NOTES FROM FARM FORESTRY COURSE
ALBANY 9-10 AUGUST 1995
RICHARD MOORE.

065175

Program

Farm Forestry Course - Albany, 9 & 10 August 1995

Venue: Vancouver Arts Centre

Wednesday, 9 August

8.15 - 9.00	Feed back on Assignment 2 Expectations for Assignment 3	Rowan Reid
9.15 - 10.45	Regional Planning for Farm Forestry (market development, strategy development & social aspects)	Brian Ray - Lancefield Consultants
10.45 - 11.30	A planned survey of landowners.	Barry Jordan Hardwood Business Unit, CALM, Albany
11.45 - 12.30	Presentation of Assignments 1 & 2	The Esperance Group
13.30 - 17.30	Tour & tree management exercise	David Mattinson's farm

Thursday, 10 August

8.00 - 11.30	Presentations of Assignments 1 & 2	Rest of course participants
11.30 - 12.00	Wrap up	Rowan Reid

Note: There will be a farm forestry tour on Thursday afternoon, organised by Barry Jordan (CALM, Albany) for the WA Agroforestry Working Group. Course participants are welcome to take part in the tour. The Working Group will be meeting in Albany on Friday morning.

FIELD TOUR - WEDNESDAY AUGUST 1995

PORT OF ALBANY

1994 trade through the Port totalled 1.68 million tonnes, catering for a total of 124 vessels. The largest commodity being the export of wheat (870 000 tonnes) and barley (514 000 tonnes).

Planning has commenced for the development of new berths to cater for increased grain exports, silica sands and woodchip exports.

DRIVE PAST WAWA EFFLUENT DISPOSAL

312 hectare Tasmanian bluegum plantation on a 627 hectare property, developed as an alternative to ocean disposal of effluent from the town of Albany. 211 hectares of trees (52 hectares planted in 1993) will be trickle irrigated (individual line for every row of trees) and harvested between six to ten years after planting. The remaining 101 hectares of the trees have been planted as a buffer in and around the valleys and will be harvested after ten to twelve years.

CALM is responsible for the establishment of the trees and the ongoing management, maintenance and marketing of the crop (through APFL).

DRIVE PAST CAPARARO

24.2ha planted in 1993
31.0ha planted in 1994

Ongoing program to plant the farm over a period of years.
Planting layout designed to reduce erosion.
Notable feature is the second year weed control in the P1993 &94 trees. Done operationally in 1994 on 1000 hectares in Albany - first time in W.A. Done operationally over 1037 hectares in 1995.

DRIVE PAST MOOJEPIN

2ha planted in 1989
3ha planted in 1990
2.6ha planted in 1991
12.4ha planted in 1993

Plantings on this property primarily for stock protection and to improve the appearance of the property.

IVE PAST POTTER

41.6ha planted in 1994

Whole farm plan drawn up by SCSF in conjunction with the landowner. Aims were to address a rising water table and provide creekline and remnant vegetation protection whilst allowing the farmer to carry out traditional farming practices.

DRIVE PAST HAMMOND

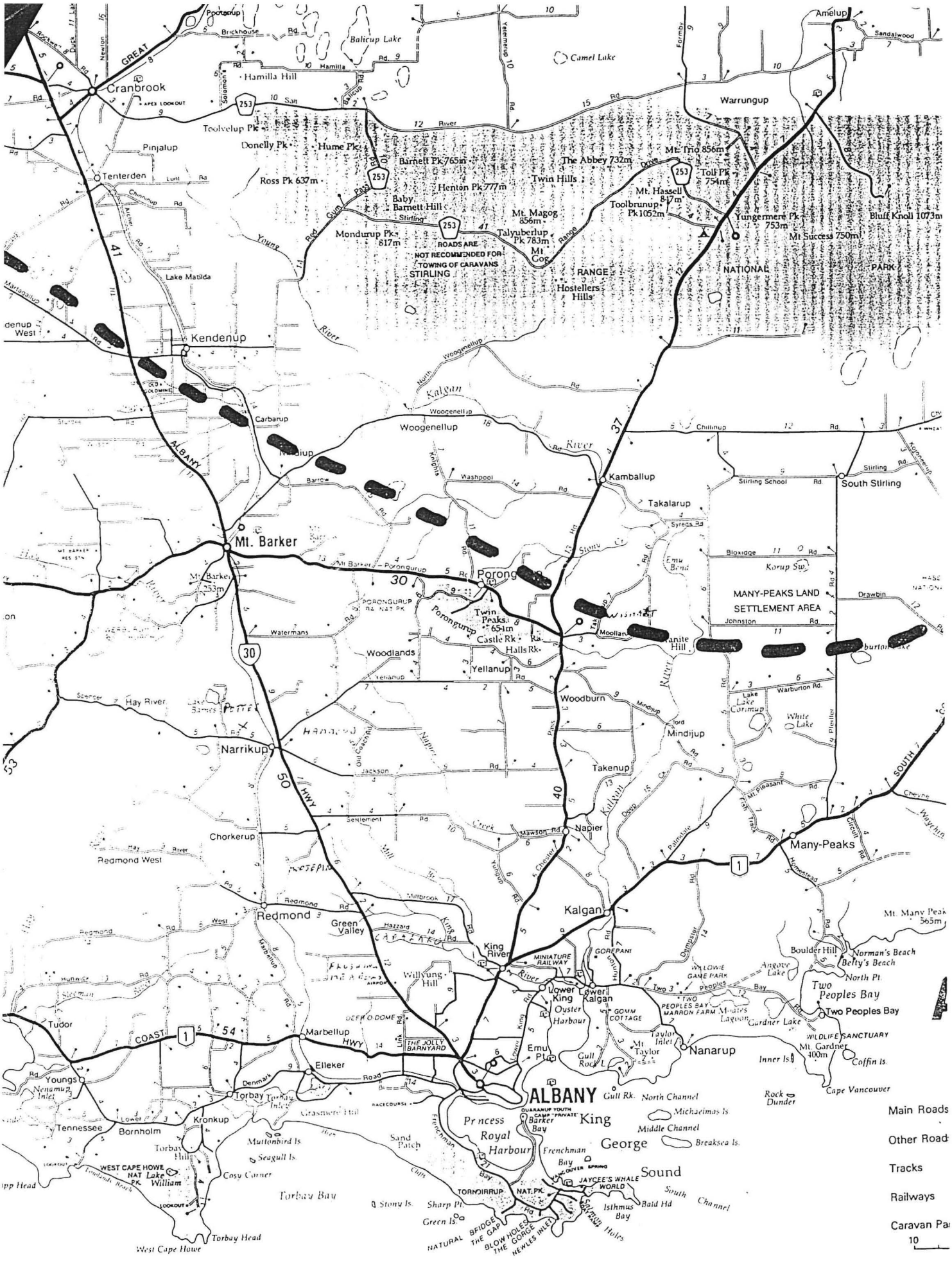
51.4ha planted in 1992
22ha planted in 1993

Major objective being the provision of shelter for cattle as well as diversifying farm income. There has also been some wetland and areas of remnant vegetation planted around and fenced off as part of the program.

VISIT WISHART

29.6ha P radiata planted in 1991

Owner had previously planted pine and bluegum shelterbelts prior to entering the Softwood Sharefarm scheme with CALM. He has continued to plant strategic shelter belts using both pines and bluegums for stock and pasture protection with the intention of tending for sawlog production.


Cranbrook
Tenterden
Pinjalup
Toolvelup Pk
Donelly Pk
Hume Pk
Hamilla Hill
Balicup Lake
Camel Lake
Amelup
Sandalwood
Warrungup
Barnett Pk 765m
Ross Pk 637m
Henton Pk 777m
Twin Hills
The Abbey 732m
Mt. Trio 856m
Toll Pk 754m
Mt. Hassell 847m
Toolbrunup Pk 1052m
Yungermere Pk 753m
Mt Success 750m
Bluff Knoll 1073m
Baby Barnett Hill
Mondurup Pk 817m
Mt. Magog 856m
Talyuberlup Pk 783m
Mt Cop
ROADS ARE NOT RECOMMENDED FOR TOWING OF CARAVANS
STIRLING RANGE
NATIONAL PARK
Hostellers Hills
Lake Matilda
Kendenup
Woogenellup
Carbarup
Kamballup
South Stirling
Takalarup
Mt. Barker
Porong
Woodlands
Yellanup
Woodburn
Mindijup
Takenup
Narrikup
Hay River
Redmond West
Chorkerup
Redmond
Green Valley
Napier
Kalgan
Many-Peaks
King River
Willyung Hill
Lower King
Lower Kalgan
Oyster Harbour
Nanarup
Two Peoples Bay
Boulder Hill
Norman's Beach
Belty's Beach
North Pt.
Mt. Gardner 400m
Coffin Is.
Cape Vancouver
Tudor
Marbellup
Youngs Nenamup Inlet
Elleker
Torbay
Kronkup
Tennessee
Bornholm
Torbay Hill
Muttonbird Is
Seagull Is
Cosy Corner
Torbay Bay
Torbay Head
West Cape Howe
WEST CAPE HOWE NAT PK
Lake William
ALBANY
Princess Royal Harbour
King George Sound
Frenchman Bay
Michaelmas Is
Middle Channel
Breaksea Is.
Gull Rk.
North Channel
Rock Dunder
Sharp Pt
Green Is.
Stony Is.
Isthmus
Bald Hd
South Channel
TORNDIRRUP NAT PK
JAYCEE'S WHALE WORLD
NATURAL BRIDGE
THE GAP
BLOW HOLES
THE GORGE
NEWLES INLET
Main Roads
Other Roads
Tracks
Railways
Caravan Parks
10
10
11
12
13
14
15
16
17

THE ALBANY EXPERIENCE

The Albany area has the fastest developing plantation based timber industry of any area in Western Australia. The current status of plantations within a 120 km radius of Albany is:

Pinus radiata 3600 hectares
Eucalyptus globulus 11000 hectares

Ten year ago there was no plantation timber industry in the Albany area. In total there was probably less than 100 hectares of pine established in small plantings on a number of different properties.

Today there are 14,600 hectares of plantations, 12 private companies and 5 different prospectus's involved in the Albany area - and it's only just started! Everyone is interested in the Bluegum industry. For example:

Timber 2002	A local group made up of Shire representatives, timber industry reps and local government reps trying to ensure a co-ordinated approach to industry development.
Albany Port	Currently undergoing EPA assessments for future developments associated with chip export.
Great Southern Regional Fire Advisory Committee	Shires and growers looking at fire control in plantations.
Roads 2020	Main roads Department looking at future roading requirements in the area.
LCDCs	All interested in the timber industry.
Shire Meetings	Approvals for establishment of Plantations.

Based on this the obvious question is why worry about a survey? The industry is already well established, targets are being met and exceeded and, in addition to this I believe that there will be no problem in achieving our 20 000 hectare target. In fact, I will be suprised if there are not 40 000 hectares of bluegums in the Albany area within the next ten years. However, note the trend to larger areas that has occurred gradually until 1994 and then significantly from 1994 to 1995. This trend is cause for concern in as much as whilst the area targets are being met they are being met on fewer and fewer farms each year - ie block plantings are becoming more prevalent. This has implications for the social structure of the community and, may in fact be so much against community wishes that the community support of the new industry is jeopardised. Why aren't all farmers putting some trees on their farms rather than some landowners planting their whole farm to trees? What do we need to do to extend the benefits of trees from a few properties across all properties in the area. In order to try and understand the reasons what options landowners require in order to encourage more landowners to establish trees on their properties it is proposed to conduct a survey of landowners in the South of Western Australia to try and identify current hindrances and objections so that ways to overcome current problems for tree establishment can be found. At this point in time the proposal is only in a very early formative stage with a sub committee from Timber 2002 being formed to look at the type of questions that need to be asked, the methodology of conducting the survey and the area the survey should cover.

REGIONAL PLANNING FOR FARM FORESTRY

MARKET DEVELOPMENT

STRATEGY DEVELOPMENT

SOCIAL ASPECTS

ISSUES GENERALLY

1. WHY A REGIONAL AGROFORESTRY DEVELOPMENT ?

PERHAPS:-

SALINITY CONTROL
SOIL CONSERVATION
ENHANCEMENT OF FARM PRODUCTIVITY
GROWTH IN REGIONAL EMPLOYMENT
POSSIBLY FOR FUN OR PROFIT

AGROFORESTRY FOR FUN OR PROFIT

WE MUST ACHIEVE BOTH ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY

IN ORDER TO HAVE FUN FROM OUR NEW AGROFORESTRY PROJECT WE MUST:-

* ESTABLISH LONG TERM TRADE IN OUR PRODUCTS

* ENSURE LAND USAGE IS SUSTAINABLE

* ENSURE PRODUCTS WE PRODUCE ARE LOW IN ENERGY USE AND POLLUTION

IN ADDITION, TO PROFIT FROM OUR NEW AGROFORESTRY PROJECT WE MUST ESTABLISH:-

* LOW COST OF PRODUCTION & DISTRIBUTION

* LOW OVERHEADS AND MANAGEMENT COSTS

* SUITABLE PRODUCT SELLING PRICES

2. GETTING STARTED

IT IS ESSENTIAL TO CONDUCT AN IN-DEPTH FEASIBILITY STUDY

3. A PRE-FEASIBILITY STUDY

IN ORDER TO GUIDE OUR PRE-FEASIBILITY STUDY IT IS IMPORTANT TO APPRECIATE RELATIONSHIPS IN THE GROWING OF FOREST PRODUCTS, THEIR PROCESSING INTO PRODUCTS AND SALE INTO VARIOUS MARKETS. THESE ARE DEPICTED IN FIGURE 1.*

DISCUSSION ON FIGURE 1.

3.1 MARKETS

IT IS FUNDAMENTALLY IMPORTANT TO ASCERTAIN:-

* SUPPLY AND DEMAND BALANCES AND IMBALANCES WITHIN AUSTRALIA AND OFFSHORE FOR FOREST PRODUCTS.

* PRICES TRENDS AND PRICES AT POINT OF USE.

* COMPETITORS' PRODUCT QUALITY

EXAMPLES OF SOURCES OF INFORMATION:

ABARE
- FOREST PRODUCTS QUARTERLY
- OUTLOOK CONFERENCES
- DISCUSSION PAPERS

RESOURCE INFORMATION SYSTEMS, INC

COUNCIL OF FOREST INDUSTRIES (BC)
APSEY & REED: "WORLD TIMBER RESOURCES OUTLOOK, CURRENT PERCEPTIONS, A DISCUSSION PAPER, DEC. 1994".

EXAMPLE: GRAPHS 1 & 2 *

PRODUCTS IN STRONG DEMAND CAN BE TESTED FOR PROFIT POTENTIAL.

3.2 COSTS OF MARKETING AND DISTRIBUTION TO POINT OF USE

EXAMPLES OF SOURCES OF INFORMATION: AS FOR 3.1
LOCAL INDUSTRIES MAY HELP

3.3 COSTS OF CONVERSION

EXAMPLES OF SOURCES OF INFORMATION: AS FOR 3.1
LOCAL INDUSTRIES MAY HELP

3.4 COST OF GROWING

REQUIRES KNOWLEDGE OF:

TREE GROWTH RATES IN RELATION TO SITES
SITE SOIL TYPES AND DEPTH
MICRO-CLIMATE - ESPECIALLY RAINFALL
ACTIVITY COSTS
- TREE ESTABLISHMENT, TENDING
- PROTECTION
- LAND RENT, LEASE OR PURCHASE
- SEEDLINGS ETC

AGE OF TREES AT HARVEST

EXAMPLES OF SOURCES OF INFORMATION:

ARBORETUM
SPECIES TRIALS
CALM
OTHER EXISTING TREE GROWERS

3.5 ESTABLISHING EQUIVALENT PRICE POINTS FOR NEW AGROFORESTRY PRODUCTS

AN EXAMPLE OF FOB PRICE AND STUMPAGE - FIGURE 2.*

NOTE: VALUE OF PRODUCT ESTABLISHED AT POINT OF END USE (FOR ROBUST OUTCOME)

EXCHANGE RATE - CONSERVATIVE

RELATIVE PRODUCT QUALITIES

3.6 FINANCIAL ANALYSIS - USING UNIT PRICE POINTS DERIVED FROM 3.5, GROWING AND OTHER COSTS

AN EXAMPLE OF FINANCIAL ANALYSIS - FIGURE 3 *

THE USE OF INTERNAL RATE OF RETURN - COMMENT

WHAT IS IRR SENSITIVE TO ? GRAPH 3 *

HOW DOES FEASIBILITY STACK UP

IRR OF SOME FINANCIAL INSTRUMENTS FIGURE 4 *

3.7 MAKING SURE ALTERNATIVE PRODUCTS ARE STUDIED

THE MANY AGROFORESTRY PRODUCTS FIGURE 5 *

FALL BACK POSITIONS - AN EXAMPLE FIGURE 6 *

3.8 A DECISION TO GO FURTHER

IF WE FIND GOOD ROBUST RETURNS APPEAR TO BE THE OUTCOME OF PARTICULAR FARM FORESTRY PRODUCTS, FURTHER ACTION SHOULD BE PRECEDED BY THE DEVELOPMENT OF A FORMAL STRATEGY.

4. STRATEGY

DISCUSSION ON HEADS OF FIGURE 7 *

4.1 INDUSTRY OBJECTIVES

THE FOLLOWING SHOULD BE STATED NUMERICALLY IN A STRATEGY DOCUMENT.

4.1.1 SCALE - IS VITALLY IMPORTANT

AREA OF PLANTINGS IN HECTARES

RATE OF PLANTED AREA DEVELOPMENT

PRODUCTION OF PRODUCT TPY

CAPITALISATION, DEBT

4.1.2 MARKET SHARE

WILL DEPEND ON COMPETITOR ACTIVITIES

4.1.3 PROFITABILITY

LONG TERM PROFITABILITY SAY 10% MIN. IRR REAL AFTER TAX

4.1.4 SURVIVAL CAPACITY

A CAPACITY TO WITHSTAND FLUCTUATIONS IN PRICE, DEMAND, DROUGHTS ETC.

ADEQUATE INITIAL CAPITAL

STAFFING ETC.

DEPENDS ON STRUCTURE OF THE ORGANISATION

4.1.5 SOCIAL

LOCAL STAFFING
COMMUNICATION WITH RURAL SECTOR
TRAINING AT LOCAL INSTITUTIONS
PLANTATIONS INCREASE EMPLOYMENT
PROMOTION OF CONSERVATION, SUSTAINABILITY ETC.

4.1.6 ENVIRONMENT

LAND, WATERWAY AND FARM BENEFITS THROUGH INTEGRATED PLACEMENT OF PLANTINGS

A COMMITMENT TO INNOVATIVE AND CONVENTIONAL AGROFORESTRY TECHNIQUES

4.2 OPPORTUNITIES AND CONSTRAINTS

4.2.1 OPPORTUNITIES - EXAMPLES

GENERAL GLOBAL AND AUSTRALIAN MARKET DEFICIENCIES IN WOOD FIBRE

RISING LIVING STANDARDS IN NEARBYE ASIA

WIDER COMMUNITY SENTIMENT FOR SUSTAINABLE PROJECTS

4.2.2 CONSTRAINTS - EXAMPLES

LONG DELAYS BETWEEN MONEY OUT & MONEY IN.

LONG GESTATION PERIOD ALLOWS TIME FOR MARKETS TO SHIFT DURING PROJECT LIFE

FARMERS HOLD LAND

FARMER RELUCTANCE TO INVEST

CURRENCY EXCHANGE RATE

4.3 RESOURCES, STRENGTHS & WEAKNESSES - EXAMPLES

INFRASTRUCTURE

LAND AT AFFORDABLE PRICES AND FOR LEASE

LAND OF GOOD TREE GROWTH PRODUCTIVITY

TRANSPORT, PORTS & COMMUNICATIONS

WORLD CLASS TECHNOLOGY

WATER
ENERGY

4.4 COMMERCIAL OPTIONS

FEASIBILITY STUDIES ON SEVERAL PRODUCTS PER FIGURE 5. FEASIBILITY STUDIES ARE REALLY "HARDER" VERSIONS OF PRE-FEASIBILITY STUDIES I.E INFORMATION IS SOURCED DIRECTLY FROM END USERS; THERE MAY BE PRELIMINARY SUPPLY & PRICE AGREEMENTS IN PLACE; THERE MAY BE NEWER DATA ON GROWTH RATES; BETTER INDICATIONS OF LAND AVAILABILITY ETC.

4.5 STRATEGIC VARIABLES - THE THINGS WE CAN CHOOSE

THE MOST SIGNIFICANT OF THE CHOICES HERE IS THAT OF THE **PRODUCT** WE ARE GOING TO PRODUCE AND THE ASSOCIATED **MARKET** IT IS GOING TO BE SOLD INTO. THIS IN A WAY DEFINES THE BUSINESS WE ARE IN.

FOR HEADS FOR DISCUSSION REFER TO:-

"FOREST INDUSTRY PROSPECTS & STRATEGY for the GREAT SOUTHERN REGION OF WESTERN AUSTRALIA" - PART 7.

4.6 WRITING THE STRATEGY INCLUDING MARKETING SUB-SET

THIS MAY BE ONLY 4 TO 6 PAGES BUT IT IS CRITICAL TO SHOW:-

TIME HORIZONS FOR COMPLETED WORK

WHO IS DOING WHAT

A FUNDS FLOW ANALYSIS - FIRST 3 YEARS

FIXED ANNUAL COSTS - INC OVERHEADS

VARIABLE ANNUAL COSTS

A FUNDS FLOW ANALYSIS - LONG TERM

FIXED ANNUAL COSTS - INC OVERHEADS

VARIABLE ANNUAL COSTS

FOR AN EXAMPLE SEE FIGURE 8.*

WHERE THE FUNDS ARE COMING FROM & WHEN

IT IS USEFUL TO DEPICT ACTIVITIES IN BAR CHART FORM

AN EXAMPLE "GREAT SOUTHERN STRATEGY" - PART 8.2

4.7 IMPLEMENTATION

REQUIRES

COMMITMENT

APPOINTMENT OF LEADER, EXECUTIVE AND FIELD PEOPLE

AN UNDERSTANDING OF THE GOALS, BUDGETS AND STRATEGY BY MOST INVOLVED

5.0 MARKETING STRATEGY ISSUES

AGRO-FORESTRY IS EASY FOR ONE DEVOTEE IN ISOLATION

A COMMERCIAL GREENFIELDS AGROFORESTRY PROJECT IS NOT SO EASY. FOR IT WE MUST HAVE:-

* SCALE FOR:-

  SUITABLE ECONOMIES

  MARKETABLE PACKAGES

* A DEMONSTRATION OF RELIABLE CAPACITY TO GROW

  THIS MEANS TREES IN THE GROUND & PLENTY OF THEM AT A RANGE OF AGES

* A DEMONSTRATION OF CAPACITY TO PROCESS AND DELIVER

  THIS MEANS PHYSICAL INFRASTRUCTURE & TECHNOLOGY

  THIS PROBABLY MEANS AN UNDEFEATABLE ANNUAL HARVEST ARRANGEMENT FROM A RANGE OF PROPERTIES

WHAT ARE WE MARKETING

WOOD FIBRE ?

A PROJECT ?

LEASE PAYMENTS FOR LAND ?

TECHNICAL ASSISTANCE IN AGROFORESTRY ?

TAX DRIVEN INVESTMENTS ?

AN END USER WONT PAY IN ADVANCE FOR WOOD NOT GROWN

FINANCE IS DIFFICULT TO OBTAIN FOR LONG TERM RISK PROJECTS

WE ARE BACK TO THE OLD CHICKEN AND EGG QUESTION - RESOURCE FIRST OR DEMAND FIRST

BREAKING THE CYCLE

OPTION ONE - A FARMERS' COOPERATIVE
- RESOURCE FIRST

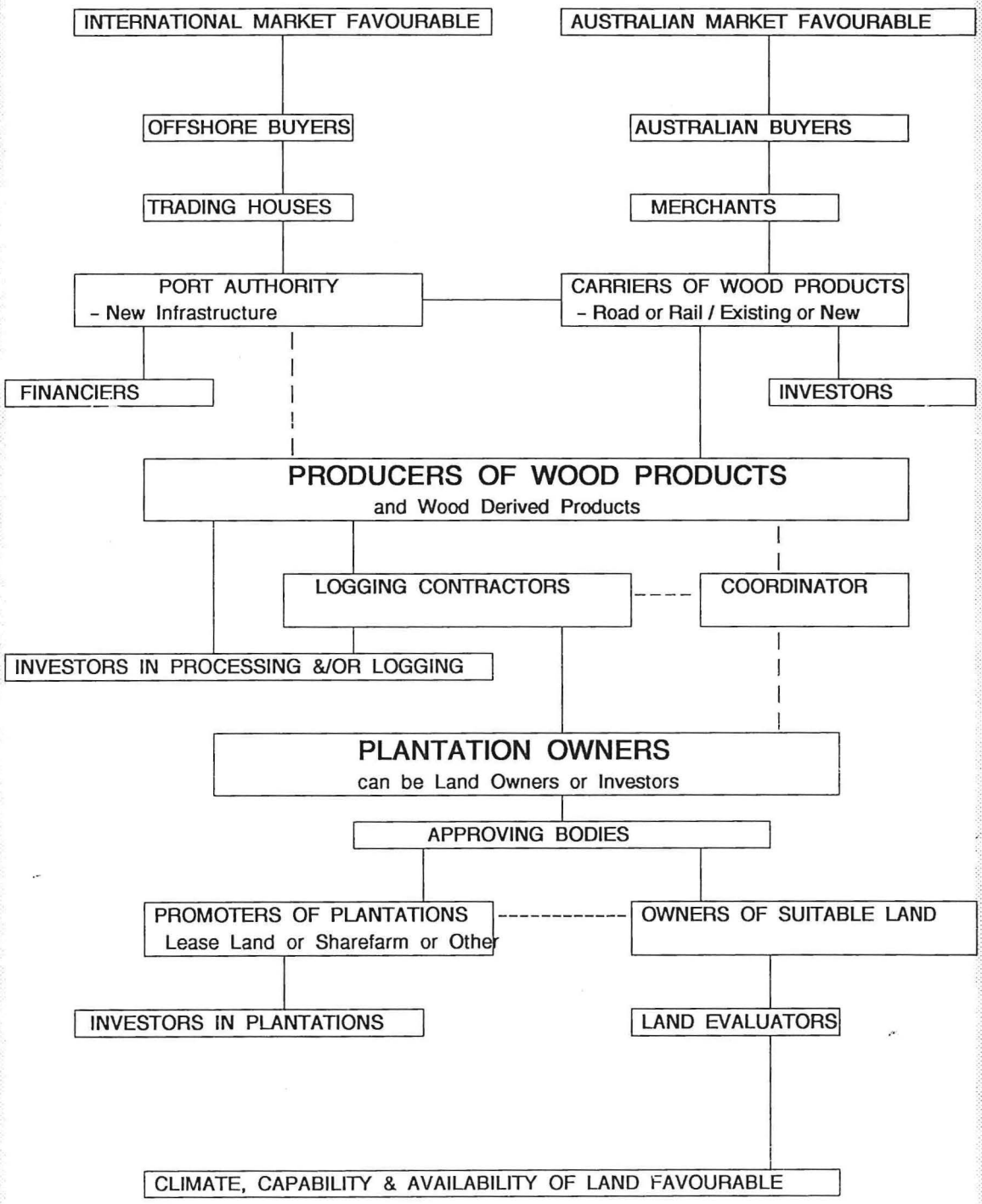
FIGURE 8.*

OPTION TWO - A COMMUNITY ROLE OF GOVERNMENT
- "MARKET" FIRST

FIGURE 9. *

REGIONAL PLANNING FOR FARM FORESTRY

RELATIONSHIPS FOR TRADE IN FOREST PRODUCTS FROM AGROFORESTRY REGIONS



File: Forindre

Figure 1.

REGIONAL PLANNING FOR FARM FORESTRY

THE UNIT VALUE (STUMPAGE) OF STANDING BLUE GUMS (GLOBULUS) IN A SOUTHERN REGION

EXPORTING REGION / SPECIES GROUP		TASMANIA NATIVE HW JUNE 1992	U.S.SOUTH MXD HW JUNE 1992	CHILE BEECH JUNE 1992	CHILE GLOBULUS DECEMBER '91	GLOBULUS EX ALBANY	
WOODCHIP PRICES RECEIVED AT PORT	FOB BDU $US	113.20	91.00	91.00	110.00		RESOURCES OUTLOOK CONFERENCE 1991; & PERSCOM
OCEAN FREIGHT	BDU $US	40.60	79.25	88.39	75.18		RAC RESEARCH PAPER NO. 4
WOODCHIP COST AT JAPANESE PORT	CIF BDU $US	153.80	170.25	179.39	185.18		
PULP YIELDS – AVERAGE		47.0%	49.5%	50.0%	54.0%		
COST OF PULP COMPONENT IN JAPAN	CIF BDU $US	327.23	343.94	358.78	342.93		
ALBANY TO PROVIDE EQUAL CHEAPEST PULP COMPONENT @ JAPANESE PORT CIF BDU $US						327.23	
ALBANY GLOBULUS PULP YIELD (SAME BASIS)						54.0%	PER PULP TRIALS ON W.A. GROWN SAMPLES
EQUIVALENT COST OF ALBANY WOODCHIPS AT JAPANESE PORT CIF BDU $US						176.71	
OCEAN FREIGHT FROM ALBANY; USE TASMANIAN RATE						40.60	
PRICE EXPECTATION FOR GLOBULUS WOODCHIPS AT PORT OF ALBANY FOB BDU $US						136.11	PREMIUM ON TAS. PRICE 20.2%
EXCHANGE RATE USING SYNTAC LONG RANGE FORECAST A$ = $US						0.79	
PRICE EXPECTATION FOR GLOBULUS WOODCHIPS AT PORT OF ALBANY FOB BDU $A						172.29	CONVERTING TO A$
PRICE EXPECTATION FOR GLOBULUS WOODCHIPS AT PORT OF ALBANY FOB BDMT $A						158.26	CONVERTING TO METRIC MEASURE
BASIC DENSITY OF GLOBULUS WOODCHIPS BDMT/M3						0.55	
WOODCHIP PRICE EXPECTATION FOB AFTER LOSSES FOB M3 SUB $A						87.04	CONVERTING TO EQUIVALENT ROUNWOOD MEASURE
WOOD LOSSES – Chipper	3.0%	– Port	2.0%	5.0%			
WOODCHIP PRICE FOB BEFORE LOSSES M3 SUB $A						82.69	
(This is the fob Revenue generated by 1 m3 sub @ the Stump)							
LESS CHARGES INCLUDING OPERATOR PROFIT (A$ per m3 at the Stump):–							PERSCOM & 1ST PRINCIPLES
PORT						8.83	
Woodchip Loading Cost Rate $/gmt		10.00					
CHIP TRANSPORT						3.59	
Chip Transport Rate (35 K Lead) $/gmt		3.85					
CHIP PRODUCTION						8.38	
Chipping Cost Rate $/gmt produced		9					
LOG TRANSPORT						5.86	
Log Transport Rate (50 K Lead) $/gmt		5.5					
LOG EXTRACTION						13.86	
Extraction Charge Rate $/gmt		13.00					
GROSS RESIDUAL STUMPAGE $/M3 SUB						42.16	
DISCOUNT TO CONTRACTED FORWARD BUYER		7.5%				3.16	
PRICE PAID BY CONTRACTED BUYER						39.00	
COORDINATION OF HARVESTING AND MARKETING		10.0%				3.90	
AVERAGE RESIDUAL STUMPAGE AVAILABLE TO GROWER A$/M3 SUB						*35.10*	

SENSITIVITY:–

PARAMETER	FOB PRICE	PULP YLD	B.DENSITY	M.C. LOSS	DISTANCE	CHARGES	EXCH.RATE	WOOD LOSS
CHANGE IN PARAMETER	CORRESPONDING CHANGE IN STUMPAGE							
+ 10%	26.3%	26.3%	17.6%	0.6%	–2.3%	–9.9%	–18.1%	–0.8%
0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
– 10%	–26.3%	–26.3%	–18.4%	–0.6%	2.3%	9.9%	22.1%	0.8%

File:GStumpag

Figure 2.

REGIONAL PLANNING FOR FARM FORESTRY

BASIC ECONOMICS OF FULLY FUNDED HARDWOOD PULPWOOD PLANTATIONS

SCALE: @ MINIMUM PULPWOOD QUANTITY, SAY '000 TONNES PA *250* *MINIMUM PLANTED AREA, HECTARES (HA) PA* *1000*

1ST ROTATION LENGTH, YEARS (YR)	10	STOCKING DENSITY STEMS PER HECTARE (SPH)	1250	PULP LOGS GROWN YR 10 M3/HA	250
MEAN ANNUAL INCREMENT (MAI), CUBIC METERS (M3) PA	25	2ND ROTATION LENGTH, YEARS (YR)	10	PULP LOGS GROWN YR 20 M3/HA	250
		AVERAGE STEM SIZE M3	0.2	PULPWOOD NET STUMPAGE $/M3	35.1

PER HA ANNUAL CASHFLOWS IN $ (CONSTANT 1993 VALUES) OVER 2 ROTATIONS

YEAR		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
LAND COST																						
AVERAGE GROSS VALUE $/HA	1800																					
AREA PLANTED	80%																					
AVERAGE VALUE PER HA PLANTED	2250																					
AVERAGE LEASE $/HA @ % REAL	7.0%	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158
CONTRACT PLANTATION OPERATIONS																						
ESTABLISHMENT	$	920																				
MANAGEMENT & PLANNING	92																					
SITE PREPARATION	60																					
FENCING	100																					
WEED CONTROL	90																					
SEEDLINGS 1250	298																					
PLANTING, FERTILISING	200																					
FERTILISER	55																					
FIRE & PEST CONTROL	25																					
PERIODIC COSTS																						
MAINTENANCE, MONITORING, REPORTS			60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
WEED CONTROL & INFILLS			120										120									
FERTILISER							110						110						110			
COPPICE MANAGEMENT													250									
CLEAN-UP																						200
SUB-TOTAL CONTRACT OPERATIONS		920	180	60	60	60	170	60	60	60	60	60	540	60	60	60	60	60	170	60	60	260
MANAGEMENT																						
ANNUAL OPERATING $'000	358	358	25	25	25	25	25	25	25	25	25	25	358	25	25	25	25	25	25	25	25	25
INSURANCE % OF COSTS	1.0%	13	15	16	17	17	19	20	21	22	23	24	9	10	11	12	12	13	15	16	17	20
SUB-TOTAL CO-OP MANAGEMENT COSTS		371	40	41	42	42	44	45	46	47	48	49	367	35	36	37	37	38	40	41	42	45
TOTAL COSTS		1448	377	258	259	260	372	263	264	264	265	268	1065	252	253	254	255	256	368	259	259	462
NPV @ 5%,1ST 10 YRS COSTS REAL $	3504																					
REVENUE $												8775										8775
ANNUAL CASH FLOW		-1448	-377	-258	-259	-260	-372	-263	-264	-264	-265	8509	-1065	-252	-253	-254	-255	-256	-368	-259	-259	8313

INTERNAL RATE OF RETURN (IRR) - REAL, BEFORE & AFTER TAX 11.7%

File:GSPBasic

Figure 3.

THE REAL WORTH OF TWO INVESTMENT ALTERNATIVES

CPI INFLATION 2.5%

A. TEN YEAR GOVERNMENT BOND (SAY "RISK FREE")

		ANNUAL CASHFLOW $										
	YEAR	0	1	2	3	4	5	6	7	8	9	10
PURCHASE OF BOND $		-1000										
REDEMPTION OF BOND												1000
BOND YIELD @	9.5%		95	95	95	95	95	95	95	95	95	95
TAX @	39.0%		-37	-37	-37	-37	-37	-37	-37	-37	-37	-37
CASH FLOW, $ NOMINAL, AFTER TAX		-1000	58	58	58	58	58	58	58	58	58	1058
CASH FLOW, $ REAL, AFTER TAX		-1000	57	55	54	52	51	50	49	47	46	821

INTERNAL RATE OF RETURN, REAL, AFTER TAX @ 39%	*3.2%*	e.g. COMPANY, INDIVIDUAL ON 39% TAX RATE
INTERNAL RATE OF RETURN, REAL, AFTER TAX @ 0%	6.8%	e.g. GOVERNMENT AUTHORITY, SPORTING BODY
INTERNAL RATE OF RETURN, REAL, AFTER TAX @ 15%	5.4%	e.g. SUPER FUND, INDIVIDUAL ON LOW MARGINAL TAX
INTERNAL RATE OF RETURN, REAL, AFTER TAX @ 48.25%	*2.3%*	e.g. INDIVIDUAL ON HIGH MARGINAL TAX

B. AVERAGE AUSTRALIAN "ALL ORDINARIES" EQUITIES

MARKET PRICE OF SHARE PARCEL $ NOMINAL	1000	1035	1071	1109	1148	1188	1229	1272	1317	1363	1411
SHARE PRICE INFLATION RELATIVE TO CPI SAY	1.0%										
VALUE OF PARCEL $ AT CPI ANNUAL INCREASE	1000	1025	1051	1077	1104	1131	1160	1189	1218	1249	1280
CASH FLOW OF INITIAL $1000 PARCEL:-											
PURCHASE OF SHARE PARCEL $	-1000										
SALE OF SHARE PARCEL $											1411
FRANKED DIVIDEND YIELD $ @ 5.0%		52	54	55	57	59	61	64	66	68	71
INCOME TAX $ say zero, because of Franking		0	0	0	0	0	0	0	0	0	0
CAPITAL GAINS TAX $ @ 39.0%											-51
CASH FLOW, $ NOMINAL, AFTER TAX	-1000	52	54	55	57	59	61	64	66	68	1430
CASH FLOW, $ REAL, AFTER TAX	-1000	50	51	51	52	52	53	53	54	54	1110

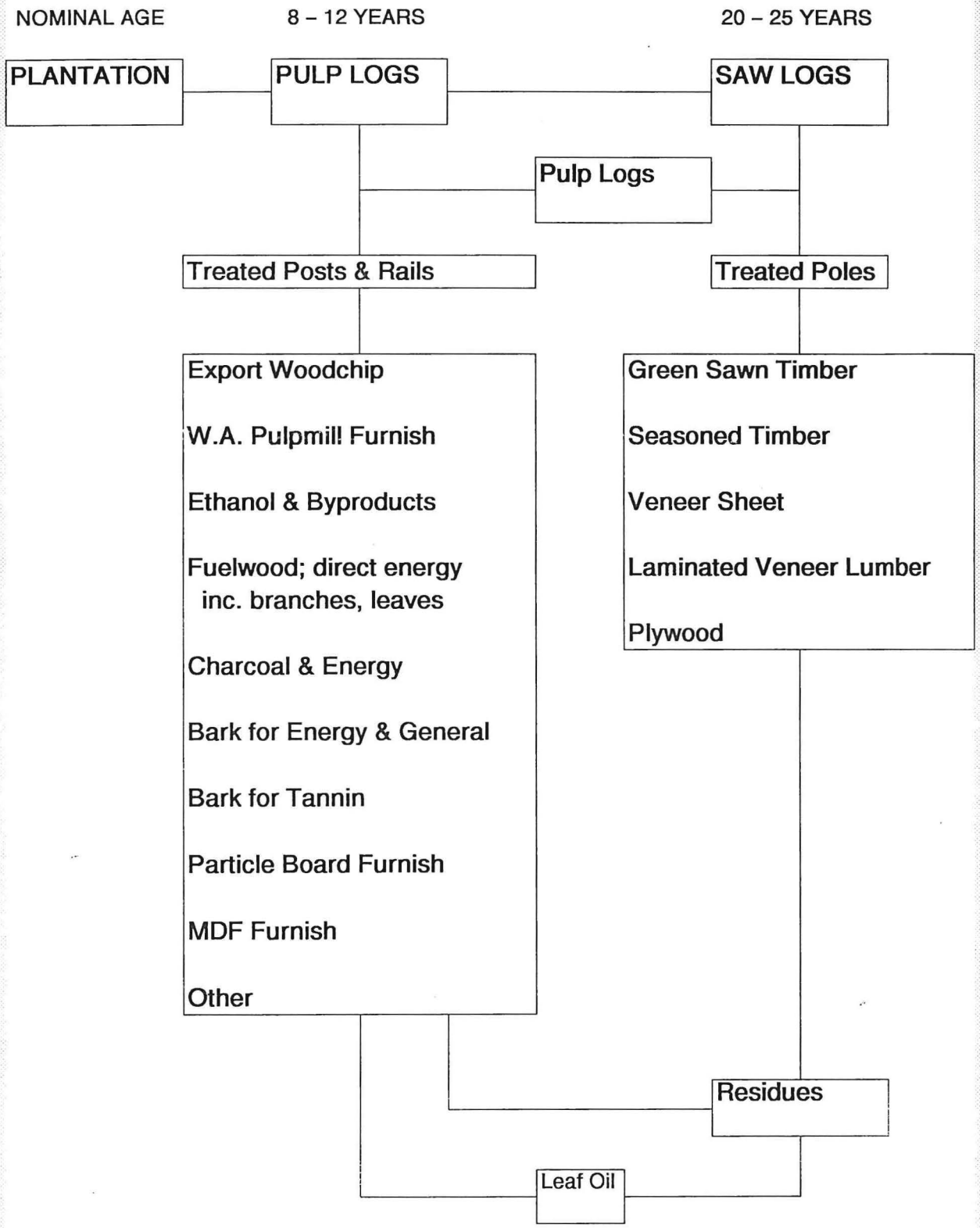
IRR OF CASHFLOW, REAL AFTER TAX @ 39.0%	*5.7%*	
IRR OF CASHFLOW, REAL AFTER TAX @ 48.3%	*5.6%*	
IRR OF CASHFLOW, REAL AFTER TAX @ 0.0%	6.0%	

File:GSinvestr

Figure 4.

REGIONAL PLANNING FOR FARM FORESTRY

BLUE GUM PLANTATION PRODUCT OPTIONS



File: Prodflo

Figure 5.

REGIONAL PLANNING FOR FARM FORESTRY

WORLD-SCALE CHEMICAL/MECHANICAL PULP (CMP) MILL
(CHLORINE – FREE)
PLANTING AREAS AND WOOD COST

WORLD-SCALE MINIMUM OUTPUT ADT PA			220000	
FINISHED PULP MC	10%			
PULP OUTPUT BDMT PA			200000	
WOOD PULP YIELD	85%			
WOOD INPUT - REQUIREMENT BDMT PA			235294	
- SAY HARDWOOD:SOFTWOOD	90%	10%		
PROJECT LIFE, YEARS			20	
MINIMUM PLANTING AREAS:-				
E. GLOBULUS COMPONENT BDMT	90%		211764	
WOOD BASIC DENSITY KG/M3			0.55	
WOOD INPUT REQUIREMENT M3 PA			385027	
AVERAGE GROWTH RATE M3/HA PA			22.5	
ROTATION LENGTH YEARS			10	
ROTATIONS			2	
PRODUCTION AFTER 10 YRS M3 PER HA PA			225	
GLOBULUS PLANTING AREA REQUIRED HA PA				*1711*
GLOBULUS AREA OVER 20 YEARS, TOTAL HA			17112	
P. RADIATA COMPONENT BDMT	10%		23529	
WOOD BASIC DENSITY KG/M3			0.45	
WOOD INPUT REQUIREMENT M3 PA			52288	
FROM SOFTWOOD SAWLOG MODEL				
- 1ST THINNINGS YEAR 9 M3 PER HA			103	
RADIATA PLANTING AREA REQUIRED HA PA				*508*
RADIATA AREA OVER 20 YEARS, TOTAL HA			10153	

ALBANY-MOUNT BARKER MILL DOOR WOOD COST ESTIMATE

HW COST COMPONENT			
STUMPAGE $ M3	30		
EXTRACTION	14		
TRANSPORT,CO-ORDN.	7		
MILL DOOR COST $ M3	51		
COST $ BDMT	92.73		
COST $ ADMT	84.30		
90% HW $ ADMT		75.87	
SW COST COMPONENT			
STUMPAGE $ M3	14.63		
EXTRACTION	14		
TRANSPORT,CO-ORDN.	7		
MILL DOOR COST $ M3	35.63		
COST $ BDMT	79.18		
COST $ ADMT	71.98		
10% SW $ ADMT		7.20	
COMBINED WOOD COST BDMT		91.37	
TOTAL WOOD COST COMPONENT A$ ADMT			83

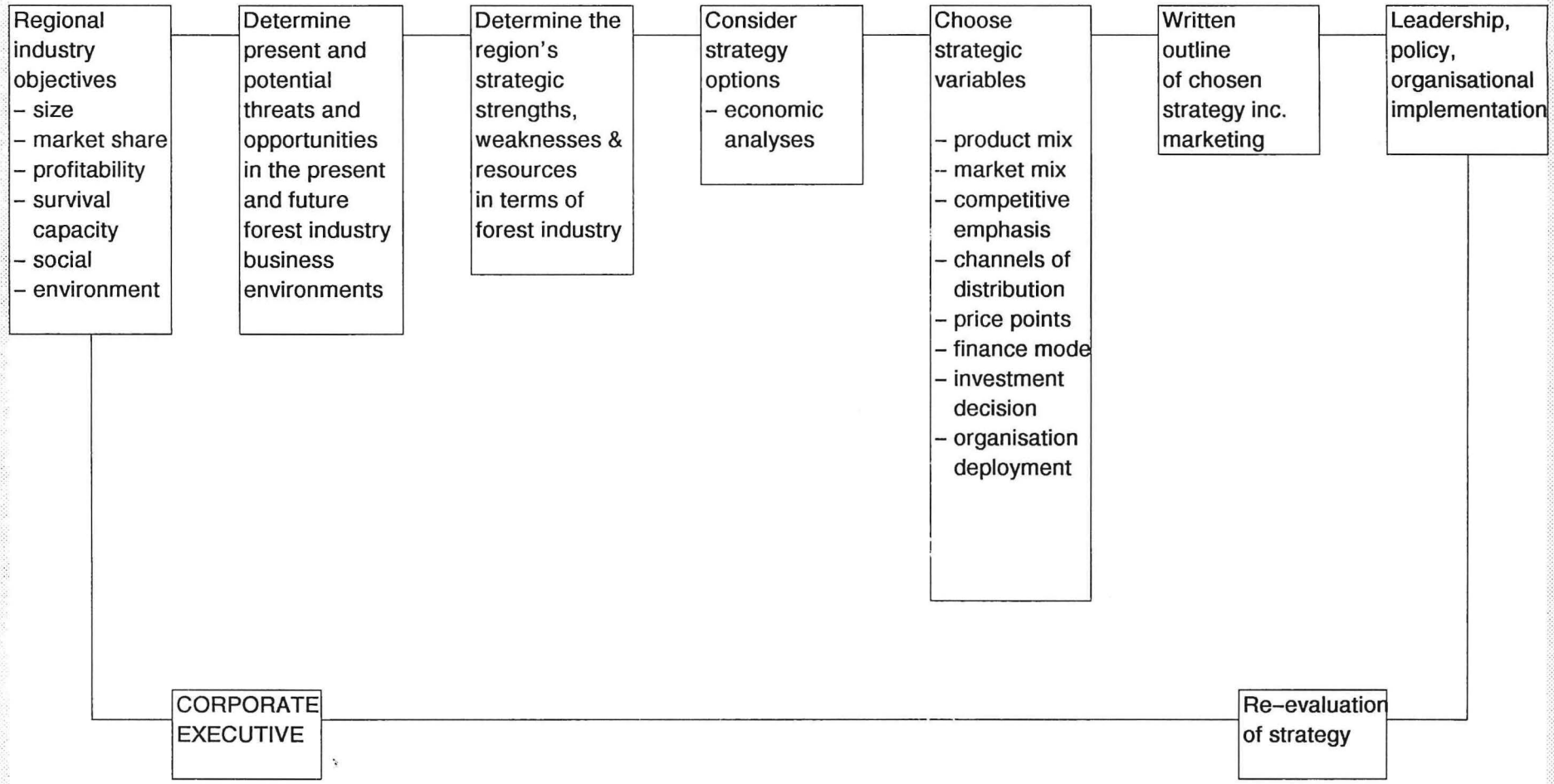
H.A.SIMONS COMPETITIVENESS STUDY ON CMP MILLS:-	
AUSTRALIAN WOOD COST PER $/ADT PULP APPROX.	95
GREAT SOUTHERN WOOD COSTS BETTER SIMONS BY $ ADMT	*12*

File:CMPMill

Figure 6.

REGIONAL PLANNING FOR FARM FORESTRY

A STRATEGIC MANAGEMENT PROCESS



File:GStrateg

Figure 7.

REGIONAL PLANNING FOR FARM FORESTRY

PLANTATIONS EXTERNALLY FUNDED THROUGH MANAGER – PROMOTER :–

"SOUTHERN TREE GROWERS CORPORATION/COOPERATIVE"

FINANCIAL PROSPECTS

1000 HA ESTABLISHED PER YEAR FOR 10 YEARS
EACH HA HAS TWO 10 YEAR ROTATIONS

INFLATION 4.0% INTEREST RECEIVED 6.0% INTEREST PAID 9.0%

TAX PAID
DIVIDEND PAID

OPTION B:– CO–0PERATIVE PAYS NO LEASES FOR LAND BUT FARMERS RECEIVE SHARE OF TREE CROP
CO–OPERATIVE RECEIVES FOR EACH 1 HA INVESTMENT UNIT UP–FRONT REAL $ 3200

CASHFLOW $ M NOMINAL

YEAR	–1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
FORMATION COSTS	0.03																														
PROSPECTUS	0.11																														
MANAGEMENT,CORPORATE	0.18	0.37	0.41	0.45	0.49	0.54	0.58	0.63	0.68	0.73	0.78	0.78	0.79	0.78	0.77	0.77	0.76	0.75	0.74	0.74	0.73	0.73	1.06	0.97	0.89	0.80	0.71	0.62	0.53	0.44	0.35
LAND COST		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLANTATION COST		0.92	1.10	1.16	1.36	1.42	1.59	1.65	1.82	1.88	1.94	1.08	1.44	1.44	1.30	1.41	1.30	1.30	1.30	1.30	1.30	1.50	0.96	0.90	0.84	0.67	0.61	0.55	0.38	0.32	0.26
SUB–TOTAL OUTGOINGS	0.31	1.29	1.51	1.61	1.85	1.95	2.17	2.28	2.49	2.60	2.71	1.86	2.22	2.21	2.07	2.18	2.06	2.05	2.04	2.04	2.03	2.23	2.02	1.87	1.73	1.47	1.32	1.17	0.91	0.76	0.61
INVESTMENT REVENUE		3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	0.00	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LESS SALES COMMISSION		0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.00	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ROYALTY REVENUE MODEL		0	0	0	0	0	0	0	0	0	0	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
SUB–TOTAL INCOME	0	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	0.38	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
OPERATIONS CASHFLOW	–0.31	1.59	1.37	1.27	1.03	0.93	0.71	0.60	0.39	0.28	0.17	–1.48	1.03	1.04	1.18	1.08	1.20	1.20	1.21	1.22	1.22	1.03	–1.64	–1.50	–1.35	–1.10	–0.95	–0.80	–0.54	–0.38	–0.23
SPONSORS DEPOSIT	0.41																														
OPENING BALANCE		0.10	0.99	1.79	2.56	3.23	3.85	4.38	4.87	5.25	5.58	5.86	4.73	5.47	6.23	7.11	7.95	8.89	9.86	10.87	11.91	13.00	14.01	13.21	12.50	11.90	11.52	11.27	11.14	11.22	11.38
INTEREST PAID/RECEIVED		0.01	0.06	0.11	0.15	0.19	0.23	0.26	0.29	0.31	0.33	0.35	0.28	0.33	0.37	0.43	0.48	0.53	0.59	0.65	0.71	0.78	0.84	0.79	0.75	0.71	0.69	0.68	0.67	0.67	0.68
OPERATIONS CASHFLOW		1.59	1.37	1.27	1.03	0.93	0.71	0.60	0.39	0.28	0.17	–1.48	1.03	1.04	1.18	1.08	1.20	1.20	1.21	1.22	1.22	1.03	–1.64	–1.50	–1.35	–1.10	–0.95	–0.80	–0.54	–0.38	–0.23
TAX @ 30%		–0.48	–0.43	–0.41	–0.36	–0.34	–0.28	–0.26	–0.20	–0.18	–0.15	0.00	–0.40	–0.41	–0.47	–0.45	–0.50	–0.52	–0.54	–0.56	–0.58	–0.54	0.00	0.00	0.00	0.00	0.00	0.00	–0.04	–0.09	–0.14
DIVIDEND 20%		–0.22	–0.20	–0.19	–0.17	–0.16	–0.13	–0.12	–0.09	–0.08	–0.07	0.00	–0.18	–0.19	–0.22	–0.21	–0.23	–0.24	–0.25	–0.26	–0.27	–0.25	0.00	0.00	0.00	0.00	0.00	0.00	–0.02	–0.04	–0.06
CLOSING BALANCE		0.99	1.79	2.56	3.23	3.85	4.38	4.87	5.25	5.58	5.86	4.73	5.47	6.23	7.11	7.95	8.89	9.86	10.87	11.91	13.00	14.01	13.21	12.50	11.90	11.52	11.27	11.14	11.22	11.38	11.63
TAXABLE INCOME		1.60	1.43	1.38	1.18	1.12	0.94	0.87	0.68	0.59	0.50	–1.13	1.32	1.37	1.56	1.50	1.67	1.74	1.80	1.87	1.94	1.81	–0.80	–0.71	–0.60	–0.38	–0.26	–0.12	0.13	0.29	0.45
CASHFLOW AFTER TAX & DIV.		0.89	0.80	0.77	0.66	0.63	0.53	0.49	0.38	0.33	0.28	–1.13	0.74	0.77	0.87	0.84	0.94	0.97	1.01	1.05	1.09	1.01	–0.80	–0.71	–0.60	–0.38	–0.26	–0.12	0.07	0.16	0.25

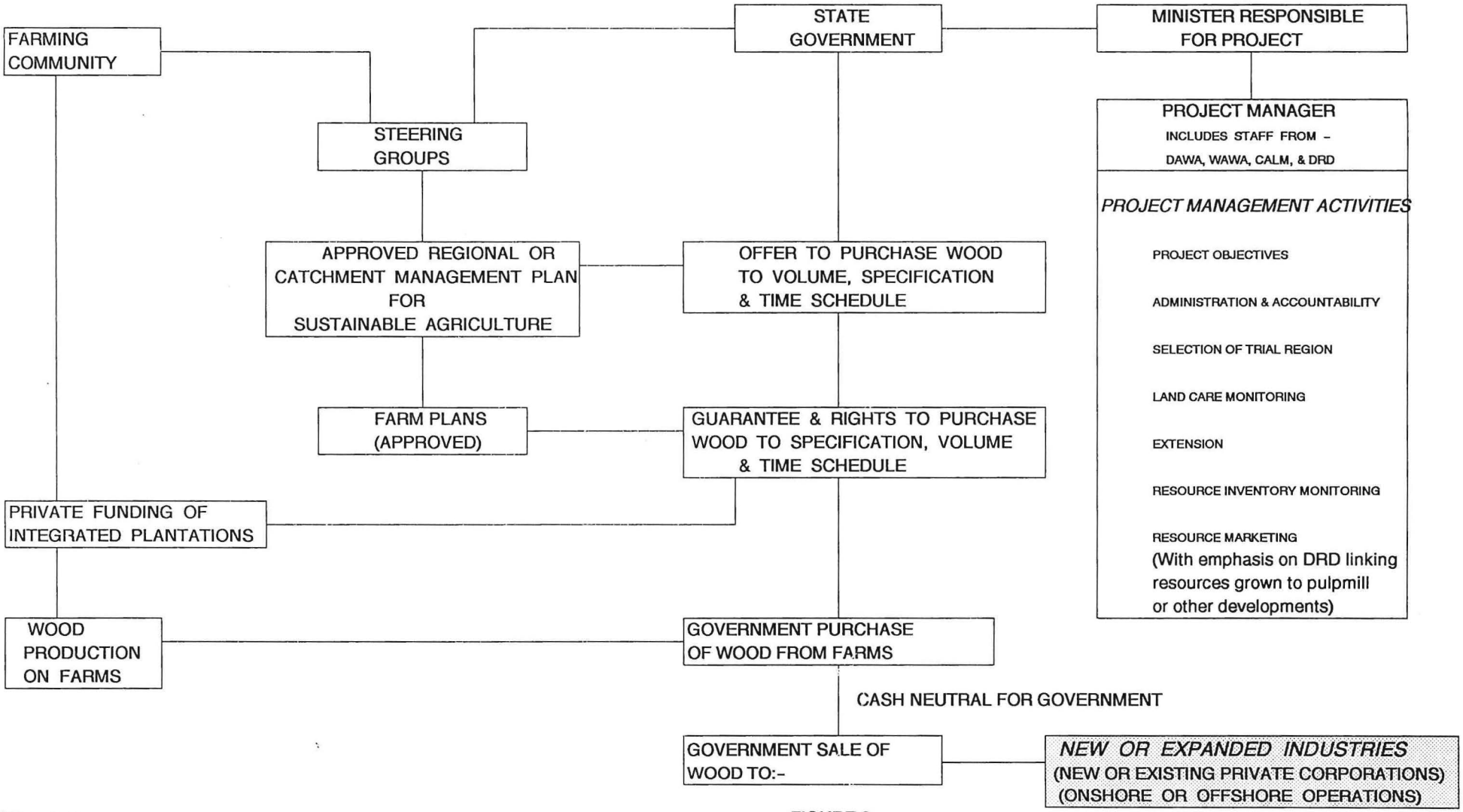
NET PRESENT VALUES @	13.0%
CORPORATION CASHFLOW AFTER TAX & DIVIDEND $M	4.87
DIVIDEND TO CORPORATION MEMBERS $M	1.35
TAX PAID $M	2.89

File: Exfintax

Figure 8.

DRAFT PROPOSAL

A PROPOSED WESTERN AUSTRALIAN GOVERNMENT SPONSORED TRIAL INITIATIVE IN ONE REGION TO DEMONSTRATE AT REGIONAL LEVEL THE IMPACT OF INTEGRATED PLANTATIONS ON FARMLAND SALINITY



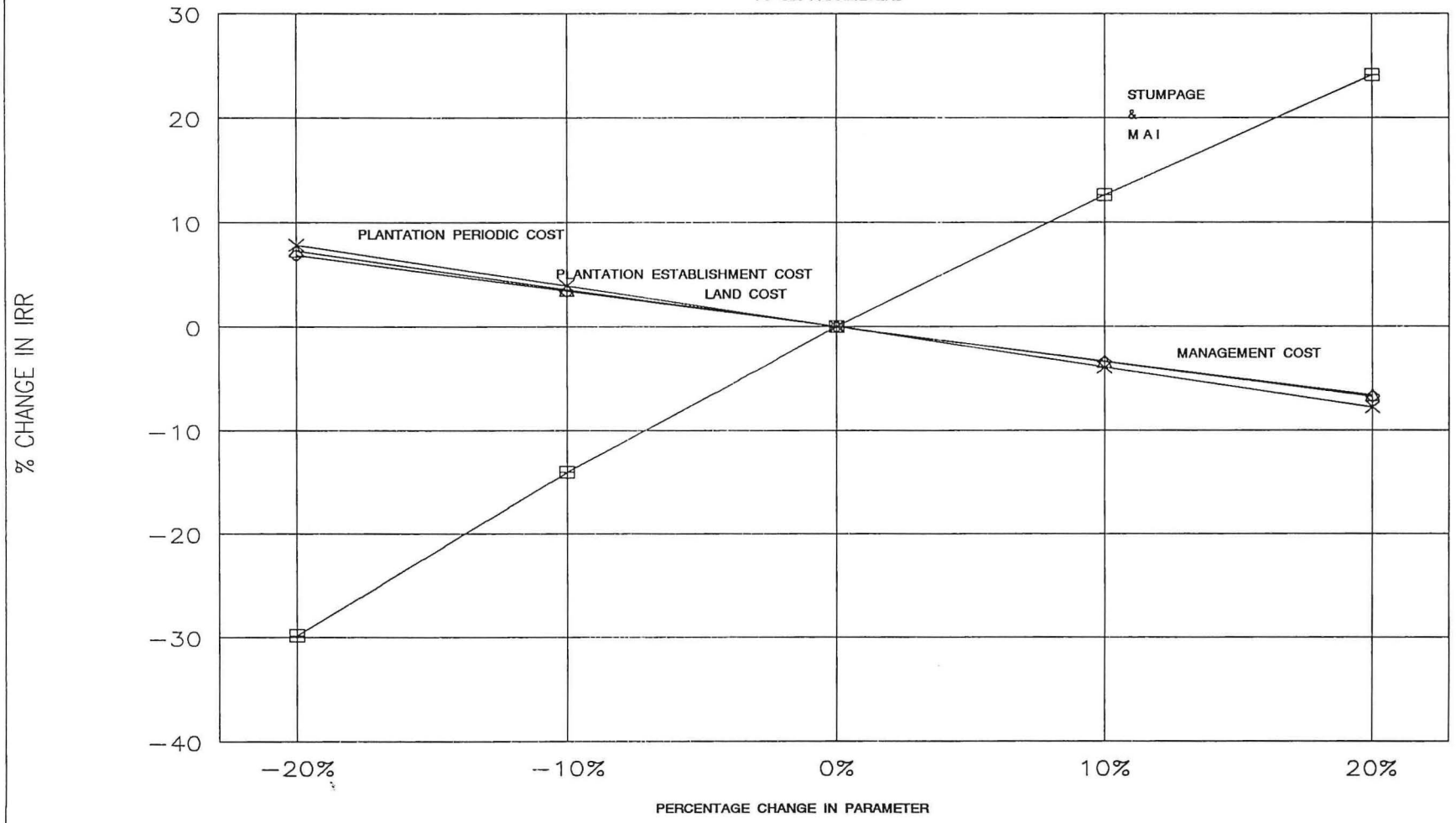
File: DRgovpur

FIGURE 9.

REGIONAL PLANNING FOR FARM FORESTRY

SENSITIVITY OF PLANTATION INTERNAL RATE OF RETURN
(HARDWOOD PULPWOOD)

TO SIX PARAMETERS



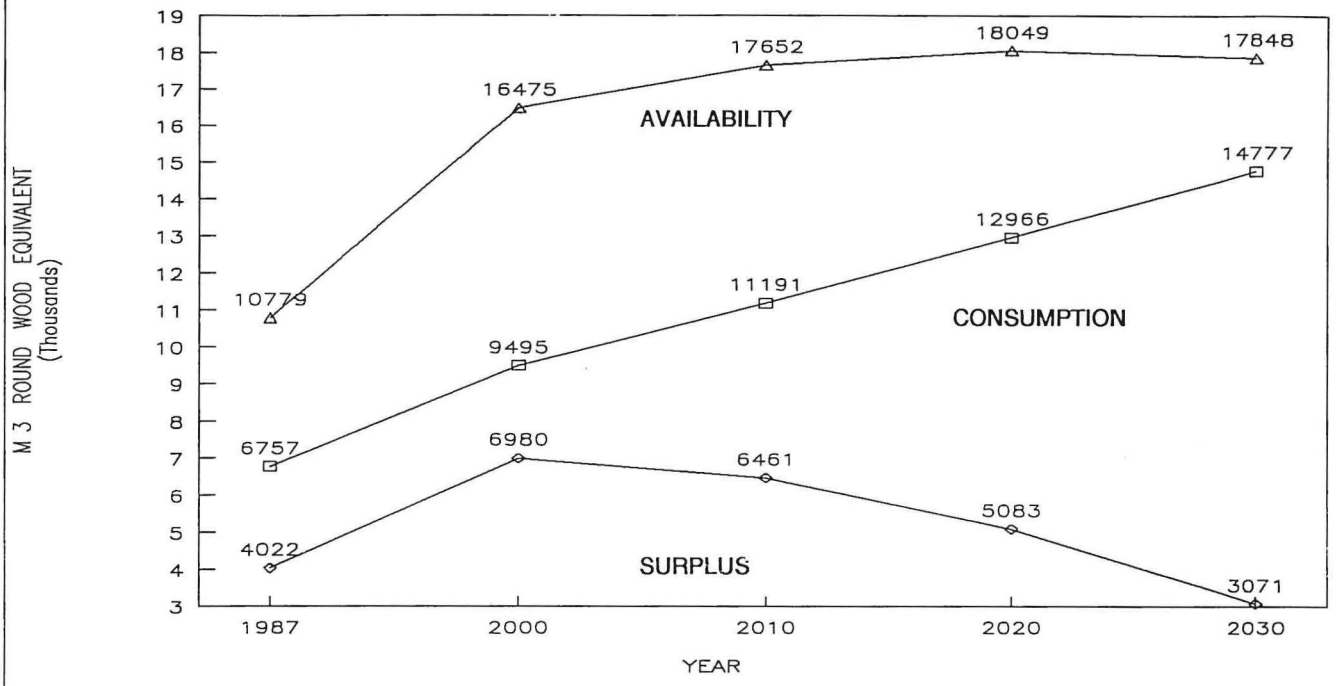
G F :GSPS

GRAPH 3

L C

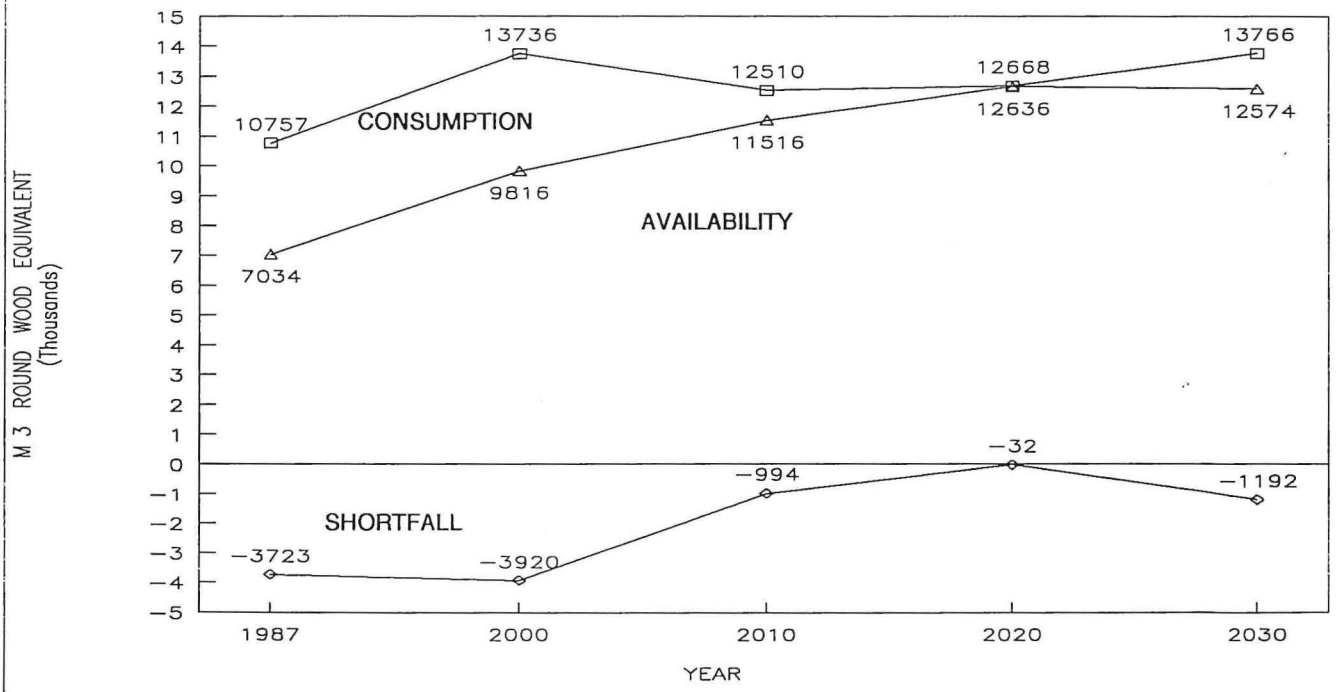
PROJECTED AUSTRALIAN DOMESTIC WOOD AVAILABILITY & CONSUMPTION

PULPLOGS



Graph 1.

SAWLOGS



Graph 2.

File:Logs&d

SOURCE: ABARE Discussion Paper 89.6, 1989