network will be defined, based where possible on existing roads and firebreaks. All other roads and tracks will be closed to public vehicles. Management vehicles will be subject to hygiene requirements when using closed roads and tracks.*

2. *New roads and firebreaks will only be created if absolutely necessary. They will be constructed in a way that will minimise the risk of disease introduction and additional spread.*

3. *Off road vehicle use will be prohibited (9.2 Vehicles Off-road). Off-road access for management purposes (eg. fire control, search and rescue) will be strictly controlled and will be subject to*

hygiene requirements" (p. 82)

7.0 Access
7.1 General Access
Objective
"*1. To provide a range of access opportunities, while ensuring that the values of the natural environment and other Park users are not adversely affected.*" (p. 87)

"*CALM has developed the following principles for road location:*

i. Before constructing or upgrading a road, it must be determined that: access to the areas is necessary; the road is the best alternative for necessary access; the resulting effects on the park environment will be minimal; the road is intimately and harmoniously related to the landscape through which it passes; and it takes maximum advantage, consistent with the foregoing criteria, of interpretive and scenic values.

ii.[…] *In particular, roads must not jeopardise park values by the introduction or spread of disease.*" (p. 88)

"*Similar principles are appropriate for the location and maintenance of access routes for management (7.3 Access for Management).*" (p. 89)

Prescriptions
"*1. Public access will be retained to all parts of the Park. Vehicle access will be provided by the roads and tracks shown on Map 15. Roads and tracks will not be upgraded unless resources are available to provide adequate facilities (eg. parking, toilets, turn-around areas) at the road/track end.*

This prescription provides vehicle access to most areas in the Parks to which public access currently exists and has been requested, by the public, to remain. In a number of instances tracks will be improved to public access for two-wheel drive vehicles for part, if not all, of the year. In addition, realignment or closure of a few tracks will take traffic away from sensitive or significant areas.

2. During the course of this plan, all roads and tracks (both existing and proposed) within the Parks will be redeveloped or developed in accordance with the previously outlined principles. Thus, the roads and tracks indicated in Table 8 will be closed or realigned. Roads and tracks proposed for realignment will remain open until alternative tracks have been provided.
[…]" (p. 89)

"*4. The status of tracks and associated facilities (parking areas, toilets, access ways to the beach) will be monitored.* […]

[…]" (p. 91)

7.3 Access for Management
Objectives
"*1. To maintain a network of roads for essential management purposes, in addition to designated public access roads.*

2. To ensure that management-only roads are effectively closed to public vehicles.

3.To allow the use of management vehicles off-road in exceptional circumstances, primarily if lives are at risk.

4.To ensure that the conservation and landscape values of the Parks are recognised in all access requirements." (p. 93)

Prescriptions
"*1. Vehicular access by the public will be restricted to designated public roads and tracks (Map 15). Management-only roads will be open for walking but will not be open to vehicular access by the public.* […]

2. Only roads designated for public access and those considered essential for management purposes, such as the strategic control of fire, disease and exotic species, will be maintained in a trafficable condition.

3. Tracks required for prescribed burning will only be maintained prior to the burn and to a standard sufficient to allow safe access.

4. All tracks surrounding no planned burn areas (Map 14) will be maintained to a standard sufficient to allow rapid access for fire-fighting.

5. Existing tracks not required for specific purposes will be either left to regenerate naturally or rehabilitated (where they adversely affect landscape values or appear to be susceptible to erosion).

6. New tracks will only be established where no feasible alternative for management exists and only following referral to the Environmental Protection, and Recreation and Landscape Branches of CALM for approval. […]

7. The use of vehicles and machines off-road will only be permitted for essential purposes such as fire control, if lives are at risk, or in extreme circumstances as judged by the relevant District Manager. Wherever possible, special care will be taken to avoid entering sites that are susceptible to soil erosion and degradation (Map 6) or are known to contain rare species (Map 9)." (p. 94)

"*8. All road maintenance and off-road use of management vehicles will be subject to strict dieback hygiene measures (Dieback Hygiene Manual, CALM 1986).*" (p. 95)

7.4 Log Road Access
Objectives
"*1. To allow the continued use of approved Park roads in the Shannon Park for log haulage, while ensuring minimal impact on Park values.*
[…]" (p. 95)

Background
"*The Shannon Basin dissects the karri forest, making it necessary – given the current distribution of timber-cutting permits – to transport logs across the Park. The only unrestricted access through the area is the South West Highway. The timber industry has, since the advent of woodchipping, developed a network of log-haulage roads through the forest. Most of those roads constructed in the Shannon Forest have now, through negotiations with the industry, been closed to log trucks.*" (p. 95)

Prescriptions
"*1. Log haulage will continue via Preston Road for the period of the plan. Use will then be reviewed.*" (p. 95)

"*2. The continued use of the above road will be subject to the following conditions:*

a) a speed limit of 60 km/hr;
b) no further road or verge development;
c) vegetation will not be removed from the road verges, however, slashing will be permissable [sic] *if required to improve visibility;*
[…]" (p. 96)

9.2 Vehicles Off-road
Objective
"*1. To protect the biological and physical environment of the Parks from damage, by directing all vehicle traffic along nominated roads and tracks.*" (p. 99)

Background
"*Off-road vehicles can have many impacts, especially on poorly consolidated soils where even a single pass by a vehicle can damage vegetation and provide a focus for erosion. In waterlogged areas vehicles can cause extensive soil degradation, including compaction or rutting, leaving long-lasting effects on vegetation growth. Vehicles are a major factor in the spread of dieback. Other impacts include vehicle tracks and noise.* […]" (p. 100)

"*In national parks all vehicles used must comply with the Road Traffic Act. Non-complying recreational vehicles can be registered under the Vehicles (Off-road) Act, but their use in a national park requires a special permit, endorsed by CALM, from the relevant local government authority. Such a permit is generally only granted in extenuating circumstances.*" (p. 100)

Prescription
"*1. No vehicle activity off road will be permitted in the Parks. All public vehicle use will be restricted to the access routes designated on Map 15.*" (p. 100)

GUIDELINES - 1987

Northern Forest Region Regional Management Plan 1987-1997. 1987
Central Forest Region Regional Management Plan 1987-1997. 1987
Southern Forest Region Regional Management Plan 1987-1997. 1987
Strategies For Conservation and Recreation on CALM Lands … 1987

Appendix 2, Departmental Management Guidelines
Landscape Management
Strategies
"*(iv) Locate and design roads and utility corridors to minimise both environmental and social impacts on the areas they traverse.*" (p. 80)

MANUAL OF HARDWOOD … - 1987

Manual of Hardwood Logging Specifications … 1987

Specification 1.1 Logging Plans
1. Responsibilities
"*3. Plans covering the first year, or first two years, of the five (or four) year plan (Annual, or Two year, Logging Plan) shall, when applicable, include the following individual plans:-*
i) Logging plan - highlighting the following information -
[…]
(e) stream, amenity and road reserves
(f) location of existing moist and dry soil roads
[…]" (p. 1-2)

Section 2 - Roading
Specification 2.1 : Selection of Log Haul Routes
"*1.Conceptual plans of log haul routes must be obtained by Districts from (a) relevant Industry representatives or (b) contractors operating under Contracts to Supply, at least two years in advance of cutting. Using this*

information, and subject to Seven Way Tests, the precise alignment of proposed logging routes is determined and included in the Two Year (or One Year) Logging Plan.

2.Guidelines to be followed in selecting logging routes include:-

* *use low profile roads*
* *avoid stream reserves, except for stream crossings*
* *avoid new roading unless required to protect dieback-free forest*
* *use roads in dieback-affected forest in preference to roads in dieback-free forest. Where roads in dieback-free forest must be used, minimise the crossing of dieback categories and minimise the areas of forest placed at risk.*
* *where consistent with dieback hygiene practices, and economics, use systems of one-way roads.*

3. The exact alignment of proposed new roads must be approved by the District Manager. In instances where proposed new roads intersect Shire or M.R.D. roads, Shire or M.R.D. engineers must be consulted." (p. 18)

Section 2 : Roading
Specification 2.2 : Road Construction
"[…]*2. Specifications for new roads and upgrading of existing roads.*

	Major Haul Rds		*Other, Including In-Coupe, Rds*	
	For dry soil use	*For wet soil use*	*For dry soil use*	*For wet soil use*
Clearing Width	*10m*	*10m*	*5m*	*5m*
Road formation Width	*8m*	*8m*	*4m*	*4m*
Gravel Thickness	*Nil or as Req.*	*min 15 cm*	*Nil or as Req.*	*min 15 cm*
Culvert Spacing	*See (a) below*	*See (a) below*	*See (a) below*	*See (a) below*
Culvert Size	*See (b) below*	*See (b) below*	*See (b) below*	*See (b) below*
Table drain Depth	*20cm*	*20 cm*	*10 cm*	*20 cm*
Major stream Crossings	*See (c) below*	*See (c) below*	*To be avoided*	*To be avoided*
Off-shoots	*See (d) below*	*See (d) below*	*See (d) below*	*See (d) below*
Maximum grade	*7 degrees*	*5 degrees*	*10 degrees*	*8 degrees*

(a) Culvert Spacing:
* *Culvert spacing depends on the grade of the road and the amount of water which reaches the road from the hillside.*

* *A culvert must be installed at the bottom of every grade.*
* *The number of culverts required per km will generally vary from 2 to 12.*" (p. 19)

(b) Culvert size:

* *The size of culvert required depends on the catchment area, the run-off conditions, and the maximum incidence of rainfall. The following table is a guide show maximum watersheds for a range of pipe sizes:*

Pipe Diameter	***Maximum Catchment Size***
30 cm	*36ha*
37.5 cm	*56ha*
45 cm	*80ha*
60cm	*144ha*
75 cm	*244ha*
90 cm	*324ha*

(c) Major Stream Crossing:

* *Must be contracted with pipes or a bridge – full earth/log fills are not permitted.*
* *Approach must be as close to but not at right angles contours, keeping in mind road alignment and safety.*
* *Borrow areas must be > 20m from watercourse.*
* *Water from borrow areas must be directed into silt trap or vegetative filter.*
* *Off-shoots must be constructed at regular intervals to turn water into silt traps of natural vegetation.*
* *Fill must be consolidated to minimise erosion of loose soil and risk of slumping.*
* *Embankments must be left rough surfaced or corrugated.*
* *Machine - activity in the watercourse and disturbance of stream vegetation must be minimised.*
* *No heaps of debris to be created within 40m watercourse.*
* *A compacted, gravel pavement must be cleared on both sides of a stream crossing (In some specific instances this may have to be sealed.*" (p. 20)

(d) Off-Shoots:

* *Off-shoots must be sufficient in number to prevent table drain erosion.*
* *Off-shoots into dieback-free forest must be approved by the FOIC.* […]
* *Off-shoots carrying water from dieback-infected forest must not discharge into dieback-free forest. If necessary the water must be carried in the table drains until it can be discharged into sumps or vegetation filters close to a watercourse.*
* *Off-shoots must have a flared outlet into a vegetation filter strip or silt sump, so that water is not directed immediately into a stream.*
* *Care must be taken when locating off-shoots near stream zones, to ensure adequate vegetation filter to prevent stream siltation.*

3.The location and use of gravel pits must be approved by the FOIC. Gravel for use on roads in dieback-free forest must be obtained from uninfected gravel pits. Small stockpiles of suitable road surfacing material should be established at the time of construction for later use in areas likely to cause problems and for gravel road maintenance.
[…]." (p. 21)

Specification 2.3 : Road Maintenance

"*1. The cost of road maintenance will be borne by the road user, as decided and directed by the Forest Officer in Charge.*

2. Maintenance, using earth moving machinery, of roads located inside dieback-free forest must be restricted to dry soil conditions only. […]

3. Maintenance grading must aim to shape the road profile, and to clean table drains, to improve drainage off and away from the road surface.

4. […] *Bypasses must not be constructed to avoid boggy sections of road.*
[…]
6. Roadside scrub clearing must be carried out according to T.I.R. Act requirements.[…]" (p. 22)

Section 4 : Coupe Control
Specification 4.1 : Coupe Demarcation
"*4. Stream reserve, road reserve and amenity reserve boundaries must be identified prior to cutting in the same way as coupe boundaries, that is with white painted crosses facing the cutting area. The exact location of boundaries of stream road and amenity reserves is as decided by the Forest Officer in Charge, using the following guidelines:-*

Road Reserves
In Woodchip Licence Area:-
- *400m in width, on both sides of major roads.*

Elsewhere:
- *100 to 200m in width, on both sides of major roads.*
- *Between 0 and 100m on both sides of other roads.*

[…]" (p. 40-41)

Specification 4.3 Extraction
"*2. Snig track patterns in individual faller's blocks or sub coupes must be planned and demarcated by the Forest Officer and Industry Bush Boss together, or, when approved by the Forest officer in Charge, by the Bush Boss alone.* […]

3. The location of landings must be planned and marked, using the same techniques as for snig tracks, by the Forest Officer and Industry Bush Boss together. Normally, one landing will be allocated to each faller's block or sub-coupe.

4. Landings must use existing gaps in the forest whenever possible. Topsoil must be stockpiled to one side of a landing and clearing debris must be heaped at least 5m away from retained crop trees. One or two large heaps or windrows is preferred to a number of smaller heaps." (p. 47)

5. Split Phase Logging
"*8. At the completion of extraction, all major snig tracks in dieback-free forest must be blocked by a physical barrier such as a log.*" (p. 49)

Specification 4.4 : Loading and Hauling
"*2. The log hauling route or routes used on State Forest must be approved by the Forest Officer in Charge.*
[…]" (p. 41)

CODE OF HARDWOOD – 1987

Code of Hardwood Logging Practice. 1987

"*Where specifications for the performance of the rules and instructions in this Code are required they are to be found in the Manual of Specifications covering the forest area in which logging operations are taking place.*"
(p. i)

Section 2 : General

"*2.1 The Instructions contained in this Code shall be observed by all persons participating in any hardwood forest logging operation on land managed by the Department of Conservation and Land Management*. […]

2.2 An Operator shall observe all Acts of the State of Western Australia, and in particular, the Bush Fires Act 1954, the Conservation and Land Management Act 1984, the Inspection of Machinery Act 1921, the Machinery Safety Act 1974, the Road Traffic Act 1975, the Timber Industry Regulation Act 1926, the Workers Compensation Act 1912, the Wildlife Conservation Act 1950-79, the Agriculture and Related Resources Protection Act 1976-83, the Country Areas Water Supply Act 1947-76, and the Water Authority Act 1986, including all amendments to those Acts for the time being in force and any Act passed in substitution or in lieu thereof and all Regulations for the time being in force thereunder as well as this Code of Logging Practice." (p. 4)

"*2.9 An Operator and all persons authorised by him, in carrying out all aspects of this operation, shall follow and use only such paths, tracks, and roads in the hardwood forest areas as may be indicated to him by a Forest Officer*." (p. 6)

Section 4 : Extraction

"*4.3 If an Operator requires to construct tracks within the hardwood forest areas to facilitate extraction, the location of such tracks shall be approved by a Forest Officer in Charge before construction and all tracks shall be constructed to the satisfaction of the Forest Officer and at the Operator's expense.*

4.4 All extraction is to be carried out with a minimum of damage to be retained standing trees. Where standing trees are damaged by him an Operator shall be liable for such damage at rates determined by Executive Director. Any penalties will be charged under Instruction 2.8 of this Code. Such damaged trees shall remain the property of the Department." (p. 12)

Section 5 : Roading

"*5.3 The location and construction and maintenance standard of all logging roads shall be determined and directed by the Forest Officer in Charge.*" (p. 14)

"*5.5 Whilst carrying out road construction and maintenance an Operator shall observe any instruction and comply with any procedures laid down to restrict the spread of jarrah dieback (See Section 7).*

5.6 Unless otherwise indicated by Act of Parliament or by the Executive Director, all roads constructed on State forest or other Crown land controlled by the Department, shall be deemed to be Departmental roads, irrespective of the organisation responsible for the cost of construction and maintenance of such roads." (p. 14)

Section 6 : Loading and Hauling

"*6.1 All loading and hauling shall be carried out in such place, order, time and manner as the Forest Officer in Charge shall from time to time approve.*

6.2 The Forest Officer in Charge may determine the priority of loading and removal of produce from time to time. An Operator shall comply with the Forest Officer in Charge's expressed priority of loading. This priority may be expressed in type of log, point of removal, dieback hygiene requirements and deadline of delivery or all four together." (p. 15)

"*6.4 An Operator shall at his own expense maintain to the satisfaction of the Forest Officer in Charge Departmental roads used by him for hauling.* […]" (p. 16)

"*6.7 An Operator shall not carry on loading and hauling at such times or places, or by methods or equipment which a Forest Officer has prohibited until such prohibition has been revoked by the Forest Officer.*

6.8 To minimise damage to forest roads and to promote safety in operation log trucks will not be loaded in excess of their licenced capacity." (p. 16)

"*6.16 Speed limits as laid down by the Road Traffic Authority will apply on both public and Departmental roads. The Department reserves the right to introduce lower speed limits on any or all Departmental roads in the interests of greater safety of operation or to lessen the damage to the road. All speed limits must be adhered to.*" (p. 17)

"*6.19 The Department reserves the right to decide whether any vehicle is in a fit condition for the job it is doing bearing in mind road conditions, road grades and load carried. Operators will, on request by a Forest Officer make their vehicle available to the Department for inspection.*" (p. 18)

"*6.21 Engine exhaust pipe systems must be installed so that they do not blow down onto the roadway. (Exhausting above the cabin is the best position).*" (p. 18)

OPERATIONS MANUAL - 1987

Southern Forest Region Operations Manual. 1987

Standards for Coupe Preparation for Karri Regeneration

1. Standards

1.1 Roading

"*a) Internal Roads* […]

These roads (usually 5-6m surface) will form the basis for future fire control and logging access, were expensive to construct, and must be retained. […] *Sufficient drainage to avoid erosion or ponding is required.* […]" (p. 123)

"*b) External Roads – These are primarily for fire control and access purposes only. As such they will generally be built to summer access standards only, but will be drained and piped to avoid deterioration and provide winter access if possible.* […]" (p. 124)

Strategic Roading for the Protection of Hardwood Regeneration

1.Scope

"*This prescription covers all types of roading required for the protection and management of regenerated forests in the southern region.*" (p. 165)

2. Objective

"*To plan, construct and maintain access roading suitable for management and protection of regenerated forests throughout the Southern Forest Region.*" (p. 165)

3. General Requirements for Access

"*Four types of access will be used to achieve this objective. Each class of road is designed to provide varying qualities of access to ensure that the district is adequately roaded for fire protection and management requirements. These requirements are:-*

3.1 Main Access Roads

a) *This type of access will be designed to surround cells of up to 2, 000 ha.*

[…]

c) These roads will normally form part of the permanent and semi-permanent boundaries for hazard reduction burns of areas adjoining the cells.
[…]
e) The standard of road must allow use by dozer transporter during the burning and fires season.
f) Maintenance to be planned and carried out on a regular basis to ensure access at all times.
[…]

3.2 Secondary Access Roads
a) Used generally to divide cells into areas up to 500ha and for access into or around isolated coupes of regeneration .
[…]
c) Use established roads or tracks wherever suitable.
[…]" (p. 165)

"*3.3 Minor Access Tracks*
a) Used only in special circumstances such as fire fighting or access for a particular works programme.
b) Tracks to be selected to further divide cells into areas of up to 250ha.
c) Use existing tracks where possible ie: log roads, coupe boundaries etc. Ensure only through access is shown. Any no through roads (ie: 'Dead-end') must be clearly signposted with permanent signs, otherwise they are to be blocked off.
d) No maintenance, other than to ensure tracks are open, after operations are completed. […]
[…]

3.4 In Coupe Clearways
a) Used only for fire fighting access for heavy plant.
b) Tracks to be selected to provide strategic in coupe assess, with cells of 40-50ha. Mark permanently and record on HOCS sheets.
c) Use existing snig tracks where possible and join up where not jointed to boundary tracks.
d) To be put in at the time of burn preparation.
[…]
e) To be maintained every 5+ years with hydroaxe or pushing with wheeled loader. Maintenance is just to ensure field indication of where they are.
f) Optimum construction time is immediately after a regeneration burn when visibility is maximised." (p. 166)

3. Roadwork Proposal
4.1 Selection
"*a) Liaise with sawmilling Industry/CALM Industry Control to ensure selection of log roads will provide benefit to future protection needs for the area.*
[…]
c) Where coupes are not involved, maximise jarrah types for ease of burning and roading. Avoid mixing forest types if possible.
[…]" (p. 166)

4.3 Advance Mop-up
"*a) To be carried out where possible during new work or upgrading programmes on roads proposed as permanent burn boundaries.*
b) Where possible road clearing debris to be pushed into cells and heaped in openings if necessary.
c) Where roads are planned prior to logging, ensure any stag felling is carried out during logging operations to allow salvage of logs." (p. 167)

Maintenance of Access for Fire Control
1. Scope
"*This prescription specifies the maintenance standards required to ensure access for fire control operations for regenerated karri forests over 4 years old in the Southern Forest Region.*" (p. 169)

2. Objective
"*To specify standards required to ensure satisfactory access for fire control operations is available. Whilst there are several categories of roads within the forest (see Item 5.1 [Strategic Roading for Hardwood Regeneration]) this prescription deals mainly with minor access roads which require frequent maintenance to ensure they remain open and safe for use.*

Secondary and Primary roads are generally reasonably maintained." (p. 169)

3. Method
3.1 Scrub Control
"[…]
3.1.1 […] *Removal of some karri regrowth may be necessary in this operation, but care must be taken to avoid damaging the butts of standing trees or pushing debris (including logs) against trees which may result in hollow butts.*" (p. 169-170)

"*3.1.2 Open off shoot drains sufficiently so they work efficiently and the grader later may reform some.*
[…]
3.1.5 Excessive scrub adjacent to bridges should be removed if possible to protect some from fire but care must be taken to avoid soil damage and damage to standing trees.

3.1.6 Grader use is generally limited to roads already treated in the above method […]
[…]" (p. 170)

3.3 Drainage
"*It is essential that effective drainage maintenance be practiced.* […] *Turbidity of adjacent waterways is to be avoided also for obvious reasons.*

To effectively drain road surfaces, off shoot drains at the required spacing and sufficient culverts (frequency of both depends on slope).

Off shoot drains must only have sufficient fall to the outlet end to allow water to decelerate before it discharges into a filtering medium (litter, tops, scrub etc). This will allow soakage into the soil and thus avoiding turbidity in adjacent streams and soil erosion. […]

[…]" (p. 170)

Access Construction for Blackberry Control Work
1.Scope
"*These guidelines refer to access construction work which may be required to enable control work to be carried out on thickets of blackberries in the Southern Forest Region. They apply whether the work is done by the Department of C.A.L.M. or by a contractor on our behalf.*" (p. 172)

2. Objective
"*To ensure access tracks for blackberry control work are environmentally acceptable.*" (p. 172)

3. Prescription
"*Because circumstances vary from case to case this prescription will step through the process involved in determining access track requirement and the principles to be applied in each decision.*" (p. 172)

3.1 Overall Principle
"*Thickets of blackberries which would necessitate access construction to do control work normally occur in environmentally sensitive zones ie: along rivers and streams. These zones are often protected from other*

operational activities consequently it is illogical to create disturbance without a very compelling reason. As a rule the construction of mineral earth access tracks for blackberry control is to be minimised." (p. 172)

3.4 Construction of Mineral Earth Access
"*If such access is required the following will apply:-*
[…]
c) Wherever possible no access to be constructed where there is a risk of winter flooding covering it.
d) No access to be closer than 10 metres to the stream edge.
e) Erosion control barriers to be installed according to Item 16 of the Industry Control Manual.
f) *Access to be closed to the public after use.*" (p. 173)

Road Construction Specifications
1. Scope
"*This prescription covers all roads within the Southern Forest Region.*[…] (p. 174)

2. Objective
"*To define the standards of roads to be constructed for various purposes.*" (p. 174)

3. Definitions
"*There are three basic Road classifications, with the following end purposes besides fire control.*
3.1 <u>Main Access</u>
- Log hauling
- Low Loader access
- Fast point to point travel

Generally constructed and maintained by Timber Industry. Subject to Industry Control Manual restrictions (see Appendix 2 attached).

CALM constructed roads will also be subject to the same in the field controls and specifications. All year access for all vehicle types.

3.2<u>Secondary Access</u>
- *Log hauling*
- *Low Loader access*
- *Reduced speed travel*

Generally only suitable for heavier trucks during summer months unless constructed or upgraded for their use (log hauling and low loader). All year access for light trucks or vehicles. May be constructed and maintained by Timber Industry and or CALM.

3.3 <u>Minor Trucks</u>
- *4 x 4 vehicle access only*
- *Fire control and Management purposes*

Constructed and maintained by CALM." (p. 174)

4. Specification
"*See Appendix 1 (attached) for self explanatory specification.*" (p. 174)

5. Supervision
"*5.1 Construction standards will need to be closely monitored by project OIC and Senior District staff to ensure environmental and utilisation issues are not compromised, and that machines are being utilised in the most efficient manner.*" (p. 175)

Appendix 2 : Prescription For Industry Roading
"*4. Maximum clearing width is 12m (Major Roads) and 8m (In-coupe Roads). Road surface width is 10m (Major Roads) and 6m (In-coupe Roads). Variations to these clearing widths must be specifically approved.*

5. On major roads logs will be cut and hauled during road clearing operations. Debris to be stacked in forest openings in tight heaps. Debris heaps must not be pushed against standing trees …

6. Planning and implementation of each creek crossing will be prescribed in detail to minimize siltation from run-off from roads and drains.

6.1 Borrow areas for fill to be approved and will not be closer than 20m from creek. Water draining from borrow pits to be directed into a silt trap or vegetation filter strip.

[…]
6.3 Table drains to turn water off at regular intervals and silt traps to be installed at all creek crossings.

6.4 Fill be consolidated to minimise erosion of fill and risk of slumping.

6.5 Batter of large fills to be terraced and revegetated. Rocking will be prescribed where necessary.

6.6 Machine activity in the watercourse will be minimised. No heaps of debris within 40m of the creek.

7. Where an existing road is re-aligned, the un-used portions of the road must be ripped. Erosion barriers will be installed on ripped roads according to the Rehabilitation Prescription. Recovery of gravel from disused roads to be considered.
[…]
10. Maintenance. Whilst roads are still being used for log hauling the Industry will maintain them. Pipes to be cleaned out regularly. Silt traps to be cleaned out when required." (p.176)

ADMIN. INSTRUCTION - 1986

Administrative Instruction No. 23 : Interim Guidelines For Operations. 1986

Introduction
"*For substantial areas of land under the control of the Department of Conservation and Land Management it will be many years before approved Management Plans will be developed. In the meantime the CALM Act provides in Section 33 (3) (b) that certain operations can be carried out when there is no management plan.*" (p. 1)

"*For indigenous State forest the operations are defined as those actions that ensure the multiple use and sustained yield of that resource for the satisfaction of long term social and economic needs.*

In accordance with the Departmental Planning Policy (Policy 1, January 1986) the necessary operations must be carried out in a planned manner through the development and implementation of INTERIM GUIDELINES FOR OPERATIONS.

The Interim Guidelines will consist of:

(1) a brief description and brief guidelines for major potential activities;

(2) a map showing the locality and area of proposed management activities;

(3) an indication of who must give approval before particular operations can be carried out.

This paper shows how the Interim Guidelines are intended to work." (p. 1)

Aim
"*The aims of the Interim Guidelines are:*

(i) *to provide an adequate safeguard against natural and operational calamities on lands administered by CALM in the absence of an approved Management Plan;*

(ii) *to ensure that critical 'necessary operations' are identified and properly prescribed;*

(iii) *to ensure that the impacts of necessary operations are fully considered and effectively incorporated within existing management and control systems;*

(iv) *to provide a simple, efficient and attainable means of gaining approval for necessary operations.*" (p. 2)

Identification
"*The first step is to identify all the necessary operations within each of the areas concerned. Use can be made of a checklist showing all the possible necessary activities – see Appendix 1. Only those operations that are essential for safeguarding the area in question should be considered. These must be consistent with the objectives for the area concerned as described in the CALM Act.*" (p. 2)

"*The development of suitable strategies and prescriptions* ***will*** *necessitate consultation and collaboration between CALM Operations, Planning and Specialist groups.* […]" (p. 3)

Duration of Interim Guidelines
"*Most Interim Guidelines should have an approval duration of at least 3 years with a maximum of 5 years.* […] *However, the works programme that emanates from these Interim Guidelines must be reviewed and updated annually.*" (p. 4)

Approval
"*A system of approval for the Interim Guidelines and the methods of implementing these is to be adopted which recognises and utilises the established hierarchy of authority and control, i.e. District Manager to Regional Manager to Divisional Manager (or Branch Manager) to Directorate (Director National Parks or Director Nature Reserves or both, or entire Policy Directorate depending on the range of necessary activities). It is expected that once the pattern of the development of these Interim Guidelines have been universally accepted, that the final approval will be delegated to Divisional or Regional Managers.*" (p. 4)

STRATEGIC PLAN - 1986

Strategic Plan : Southern Forest Region. [1986]

3. Regional Strategic Objectives
Logging
"[…]*To minimize the impact of logging operations on environmental values. To maximize the Department's control of roading and logging operations through contractual arrangements incorporating Codes of logging practise.*[…]" (p. 4?)

Hardwood Timber Production
Key Area : Responsibility for Roading
Objective
"*1. Develop opportunities for CALM to assume responsibility for road construction for logging purposes.*[…]"(p. 26?)

Measure of Performance
"*1. Aim to have CALM responsible for all roading by December, 1987.*" (p. 26?)

Key Area : Conceptual Plans
Objective
"*1. Develop conceptual roading plans for all unroaded forest blocks with Timber Production priority.*" (p. 26?)
Measure of Performance
"*1. Complete plans by December,1987.*" (p. 26?)

Key Area : Coupe Roading
"*1. Ensure Industry submit advance plans for road construction on schedule.*[…]" (p. 26?)

Key Area : Environmental Protection
Objective
"*1. Continue to refine prescriptions for road construction to minimise erosion and sedimentation.*" (p. 26?)
Measure of Performance
"*1. Develop cost efficient techniques for roadside stabilisation, by March, 1987.*" (p. 26?)
Objective
"*2. Liaise with Water Authority to develop standard drainage prescriptions, especially near stream crossings.*" (p. 26?)
Measure of Performance
"*1.Arrange meeting with WAWA by December, 1986.*" (p. 26?)

Key Area : Road Safety
Objective
"*1. Ensure signposting and barriers on logging roads are effective in achieving safety, legal and recreation objectives in the forest.*" (p. 26?)
Measure of Performance
"*1. A meeting of CALM and Industry representatives to be held bi-annually.*" (p. 26?)

Key Area : Environmental Awareness and Visual Resource Management
Objective
"*1. Provide guidelines for road planning design, construction and maintenance.*" (p. 31?)
Measure of Performance
"*1. Check status of existing Departmental and Regional guidelines for road construction review and rewrite by June, 1987.*
[...]
3. Develop specific guidelines for:
** bank and batter stabilisation*
** rehabilitation and revegetation*
** debris removal and final presentation*
** drainage and culverts*
** bridges.*

4. Regional Manager, District Managers and Parks and Reserves Officer to assess new roads at practical completion. Report to outline remedial action." (p. 31?)

Key Area : Wood Production
Objective
"*2. Supervise Departmental contractors and monitor standards of products*" (p. 73?)
Measure of Performance
"*3. Construct and maintain roads for CALM Contractors.*" (p. 73?)

Objective
"*3. To plan all harvesting operations well in advance*" (p. 73?)
Measure of Performance
"*2. Ensure roading is completed at least one year ahead of requirements.*
This applies to both, CALM roads for regrowth logging contractors and for old growth operations.
[...]
4. Plan in-coupe roads to be on species boundaries." (p. 73?)

CORPORATE MISSION AND OBJECTIVES - 1986

CALM Annual Report 1st July 1985 to 30th June 1986. 1986

Corporate Objectives
"*Under a corporate plan formulated in 1985/86 the statement of mission for the Department of Conservation and Land Management is:*

> *TO PROVIDE FOR THE USE OF THE NATURAL ENVIRONMENT WITHOUT DETRACTING FROM POSSIBLE FUTURE USE.*

The scope of the Department's responsibilities is represented by its charter which is:

> *TO CONSERVE WESTERN AUSTRALIA'S WILDLIFE AND MANAGE PUBLIC LANDS AND WATERS ENTRUSTED TO THE DEPARTMENT FOR THE BENEFIT OF PRESENT AND FUTURE GENERATIONS.*

Primary objectives are:

Management
> *To protect, restore and enhance the value of resources entrusted to the Department so as to meet, as far as possible, the diverse expectations of the community.*

[…]" (p. 8)

Production
> *To provide and regulate the supply of renewable resources on a sustained yield basis in a manner that minimises impact on other values.*

Recreation
> *To facilitate the public enjoyment of the natural attributes of public lands and reserved waters in a manner that does not compromise conservation objectives.*

Knowledge
> *To seek a better understanding of the natural environment and to promote awareness and appreciation of its values.*

To achieve the primary objectives the Department will:

Provide an effective administrative framework for the conservation of wildlife throughout the State and the management of lands, waters and natural resources entrusted to the Department.

This will involve:

- *The maintenance of a Policy Directorate to establish, review and refine Departmental aims, policies and priorities; to monitor the implementation of management plans; and to see that goals are achieved.*

- *The maintenance of an operations wing to implement policies and management plans and to set up efficient financial, administrative and management systems.*" (p. 9)

"*Establish and maintain a system of secure reserves which protect viable representative samples of all the State's natural ecosystems and species, both terrestrial and aquatic, as well as areas suitable for recreation and the production of renewable natural resources.*

This will involve:" (p. 10)
[…]

- "*Protecting ecosystems, landscape and the cultural heritage on lands and waters entrusted to the Department from damage by fire, disease, grazing, feral animals and people.*

- *Developing prescriptions for control of disturbance and for rehabilitation of damaged forests, parks and reserves.*

- *Opposing the incompatible use of lands and waters entrusted to the Department and opposing the release of such lands and waters for other purposes.*" (p. 11)

MANUAL OF SPECIFICATIONS … - 1986

Manual of Specification for Control of Hardwood Logging Operations … 1986

"*3.Plans covering the first two years of the five year plan (Two Year Logging Plan) shall wherever possible include the following individual plans:-*" (p. 3)
"i*) Logging plan – highlighting the following information –*
[…]
(e) stream, amenity and road reserves
(a) location of existing moist and dry soil roads
[…]" (p. 4)

Specification 2.1 : Selection of Log Haul Routes
"*1. Conceptual plans of log haul routes must be obtained by Districts from (a) relevant Industry representatives or (b) contractors operating under Contracts to Supply, at least two years in advance of cutting. Using this information, and subject to Seven Way Tests, the precise alignment of proposed logging routes is determined and included in the Two Year Logging Plan.*

2.Guidelines to be followed in selecting logging routes include:-
* *use low profile roads*
* *avoid stream reserves, except for stream crossings*
[…]
* *avoid new roading unless required to protect dieback-free forest*
* *use roads in dieback-affected forest in preference to roads in dieback-free forest. Where roads in dieback-free forest. Where roads in dieback-free forest must be used, minimise the crossing of dieback categories and minimise the areas of forest placed at risk.*
* *where consistent with dieback hygiene practices, and economics, use systems of one-way roads.*

3.The exact alignment of proposed new roads must be approved by the District Manager. […]" (p. 24)

Specification 2.2 : Road Construction
"*1. Road construction must take place in dry soil conditions only.*

2. Specifications for new roads and upgrading of existing roads.

	Major Haul Rds		*Other, Including In-Coupe, Rds*	
	For dry soil use	*For wet soil use*	*For dry soil use*	*For wet soil use*
Clearing width	*10m*	*10m*	*5m*	*5m*
Road formation width	*8 m*	*8 m*	*4m*	*4m*
Gravel thickness	*Nil or as Req.*	*15 cm*	*Nil or as Req.*	*15 cm*
Culvert spacing	*See (a) below*	*See (a) below*	*See (a) below*	*See (a) below*
Culvert size	*See (b) below*	*See (b) below*	*See (b) below*	*See (b) below*
Table drain depth	*20cm*	*20 cm*	*10cm*	*20cm*
Major stream crossings	*See (c) below*	*See (c) below*	*To be avoided*	*To be avoided*
Off-shoots	*See (d) below*	*See (d) below*	*See (d) below*	*See (d) below*
Maximum grade	*7 degrees*	*5 degrees*	*10 degrees*	*8 degrees*

(a) Culvert Spacing:

* *Culvert spacing depends on the grade of the road and the amount of water which reaches the road from the hillside.*
* *A culvert must be installed at the bottom of every grade.*
* *The number of culverts required per km will generally vary from 2 to 12.*" (p. 25)

"*(b) Culvert size:*

* *The size of culvert required depends on the catchment area, the run-off conditions, and the maximum incidence of rainfall. The following table is a guide showing maximum watershed for a range of pipe sizes:* […]" (p. 26)

"*(c) Major Stream Crossing:*

* *Must be contracted with pipes or a bridge – full earth/log fills are not permitted.*
* *Approach must be as close to but not at right angles to contours, keeping in mind road alignment and safety.*
* *Borrow areas must be > 20m from watercourse.*
* *Water from borrow areas must be directed into silt trap or vegetative filter.*
* *Off-shoots must be constructed at regular intervals to turn water into silt traps of natural vegetation.*
* *Fill must be consolidated to minimise erosion of loose soil and risk of slumping.*
* *Embankments must be left rough surfaced or corrugated.*
* *Machine activity in the watercourse and disturbance of stream vegetation must be minimised.*
* *No heaps of debris to be created within 40m of watercourse.*
* *A compacted, gravel payment must be cleared on both sides of stream crossing (In some specific instances this may have to be sealed.)*" (p. 26)

"*(d) Off-Shoots:*

* *Off-shoots must be sufficient in number to prevent table drain erosion.*
* *Off-shoots into dieback-free forest must be kept to a minimum. Wherever possible these off-shoots should be at the lowest point in the topography.*
* *Off-shoots carrying water from dieback-infected forest must not discharge into dieback-free forest. If necessary the water must be carried in the table drains until it can be discharged into sumps or vegetation filters close to a watercourse.*
* *Off-shoots must have a flared outlet into a vegetation filter strip or silt sump.*
* *Care must be taken when locating off-shoots near stream zones, to ensure adequate vegetation filter to prevent stream siltation.*" (p. 27)

Specification 2.3 Road Maintenance

"*3. Maintenance grading must aim to shape the road profile, and to clean table drains, to improve drainage off and away from the road surface.*

4. […] *Bypasses must not be constructed to avoid boggy sections of road.*

[…]

6. Roadside scrub clearing must be carried out according to T.I.R. Act requirements. The cost of such work must be borne by the road user, as decided and directed by the Forest Officer in Charge." (p. 28)

Section 4 : Coupe Control

Specification 4.3 Extraction

"*2. Snig track patterns in individual sub coupes must be planned and demarcated by the Forest Officer and demarcated by the Forest Officer and Industry Bush Boss together, or, when approved by the Forest Officer in Charge, by the Bush Boss alone.* […]" (p. 41)

Specification 4.4 Loading and Hauling

"*1. In dieback-free forest, the loading operation must conform with the techniques of 'split-phase logging', described in Specification 4.3.*

3. *The log hauling route or routes must be approved by the Forest Officer in Charge.* […]" (p. 44)

LEGISLATION - 1984

Conservation and Land Management. No. 126 of 1984

"AN ACT to make better provision for the use, protection and management of certain public lands and waters and the flora and fauna thereof, to establish authorities to be responsible therefor, and for incidental or connected purposes

[Assented to 8 January 1985]" (p. 1881)

Part IV. - Department of Conservation and Land Management

Division 1. - Establishment of Department

"*33.(1) The functions of the Department are, subject to the direction and control of the Minister-*

(a) to manage land-

(i) to which this Act applies; or

(ii) which becomes subject to the management of the Department under subsection (2),

and the associated forest produce, fauna and flora;

(b) to provide the Commission, the Authority and the Council with such assistance as they may reasonably require to perform their functions;" (p. 1905)

"*(d) to be responsible for the conservation and protection of flora and fauna throughout the State, and in particular to be the instrument by which the administration of the Wildlife Conservation Act 1950 is carried out by the Executive Director pursuant to section 7 of that Act;*

(e) to carry out or cause to be carried out such study or research of or into-

(i) the management of land to which this Act applies; and

(ii) the conservation and protection of flora and fauna, as the Minister may approve;

(f) to provide advice to, or undertake work for or jointly with, and to supply services or facilities to, any department, public or private body or other person if that Minister is of the opinion that the provision of that advice or the undertaking of that work is in the public interest;

(g) upon request by the Minister to whom the administration of the Land Act 1933 is committed, to advise him on the reservation, alienation, and disposal of Crown land in rural areas under that Act." (p. 1906)

"*33(3) The management of land referred to in subsection (1) (a) (i) and the associated forest produce, flora and fauna shall be carried out-*

(a) where there is a management plan for the land, in accordance with that plan; or" (p. 1906)
"*(b) where there is for the time being no such plan-*
(i) in the case of national parks and nature reserves, in such a manner that only necessary operations are undertaken; or
(ii) in any other case, in accordance with the provisions of section 56 applicable to the land.
(4) In subsection (3) (b), 'necessary operations' means those that are necessary for the preservation or protection of persons, property, land, flora or fauna, or for the preparation of a management plan.

(5) Nothing in subsection (1) shall be read as limiting the functions of the Commission and the Authority under sections 19 and 22 respectively.

34. Subject to this Act and the Public Service Act 1978, the Executive Director has power to do all things that are necessary or convenient to be done for, or in connection with, the performance of the functions of the Department." (p. 1907)

Part V. – Management of Land
Division 1. – Management Plans
"*54. (1) A controlling body shall be responsible-*

(a) for the preparation of proposed management plans; and

(b) the review of expiring plans and preparation of further management plans,

for all land which is vested in it whether solely or jointly with an associated body.

(2) This Part applies to the preparation of a plan under subsection (1) (b) in the same way as it applies to the preparation of an initial management plan." (p. 1914)

"*(3) Proposed management plans for any land shall be prepared-*

(a) by the controlling body for that land through the agency of the Department; and

(b) within such period after the commencement of this Act as is reasonably practicable having regard to the resources of the Department available for the purposes." (p. 1915)

"*55. (1) A management plan for any land shall contain –*

(a) a statement of the policies or guidelines proposed to be followed; and

(b) a summary of the operations proposed to be undertaken,

in respect of that land during a specified period which shall not exceed 10 years.

(2) A management plan shall state the date on which it will expire, unless it is sooner revoked, but notwithstanding anything in this section or in the plan, a plan which would otherwise expire shall, unless it is revoked, remain in force until a new plan is approved." (p. 1915)

"*56. (1) A controlling body shall, in the preparation of proposed management plans for any land, have the objective of achieving or promoting the purpose for which the land is vested in it, and in particular management plans shall be designed –*

(a) in the case of indigenous State forest or timber reserves, to ensure the multiple use and sustained yield of that resource for the satisfaction of long-term social and economic needs;
[…]" (p. 1916)

"(2) In subsection (1) (a) 'multiple use' means as many different uses as are possible and compatible among themselves." (p. 1916)

HANDBOOK – 1983

Bauxite Mining : Northern Jarrah Forest : Mining Operations Handbook 1. Ed. 2. 1983

NOTE: REFER TO ENTRY UNDER EDITION 1981 AS IT CONTAINS SIMILAR DETAILS EXCEPT FOR AMENDMENTS TO THE FOLLOWING PRESCRIPTONS-

REHAB 83 : Prescription For Rehabilitation of Bauxite Mines in the Western Jarrah Forest
4.1 Broadscale Regional Planning
"*The mining company is required to produce each year an updated 5-year Mining and Management Plan for approval by Government. In the preparation of these plans, the following aspects of rehabilitation are to be considered:-*
[…]
- *Access for mining and future management.*

[…]" (p. 4.5.4)

6. The Forest Improvement and Rehabilitation Scheme Prescription : F.I.R.S. 82
The Prescription
"*4.1 FIRS 1 – *Water Production MPA*
**Advanced Dieback*
**Pipehead or pumpback catchments only*

For all sites except stream zone.
[…]
(v) […]

Carry out erosion control on all unwanted roads, tracks, landings and pits. […]" (p. 6.3)

*"4.3 FIRS 3 - *Water Production MPA*
** Other forest (i.e. not advanced dieback).*

'*A wide range of treatments is currently being investigated. The 'base' prescriptions, about which variations will be designed, is:*

[…]
"*(iii) If it is an even-aged 'pole' stand:*

[…]*Ensure erosion control, crop tree protection and landing rehabilitation measures are carried out.*

[…]" (p. 6.5)

"*(iv) If it is not a 'pole stand':*
[…]
Erosion control and crop tree protection to be carried out.

[…]
(vii)Erosion control works to be completed prior to autumn rains. It is essential to ensure that water from roads, pits, conveyors, etc. does not drain into the treated stand.

(x) Close all unwanted roads. Upgrade drainage on existing roads to ensure no water flows into forest unaffected or only lightly affected by dieback." (p. 6.6)

Forest Management After Bauxite Mine Rehabilitation in the Western Jarrah : Prescription 82
1.Responsibilities
"*This new prescription deals with the subsequent management of these areas, comprising the regenerated stands on pits, roads, crusher sites and other sites disturbed by mining.*" (p. 7.1)

6. Basis for Treatments
"*6.4 Field Inspection: Each stand for which treatment is proposed must be inspected on the ground. The following attributes will be checked and/or measured:-*

(i) Roads, tracks and drainage: Inspect and prescribe for upgrading, closure or maintenance of each road or track. The ultimate road network must conform with a regional plan which minimises the number of roads while providing adequate access for management." (p. 7.3)

MANAGEMENT PLAN – 1982

Hardwood Management Plan (Central Region). 1982

2.4.4 Influence Zones and Conservation Practices
"*These are areas designated by the planner which surround special natural or artificial features in the forest.*

*For example: * Streams and rivers*
** Roads, railway lines, S.E.C. lines*
[…]
** Tourist, recreation facilities, scenic drives, walk tracks etc.*

After designation, the O.I.C. will prepare an appropriate prescription for each area taking into account land use, dieback status, hygiene, aesthetics, conservation values and risks of visual or noise pollution or of undesirable effects on water supply." (p. 5)

3.1.2 Planning the Annual Cut
"*(5) Existing access roads, stream reserves, amenity strips etc. must be defined.*" (p. 7)

LOGGING PLAN – 1982

Integrated Logging Plan 1979-1982

Part 1. Sawlog
Introduction
"*3.*[…] *All areas are expected to be roaded to winter standard and each coupe will be operated on its merits, in consultation with the Forests Department Divisional O.I.C.*

[…]

5. All road selection is to be approved by the Forests Department before construction.

5.1 In-coupe roads by the appropriate Divisional Officer
5.2 Major roads by the Procurement Officer." (p. 2)

Part 2. Chipwood
Introduction
"*3.*[…] *All areas are expected to be roaded to winter standard and each coupe will be operated on its merits, in consultation with Forests Departments Divisional O.I.C.*
[…]

5. All road selection is to be approved by the Forests Department before construction.
5.1 In-coupe roads by the appropriate Divisional Officer
5.2 Major roads by the Procurement Officer." (p. 7)

FORESTERS' MANUALS – 1981

Foresters' Manual : Part 12 : Mining in Forest Areas. 1981 [in *Foresters' Manual*. 1979]

Erosion Control and Rehabilitation Working Group
"*12.036 The Mining Operations Group is an inter-disciplinary group representing Government interests, including the Public Works Department, the Metropolitan Water Board and the Department of Agriculture (Soil Conservation Service). It is chaired by the Forests Department's Superintendent (Northern Region). All applications for access to forest areas for mining activity are submitted to the Conservator at least six months in advance (up to 2 years in advance for roadworks), and are referred to this committee before approval is given for the removal of timber and subsequent operations.*" (p. 15)

Part 13 : Foresters' Manual : Recreation and Landscape Management. 1981

Recreation Policy
Control of Recreation Facilities
Motorised Recreation
"*13.006 Unlicensed motor vehicles of all types are prohibited on forest land and forest roads. Licensed vehicles may use designated forest roads and tracks. Off-road use of licensed vehicles is prohibited, except in areas where such activity may be specifically designated.*" (p. 2)

HANDBOOK – 1981

Bauxite Mining Northern Jarrah Forest Mining Operations Handbook 1. Edition 1. 1981

3.3 Mining Plans
"*5 Year Plans (also known as Mining & Management Programmes, or MMPs). Prepared by Alcoa annually for each minesite for review by MMP Liaison Group, Government Departments etc., and approval in principle by Minister for Resource Development.*" (p. 15)

3.6 Procedure for Review of 5 Year Plans
"*6. Check proposed haul roads, conveyor routes and powerlines to see that : -*

(i) clearing will be minimised
(ii) optimum use is made of mines, existing easements, PP.
(iii) routes are low in the profile
[…]" (p. 16)

5. Planning Approval
"*5.1 Overall rehabilitation planning must precede, not follow, the mining operation. Accordingly, the following aspects must be taken into account in the preparation and approval of the 5 year Mining and Management Plans for each mine site :-*
[…]
- *future access and management.*

[…]

5.2 A detailed rehabilitation plan will be prepared for each pit. This will indicate :-

[…]

- *access*

[…]" (p. 39)

Rehab 80' : Prescription for Rehabilitation of Bauxite Mines in Western Jarrah Forest
"*11.1 The road network which remains after rehabilitation must conform to a predetermined plan.*

11.2 This plan will be drawn up from approved 5 year mining plans, and will cater for :-

(i) access for mining
(ii) access for rehabilitation
(iii) access for future forest management.

11.3 The basic planning principle is to aim for the minimum number of well surfaced, low profile roads, consistent with fire protection requirements.

11.3 Unwanted roads will be rehabilitated by :-

(i) recovery of gravel for re-use elsewhere.
(ii) ripping and erosion control
(iii) seeding and planting in harmony with surrounding forest." (p. 43)

MANAGEMENT PLAN – N.D. - 1980?

Land Management Plan for State Forest in the Mount William Area. N.D. 1980?

2.3 Access
"*The area is well served by existing roads and tracks and no major construction for forest management purposes is proposed. Mining operations may sever basic access and adversely affect forest management, forest based industries and the public (e.g. Western Boundary Road, Wagerup-Willowdale Road, Nanga Road). Where this is so, an acceptable alternative access will be required (e.g. overpass, minor detour, etc.).*" (p. 7)

3.6 Environmental Control over Bauxite Mining and Rehabilitation of Mined Areas
3.6.2.4 Rehabilitation Phase
"*(a) In conjunction with the Regional Operations Leader, set out preliminary proposals in September each year for rehabilitation based on advice from Alcoa on the availability of areas.* […]

(b) Accompany the Erosion Control and Rehabilitation Working Group and Alcoa environmental personnel on an inspection of areas available for rehabilitation in order to:

[…]
- […] *Redundant haul roads not required for the mining process or by the Forests Department are to be included in the rehabilitation plans.*" (p. 39)

"*(d) Alcoa are to carry out earthworks to prepare the landscape for tree planting according to the rehabilitation specification. This involves the following:*

[…]

- *haul roads not required for further mining or for future forest management are ripped for planting;*

[…]" (p. 40)

WORKING PLAN - 1977

General Working Plan No. 86 of 1977. Part I

5. Resource Management
5.1 Water
5.1.6 Management Strategy
3. Keep road construction and maintenance to the level necessary for catchment protection." (p. 49)

5.2.6.2 Sawlog production strategy
"*9. Design harvesting programmes to minimise road length and design specification so as to avoid unnecessary environmental damage and loss of forest estate*." (p. 73)

5.7.2.5 Gravel, stone and sand policy
"*4. Locate borrow pits where they will not be in view from public roads.*" (p. 110)

5.8 Public Utilities
5.8.7 "*2. Liaise with shires to avoid the use of State forest for access to subdivisions for farmlets*." (p. 113)

LEGISLATION – 1973

Alumina Refinery (Worsley) Agreement. No. 67 of 1973

"*9(2) The Joint Venturers may construct and use private roads within the area of the mineral lease but –*

(a) the plans and specifications for any such road shall be approved in advance by the State and shall where required by the State provide for grade separation at all interactions with public roads and railways;

(b) the Joint Venturers shall –

(i) minimise the extent of forest clearing required for road alignments and give to the Conservator of Forests six (6) months prior notice of their intention to build any road;" (p. 517)

CIRCULAR - 1973

Circular No. 4/73 : Conservation in Management Practice. 1973)

NOTE: CIRCULAR IS AN APPENDIX 13 IN *Hardwood Management Plan : Central Region.* 1982.

4.3.1 Roads and Tracks
"*To be installed to specifications set down in Foresters' Manual. Proper provision to be made for surface drainage, culvert outflow to be diverted across filter strips of uncleared natural surface vegetation at least 20 metres wide before entering reservoirs or major watercourses.*" (p. 5)

WORKING PLAN – 1971

General Hardwood Working Plan No. 85. 1971

1.2 Permanent Forest and Proposed Permanent Forest
"[…] *Clearing of permanent forest for developmental projects such as new power lines, main road alignments and damsites, alone amount to 23, 000 acres and also make serious and continuing inroads into the area of State Forest. For this reason, forest land must not be alienated for any purposes without thorough investigation and deep consideration.*" (p. 4.)

3. Silvicultural Considerations
The Jarrah Forest
"*Conversion from a light selective cut to a heavy concentrated cut will favour the development of even-aged regeneration, will restrict the amount of road construction and maintenance required …* […]" (p. 8)

CODE OF LOGGING … - 197-?

'**Code of Regrowth Logging Practice' for all Logging Operations … 197-?**

Section 2 : General
"*2.1 The Instructions contained in this Code shall be observed by all persons carrying out any regrowth logging operation.* […]"(p. 3)

"*2.3 A contractor shall observe all Acts of the State of Western Australia, and in particular, the Bush Fires Act, 1954, the Forests Act, 1918-1976 … including all amendments to those Acts for the time being in*

force and any Act passed in substitution or in lieu thereof and all Regulations for the time being in force thereunder as well as this Code of Regrowth Logging Practice." (p. 3)

"*2.5 A contractor shall exercise strict supervision and control over the operations of all workers employed by him with a view to:*

2.5.1 Preventing any breach of the Forests Act and Regulations and this Code of Practice." (p. 3)

"*2.8 A contractor, in carrying out all operations in pursuance of his contract shall follow and use only such paths, tracks and roads in the Regrowth areas as may be indicated to him by a Forest Officer and all persons authorised by him to use any paths, tracks and roads at any time.*" (p. 4)

"*2.16 The Conservator reserves the right to prohibit the use of vehicles or equipment which in his opinion are not suited to the task or are considered unsafe.*" (p. 4)

Section 3 : Felling, Trimming, Crosscutting, Etc.

"*3.13 All culverts and road drains shall be kept clear of soil, slash or other debris likely to obstruct the flow of water. Damage caused to roads by a failure to carry out this Instruction will be regarded as damage covered by Instruction 2.10.*" (p. 7)

Section 4 : Extraction

"*4.3 If a contractor requires to construct tracks within the Regrowth areas to facilitate extraction, the location of such tracks shall be approved by a Forest Officer before construction and all tracks shall be constructed to the satisfaction of the Forest Officer and at the contractor's expense.*

[…]

4.5 All culverts and road drains shall be kept clear of soil, slash and other debris likely to obstruct the flow of water. Damage caused to roads by a failure to carry out this Instruction will be regarded as damaged covered by Instruction 2.10." (p. 8)

Section 5 : Loading and Hauling

"*5.4 A contractor shall at his own expense maintain Departmental roads used by him for hauling to the satisfaction of a Forest Officer.*" (p. 10)

"*5.11 All culverts and road drains shall be kept clear of soil, slash or other debris likely to obstruct the flow of water. Damage caused to roads by a failure to carry out this Instruction will be regarded as damage cover by Instruction 2.10.*

5.12 To minimise damage to forest roads and to promote safety in operation log trucks will not be loaded in excess of their licensed capacity." (p. 11)

"*5.20 Speed limits as laid down by the Road Traffic Authority will apply on both public and Departmental roads. The Forests Department reserves the right to introduce lower speed limits on any or all Departmental roads in the interests of greater safety of operation or to lessen the damage to the road. All speed limits must be adhered to.*

[…]

5.23 The Forests Department reserves the right to decide whether any vehicle is in a fit condition for the job it is doing bearing in mind road conditions, grades, load carried etc. etc.[…]

[…]

5.25 Engine exhaust pipe systems must be installed so that they do not blow down onto the roadway. (Exhausting above the cabin is the best position)." (p. 12)

LEGISLATION - 1969

Wood Chipping Industry Agreement No. 58 of 1969

"*14.[…] Any damage to existing roads or tracks resulting from the felling or removal of timber by the Company shall be repaired by the Company at its own expense to the satisfaction of the Forest Officer in Charge*." (p. 465)

FORESTERS' MANUALS – 1961

The Foresters' Manual : Forest Engineering : Section 1. Roads and Bridges … 1961

"*1. Construction and maintenance of roads and tracks for forest projection, management and utilisation absorbs a major part of forest revenue. Selection of good road alignment, together with careful costing, close conformity with specifications and effective supervision of roading operations enables limited funds to be used to the best advantage.*" (p. 7)

Road Planning
"*2. Road planning is a function of the Divisional Officer. The location and standard of road depends on the nature and frequency of traffic, or finance available and on the nature and the area to be roaded.* […]" (p. 7)

Road Location and Selection
"*(c)* […] *Careful selection is an essential pre-requisite for good roading.*" (p. 8)

Specifications
Arterial Roads
"*8. […]Avoid following gullies. Keep up on the gravel slopes or ridge tops if free of stone.* […]. *With arterial roads high cross slope is undesirable as it entails heavy side cutting for an 18 ft. road width.*" (p. 8)

Width of Clearing
"*9. The width of clearing shall be 18 ft. with a road surface of 12 ft. In Karri country the width of clearing is to be increased to 20 ft.*[…]." (p. 8)

F.A.R.G. roads for which a specific grant has been made
"*15. These are roads built with special funds provided by the Main Roads Department.*[…]" (p. 9)

"*16. Generally the standard will be that of the arterial road* …[…]" (p. 9)

Sub-arterial Roads
"*18. These roads should be selected with a view to carrying fast traffic from the fire gang centres, and, where practicable, around forest boundaries. Specifications closely follow those required for an arterial road, but the width of clearing is reduced:-* […]

(c) Width .- The width of clearing shall be 14 ft. with a 12 ft. roadway. In Karri country the width of clearing shall be increased to 16 ft.

[…]." (p. 9)

Forest Tracks
"*20. Tracks are cleared to a width of 12 ft in Jarrah forest and 15 ft in Karri country.*" (p. 10)

Road Maintenance
"*71. Removal of overhanging scrub is carried out by hand slashing …*" (p. 18)

The Foresters' Manual : Control of Trade Operations. 1961

Logging Roads
"*85. Where logging roads replace tramways for extraction purposes, no permits are issued, but a plan of the proposed routes must be submitted for approval by the D.F.O. This is especially important where the permit holder plans 12 months or more ahead so that logging roads can be cleared and consolidated in advance of logging operations. See also paragraph 71.*" (p. 16-17)

REGULATIONS - 1935

Forest Regulations. 1935

General
"*117: (ii) No person shall, in any State forest or Timber Reserve, use any road or track constructed or maintained from funds provided under Section 41 of the Act when a notice is exhibited on such road or track that the use thereof is prohibited by the Conservator.*" (p. 1240)