

DISTRICT MANAGER
DEPARTMENT OF CONSERVATION AND LAND
MANAGEMENT
GEORGE STREET
JARRAHDALE W.A.

DEPARTMENT OF CONSERVATION & LAND MANAGEMENT

C E R T I F I C A T E

- IN -

CONSERVATION & LAND MANAGEMENT

2ND YEAR SYLLABUS 1987.

CADET SCHOOL
DWELLINGUP
WA 6213

2/11

CERTIFICATE IN CONSERVATION & LAND MANAGEMENT
2nd YEAR SYLLABUS 1987

Attached is the 2nd Year Syllabus for 1987 for your information and comment.

The intention of the syllabus is to develop understanding, knowledge and skills. The development of skills is expected to take not less than 65% of total training time. Skills training items can be identified in the syllabus by the preparatory clause "Cadets shall demonstrate the ability" etc.

The subject "Law Enforcement" is being currently developed for inclusion within the 1987 Course. Its syllabus will be distributed when completed.

The syllabus as presented is probably overloaded in terms of content for time available. Suggestions for deletion shall be made as well as additional items.

Suggestions and comments should be sent direct to the Cadet School, Dwellingup, for attention Training Officer A. Scott.



F. H. PRIDHAM (R/F TRAINING)

ENC.

FHP/RH

DISTRIBUTION:

General Manager R. J. Underwood, S.H.Q. Como
All Regional Managers 12
All District Managers 13
Branch Manager Wildlife Research, Woodvale
" " Research Como
" " Planning, Murdoch House
" " Recreation & Landscape, Murdoch House
" " Personnel, S.H.Q. Como
" " Finance, S.H.Q., Como
" " Engineering Services, S.H.Q. Como.
" " Protection, S.H.Q. Como
" " Timber Production, S.H.Q. Como
" " Environmental Protection S.H.Q. Como
" " Information Services, S.H.Q. Como
" " Inventory & Planning, S.H.Q. Como.
" " Communication Branch, S.H.Q. Como.
Manager, Policy Directorate, Crawley
Chief Wildlife Officer, S.H.Q. Como
Safety Officer-in-Charge, Safety Section, S.H.Q. Como.

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ADMINISTRATION

TERMS 1, 2, 3.

General
Aims

Note: Administration includes the control of certain specified Licences.

To give knowledge of Departmental Legislation ~~Regulations~~ ^{Structure} ~~and impart the ability to apply the sections relevant to a Field Officer's work where these are of direct concern to a Field Officer's work.~~

To give knowledge of the legal ~~requirements & licences~~ ^{obligations of licensees} ~~controlling users of Departmental resources; & to impart the ability to control such users.~~ ^{to teach the skills required to control such users.}

To give knowledge of the Agreements & Awards governing the employment of Departmental personnel.

To provide skills required to calculate payments to Departmental employees & to handle costs & basic estimates.

To provide basic knowledge of Public Service Regulation.

To provide knowledge & skills necessary to ensure the proper care & administration of Departmental Vehicles.

To provide basic knowledge of Office Procedure.
To improve skills in written communication.

1. Topic
C.A.L.M.
Department
Organisation

Cadet Objectives

Cadets shall demonstrate knowledge of Regional & District structure.

They shall be generally informed about structures at S.H.Q. level.

2. C.A.L.M.
Legislation

1. Cadets shall demonstrate understanding of the basic structure of the C.A.L.M. Act & Regulations & ability to refer quickly to nominated sections, sub-sections & regulations.

2. Cadets shall demonstrate understanding of the terms used in the C.A.L.M. Act & its Regulations.

3. Cadets shall demonstrate understanding of the terms used in the Regulations of the former National Parks Act, the former Wildlife Act & the former Forests Act.

3. ~~C.A.L.M. Departmental Corporate~~
~~Offences Plan:~~

~~Cadets shall demonstrate general understanding of the significance of the common offences given in the C.A.L.M. Legislation.~~

~~1. Cadets shall demonstrate knowledge of the common offences given in the C.A.L.M. Legislation.~~

~~2. Cadets shall demonstrate ability to follow correct procedures in investigating & recording offences.~~

~~3. Cadets shall demonstrate knowledge of correct procedures relating to the seizure of forest produce.~~

~~and the main articles of the Corporate Plan.~~

4. Registration of
Timber Workers &
Brands

1. Cadets shall demonstrate knowledge of the procedures for registering Timber Workers.

2. Cadets shall demonstrate knowledge of timber brands, their correct use & constraints on it.

5. Forest Produce
(Introduction)

1. Cadets shall demonstrate knowledge of the following procedures & documents & shall be able to enter them correctly:

- (i) Sawmilling Licenses & Agreement.
- (ii) Summary of Sawmilling Operations 182.
- (iii) Log Book (including Colour coding procedure) FD 183a.
- (iv) Firewood Operations FD 165, 175, 240a, 241.
- (v) Control of Apiary Sites FD 162, 298, 72A, 72B, 622.
- (vi) Pole & Pile Licenses FD 202.
- (vii) Measuring & Tallying Procedure FD 125A.

NOTE: Form titles & numbers will be updated.

2. Cadets shall demonstrate ability to carry out a Mill Landing Inspection.

6. T.I.R. Act

1. Cadets shall demonstrate knowledge of the T.I.R. Act & Regulations so far as the following items are concerned:

- (i) Officers appointed under the Act & their responsibilities.
- (ii) Related responsibilities of Forest Officers.
- (iii) Sections of the Act & supporting Regulations applicable to activities within State Forest.

7. Land
Tenure

1. Cadets shall demonstrate knowledge of the tenure of those Land categories, Government & Private, of relevance to the Department.

2. Cadets shall demonstrate ability to recognize land categories as they are shown on plans & maps of relevance to the Department.

Sawlog Permit
Control (including
operations controlled
by Licences &
Agreements).

1. Cadets shall demonstrate knowledge of:

- (i) Current General Working Plan provisions regarding Permit Control.
- (ii) Application of 7-Way Test to Timber Harvesting.
- (iii) Conditions of Typical Permit/Licence/Agreement.
- (iv) Conditions of Typical prescription relating to Tree marking & Permit Control.
- (v) 49a and 49b Procedure.
- (vi) Controls to achieve maximum utilisation without jeopardising the environment or spreading Forest Disease.
- (vii) Organisation of a Falling & Logging Crew of the Sawmilling industry.

2. Cadets shall demonstrate ability to:

- (i) Demarcate coupe boundaries in accordance with prescriptions using maps & aerial photographs.

- (ii) Plan & Control logging including roading, bush landings, extraction, hygiene measures, coupe certification.
 - (iii) Assess trees in terms of a prescription, estimate log volumes & quality, mark trees in the approved manner.
- 3. Cadets shall demonstrate understanding of recording process particularly the H.O.C.'s system as it relates to Logging Operations.
- 9. Control of Other Produce
 - 1. Cadets shall demonstrate knowledge of the provisions of the General Working Plan regarding Forest Produce.
 - 2. Cadets shall demonstrate ability to apply Licences & Prescriptions to Field operations relating to:
 - Poles
 - Firewood
 - Minor Procedure
- 10. Agreements, Awards, Conditions of Service
 - 1. Cadets shall have a general understanding of the Public Service Act & Administrative Instructions.
 - 2. Cadets shall demonstrate knowledge of Sections of the Public Service Act of relevance to the Junior Officer.

These include:

 - Conduct & Efficiency
 - Dress
 - Dealings with Public
 - Rights & constraints
 - Leave & related conditions of Service
 - Allowances
 - 3. Cadets shall demonstrate knowledge of those sections of the Forests Act relating to Forest Officers' Conditions of Service.
 - 4. Cadets shall demonstrate understanding of the Field Staff Agreement and Departmental Circulars issued to clarify and implement it.
 - 5. Cadets shall demonstrate ability to complete forms relating to their service in general. These include:
 - Attendance Record
 - Leave Application
 - P.S. 10.
 - 6. Cadets shall have a general understanding of the structure of a typical Award and how, together with Award Rulings, it is applied.
 - 7. Cadets shall have a thorough knowledge of the A.W.U. (Forestry Workers) Award.
 - 8. Cadets shall demonstrate ability to apply the Conditions of the Award to certain given circumstances.

9. Cadets shall demonstrate knowledge of procedure & pre-service induction of a prospective employee.
 10. Cadets shall have a general understanding of the Duty Statement.
 11. Cadets shall demonstrate knowledge of Departmental Policy on Flexible Working Hours/Nine Day Fortnight.
11. Calculations of Pays
1. Cadets shall demonstrate ability to fill in Time Sheets for routine operations.
 2. Cadets shall demonstrate ability to complete Piecework Determination Form FD 615 in accordance with most recent circulars.
 3. Cadets shall demonstrate the ability to relate Departmental procedure regarding P/W to the relevant sections of the A.W.U. Award.
- Estimate, Expenditure & Costing
1. Cadets shall have a general understanding of the Department's system of Estimates & Expenditure Control.
 2. Cadets shall demonstrate ability to carry out basic costing exercises based on:
 - Time Sheets
 - Job Numbering
 - Form 167's
 - Vehicle Running Books
 - Material Costs
 - Overheads
 - Units of Work Done
 and achieve an answer in dollars or as work units per man day.
 3. Cadets shall have a general understanding of Departmental contract procedures.
 4. Cadets shall demonstrate knowledge of the duties and responsibilities of a junior officer in day to day change of routine contract such as gravelling.
13. Superannuation
1. Cadets shall have a general understanding of the main conditions of Superannuation Scheme & the role of the Department in deducting contributions.
 2. Cadets shall demonstrate ability to apply the Tables in worked examples.
14. Vehicle Records & Costing
1. Cadets shall demonstrate knowledge of Departmental procedures for the organisation and maintenance of its vehicles based on Section 8 of the Foresters' Manual, and modification of it.
 2. Cadets shall demonstrate ability to complete Forms 373 (Vehicle Running Book) and 466 (Fortnightly Plant Return).
 3. Cadets shall demonstrate ~~ability to carry out vehicle maintenance listed on Form 330 (Vehicle Maintenance Record Chart)~~ *understanding of the basic uses of Form 330.*

15. S.G.I.O.
Compensation

1. Cadets shall demonstrate a working knowledge of certain provisions of the Workers' Compensation Act 1912-1978
2. Cadets shall demonstrate their ability to complete
S.G.I.O. Forms 1 and 1A (Employer's Report Form)
S.G.I.O. Form 2 (Workers Claim Form)
S.G.I.O. form 5 (Witness' Statement Form)

Medical Certificates

3. Office
Procedure

3. *Cadets shall demonstrate knowledge of & ability to comply with the provision of Circular 15/86 - MOTOR VEHICLE ACCIDENT INSURANCE CLAIMS.*
1. Cadets shall have a general understanding of basic Departmental Office procedure, including:

Duties of Office Staff

Interaction between Office & Field Staff

Handling correspondence, files, maps & records

Establishing & following routine

Use of telephone.

17. Stores

1. Cadets shall demonstrate ability to identify, check & maintain Departmental general stores.
2. Cadets shall demonstrate general knowledge of basic stores accounting & ordering.

18. WRITTEN COMMUNICATION

1. *Cadets shall demonstrate the ability to write official Departmental letters, using the standard format & conventions. Letters are to reach prescribed standards of clarity, accuracy & effectiveness.*
2. *Cadets shall demonstrate the ability to write technical reports on given syllabus items, using the standard format & conventions. Reports are to reach prescribed standards of clarity, accuracy & effectiveness.*

AXE MAINTENANCE & HANDLING

Term 1.

General Aims

- a) To teach ability to maintain an axe in safe and efficient condition.
- b) To teach skill and safety in basic axe handling.

Topics Axe Maintenance

Cadet Objective

Cadets shall demonstrate the ability to:

- (i) Name correctly the parts of an axe.
- (ii) Remove a broken handle from an axe.
- (iii) Prepare a suitable wedge.
- (iv) Fit a new handle correctly.
- (v) Sharpen an axe correctly.
- (vi) Carry and transport an axe in the correct manner to ensure the safety of personnel and the good condition of the axe.

Axe Handling

Cadets shall demonstrate the ability to use an axe correctly and safely in:

- (i) Tree Marking (e.g. Jarrah, Karri and Pine).
- (ii) Falling small poles (e.g. Marri Coppice and Pine).
- (iii) Cutting & removing small trees from tracks.
- (iv) Trimming pine.
- (v) Cutting Firewood.

CHAIN SAW & FALLER TRAINING

Terms 1 & 2

General
Aims

- a) To teach correct & safe maintenance, sharpening & handling of chain saw.
- b) To develop skills in a range of operations involving chain saws, emphasizing efficient utilisation.
- c) To develop supervisory skills in operations involving chain saws.

Topic

1. Introduction
to
Chain Saw

Cadet Objectives

Cadet shall demonstrate knowledge of:-

1. Working principles of typical chain saw.
2. Types of chain saw & chain in Departmental use.
3. Safety features of saw & chain.

2. Chain Saw
Maintenance &
Sharpening

1. Cadet shall demonstrate ability to use a chain saw file under workshop & bush conditions.
2. Cadet shall demonstrate ability to sharpen blunt chain & to maintain chain in optimum condition.
3. Cadet shall demonstrate ability to assemble a new chain saw, to start it, adjust & run in.
4. Cadet shall demonstrate ability to carry out normal chain saw maintenance, to identify and correct common faults both mechanical and of the chain.
5. Cadets shall demonstrate ability to adjust & wear correctly prescribed safety equipment & to identify defective safety equipment.
6. Cadets shall demonstrate understanding of the lubricants used in chain saws.

3. Basic
Chain Saw
Operations

1. Cadets shall demonstrate safe & efficient working in the following operations:
 - a) Removal of pole & small trees from tracks.
 - b) Directional falling of plantation timber from "cleaning" size to commercial thinning size, including the falling of "hung-up" trees.
 - c) Efficient & safe trimming.
 - e * d) Falling of hardwood timber (other than defective or problem trees) up to 50 cm. d.b.h.o.b.
 - f e) Dressing & squaring timber in basic construction work e.g. recreational facilities.
2. Cadets shall demonstrate awareness of the potential dangers in carrying out the above operations incorrectly

* d) Chainsaw operations in hardwood stand improvement.

4. Advanced
Chain-Saw
Operations

1. Cadets shall receive demonstration & explanation of falling and other advanced chain saw use.
e.g. Thinning larger dimension Karri pole stands
Falling defective trees
2. Cadets shall demonstrate understanding of the skills & hazards of 1., and relate this to permit control, marking crop trees, etc.

D R I V E R T R A I N I N G

Terms 1, 2, 3.

General Aims

1. To provide knowledge of the Traffic Act & related legislation.
2. To teach ability to carry out to a high level of efficiency, essential driving skills.
3. To provide understanding of the especial hazards of driving under Departmental road conditions, both with conventional & with 4 Wheel Drive Vehicle & to teach ability to cope with these hazards.
4. To develop safe & responsible attitudes to safe driving & road usage.

Topics

1. Legislation

Cadet Objectives

1. Cadets shall demonstrate knowledge of the Traffic Act & other legislation related to driving.
2. Cadets shall demonstrate knowledge of Departmental instructions relating to driving.

2. Driving Skills & Techniques

1. Cadets shall demonstrate ability to employ the following driving skills & techniques:

- a) Vehicle check & cab drill before starting.
- b) Steering.
- c) Acceleration sense.
- d) Gear changing.
- e) Three point turn.
- f) Hill start.
- g) Use of transfer case & free wheeling hub.
- h) Co-ordinated use of controls, anticipation, correct signals & use of mirrors.

i) *Skid Control*

Cadets shall demonstrate ability to drive efficiently & safely under the following conditions:

- a) Forest Tracks.
- b) Gravel Roads.
- c) Deep Mud.
- d) Steep roads.
- e) Bad visibility, (including smoke.)
- f) Deep Sand.

3. Off Bitumen Driving

Ability shall be demonstrate both with conventional drive vehicles & Four-Wheel drive vehicles.

*NOTE: Night driving will be included
if time permits.*

4. Correct
Attitudes to
Driving & Use
of Departmental
Vehicles

1. Cadets shall demonstrate correct attitudes to Driving both under test & routine conditions.
2. Cadets shall demonstrate ability to handle vehicles with the proper care, protective maintenance & sympathy.
3. Cadets shall provide evidence of satisfactory driving licence status.

ENGINEERING

I

Term I

ROADS & BRIDGES

General
Aims

1. To provide knowledge of Departmental Policy on Road Planning & Procedures.
2. To teach ability to select the most suitable road alignment to a given specification.
3. To provide knowledge of Road Construction to Departmental standards & specification, & the points of control where road construction is carried out by contractors.
4. To teach & provide operational experience of the standard operations that constitute road & track maintenance.
5. To provide knowledge of the Departmental prescriptions & specifications used in the construction of bridges & installation of culverts.
6. To provide for participation in the construction of Departmental bridges & culverts & to develop the planning, construction & recording skills involved.

Cadet Objectives1. Topic
Road Planning

Cadets will demonstrate knowledge of Road Planning in accordance with Departmental policy & procedures; including Seven-Way Test.

2. Road
Selection

Cadets will demonstrate the ability to select, in the field, a road alignment conforming to a Departmental specification.

Using Aerial Photographs, A.P.I., Dieback & Contour Maps:

Select a final line allowing for limiting factors affecting gradient.

Peg Curves following standard Departmental procedure.

Note availability of gravel in both Dieback & Dieback free areas.

Assess the volume of merchantable timber to be removed in road clearing.

Note any timber suitable for necessary bridge construction.

Compare the relative merits of optional alignments.

3. Road
Construction

Cadets will demonstrate knowledge of the specification of Departmental Road Construction, particularly:

- (i) Widths of clearing for different specifications.

- (ii) Widths of forming depending on future use.
- (iii) Grading requirements including super evaluation on curves.
- (iv) Adequate drainage, table drains, run offs, culverts.
- (v) Bridging requirements.
- (vi) Gravelling, including selection of gravel pits and their subsequent rehabilitation.
- (vii) Cadets will demonstrate knowledge of the practical points of field supervision & control of Road Construction by Contract.

4. Road & Track Maintenance

Cadets shall demonstrate knowledge of:

- (i) Departmental policy for road and track maintenance having regard to
 - Legal Requirements
 - Constraints of 7 Way Test
 - Fire Control Requirements
- (ii) Department working prescriptions applicable to Road & Track Maintenance, including
 - Patch Gravelling
 - Grading
 - Sweeping
 - Slashing
 - Draining, including Culvert maintenance.

Cadets shall demonstrate ability to carry out and/or observe operations listed above.

5. Bridges

Cadets shall demonstrate knowledge of Departmental bridge specifications & plans, and shall be able to name the part of a bridge.

Cadets shall demonstrate ability to draw up a prescription including a working sequence involving machinery, for the construction of a Departmental bridge.

This shall include drawing a detailed plan, quantities list and site map.

Cadets shall demonstrate ability to build a bridge by maximum involvement.

Cadets shall demonstrate ability to report on a bridge construction project, including full costings and appreciation of Safety factors.

6. Culverts

Cadets shall demonstrate knowledge of the sizes, specifications & capabilities of culverts in Departmental use.

Cadets shall demonstrate ability to estimate the best location for culverts on Departmental roads & tracks & the appropriate culverts for given catchments or situations.

Cadets shall demonstrate ability to instal sets of culvert pipes to Departmental Specifications.

ENGINEERING

II

DEPARTMENTAL BUILDINGS

Term 3

General
Aims

1. To provide knowledge of Departmental Housing Policy & the procedures for rental & occupancy.
2. To teach ability to carry out, record, & initiate follow up action to, routine Housing Inspections.
3. To provide knowledge of planning, organising & costing the construction of a simple Departmental building.
4. To provide for participation in the construction of a simple Departmental building, & develop simple building skills.
5. To teach procedures for ensuing compliance & co-operation with local authorities concerned with Department buildings; also brief reference to the insurance requirements.

	<u>Topic</u>	<u>Cadet Objectives</u>
1.	Housing General	<p>Cadets shall demonstrate knowledge of:</p> <ul style="list-style-type: none"> (i) Departmental Housing Policy. (ii) General system of Housing Rentals. (iii) Conditions of Occupancy Agreement, Form 443, with emphasis on Occupant Obligations.
2.	Housing Inspections	<p>Cadets shall demonstrate knowledge of:</p> <p>Common building terms used in Housing Inspection.</p> <p>Cadets shall demonstrate ability to:</p> <p>Carry out Building Inspections & to complete Forms 429.</p> <p>Cadets shall demonstrate ability to draw up:</p> <p>Simple maintenance programmes & follow up action arising from Building Inspections.</p>
3.	Building Construction	<p>Cadets shall demonstrate ability to:</p> <ul style="list-style-type: none"> (i) Prepare plans of a simple building, naming the parts & estimating quantities. (ii) Draw up a work sequence, including the involvement where necessary of local Health Authorities, S.E.C., Electrical Contractors, etc. (iii) Construct the building to the plans & instructions of the qualified supervisor. (iv) Prepare the documentation necessary for Departmental insurance of the building. (v) Write a factual report on the construction of the building including full costs and safety factors.

ENGINEERING

III

EXPLOSIVES

Term 3

General
Aims

- (a) To give understanding of place of explosives in Departmental operations.
- (b) To emphasise the legal requirements & overriding safety precautions.
- (c) To demonstrate the capabilities of explosives in Departmental Use.

Topic
1. Legislation

Cadet Objectives

Cadets shall demonstrate general knowledge of Explosives & Dangerous Goods Act.

Cadets shall have general knowledge of the Regulation of the above Act relating to:

- (i) Purchasing Explosives.
- (ii) Manufacturing ANFO.
- (iii) Transporting Explosives.
- (iv) Storing Explosives.
- (v) Using Explosives.
- (vi) Disposal of surplus or deteriorated explosives.
- (vii) Blasting near towns, settlements, built-up areas.
- (viii) Approved procedure for variation.

Cadets shall demonstrate knowledge of A.W.U. Government Forestry Award concerning explosives.

Cadets shall demonstrate knowledge of Bush Fires Act & Regulations relating to explosives.

The above items shall be related closely to likely use of explosives in Departmental Operations.

2. Characteristics
of
Explosives

Cadets shall demonstrate a general knowledge of:

- (i) Definition of explosives.
- (ii) Sensitivity of explosives.
- (iii) Types of Explosives in Departmental Use.

Gelignite
Detonators
Safety Fuse
Detonating Fuse
ANFO.

3. Operational
Use of
Explosives

Cadets shall ^{receive demonstration & explanation in} ~~gain experience, by demonstration and some participation, in~~ the safe & effective use of explosives, listed below:

- (i) Control of Blasting Site.
- (ii) Precautions & Warning Procedures.
- (iii) Preparation of charges & initiators.
- (iv) Blasting Tree Stumps.
- (v) Blasting Rock in small scale road operations.
- (vi) Disposal of deteriorated explosives.

ENGINEERING

IV

SURVEY & MAPPING

NOTE: This is a bridging course between Mapping 'A' and Mapping 'B' of the 1st Year Cadetship and Departmental operations and procedures.

General Aims

1. To teach ability to use efficiently Department Maps & Aerial Photographs in all field situations.
2. To teach ability to use efficiently, at the District level standard Departmental survey equipment.
3. To teach ability to carry out & plot standard surveys.

1. Topic Departmental Maps & Photographs

Cadet Objectives

Cadets shall demonstrate their ability to use the following for Departmental activities:

- (i) 1:50,000 Maps with and without contours.
- (ii) 1:25,000 A.P.I. Maps.
- (iii) Aerial Photographs with Stereoscope.
- (iv) ~~2v~~ ^{Augure maps} Selected Departmental Management Maps. e.g. "Blown Up HCCS sheets"

Cadets shall demonstrate ability to:

- (i) Employ the Departmental 6 figure Map ref. system.
- (ii) Relate accurately positions on Maps to positions on Aerial Photographs.
- (iii) Describe positions on the ground accurately by co-ordinates.
- (iv) Use Maps & Photographs efficiently in navigational exercises.
- (v) Identify accurately from Photographs & Contour Maps the boundaries of micro catchment.

2. Area Calculations

Cadets shall demonstrate their ability to calculate given areas on any Departmental map:

- (i) By the use of a planimeter.
- (ii) By the use of a Dot Grid.
- (iii) By measurement and mathematical calculation.

3.

Survey
Instruments
& Methods

Cadets shall demonstrate knowledge of:-

Types of Survey of Field significance.

Cadets shall demonstrate ability to:

Use Compass (~~Prismatic & Suunto~~).
Clinometers (~~Hilger & Watts and Suunto~~).
Abney Level, ~~to prescribed standards~~.

Apply Magnetic Variation (or Declination).

Index error as employed in Departmental procedures

Carry out Survey with Compass & Band.
Survey with Compass & Pacing (with or without
backsights).

4.

Plotting
Surveys

Cadets shall demonstrate ability to:

~~Having carried~~ ^{Carry} out Surveys using above equipment.

Apply corrections for Slopes.

Correct Bearings using standard Departmental techniques.

Plot the Survey & "close" permissible errors using
standard Departmental procedures.

MANAGEMENT

Term 3

GENERAL

General
Aims

6. To provide knowledge of Research Principles & Departmental Research structure & priorities.

Topic

1. Management
Definitions,
Development,
Types of
Management

2. Management
Cycle

3. Key
Management
Topics

4. Training

1. To provide knowledge of Management Principles.
2. To provide knowledge of the historical development of Management Styles.
3. To provide knowledge of specific practical management topics.
4. To introduce training as a function of management & to teach Departmental Training Policy & Procedures.
5. To teach ability to develop a simple training plan & to conduct a reasonable session of simple skills training.

Cadet Objectives

Cadets shall understand definitions of "Policy" & "Management" & the relation between these terms as applied to organisations.

Cadets shall be aware of historical development of management skills to modern management from historical examples.

Cadets shall understand the diversity of management styles according to the policy of the organisation (e.g. Militaristic, Social, "Hippy").

Cadets shall understand the components of a simple Management Cycle - Planning, Organising, Directing, Controlling.

Cadets shall be able to relate the Management Cycle concept to Departmental topics & development.

Cadets shall demonstrate understanding of the following key management topics:

Effective Routine
Effective Communication
Effective Feedback
Effective Delegation
Effective Decision Making

1. Cadets shall understand the significance of training as a function of Management.
2. Cadets shall demonstrate knowledge of key points of Departmental Training Policy, Procedures & Organisation.
3. Cadets shall demonstrate full understanding of selected key definitions.
4. Cadets shall have general understanding of the learning process, related to skills & information training.

5. Cadets shall demonstrate understanding of how a District Annual training programme is drawn up.

Cadets shall demonstrate the ability to draw up a Training Plan for a simple session of skills training.

Cadets shall demonstrate ability to organise, deliver & evaluate a simple session of skills training.

5. Research

1. Cadets shall understand Research as an aspect of Management.

2. Cadets shall demonstrate knowledge of the structure & objectives of the Departmental Research Branch.

3. Cadets shall demonstrate knowledge of Regional Research priorities.

4. By involvement in those Research activities related to the syllabus Cadets shall demonstrate ability to participate in Research Projects & offer effective assistance to Research Officers.

5. Cadets shall demonstrate knowledge of the fundamental research principles which characterise a typical Departmental field experiment, for example:

1. Definition of objectives
2. Reference to related experiments
3. Experimental layout
4. Replication
5. Controls
6. Conclusions
7. Presentation of results.

M A N A G E M E N T

II

FOREST MANAGEMENT

Term 3

General
Aims

1. To provide understanding of the interrelationship of Forest Policy & Forest Management.
2. To provide understanding of the progression of Forest Management through the succession of Working Plans.
3. To teach some basic concepts of Forest Management.
4. Using Working Plan 87 as an example, to develop familiarity with Working Plan design and content.
5. To emphasise, by example the importance of records in the planning & management process.

Topics1. Forest
Policy &
Forest
ManagementCadet Objectives

1. Cadets shall demonstrate knowledge of the differences & connections between Forest Policy & Forest Management.
2. Cadets shall be informed of the progression & mutability of Forest Policies.
3. Cadets shall demonstrate knowledge of the key points of the Forest Policy of Western Australia enumerated in the General Working Plan 87 of 1982.

2. Forest
Management
through
Working
Plans

1. Cadets shall demonstrate knowledge of:
 - 1.1 The processes of Forest Management, through Local & General Working Plans, by which State Forest was managed until Working Plan 87 of 1982.
 - 1.2 A range of examples of the application of Multiple Use Management to operations and derived prescriptions.
2. 2.1 Cadets shall demonstrate understanding of the layout of Working Plan 87, & of the terms used in it.
- 2.2 Cadets shall demonstrate ability to refer quickly & accurately to nominated chapters & sub-divisions of the Working Plan & of its appendices.

2.3 Cadets shall demonstrate a general understanding of nominated reports & organisations referred to in Working Plan 87 (e.g. System 6).

3. Working Plan Concepts

1. Cadets shall demonstrate knowledge of key concepts of Working Plans:
 - a) Sustained Yield
 - b) Resource Management, with objectives Policies & Strategies.
 - c) Multiple Land Use & management Priority Areas.
 - d) Core & Buffer
 - e) The role of Forest Protection
2. Cadets shall demonstrate a general understanding of the role of Planning Branch in Forest Management.
3. Cadets shall demonstrate a general understanding of the process whereby records obtained in the field are used in Forest Management.

RECREATION AND PARK MANAGEMENT

TERM |
General
Aims

- a) To develop an understanding of Departmental Policy, Management & Organisation relating to National Parks.
- b) *To develop an understanding of the principles of Recreation Management*
- b/c) To provide knowledge of the responsibilities & workloads of Park Rangers.
- e/d) To give an appreciation of the planning process for Park Management.
- d/e) To involve cadets in designing and construction of recreation facilities, & related protection work.

1. Topic
National Park
Legislation &
Organisation

Cadet Objectives

Cadets shall demonstrate knowledge of:

1. Departmental Policy on Park Management.
 2. Background to C.A.L.M. Legislation and National Park Sections of the C.A.L.M. Act.
 3. Current Regulations from previous legislation related to National Parks.
 4. Organisation of Ranger Staff & their supporting services.
 5. Workloads of Park Rangers.
 6. Conditions of Service of Park Rangers.
-
2. Park Management Planning
 1. Concepts of Park Management Planning within the framework of wider Environmental Planning.
 2. Outline of Major Planning Problems in Park Management.
 3. The integration of Park Management Planning with other organisations & with the requirements of the General Public.
-
3. Outdoor Recreation Planning
 1. Basic Concepts & Principles.
 2. Planning Objectives; including Carrying Capacity & Zoning.
 3. The Planning Process.
-
4. Recreation Design
 1. The Design Process.
 2. Site Selection.
 3. Site Management, Protection & Maintenance.
 4. Visitor Management Control, Survey, Interpretation.
 5. Recreation design as applied to
 - Day Use Areas
 - Camping Areas
 - Walk Trails.

5. Park Protection

1. Threats to Parks & Management procedures resulting from:
 - a) People.
 - b) Feral Animals.
 - c) Exploitation, especially from Mining & allied activities.
 - d) Disease, especially P.c.
 - e) Fire.
 - f) Land degradation, e.g. Salinity, Vegetation loss, Erosion.
 - g) Noxious Weeds.

6. Recreation Furniture & Facilities

1. The principles & guidelines in designing:
 - Tables/Seats
 - Barbecues
 - Barriers
 - Litter Bins
 - Toilets
 - Bridges, Boardwalks, Culverts
 - Steps
 - Parking
 - Signs

Cadets shall demonstrate ability to participate effectively in the planning, designing & construction stages of at least one Park Recreation Project of significance.

7. Aboriginal Culture

Cadets shall demonstrate knowledge of:

1. The impact on Aboriginal Society of white conquest, government policies & social changes.
2. The nature of Aboriginal relationships to land, sites and conservation.

Term 3

WILDLIFE (FLORA & FAUNA) MANAGEMENT

General Aims:

- a) To develop an understanding of Departmental Policy, Management & Organisation relating to Flora and Fauna.
- b) To provide general knowledge of Flora and Fauna in W.A.
- c) To develop an understanding of the factors affecting Flora and Fauna Management.
- d) To provide knowledge of the responsibilities and functions of Officers involved in managing Flora and Fauna.
- e) To provide information and experience of Flora and Fauna Research, and of writing standard inspection reports on Nature Reserves and rare flora surveys.

Cadet Objectives:

Cadets shall demonstrate knowledge of:

- 1.1 Departmental Policy on Wildlife Management, *including impact on community*
- 1.2 Background to C.A.L.M. Legislation. Relevant Wildlife sections of the C.A.L.M. Act, knowledge of the Wildlife Conservation Act.
- 1.3 Current Regulations from previous Legislation

related to Wildlife (especially endangered fauna | rare flora protection) i.e. Wildlife Conservation Act, Regulations).

1.4 Organisation of Wildlife Protection Branch, Reserves Officer and their Support Services.

1.5 Role or duties of Wildlife Officers, National Park Rangers, Reserves Officers and District (Environmental) Protection Officers in relation to Flora and/or Fauna Management.

1.6. MANAGEMENT IMPLICATIONS OF RESERVE SIZE AND DISTRIBUTION ("LOSS").

Cadets shall demonstrate knowledge of:

2.1 Wildlife populations in W.A. including recent and likely future trends (e.g. Kangaroo, Emu, Finch, Waterfowl, Crocodiles, commercially used flora and rare flora).

2.2 Movements of Wildlife populations under natural influences (e.g. Emu migration into agricultural areas, Red Kangaroos in pastoral areas, Migratory waders from Asia....)

2.3 Survey Techniques for rare flora populations.

Cadets shall demonstrate knowledge of:

3.1 Principles of Wildlife Management. Explanation of concepts and terms. Management Plans. Enforcement as a management tool. Knowledge of Wildlife policies and background to them.

3.2 Effect on Flora and Fauna of Departmental operations (e.g. Burning, timber production, road and firebreak construction, plantation establishment).

3.3 Taking of flora and fauna, both legal and illegal.

3.4 Other human influences (Legal and illegal) - land clearing, pollution, wildlife conflicting with agriculture.

3.5 The Management of Reserves and Refuges - (public access, rubbish dumping, littering, fire-breaks, illegal taking of flora and fauna).

Cadets shall demonstrate ability to carry out a complete inspection of a Nature Reserve; complete a rare flora survey; and satisfactorily complete the associated reports.

3.6 Vermin Control (e.g. foxes, rabbits, cats, dogs, goats, feral cattle, noxious weeds, environmental weeds). Implementing declared rare flora management programmes (e.g. survey, fencing, fire management).

4.1 - 4.4 no changes.

Cadets shall demonstrate:

4.5 Ability to participate, understand and keep records of one or two current research projects.

This shall include:

4.5.1 Trapping small marsupials in Forest areas (to study, for example, the effect of fire exclusion on species' diversity).

4.5.2 Mist netting (to study, for example, bird populations, feeding times, habitat levels (height), small birds' sensitivity to direct human interference, ease of capture....)include banding.

4.5.3 Bird Call studies (to gain an appreciation of bird numbering and species existing in any particular area especially those birds generally not visible).

4.5.4 Pollen collection from both plants and birds to study the plants that particular birds feed on.

4.5.5 Nectar flow measurements (by excluding birds) to assess the value of a site for feeding (by birds).

4.5.6 Collecting, pressing, mounting and adding plants to local herbarium (including identifying plants using Blackall & Grieve for e.g.)

4.5.7 Demonstrating an understanding of how to use the W.A. Herbarium for plant identification.

4.5.8 Radio tracking to study territories, daily movements.....

4.5.9. Spot Lighting.

4.5.10 Declared rare flora population studies.

5.1 No change.

5.2 Cadets shall experience a period of on-the-job training, of about 5 days' duration, with a Wildlife Officer, Reserves Officer or a N.P.R. or District Environmental Protection Officer working on the wildlife management's components of their duties.

Term 3

HUMAN RESOURCE MANAGEMENT

(PEOPLE MANAGEMENT)

General
Aims

- 1) To provide basic concepts of people management.
- 2) To promote awareness of styles in people management based on study of individuals & groups.
- 3) To promote awareness of leadership qualities & attempt to develop them.
- 4) To teach systematic communication & supervisory skills.
- 5) To give practical advice & pointers to people management.

Topic

1. Introduction
to Human
Resource
ManagementCadet Objectives

Cadets shall demonstrate knowledge of:

- 1.1 The concept of regarding people as a resource.
- 1.2 The work-related aspirations of Departmental employees.
- 1.3 How aspirations & Departmental objectives may be satisfied in such areas as Safety, Training, Fitness.

2. Studying
& Appraising
People

Cadets shall demonstrate knowledge of:

1. How people may be placed into personality categories for management purposes.
2. The value of the approach described in 2.1.
3. The alternative/complimentary approach emphasising the uniqueness of the individual.
4. The diversity & unity of Departmental employees.
5. Performance appraisal, Form 771. Objectives, procedures & problems.

3. Leadership

1. Cadets shall demonstrate knowledge of the topic leadership under the following headings:

- (a) Leadership - fact or myth
- (b) Leadership styles
- (c) Leadership attributes
- (d) Leadership development.

4. Inter-
Personal
Communication

1. Cadets shall demonstrate knowledge of:

- (a) The Communication Process
- (b) A Systematic Approach to Communication

2. Cadets shall demonstrate ability to put into effect communication skills in short training periods.

5. Supervision

1. Cadets shall demonstrate knowledge of basic supervisory skills under the following headings:

- (a) Role of a supervisor
- (b) Setting objectives
- (c) Job Organisation - Link with Management General
- (d) Job Control (Standards, Review, Rewards)
- (e) Industrial relations
- (f) Safety
- (g) Supervisors role in preparing Job Prescriptions.

6. Case Studies

1. Cadets shall demonstrate ability to contribute to discussion on case studies in people management & to evaluate proposals, "do's" & "don'ts".

FOREST MENSURATION

Term 1

General
Aims

1. To teach ability to measure & record the dimensions of standing trees, logs & other forest produce.
2. To teach ability to measure & record Eucalyptus plots & to prepare growth curves.
3. To provide understanding of the work of officers involved in forest inventory & to teach the techniques of common inventory procedures both in hardwood & pine forest.

Cadet Objectives

1. pic
g
Measurement

1. Cadets shall demonstrate the ability to carry out the correct standard procedure for measuring & recording saw logs.
2. Cadets shall demonstrate the ability to measure & record $\frac{1}{2}$ logs according to standard procedure.
3. Cadets shall demonstrate the ability to check measure logs according to Mill Landing Inspection procedure & to check relevant records.

2. Tree height
Measurement &
Tree Volume
Estimation

1. Cadets shall demonstrate the ability to do the following to a prescribed degree of accuracy:-
 - a) Measure the top height of a variety of tree crowns.
 - b) Measure the height of trees from ground level to crown break or other nominated height.
 - c) Measure diameter over bark at breast height using diameter tape.
 - d) Using measurements already taken, or given, calculate under bark volume of logs from Tree Volume Tables.
 - e) Estimate the volume of logs in the upper part of the bole of a standing tree.
 - f) Estimate & assess the defects of a standing tree.
 - g) Estimate the basal area of a stand by use of the basal area prism.

3. Eucalypt
Plot
Measurements

1. Cadets shall demonstrate ability to measure height, diameter & bark thickness, crown depth & crown diameter of trees.
2. Cadets shall demonstrate ability to complete Plot Record Cards.
3. Cadets shall demonstrate ability to tabulate & graph results obtained.

4. Pole
Measurement
& Classification

1. Cadets shall demonstrate ability to:
 - a) Measure the length of standing hardwood poles.
 - b) Measure/Estimate the crown diameter of standing hardwood poles.
 - c) To apply utilisation specifications to hardwood poles & to accept/reject them accordingly.
 - d) To prepare relevant utilisation & accounting documents.

5. Pine
Produce

1. Cadets shall demonstrate ability to measure produce derived from pine harvesting, & to prepare relevant utilisation & accounting documents.
2. Cadets shall demonstrate general understanding of the way that information from 5.1 is entered & received from a computer terminal.

6. Other
Mensuration

1. Cadets shall demonstrate the ability/knowledge relating to measurement of other produce (firewood, sandalwood), by bin measure or weight.

7. Forest
Inventory

1. Cadets shall demonstrate knowledge of the objectives of Inventory in Forest Management & of the workloads of the officers involved.
2. Cadets shall demonstrate knowledge of F.M.I.S. & of its application to Inventory.
3. Cadets shall be acquainted with practical examples of the significance of the Inventory process, both in Hardwood & Pine Forest, to Industry Control.
4. Cadets shall demonstrate ability to carry out, under close supervision, inventory by line assessment in the Hardwood Forest & by standard plot assessment in the Pine Forest.
5. Cadets shall demonstrate ability to record & present data obtained from 7.4 in the approved way.

PROTECTION

I

Term 1, 2, 3.

FIRE PROTECTION

General
Aims

1. To give a general understanding of the history of fire protection of Departmental lands.
2. To teach thoroughly those sections of the Bush Fires Act, the C.A.L.M. Act & the Regulations of the former Forests Act which are of relevance to Departmental Officers.
3. To give a general understanding of the role of the Officers of the Bush Fires Board & exact knowledge of their interaction with Officers of the Department of C.A.L.M.
4. To teach full knowledge & exact compliance with the requirement of "Safety in Prescribed Burning" (Dept. Bulletin 71).
5. To teach the exact legal & operational obligations in Fire Control matters of Departmental personnel to occupants of neighbouring land.
6. To give good working knowledge of Departmental fire control structure & procedures.
7. To teach the principles of fire behaviour in various vegetation types under a range of conditions & to afford maximum practical experience of them.
8. To provide understanding of those weather patterns of significant impact on fire control operations. To demonstrate Departmental inputs to the Weather Forecasting & the basic forecasting procedures.
9. To give general understanding of the Departmental communication network & sufficient experience to ensure ability of cadets to operate it at the Forest Ranger or equivalent level.
10. To give a general knowledge of the Fire Detection System & to teach the ability both to understand & to prepare detection reports & P.A.F.T.A.C.C.
11. To teach the methods of assessing fuels & risks & the ability to prepare comprehensive prescribed burning prescriptions for a wide range of Departmental land, particularly Hardwood & Pine Forestry. Particular emphasis will be placed on the reasons for burning or for not burning.
12. To teach the skills required to carry out prescribed burning in a wide range of fuels & conditions, & how to inspect & record these burns.
13. To teach the principles of fire suppression on Departmental lands with particular emphasis on practical hand attack.
14. To give general understanding of L.F.O. procedure. To teach exactly the common L.F.O. roles relative to a junior Field Officer's involvement. To prepare the cadet for immediate participation in L.F.O. at the likely junior Field Officer level.
15. To train cadets to handle efficiently basic gang fire control equipment including Fire retardants.

Topics

1. History of Fire Protection in W.A. & Problems associated with it.

2. Fire Protection Policy.

3. Legal Requirements.

Cadet Objectives

Cadets shall demonstrate general knowledge of:

1. Brief history of the fire protection problems associated with the Public Lands of Western Australia since recorded times & the authorities set up to solve them.

2. History of the fire protection of the Eucalypt forests of Western Australia, particularly of the high forest of the lower South West.

1. Cadets shall demonstrate knowledge of the general policy statement & the specific objectives which constitute protection policy stated in the most recent Departmental publications & manuals.

1. Cadets shall demonstrate thorough knowledge of the Sections of the C.A.L.M. Act & the Regulations of the former Forests Act relating to topics listed in other subjects of this Syllabus. Specifically:

- a) Penalty for unlawfully lighting fires.
- b) Forest Officers calling for suppression assistance.
- c) Unauthorised setting fire to the bush.
- d) Sawmill protection.
- e) Responsibility of licensee & permit holders.

2. Cadets shall demonstrate knowledge of the sections of the Bush Fires Act & the Bush Fires Act Regulations relating to the following items:

(Note: the level of understanding will be that of the pamphlet "Fire Law").

- a) Prohibited Burning Times, including suspensions, etc.
- b) Restricted Burning Times, including suspensions, etc.
- c) Burning During Prohibited & Restricted Burning Times.
- d) Suppression of Bush Fires.
- e) Disposal of Cigarettes & matches.
- f) Shire powers under the Act & Regulations, Zoning System.
- g) Appointment & duties of Bush Fire Control Officers.
- h) Fire Weather Officers.
- i) Provisions of Permit to Set fire to Bush.
- j) Powers of Forest Officer as a Bush Fire Control Officer.
- k) Bush Fire Brigade, Organisation, Powers, Insurance.

4. Safety in
Fire Control.

3. Cadets shall demonstrate a general understanding of the functions & structure of the Bush Fires Board & of its full time staff, including its interaction with Department of Conservation & Land Management.
4. Cadets shall demonstrate complete understanding of the application of the Bush Fires Act to the Department of Conservation's fire protection activities.

5. Liaison with
Public, Private
Property Owners,
& other Organisations.

1. Cadets shall demonstrate thorough knowledge of the Publication "Safety in Prescribed Burning" Bulletin 71.
2. Cadets shall demonstrate ability to comply fully in the field with the requirements of Safety in Prescribed Burning Bulletin 71.

1. Cadets shall demonstrate knowledge of the Department's obligations to & interaction with the Public, Private Property Owners & other organisations in the following Fire Control items:

- a) Pamphlets & information.
- b) Fire Control Signs used for Public Warning.
- c) Departmental assistance in training, fire suppression.
- d) Burning on non-Departmental land.
- e) General Public Warnings.
- f) Specific Warnings via P.A.F.S.O.U.
- g) Special notice to Bee Keepers.
- h) Liaison with Westrail, S.E.C., Telecom.
- i) Protective Burning around Settlements & Schools.
- j) Periodic notification to Shires of smoke reports.

6. Departmental
Fire
Protection
Organisations.

Cadets shall demonstrate knowledge of:

1. The "A" "B" "P" system of Zoning for Fire Protection Purposes.
2. The District, Regional & Departmental system of fire control & the routine structure (i.e. other than L.F.O. or Red Action).
3. Cadets shall demonstrate general understanding of the layout of a typical District Fire Control Working Plan.
4. Cadets shall demonstrate thorough knowledge of the Sections of a District Fire Control Working Plan dealing with:
 - a) Association of Duty Rosters & Standbys with Weather Conditions.

- b) Automatic Dispatch procedures.
- c) Automatic Search & Rescue procedures.
- d) Table of Skills, in association with Gang Unit Cards.

7. Fire Behaviour.

1. Cadets shall demonstrate thorough knowledge of the terms & factors of fire behaviour in grass-land, swamp vegetation, woodland, Jarrah types & Karri types under normal & extreme conditions.
2. Cadets shall demonstrate thorough knowledge of how fire behaviour is controlled by the factors of:

Fuel - (including availability - fuel type)
Rain & Drying Conditions.

Slope & Aspect

Relative Humidity

Wind

Temperature

Soil Type

3. Cadets shall be given every reasonable opportunity to witness fire behaviour. They shall demonstrate ability to measure & record fire behaviour by standard Departmental procedure, i.e.
 - Rates of Spread of fire components (head, flank & tail)
 - Flame Height
 - Scorch Height
 - Spotting

4. Cadets shall demonstrate the ability to project & plot fire perimeters under a range of given conditions & to combine this with projected theoretical fire line construction.

8. Fire Weather.

Cadets shall demonstrate knowledge of:

1. The Departmental weather forecasting system by radio or by the computer network.
2. The method of recording weather data in Districts & disseminating it to Officers & Gangs.
3. The weather data collected by certain Districts & the uses to which it is put.
4. The special significance of weather data to conditions of extreme fire danger.
5. Cadets shall demonstrate, using Fire Behaviour Tables, the ability to calculate, to the standard required in a District during the fire season. The rates of fire spread, & where applicable, prescribed burning patterns, & to present them in the form required.

6. Cadets shall demonstrate the ability to calculate the Soil Dryness Index over a sustained period.

7. Cadets shall demonstrate knowledge of the implication of S.D.I. & its constraints on Fire Control operations.

9. Communications.

1. Cadets shall demonstrate knowledge of the Departmental Radio network, in particular:

- a) Types & Quantity of Equipment
- b) Major Uses
- c) Constraints, including Legal constraints.

2. Cadets should demonstrate knowledge of the Organisation of Communications Branch & the work loads of its Officers.

3. Cadets shall demonstrate knowledge of the need to safeguard equipment & in the event of malfunction, how to report & return to Communications Branch.

4. Cadets shall demonstrate ability to use radio sets effectively & quickly, using standard procedures & techniques.

10. Fire Detection.

Cadets shall demonstrate knowledge of:

1. The overall Departmental Fire Detection System & its significance in Fire Control.

2. The role of aircraft in fire detection & the principles of aerial surveillance.

3. The types of aircraft in current use including their basic capabilities.

4. The qualifications, duties & organisation of the pilot group, & the training & support given to them by District Personnel, including emergency procedures.

5. From brief experience on a detection flight & from office experience, cadets shall demonstrate the ability to give & record smoke reports.

6. Cadets shall demonstrate general knowledge of:

- a) the tower lookout system
- b) a towerman's capabilities & duties
- c) the method of reporting smokes from a tower
- d) essentials of tower maintenance.

11. Prescribed Burning - Hardwood.

Cadets shall demonstrate knowledge of:

1. Different reasons for carrying out prescribed burning & the range of techniques available.

2. Circumstances under which burning should not be practised.

3. Normal range of burning operations.

4. Planning Process, especially

- a) Master Burning Plan
- b) Annual Burning Plan
- c) Individual Burn Prescription
- d) History Plan, /with Colour Coding.

5. Cadets shall demonstrate ability to prepare complete prescriptions for a range of hand burns including:

- a) Identification of land use priority.
- b) Seven Way Test.
- c) List of preparatory work, e.g. roads, edging.
- d) Prepare detailed ^{Fuel Age Plan} fuel age/weight plans by reference to cutting records, A.P.I. plans, photographs & intensive fuel sampling.
- e) Prescribe the number of lighting & other conditions necessary to achieve the proposed burning effect.
- f) Detailed preparation of P.A.F.S.O.U.
- e) Detailed preparation of Environmental Impact Statement.

6. Cadets shall demonstrate ability, under the closest supervision to carry out all aspects of hand burn including:

- a) Edging
- b) Test fires
- c) Weather Observation, *including operational Met. & Fuel instruments*
- d) Identification of likely trouble spots.
- e) Stripping
- f) Checking & supervising hop overs
- g) ~~Final~~ Mop up & ~~check~~ patrol
- h) Preparing Reports.
- i) Entering on Records.

7. Cadets shall demonstrate knowledge of the strategy organisation & conduct of an aerial burning operation & shall participate in components such as briefing, edging, patrol, study of fire behaviour, reporting.

8. Cadets shall demonstrate knowledge of the role of the aircraft in aerial burning operation (including flight patterns) & the role of motor vehicles (including use & constraints on Very Pistol).

12. Fuel Reduction
Softwood Plantations,
particularly by
burning.

Cadets shall demonstrate knowledge of:

1) The range of fuel reduction methods in softwood plantations, particularly:

- a) Prescribed Burning
- b) Grazing
- c) Mechanical crushing of debris.

2. The objectives of fuel reduction by burning.

3. The principal factors influencing burning in pine plantations, i.e.:

Available Fuel
 Temperature
 Wind
 Slope & Aspect
 Soil
 Relative Humidity
 Rain & Drying Conditions
 Consideration of Edge Effect.

4. The constraints to burning listed in Departmental Manuals.

5. The main methods of burning, including stripping across wind, back burning.

6. Differences in P. radiata & P. pinaster fuels; different burning techniques.

12A. PINE BURNING PRESCRIPTIONS

Cadets shall demonstrate ability to:

1. Carry out detailed fuel surveys in pine plantations & produce detailed fuel plans.

2. Write standard prescriptions for pine burning.

3. Under close supervision to carry out burning operations under pine canopy, including post burning inspection & recording.

13. Fire Suppression.

Cadets shall demonstrate knowledge of:

1. Standard Despatch procedure once action is decided upon.

2. Special "Red Action" Despatch procedure, in particular the responsibilities of an Officer & Overseer when he

a) is designated at the beginning of the day for Red Action duty.

b) receives a Red Action Call.

3. P.A.F.T.A.C.C. procedure.

4. Cadets shall demonstrate ability, in a contrived bush situation, acting as Overseer of a 5 person gang, to deliver on the radio an efficient speedy P.A.F.T.A.C.C.

5. Cadets shall demonstrate knowledge of the principles of fire suppression in terms of "Strategy, priority, Speed of Attack, aggressiveness, safety, gang control, fire behaviour, periodic reports, mop-up, final report, record.

6. Cadets shall demonstrate ability to use correctly, in fire suppression, the following:-

Protective clothing & equipment
 Rake Hoe
 Chain Saw
 Axe
 Knapsack Spray

Fire Retardant

Light Duty

Heavy Duty

All knowledge gained from Booklet 71.

7. Cadets shall demonstrate knowledge of fire suppression strategies, namely direct & indirect attack, back burning ("counter firing".)

14. Large
Fire
Organisation.

1. Cadets shall demonstrate knowledge of the objectives of L.F.O. & a brief history of its development.

2. Cadets shall demonstrate knowledge of the overall structure of L.F.O. & how it may be initiated, sealed up & down, depending on the development of the fire.

3. Cadets shall demonstrate thorough knowledge of selected roles, namely Fire Boss, Sector Boss, Crew Leader, Controller, Supply Officer, Intelligence Officer.

4. Cadets shall demonstrate thorough knowledge of the Control Point of a typical hardwood L.F.O., the functions of the personnel normally located there, & the use of written messages.

5. Cadets shall demonstrate ability to fill in correctly a Gang Unit Card.

15. Fire
Reports &
Investigation.

1. Cadets shall demonstrate knowledge of the system of fire reports.

2. Cadets shall demonstrate ability to fill in & submit the standard fire report at the District level.

3. Cadets shall demonstrate the ability to use the standard procedure for investigating the cause of a wild fire.

16. Fire
Equipment.

1. Cadets shall demonstrate ability to identify & use the standard fire equipment carried on a Gang Truck & on a Heavy Duty.

2. Cadets shall demonstrate knowledge of the colour code identification system of fire equipment.

3. Cadets shall demonstrate ability to identify & describe containers of liquids used in Fire Control.

4. Cadets shall demonstrate exact knowledge of the requirements of the T.I.R. Act, A.W.U. Award & Explosives Act regarding the proper carriage of such liquids & associated substances.

5. Cadets shall demonstrate thorough knowledge of the types of fire fighting hose in Department, with its classification & colour coding.

6. Cadets shall demonstrate ability to handle, stow & safeguard hose under operational conditions.

17. Water
Supplies.

Cadets shall demonstrate knowledge of:

1. Departmental procedures regarding the use, density, capacity & location of Water Supplies used in fire control.
2. The correct methods of:-
 - a) Signposting water supplies in the field.
 - b) Representing them on Departmental plans.
 - c) Recording them in the Office.

18. Fire
Retardants.

1) Cadets shall demonstrate knowledge of the nature, storage & use of Fire retardants currently used by the Department.

(Note: The chemistry of Fire Retardants has been covered in the 1st Year Syllabus).

2. Cadets shall demonstrate ability to mix & apply Fire Retardants in the way prescribed, for each specific fire control operation.

3. Cadets shall demonstrate ability to clean & maintain in good condition, vehicles & equipment used in the application of fire retardants.

PROTECTION

II

OTHER HARMFUL AGENCIES

Term 2

General Aims

1. To provide knowledge of the history & development of *Phytophthora cinnamomi* in Western Australia.
2. To teach the life cycle & biology of P.c. with especial reference to its manifestation in indicator species & vegetation communities on Departmental lands.
3. To teach sampling & recognition of P.c. in a range of sites & of vegetation communities & appreciation of its likely impact on such sites & communities.
4. To teach the relevant Forest Diseases legislation & the permit, control & recording system based on it.
5. To teach the key sections of the legislation relating to noxious weeds. To teach the recognition of as many as practicable & the methods of control.

Topics

1. *Phytophthora cinnamomi*.

Cadet Objectives

1. Cadets shall demonstrate knowledge of the brief history in W.A. of the disease *P.cinnamomi* including pre identification status, identification, recommendations of Task Force, proclamation of D.R.A.'s contemporary strategies.
2. Cadets shall demonstrate knowledge of the legislation initially under Forests Act, subsequently under C.A.L.M. Act, together with regulations & schedules.
3. Cadets shall demonstrate knowledge of the Biology of *P.cinnamomi* in association with susceptible members of the Jarrah community, particularly *Banksia grandis*.
4. Cadets shall demonstrate knowledge of the manifestation of *P.cinnamomi* in a range of vegetation & soil types, both forest & other sites representative of Department lands.
5. Cadets shall demonstrate ability to carry out a ~~grand~~ survey to record *P.cinnamomi* occurrence
ground

or suspected occurrence through indicator species.

6. Cadets shall demonstrate ability to produce plans recording the results of samples.

7. Cadets shall demonstrate ability to sample vegetation suspected of P.c. infection.

8. Cadets shall demonstrate general understanding of the identification of P.c. through aerial photography, interpretation & expert ground monitoring.

9. Cadets shall demonstrate knowledge of the likely consequence of operations on a range of sites of varying P.c. status.

10. Cadets shall demonstrate ability to apply the 7 Way Test to a range of Departmental operations.

11. Cadets shall demonstrate general understanding of the results of past research into P.c. associated problems & the general trend of current research.

12. Cadets shall demonstrate ability to excavate & describe typical Jarrah root system in a variety of sites.

13. Cadets shall demonstrate a general understanding of the interaction of P.c. on the following activities on Departmental lands:

- a) Bauxite Mining
- b) Logging
- c) Prescribed Burning & *Fire Suppression*
- d) Roothing
- e) Silviculture Operations
- f) Public Visitation
- g) Water production.

14. Cadets shall demonstrate ability to carry out effective vehicle washdown.

15. Cadets shall demonstrate ability to fill in Permits commonly required for entry into D.R.A's.

16. Cadets shall demonstrate knowledge of how the permit system is used to control infection of Departmental lands & the action taken to record breaches & possible infection.

2. Noxious Weeds.

1. Cadets shall demonstrate knowledge of legislation relating to declared flora on Departmental lands.

2. Cadets shall demonstrate ability to recognize a range of these weeds.

3. Cadets shall demonstrate knowledge of the control measures applicable to a representative sample of these weeds.

4. *Cadets shall demonstrate knowledge of the process whereby the occurrence & progress in controlling noxious weeds is covered by HOCs & POCs.*

Term 1, 2, 3.

General Aims

- a) To provide complete understanding of Departmental Safety Policy and of the concepts and terms used in it.
- b) To teach skills required to carry out Departmental Safety procedures, especially relating to accident recording and investigation.
- c) To develop a high degree of safety awareness, including use of protective equipment.
- d) To provide an understanding of the Chemical Users Manual and ability to use it.
- e) To reinforce 1st Aid Skills learnt earlier.
- f) To encourage personal fitness through training in the ability to assess and record fitness.
- g) To teach correct lifting techniques.
- h) To provide a general understanding of Hearing Protection and precise knowledge of Departmental obligations.

Topics

1. History, Legislation & Policy.

Cadet Objectives

- 1.1 Cadet shall demonstrate general understanding of the history of Accident Prevention.
- 1.2 Cadet shall demonstrate knowledge of those Sections of T.I.R. Act relating to practical bush operations.
- 1.3 Cadet shall demonstrate thorough understanding of Departmental Safety Policy.

2. Safety & Accident Terms & Definitions.

- 2.1 Cadets shall demonstrate knowledge of Safety Terms used in:
 - a) Accident Analysis & Investigation.
 - b) Accident Recording.
 - c) Accident Statistics.
 - d) AS 66 (Selected Section).

3. Accident Investigation & Recording.

- 3.1 Cadet shall demonstrate knowledge of Departmental procedure for Investigating & Recording accidents.
- 3.2 Cadets shall be able to fill in and properly process:
 - a) 1st Aid Treatment Slip
 - b). FD 774
 - c) Current Accident Report Forms
- 3.3 Cadets shall demonstrate understanding of systematic Safety Inspection.
- 3.4 Cadets shall demonstrate understanding of Systems Approach to Accident Investigation and ability to apply it to a mock accident.

4. Creating & Fostering Safety Awareness

- 4.1 Cadets shall demonstrate understanding of:
 - a) Induction process.
 - b) Function of Safety Meetings.
- 4.2 Cadets shall wear and use Safety Clothing and equipment with a full understanding of its use.
- 4.3 Cadets shall attend Safety Meetings at Cadet School and if possible at Districts and in rotation fill the role of meeting office bearers.

5. Chemical Users Manual

- 5.1 Cadets shall demonstrate understanding of the reasons for the Manual and the method of using it.
- 5.2 Cadets shall apply selected parts of the Manual to nominate operations.
- 5.3 Cadets shall in rotation complete the fortnightly record of chemical use.

6. 1st Aid Course

- Entry behaviour - The St. John Course taken in the 1st Year.
- 6.1 Cadets shall demonstrate knowledge of the basic requirements of a Departmental 1st Aid Kit.
 - 6.2 Cadets shall demonstrate ability to apply 1st Aid in prescribed situations.

7. Kinetic Lifting

- 7.1 Cadets shall demonstrate knowledge of the principles of Kinetic lifting.
- 7.2 Cadets shall correctly execute lifts of a number of prescribed articles.

8. Fitness Training

- 8.1 Cadets shall demonstrate ability to measure and record personal performance in the following activities:
 - a) Step Test.
 - b) 2.4 km. run.
 - c) Performance on Fitness Stands.
 - d) Walk/Run 5,200 metres.
- 8.2 Cadets shall demonstrate knowledge of the Aerobic Points method of fitness recording.
- 8.3 Cadets shall demonstrate understanding of the groups fitness levels & *write a factual report on the subject.*

9. Hearing Protection

- 9.1 Cadets shall demonstrate understanding of the main points of Legislation relating to Hearing Protection.
- 9.2 Cadets shall demonstrate understanding of Departmental policy and procedures relating to Hearing Protection.
- 9.3 Cadets shall demonstrate full understanding of exposure to Chain Saw noise and of the relative merits of a range of hearing protection.
- 9.4 Cadets shall demonstrate ability to check and assess the condition of protective equipment.

10.3 Cadets shall be able to relate HAZCHEM system to Dept. operations.

- 9.5 *By being tested individually, cadets shall gain general understanding of the audiometric testing process.*
- 10.0 *"HAZCHEM" System.*
- 10.1 *Cadets shall demonstrate knowledge of the objectives, procedures & basic legal requirements of the system.*
- 10.2 *Cadets shall demonstrate ability to translate HAZCHEM signs.*

SILVICULTURE

I

ELEMENTS OF SILVICULTURE

Term 1

General Aims

1. To give knowledge of the aims, application & general terminology of silviculture.
2. To give knowledge of common silvicultural systems & of their application to forestry in Western Australia.
3. To explain the range of silviculture operations relevant to forestry in Western Australia, with especial references to technical terms, to operational objectives, & environmental implications.

Topics

Cadet Objectives

1. Preliminary Instruction

- 1.1 Cadets shall demonstrate understanding of common silvicultural terms.
- 1.2 Cadets shall demonstrate understanding of the difference between the managed and the unmanaged forest.
- 1.3 Cadets shall demonstrate understanding of the term "stand" and how it is used in W.A. forestry.

2. Silvicultural Systems

- 2.1 Cadets shall demonstrate knowledge of the characteristics of a silvicultural system.
- 2.2. Cadets shall demonstrate knowledge of the following system as they apply, or have/ ^{been} applied or might be applicable to W.A. forestry:
 - (i) Clear Felling System
 - (ii) Selection System
 - (iii) ~~Shelterwood~~ Uniform System
 - (iv) Coppice System

3. Silvicultural Operations

- 3.1 Cadets shall demonstrate knowledge of the purposes and terminology of the following operations:
 - (i) Site preparation
 - (ii) Establishment - Planting, Seeding.
 - (iii) Tending - Weed control, Stand Improvement, Cleaning, Tops Disposal.
 - (iv) Pruning
 - (v) Thinning. Tree Categories. Types of Thinning, Thinning Regimes.
 - (iv) Clear felling, Trade Cutting, Salvage Cutting.
 - (v) Agro-forestry.

Note: Detailed prescriptions will not be included. They will be covered elsewhere in the Course.

SILVICULTURE

II

JARRAH SILVICULTURE

Term 1

General

Aims

1. To provide knowledge of the range & significance of the Jarrah Forest in Western Australia.
2. To explain the history of the Jarrah Forest with especial reference to the Silviculture applied to it.
3. To provide knowledge & full understanding of the development of a Jarrah stand.
4. To provide knowledge & full understanding of past & present pressures operating in the Jarrah forest.
5. To provide knowledge & experience of current Silviculture & detailed silvicultural prescriptions.
6. To provide skills to carry out Silvicultural assessments & to participate in current Jarrah prescriptions.

Topics

1. Introduction to Jarrah Silviculture

Cadet Objectives

1.1 Cadets shall demonstrate knowledge of:

- (i) The range of the Jarrah Forest.
- (ii) The silvicultural characteristics of Jarrah.
- (iii) A brief history of Jarrah Silviculture.

2. Silvicultural Characteristics of Jarrah

2.1 Cadets shall demonstrate knowledge of the following:

- (i) Flowering and seed cycle.
- (ii) The effect of seeding on Jarrah growth.
- (iii) Seedling development.
- (iv) The development and significance of the lignotuber.
- (v) Sapling formation.
- (vi) Pole formation.
- (vii) The pole and veteran stages.
- (viii) Jarrah coppice.
- (ix) Jarrah as a Nursery subject.

2.2 Cadets shall demonstrate the ability to recognise and record in the field the stages enumerated in 2.1

2.3 Cadets shall demonstrate knowledge of reaction of Jarrah to the following factors operating in its environment.

- (i) Fire, both prescribed and wild.
- (ii) Phytophthora cinammoni. *amillan*
- (iii) Site disturbance by logging and mining.

2.4 Cadets shall demonstrate knowledge of the Jarrah root system and ability to excavate and interpret such a typical root system.

3. Jarrah Silviculture Systems

3.1 Cadets shall demonstrate knowledge of the history of Jarrah Silviculture Systems including:

- (i) Pre Forest Department Cutting. - *girth limit*
- (ii) The Selection System/ *group selection systems*
- (iii) Clear felling System.
- (iv) Jarrah Intensive Management Units.
- (v) Jarrah mixtures, especially in the Southern Re
- (vi) Current prescriptions.

3.2 Cadets shall demonstrate ability to apply current prescriptions.

4. Jarrah Regeneration, Tending & Thinning.

- 4.1 Cadets shall demonstrate understanding of the factors affecting the natural regeneration of Jarrah.
- 4.2 Cadets shall be shown stands which have been treated by the following operations and shall demonstrate ability to carry out as many of them as are available:
 - (i) Ringbarking.
 - (ii) Coppicing.
 - (iii) ~~Banksia eradication~~. *Crop Tree Retention Marking*
 - (iv) Non commercial thinning, including notching.
 - (v) Tops disposal.
 - (vi) F.I.R.S. and other stand improvement, including *eradicate Banksia*.
 - (vii) Fertilizing.
 - (viii) *Other current prescriptions of Jarrah Silviculture.*
- 4.3 Cadets shall demonstrate the ability to construct and use a booking sheet for sequential sampling in Jarrah pole thinning.
- 4.4 Cadets shall demonstrate the ability to carry out current techniques in the assessment of regeneration.

5. Silvicultural Control Systems

- 5.1 Cadets shall demonstrate understanding of and ability to handle, at a basic level, the HOC System.
 - 5.2 Cadets shall demonstrate understanding of EMIS as related to Hardwood Silviculture.
- (Note: Topic 5 shall be taught with reference both to Jarrah & to Hard Silviculture)

SILVICULTURE

III

KARRI SILVICULTURE

Term

General Aims

1. To teach the distribution & composition of the Karri Forest & the silvicultural characteristics of the species Karri.
2. To promote understanding of the Karri seed cycle & basic methods of seed forecasting.
3. To explain, demonstrate & practice the optional methods of regenerating karri, including nursery practice.
4. To promote understanding of the development of silvicultural systems.
5. To enable cadets to carry out the complete range of operations in the Karri Forest.

Topics

1. Introduction to Karri Silviculture.

Cadet Objectives

Cadets shall demonstrate knowledge of:

- 1.1 Distribution of the Karri Forest.
- 1.2 Pure Karri and mixtures including Karri.
- 1.3 Silvicultural Characteristics of Karri.
- 1.4 Overview of Karri Silviculture.

2. Karri Regeneration

Cadets shall demonstrate knowledge of:

- 2.1 Flowering and seed cycle.
- 2.2 Seed forecasting.
- 2.3 Seedling ^{establishment} ~~development~~ and related site factors, e.g. slope ~~weed competition~~.
- 2.4 Early development of Karri stands.

2.5 Cadets shall demonstrate knowledge of the factors affecting the natural regeneration of Karri.

2.6 Cadets shall demonstrate knowledge of the factors affecting the survival of artificially regenerated Karri.

2.7 Cadets shall demonstrate ability to recognise floral component of Karri and to carry out simple forecasting exercises.

3. KARRI NURSERY

- 3.1 Seed Extraction
- 3.2 Nursery Layout
- 3.3 Seed Sowing
- 3.4 Tending Operations
- 3.5 Irrigation

3.6. Inimicalities.

3.7 Cost & Production.

3.8 Lifting & despatch.

3.9 Survival Counts & Stock Taking.

4. Assessment of
Karri
Regeneration

Cadets shall demonstrate the ability to assess and record in the field the success of Karri regeneration using the standard Milacre method.

5. Karri
Operations

Cadets shall demonstrate knowledge of the following establishment operations and ability in doing them:

5.1 Selecting Seed Trees.

5.2 Seed Collection.

5.34 Hand planting - potted and open rooted.

5.45 Spot Seeding.

5.56 Broadcast Seeding.

5.5A3 Karri Regeneration Burning.

Cadets shall demonstrate knowledge of the following tending operations and ability in doing them.

5.6 Coppicing.

5.7 Thinning - *even aged, two tiered*
~~Commercial & Cleaning.~~

5.8 Tops disposal.

~~5.9 Stand improvement.~~

6. Karri
Silvicultural
Systems

Cadets shall demonstrate knowledge of the development of Karri Silvicultural System, including:

6.1 Pre Forests Department cutting.

6.2 Selection System.

6.3 Clear Felling System.

6.4 Treatment of Karri Mixtures.

6.5 Integration of Karri Silvicultural System with Woodchipping

6.6 Current prescriptions.

SILVICULTURE

IV

PINE SILVICULTURE

Term 2

General
Aims

1. To give understanding of the role of the pine forest in Western Australia, especially the associated advantages & problems.
2. To give knowledge of the particular roles & relative merits of *P.radiata* & *P.pinaster*.
3. To explain the acquisition & use of land for pine forestry including the role of private forestry.
4. To give knowledge of & ability to carry out the range of operations necessary for the establishing & tending of the pine forest.
5. To give understanding of the interrelationships between pine silviculture, harvesting & protection.
6. To teach ability to programme, supervise & record pine operations.
7. To give knowledge pine nursery techniques & as much practice as feasible in pine nursery operations.

Topics

1. Introduction

Cadet Objectives

1. Cadets shall have a general understanding of the role of exotic species in forestry, and of the advantages & problems of their introduction.
2. Cadets shall have a thorough understanding of the place of *P.radiata* and *P.pinaster* in Western Australia forestry
3. Cadets shall demonstrate knowledge of the development of the Pine forests in W.A., both State & Privately owned.
4. Cadets shall demonstrate knowledge of the Departmental objectives, target costs and related factors of its pine planting programme.

2. Silvicultural
Characteristics
& Silvicultural
Systems

1. Cadets shall demonstrate knowledge of the silvicultural characteristics of the genus pine with particular reference to *P. radiata* and *P.pinaster*.
2. Cadets shall have a general understanding of the origin of *P.radiata* and *P.pinaster*; in particular:
 - a) Their major importance outside W.A.
 - b) Major provenances
 - c) Silvicultural systems by which they are cultivated other than in W.A.
 - d) Comparative growth rates.

3. Land for Pine Planting
 3. Cadets shall have a general understanding of other Pine species of possible W.A. significance.
 1. Cadets shall demonstrate knowledge of the requirements for viable *P. radiata* & *P. pinaster* forest in W.A. under the headings of:
 - a) Site
 - b) Climate
 - c) Protection & harmful agencies
 - d) Marketing considerations
 2. Cadets shall demonstrate knowledge of the procedures whereby the Department may purchase land for Pine Planting.
 3. Cadets shall demonstrate ability to carry out & record a field survey designed to assess land for Pine Planting.
- + Pine Forest Design
 1. Cadets shall demonstrate knowledge of the principles governing the design of pine forest & of the terms involved.
 2. Cadets shall demonstrate understanding of the interrelationships of marketing, protection & silviculture in the design of pine forest.
 3. Cadets shall demonstrate ability to use the relevant plans, conventional signs & nomenclature.
 4. Cadets shall demonstrate knowledge of differences in pine plantation design with locality, particularly "Hills" "Coastal" & "Sunkland".
5. Site Preparation
 1. Cadets shall demonstrate knowledge of the principles of site preparation for planting on normal Departmental planting areas namely Coastal Sands, High Forest & Grassland.
 2. Cadets shall demonstrate knowledge of the standard prescriptions in localities listed in Silvicultural Characteristics & Silvicultural Systems 1.
 3. Cadets shall be shown the operations at pine Districts and participate as far as possible. They shall be acquainted with targets, production & costs.
6. Weed Control
 1. Cadets shall demonstrate knowledge of the principles of weed control under headings Mechanical Control, Chemical Control & Silvicultural Control.
 2. Cadets shall demonstrate understanding of the relative merits of pre-planting and post-planting weed control.
 3. Cadets shall demonstrate knowledge of the standard prescriptions of weed control.
 4. Cadets shall be shown the operations at Pine Districts and shall participate as far as possible.

7. Plantation
Establishment
(Planting,
Blank Filling,
Tending to
Canopy closure).

1. Cadets shall demonstrate knowledge of the principles of planting on the normal range of Departmental sites, namely:
 - Coastal Sands
 - Former High Forest
 - Grasslands
2. Cadets shall demonstrate knowledge of the organisation & points of supervision applicable to 1.
3. Cadets shall be able to relate nursery practice to planting requirements, planting requirements to planting spacing, and planting spacing to subsequent operations, including harvesting.
4. Cadets shall demonstrate ability to carry out a prescription for planting including the application of fertilizer at planting time.
5. Cadets shall be shown a wide range of planting & associated operations & shall participate in the maximum number available.
6. Cadets shall demonstrate ability to carry out a prescribed survival count of a recently planted compartment, to record the result on a plan and to make recommendations for the appropriate amount of blank filling.
7. Cadets shall demonstrate knowledge of prescribed cleaning operations & ability to carry them out.

8. The Use
of Fertilizers

1. Cadets shall demonstrate knowledge of the fertilizer and trace element requirements of *P. radiata* and *P. pinaster* on the normal range of plantation sites.
2. Cadets shall, by explanation or demonstration, be familiar with the results of past and present experiments demonstrating plantation fertilizer requirements.
3. Cadets shall demonstrate knowledge of the cost of fertilizer application in relation to increment attributable to fertilizers.

9. Pruning

1. Cadets shall demonstrate knowledge of the special objectives of pine pruning and be able to relate pruning to thinning & to utilisation.
2. Cadets shall demonstrate knowledge of the standard pruning prescriptions & the reasons for local variations.
3. Cadets shall demonstrate their ability to apply prescriptions & carry out marking & pruning, with appreciation of the parts of supervision & operational costings.
4. Cadets shall by explanation or demonstration be familiar with pruning techniques in which they are unable to participate.

10. Thinning

1. Cadets shall demonstrate knowledge of the special objective of pine thinning & be able to relate thinning to utilisation & to fire protection.
2. Cadets shall demonstrate knowledge of standard thinning prescriptions & the reasons for local variations.
3. Cadets shall demonstrate their ability to apply prescriptions & carry out marking & thinning, with appreciation of the points of supervision & operational costings.
4. Cadets shall demonstrate ability to determine plantation stocking calculating stems per hectare & basal area as a means of controlling thinning operations.
5. Cadets shall by explanation or demonstration, be familiar with thinning operations in which they are not able to participate.

11. 2nd Rotation Operations

1. Cadets shall demonstrate knowledge of the factors determining rotation length, particularly harvesting considerations.
2. Cadets shall demonstrate knowledge of nutrient balance between burning & fertilizer application, so far as second rotation establishment is concerned.
3. Cadets shall demonstrate knowledge of the standard prescription & operations involved in second rotation by replanting, including the use of fire.
4. Cadets shall demonstrate knowledge of the alternative method by natural regeneration.

12. Agro- Forestry

1. Cadets shall demonstrate understanding of the reasons for the encouragement of agro-forestry & the range of sites & circumstances favouring agro-forestry.

2. Cadets shall demonstrate knowledge of the favoured prescription for agro-forestry, particularly nutrition spacing, inter row cropping & grazing, pruning & thinning. These shall be related to the quality & quantity of the anticipated timber product.
3. Cadets shall demonstrate general knowledge of agro-forestry from the aspect of the agriculturist & the grazing requirements to achieve the husbandry objectives
4. Cadets shall demonstrate knowledge of the fire control implications & benefits.

13. Private
Forestry

1. Cadets shall demonstrate knowledge of the extent & size of private pine forests & of relevant Departmental policy.
2. Cadets shall demonstrate knowledge of the assistance which the Department may legitimately give to private forestry & the limitations in that assistance; particularly the role of forestry consultants.
3. Cadets shall be informed by specialist Departmental Officers of details of private pine forestry. This shall include both existing privately owned plantations & share farming projects.
4. Cadets shall be informed of the points of contact between the forest officer in relation to adjacent "private pine foresters".

14. Pine
Operations
Control
System

1. Cadets shall demonstrate understanding of the need for a Pine Operations Control System.
2. Cadets shall demonstrate ability to use the Pine Operations Control System by composing & processing sample entries related as closely as possible to their personal experience.
3. Cadets shall be informed, by demonstration, of the working of a District Pine Operations Control System.

15. Pine
Nurseries

1. Cadets shall demonstrate knowledge of:
 - Factors to be considered in siting a Pine Nursery
 - Soil fertility & maintenance of fertility in a Pine Nursery
 - Nursery Layout
 - Nursery Machinery & Equipment
 - Nursery Irrigation
 - Nursery Calendar of routine operations to raise seedlings
 - Lifting & Despatch of Nursery Stock
 - Nursery Stock-taking (Survival Count)
 - Pest & Diseases
2. Cadets shall by demonstration & visits to Departmental Nurseries become familiar with as many as possible of the items of topic 1.
3. Cadets shall demonstrate ability to carry out the basic operations of Pine Nursery practice.

SILVICULTURE

V

Term 3

OTHER SPECIES

General Aims

To provide cadets with general knowledge of the status, silvicultural characteristics of a selection of tree species.

Topic	Cadet Objectives
1. Indigenous Species.. Eucalyptus	1. Cadets shall demonstrate general knowledge of the following species: E.wandoo, E.patens, E.calophylla, E.gomphocephala E.megacarpa, under the following headings: a. Distribution b. Silvicultural Characteristics & rates of growth. c. Natural & Artificial Regeneration. d. Environmental significance. e. Economic significance.
2. Indigenous Species.. Sandalwood	1. Cadets shall demonstrate general knowledge of the species Santalum spicatum, under the following headings: a. Distribution including Sandalwood Survey. b. Silvicultural Characteristics. c. Natural and Artificial Regeneration. d. History of Sandalwood Utilisation. e. Current Harvesting & Marketing - Economic Importation. f. Sandalwood research.

3. Exotic
Species

1. Cadets shall demonstrate a general knowledge of the natural occurrence, value & possible significance to Western Australia of exotic species such as poplar

SITE VEGETATION CLASSIFICATION

Term 2 - 3

General Aims

1. To provide knowledge of the standard terms of soil description.
2. To teach ability to describe a range of soil profiles.
3. To provide understanding of the relationship of key indicator species to plant communities & soil types.
4. To teach ability to identify key species & classify a site in terms of its vegetation.
5. To provide understanding of land management by site classification, and relate this to Departmental situations & influences.

Topics

1. Soil Description

Cadet Objectives

- 1.1 Cadet shall demonstrate knowledge and ability to apply the standard terms employed in soil description.
- 1.2 Cadets shall demonstrate understanding of the variation and gradation of soil types especially those of Departmental significance.
- 1.3 Cadets shall demonstrate ability to use the Munsell Soil Colour Chart.
- 1.4 Cadets shall dig adequate soil pits, including any environmental safeguards and safety factors.
- 1.5 Cadets shall describe a representative range of soil profiles.

2. Vegetation Description

- 2.1 Cadets shall recall the relevant sections of the 1st Year Botany Course.
- 2.2 Cadets shall demonstrate understanding of the principle of key indicator species in vegetation classification.
- 2.3 Cadets shall progressively identify the major indicator species.
- 2.4 Cadets shall collect and identify unfamiliar species.
- 2.5 Cadets shall correctly fill in the standard vegetation record sheets.
- 2.6 Cadets shall demonstrate ability to classify a site using vegetation record sheets. This ability shall be required on approximately 10 sites of major Departmental significance.
- 2.7 Cadets shall be acquainted, by demonstration, with other significant soil types.

3. Management &
Land Use
Implications

- 3.1 Cadets shall demonstrate understanding of the general distribution of the major site types in Departmental areas.
- 3.2 Cadets shall demonstrate understanding of the relationship between site types & land use.
- 3.3 Cadets shall demonstrate understanding of the present occurrence & likely impact of *Phytophthora cinnamomi* in terms of site classification.
- 3.4 Cadets shall demonstrate understanding of the value of site classification in land management.

Term 2 & 3

General
Aims

TIMBER UTILISATION

1. To provide knowledge of the Timber Industry in W.A. & of the Department's related role, including utilisation research.
2. To provide knowledge of the range & value of timber products.
3. To provide knowledge of the sawmilling & associated processes.
4. To refresh 1st Year knowledge of wood technology & relate it to wood treatment processes.
5. To provide understanding of & ability to apply the timber grading rules.

Topic
1. Departmental
Policy & the
Timber Industry

Cadet Objectives

1. Cadets shall demonstrate knowledge:
 - (a) Department of C.A.L.M. Timber Policy & its role in the control of the Timber Industry.
 - (b) The Forest Production Council & the Timber Bureau.
 - (c) The structure of the Utilisation Section & the role of its Officers.
 - (d) A brief history of the Timber Industry, its present situation & likely future trends.
 - (e) The value and status of the Timber industry in W.A., its workforce & related industries.

2. Forest
Products

Cadets shall demonstrate knowledge of:

- (a) The range of Forest Products in W.A. & their values.
- (b) The principles of efficient utilisation.
- (c) The principles of forest products measurement, stumpage, royalty & revenue collection.

Cadets shall be acquainted with development of recent & future timber products.

3. Introduction
to Sawmilling

Cadets shall demonstrate knowledge of:

- (a) The basic principles of sawmilling, including flow of logs through a mill.
- (b) The terminology applicable to normal saw-milling operations, including the types of sawn timber produced.
- (c) The term recovery & its application to the saw-milling industry.
- (d) The types of machinery in common sawmilling use.
- (e) Cadets shall understand, by demonstration & field trip the following operations at a range of sawmills:

Mill landing procedures

Log measurement

Debarking

Milling

Sorting

Dressing

Grading .

Stacking

Identification

(f) Cadets shall be acquainted thoroughly with the safety precautions associated with the above operations, in conformity with the Regulations of the T.I.R. Act.

4. Timber Structure

1. Cadets shall demonstrate knowledge of basic timber structure & ability to distinguish & identify a number of prescribed characteristics.

2. Cadets shall demonstrate knowledge of the effect on timber structure of various seasoning & treatment processes.

5. Timber Seasoning

Cadets shall demonstrate knowledge of:

(a) the reasons for seasoning timber in W.A.

(b) Seasoning procedures both in Hardwood & Softwood timber utilisation.

(c) Kiln drying.

6. Timber Grading

1. Cadets shall demonstrate knowledge of:

(a) The reasons for timber grading.

(b) Terminology of Grading & the structure of a typical set of Grading Rules.

(c) The Department's Timber Inspection Service, the load of Departmental Timber Inspectors.

(d) Log Quality, & the effects of defects on products.

(e) Cadets shall demonstrate the ability, under the supervision of a Timber Inspector to apply Grading rules to a given parcels of timber, to brand the timber & compile the relevant forms.

7. Timber & Research Harmful Agencies

(a) Cadets shall be acquainted with common harmful agencies & means of avoiding & controlling them, in particular, Wood Borers, Bark Beetles & Blue Stain.

(b) Cadets shall be acquainted with the main lines of Timber Research by involved organisations.