TREE TRUST

A Proposal for a Private Enterprise Funded Hardwood Afforestation Programme for South-Western Australia

Objectives

This paper outlines a detailed proposal to establish 105 000 ha of *Eucalyptus globulus* (Tasmanian blue gum) in the south-west of Western Australia by the year 2 000 using capital raised from the private sector. The project will consist of eleven yearly planting modules (each financially independent) commencing at 5 000 ha in the first year (1989) and for the next ten years 10 000 ha .

Community Benefits

The project will result in a major improvement in soil and water quality and fauna habitat in the south-west of the State. It will also make a significant regional contribution to the reduction of the Greenhouse Effect.

1. Salination

The clearing of native vegetation in the south-west of Western Australia has disrupted the hydrological cycle causing the release of salt stored in the soil profile. This has caused 50 % of the potential fresh water resource to be made saline, and 300 000 ha of agricultural land has been made unproductive.

Detailed studies have shown that replanting with forest trees will restore the hydrological balance.

This afforestation program has the potential, in conjunction with other soil conservation measures, to increase the potable water resource of the south-west by 340 million cubic metres per year. This resource is conservatively valued in excess of 250 million dollars per year.

2. Eutrophication

Phosphate pollution threatens the long term viability of every inland waterway and estuary in south western Australia.

The partial replacement of agricultural crops with trees in catchments will result in a marked reduction of phosphate input as a consequence of lower fertiliser use and water table lowering.

3. Fauna habitat

Estuarine and inland waterways provide critical habitat for local fauna and migratory birds. Strategic afforestation will prevent habitat destruction by phosphate and salt pollution.

4. Pesticide soil rehabilitation

Tree crops will provide an interim cash crop to farms currently affected by pesticide residues.

5. Greenhouse Effect

105 000 ha of *Eucalyptus globulus* plantations would consume 13 per cent (3.4 million tonnes) of the carbon dioxide currently emitted from Western Australian industrial and domestic processes.

Industrial Benefits

By the year 2 000, the hardwood plantations would generate a gross revenue in excess of 150 million dollars per annum if the resource was exported as woodchips.

The establishment of a paper pulp industry in Western Australia is conditional on the success of the hardwood afforestation project, because there is not sufficient resource available from native forest to establish an economically

viable mill. If it is assumed that half of the resource from the plantation project would be consumed by a local pulp mill, the gross revenue will exceed 350 million dollars.

A chip export industry combined with local pulp production would generate in excess of 3 000 new jobs.

Market

The commercial viability of the project is based on a projected increase in the demand for high quality short-fibred eucalypt required for the production of high quality paper.

There is a continued increase in the demand for high quality paper. In the Pacific Basin alone it is estimated that the demand for market pulp will increase by 300 000 tonnes per annum over at least the next decade. Because of its high quality of eucalypt fibre, a significant proportion of this demand will be for eucalypt fibre.

The reduction in capacity of native forest to supply eucalypt fibre means that this demand can only be met by the establishment of high yielding eucalypt plantations. It would be necessary to establish 60 000 ha of eucalyptus plantations per annum to supply sufficient wood to provide the raw material necessary to produce 300 000 tonnes of market pulp.

Climatic constraints on the growth of eucalypt restrict the number of areas in the world where it can be grown. The availability and cost of land, the technical infrastructure necessary to establish and maintain plantations, and the need for political stability further constrain the regions of the world where it would be commercially possible to establish extensive areas of hardwood plantations. The south-west of Western Australia has been independently rated as the Pacific Basin's most desirable location for the establishment of hardwood plantations for pulpwood.

Price

The analysis of an existing world parity price paid for eucalypt wood fibre, with appropriate adjustments for the superior wood quality of *Eucalyptus globulus*, indicates that the existing market price at the stump for *Eucalyptus globulus* fibre is in the range of $22.00 to $28.00 per cubic metre. Long term price trends suggest that over the next 20 to 30 years a 2 per cent increase in the world parity price for wood fibre will occur.

In the calculation of the commercial viability of this project, two price scenarios have been assumed:

- $24.00 per cubic metre and
- $24.00 per cubic metre with a 2 per cent real increase in price over the rotation.

Growth and wood characteristics of Eucalyptus globulus

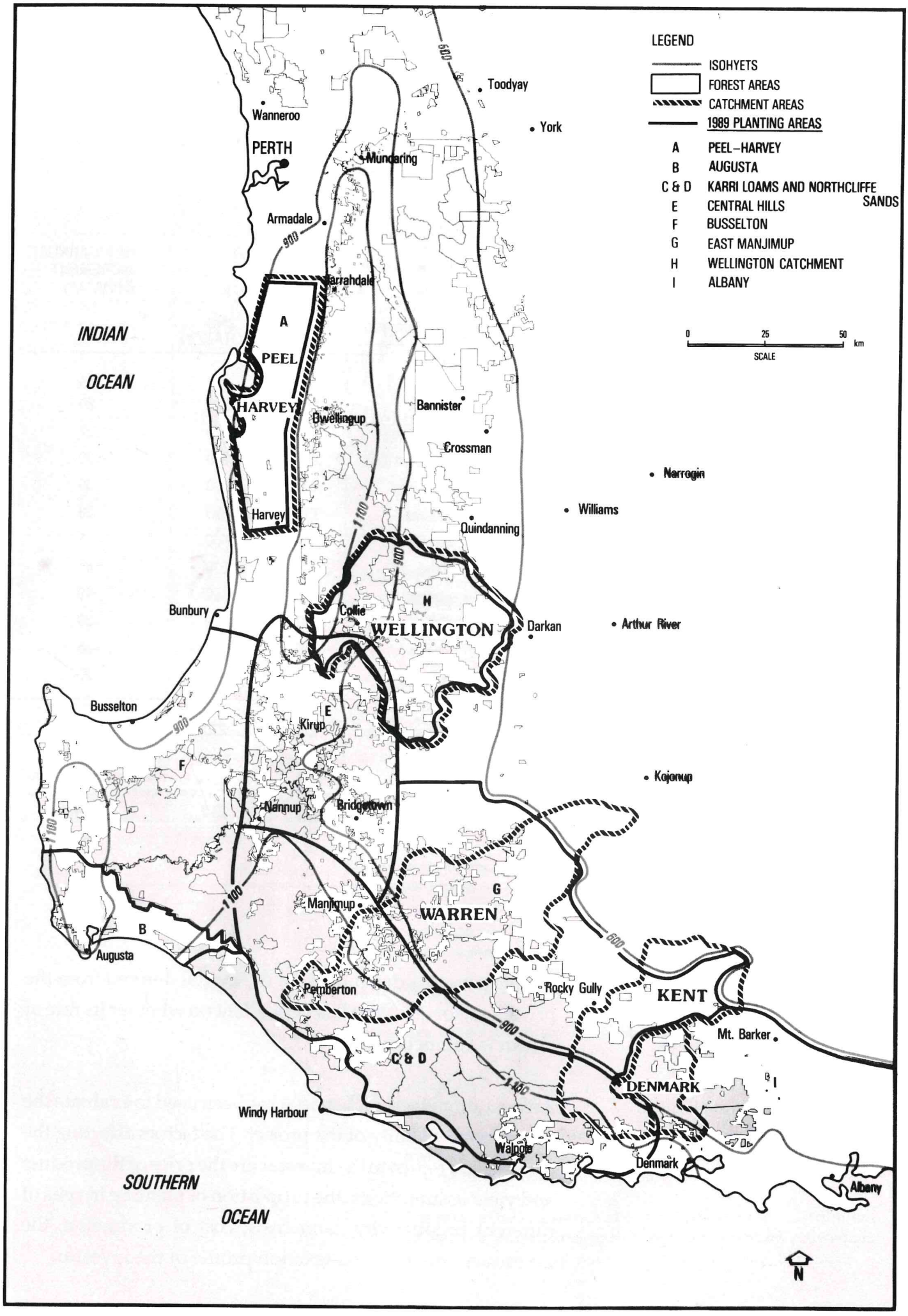
1. *Eucalyptus globulus* is indigenous to Tasmania and south-eastern Victoria. Its wood properties are such that it is rated as one of the most desirable species for production of high quality paper. It has the capacity to grow in a wide range of soil types and will grow in forest formation down to a rainfall of 600mm per annum.

2. Land area

There is in excess of 400 000 ha of cleared agricultural land in the south-west of the State within a 600mm isohyet, which has the potential to grow *Eucalyptus globulus* economically. The land required for the project will be obtained by entering into leases with farmers for two ten-year rotations.

3. Growth

Although *Eucalyptus globulus* is not a species which is endemic to Western Australia, the climatic regime here is similar to its place of origin and it has been grown in plots throughout the region. Growth and development data for the species has been obtained from 60 growth plots located throughout the region.


LEGEND
ISOHYETS
FOREST AREAS
CATCHMENT AREAS
1989 PLANTING AREAS
A PEEL–HARVEY
B AUGUSTA
C & D KARRI LOAMS AND NORTHCLIFFE SANDS
E CENTRAL HILLS
F BUSSELTON
G EAST MANJIMUP
H WELLINGTON CATCHMENT
I ALBANY
0 25 50 km
SCALE
INDIAN OCEAN
SOUTHERN OCEAN
PERTH
Wanneroo
Toodyay
York
Mundaring
Armadale
Jarrahdale
PEEL
HARVEY
Dwellingup
Bannister
Crossman
Narrogin
Williams
Quindanning
Harvey
Bunbury
Collie
WELLINGTON
Darkan
Arthur River
Busselton
Kirup
Kojonup
Nannup
Bridgetown
Manjimup
WARREN
Augusta
Pemberton
Rocky Gully
KENT
Mt. Barker
DENMARK
Windy Harbour
Walpole
Denmark
Albany
600
900
1100
1400
N

Ten distinct 'cells' have been identified in the region. Yield estimates for each cell and soil type within the cell are shown below.

CELL	SOIL	YIELD (M^3HA^{-1})		MEAN ANNUAL INCREMENT ($M^3HA^{-1}A^{-1}$)
		1ST ROTATION	2ND ROTATION	
A-Peel Harvey	Sands	150	150	15
A-Peel Harvey	Duplex	200	200	20
B-Augusta	Black sands	270	270	27
B-Augusta	Coloured sands	300	300	30
B-Augusta	Laterites	300	300	30
B-Augusta	Loams	350	350	30
C-Karri	Loams	450	450	45
D-Northcliffe	Sands	270	270	27
D-Northcliffe	Loams	400	400	40
E-Central Hills	Gravels	300	300	30
E-Central Hills	Loams	350	350	35
F-Busselton	Sands	250	250	25
F-Busselton	Laterites	300	300	30
G-East Manjimup	Gravelly loams	220	220	22
H-Wellington Catchment	-	200	200	20
I-Albany	Alluvial sands	200	200	20
I-Albany	Duplex	240	240	24

Mean Annual Increment at age 10 years.

Commercial Viability

As this project is dependent on the capital derived from the private sector, its success is dependent on whether its rate of return is competitive.

An operational research model has been used to evaluate the commercial viability of the project. The factors affecting the commercial return to the investor are the price of the product and yield assumptions, the proportion of planting in cells of different productivity, land costs, cost of production, the investment method and taxation profile of the investor.

The commercial return to the investor is affected by the method of investment. Where all costs for the project for the 20-year period are obtained in the first year, the internal rate of return is decreased because only one-third of the expenditure is incurred in the first year of establishment. This requires that funds obtained in the first year but which will be expended throughout the rotation will need to be invested in guaranteed investments which, of necessity, have a lower rate of return.

A contributory investment scheme does not incur this disadvantage since funds are obtained from investors at the time the expenses are incurred.

The internal rates of return for a tax neutral scheme, a contributory and a non-contributory scheme, assuming moderate and optimistic assumptions for tree growth and wood price, is shown below.

	Conservative Scenario	**Optimistic Scenario** (Tree growth yields increased by 5% and wood price assumed to increase by 2% annum)
Tax Neutral Contributory Scheme	10.1%	14.5%
Contributory Scheme ***(Tax deductions as investments are made)***	20.4%	24.5%
Non-Contributory Scheme ***(Total investment in year 1 tax deductions as expenses are incurred)***	12.9%	15.6%

Note:

1. All calculations of return are real and have been based on the revenue pre-tax and it has been assumed that the investor is paying the top marginal tax rate.

2. The rates of return shown above are based on the distribution of planting areas across each of the nine planting cells which optimises commercial return and environmental benefits.

Capital Requirements

The total capital requirement for the 105 000 ha program is 315 million dollars over a period of 30 years.

The initial 5 000ha module will require 15 million dollars over a period of 10 years.

Management and financial structure

1. Tree Trust

A company (Tree Trust) will be established which will be responsible for the management of the project

The board of the company will consist of two directors appointed by a timber industry consortium (see below), a government representative and an independent chairman.

The functions of the Tree Trust will be:

(i) To oversee and coordinate an integrated approach to the establishment of hardwood plantations in Western Australia.

(ii) Subject to the requirements of the trust deed, to oversee the marketing of the produce from these plantations.

(iii) Subject to the commercial requirements of the program, to maximise the environmental benefit of the plantations to southern Western Australia.

(iv) To appoint a trustee to administer any trust deeds required to achieve the above.

The Tree Trust will control the project because it will be designated under the Limited Partnership Act as the general partner of the timber industry consortium and a series of limited partnerships of investors.

2. The Timber Industry Consortium

The timber industry consortium will consist of a limited partnership of W.A. timber industry companies, the Department of Conservation and Land Management (CALM) and the General Partner.

The functions of the consortium will be:

(i) To provide seed capital for the project.

(ii) To nominate timber industry representatives to the Tree Trust Board.

CALM and Bunnings Ltd will have 20 per cent free carriage in the consortium in return for funds already expended in the project.

The consortium will receive a prescribed (20 per cent) rate of return on its investment and any premium over and above the target rate of return to investors which will be specified in the Trust Deed.

3. The Department of Conservation and Land Management

CALM will establish and manage the plantations under a commercial contract with Tree Trust.

4. The Investment Vehicle

Each annual planting 'module' will involve a separate investment program.

It is necessary to place individual or institutional investors in limited partnerships associated with identifiable plantations to enable them to qualify for primary industry tax deductions, to accommodate different types of investors and to provide a mechanism which will enable each investor to pay the average costs and receive average returns from each investment module.

The Trust Deed will provide for applications for limited partnership units - ($1 000 per unit).

Upon the minimum subscription being reached, each applicant will become a limited partner in a limited partnership which will be comprised of the general partner and up to nineteen limited partners.

Each limited partnership will be entitled to a sub-lease or licence from CALM of a specified part of each of the plantations.

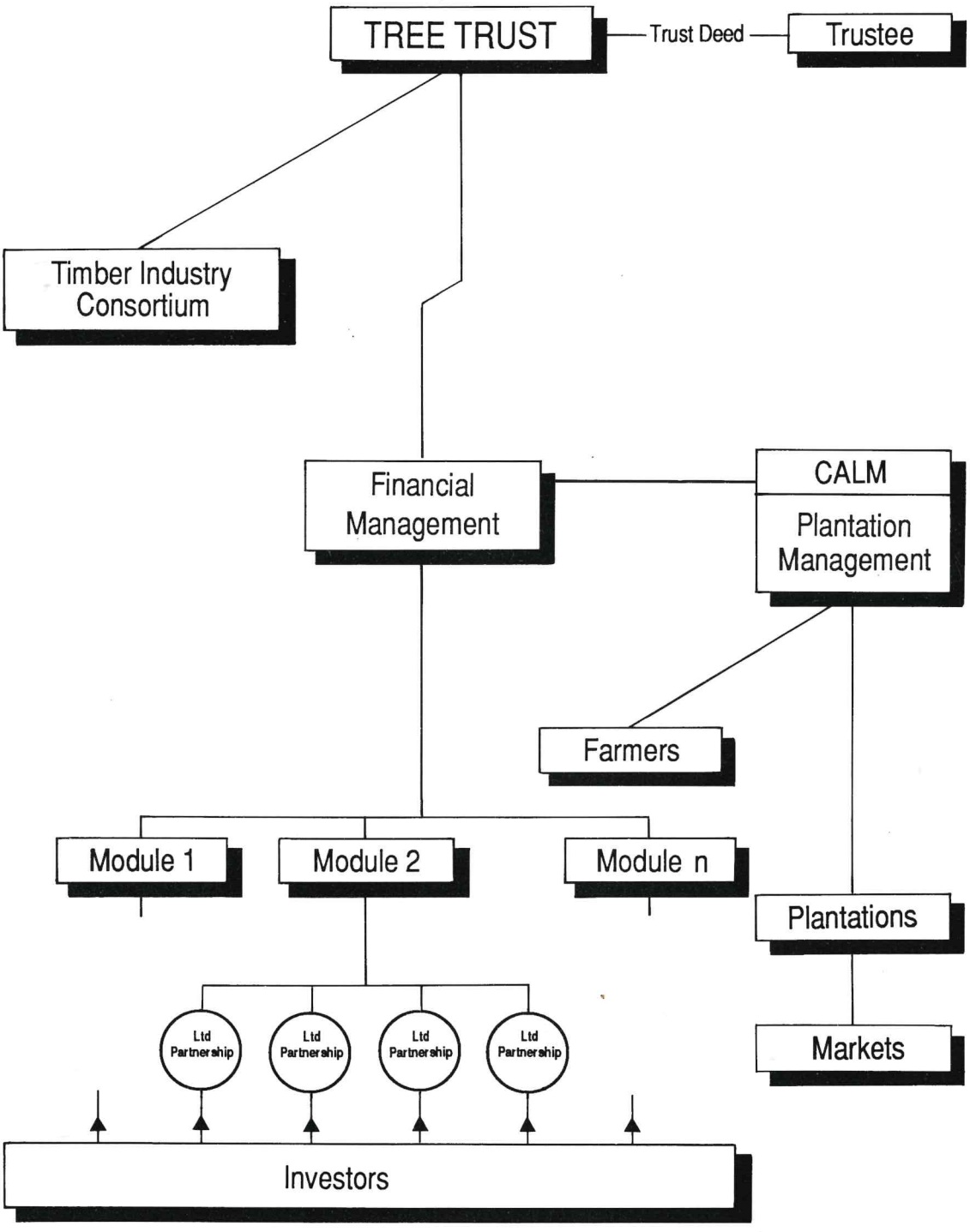
Each limited partnership through the general partner will contract with CALM to develop, manage and harvest trees on its allocated portions of land. These contracts will be based on averaging of costs in respect of each plantation and as each limited partnership will be involved in a portion of each of the plantations the costs and revenue will be averaged for each annual planting module.

5. Investors

The project is anticipated to be highly attractive to a range of different types of investors. The specific requirement of the investor can be accommodated by the limited partnership structure.

In addition to individual investors, the scheme can accommodate institutional investors (who generally will qualify for a contributory scheme) and overseas investors involved in the pulp and paper industry who may pay a

Management & Financial Structure



premium in return for first rights of refusal on the wood resource.

Timing

It is proposed to establish the first 5 000 ha module in 1989.

This requires a State Government commitment of $1.7 million dollars in the financial year 1988-89 to permit nursery establishment, land lease contracts to be confirmed (5 000 ha of land have been surveyed and are available) and site preparation to commence.

The Tree Trust and the associated Trust Deed could be established by February 1989.

Capital raising would commence in April 1989 and would be completed by June 1989.