The Potential for Tree Crops and Vegetation Rehabilitation to Sequester Carbon in Western Australia

Presentation by:

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Executive Director

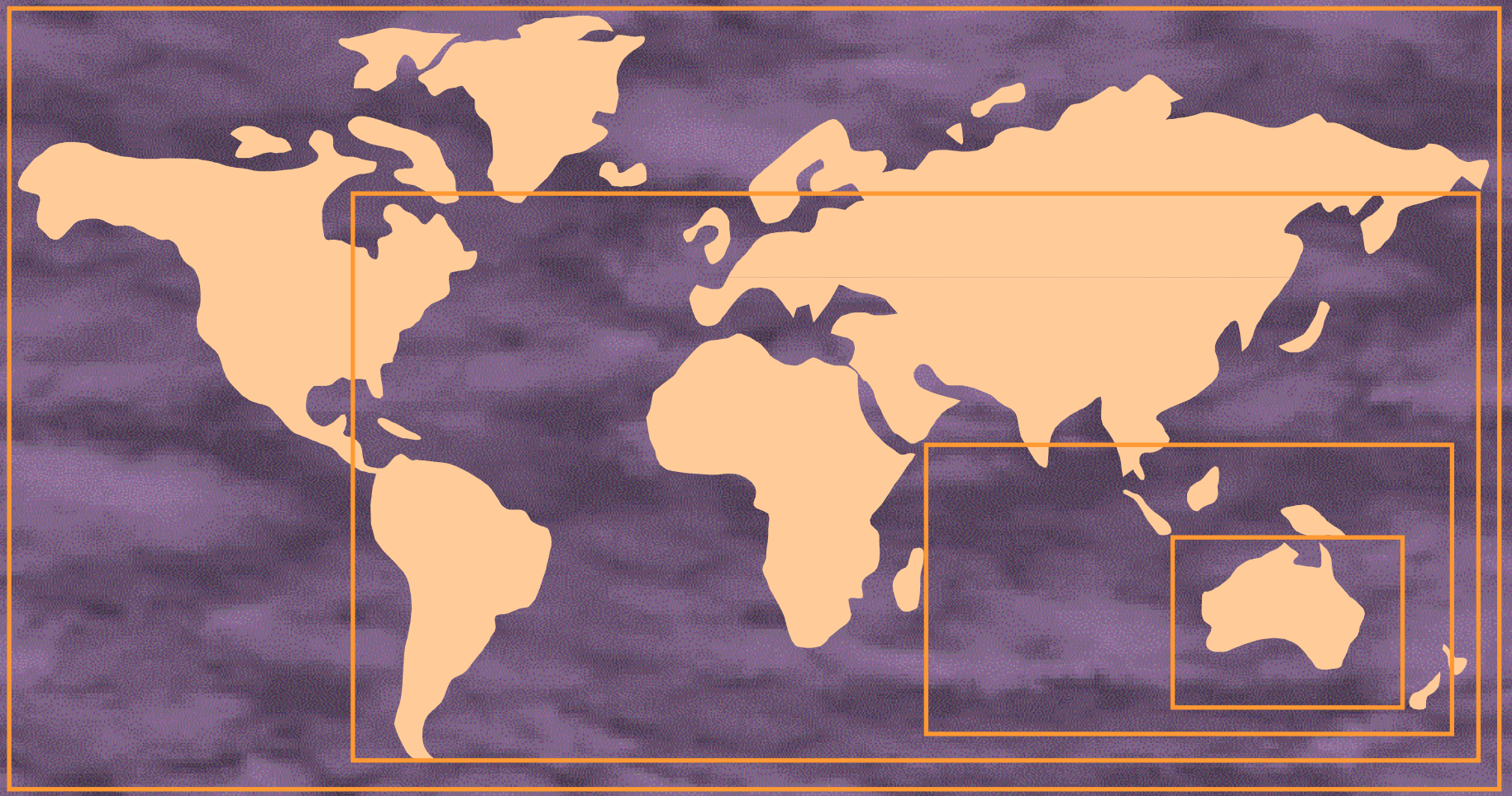
Department of Conservation and Land Management,

Western Australia

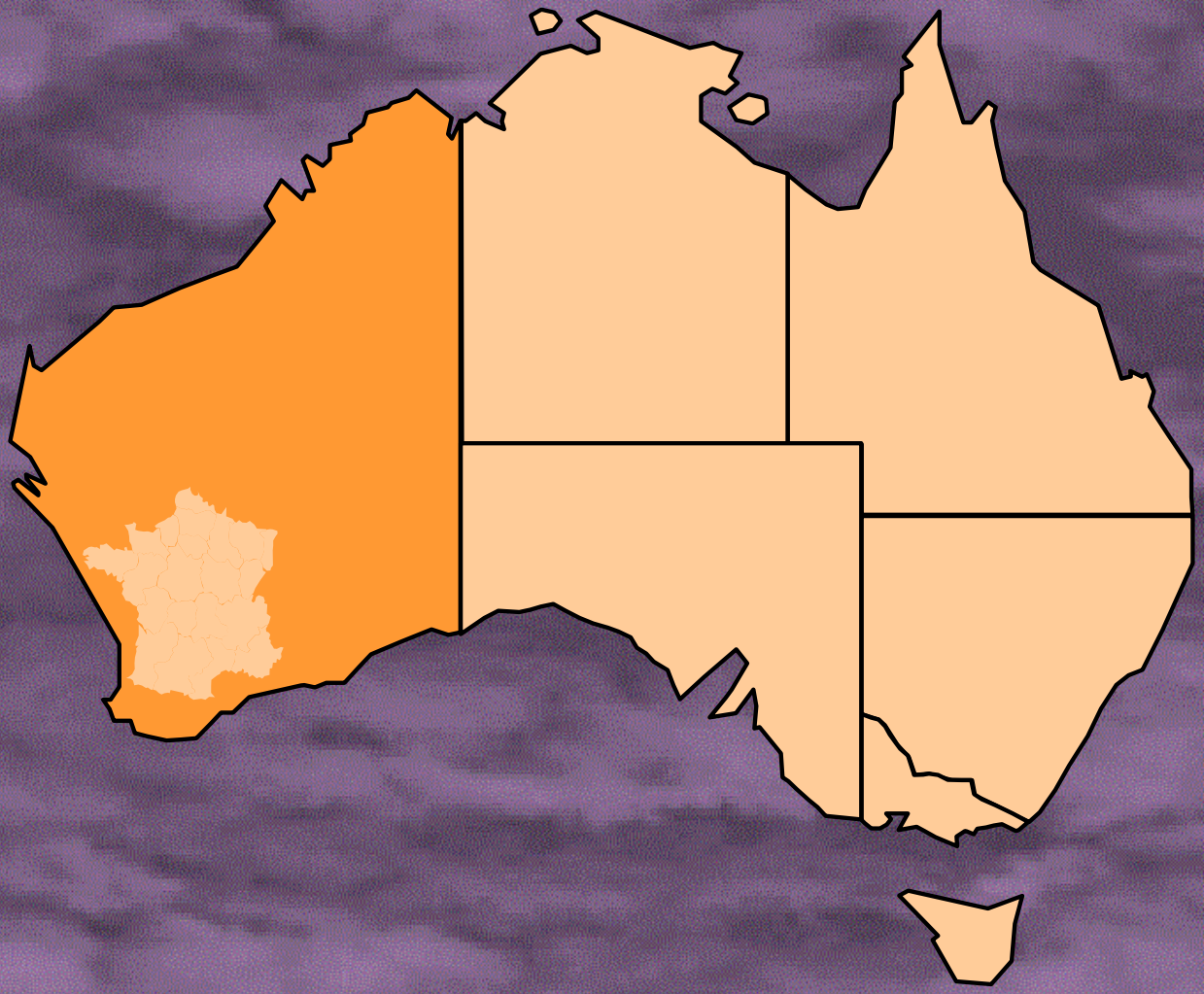
to

BP, London

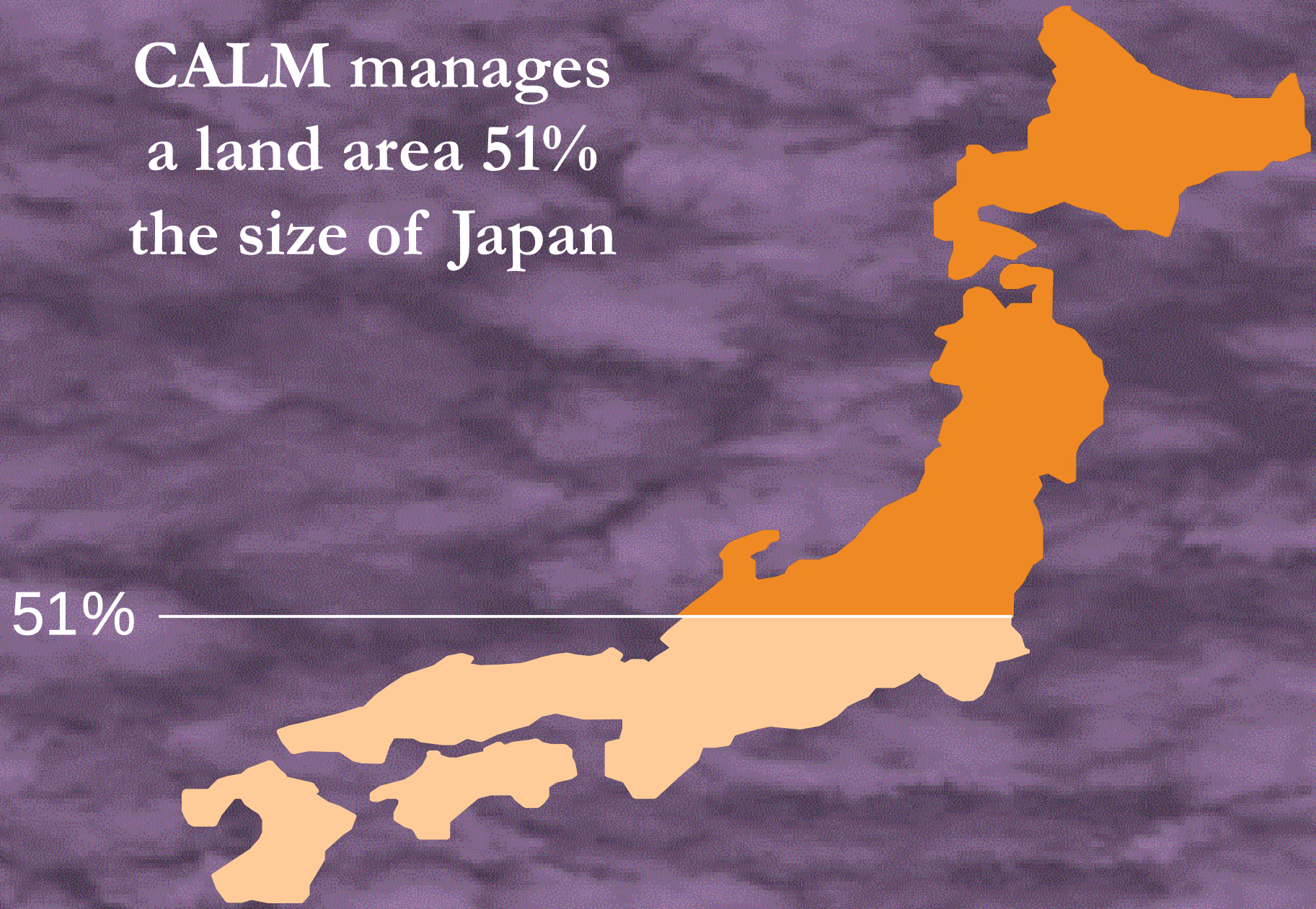
4 November 1998



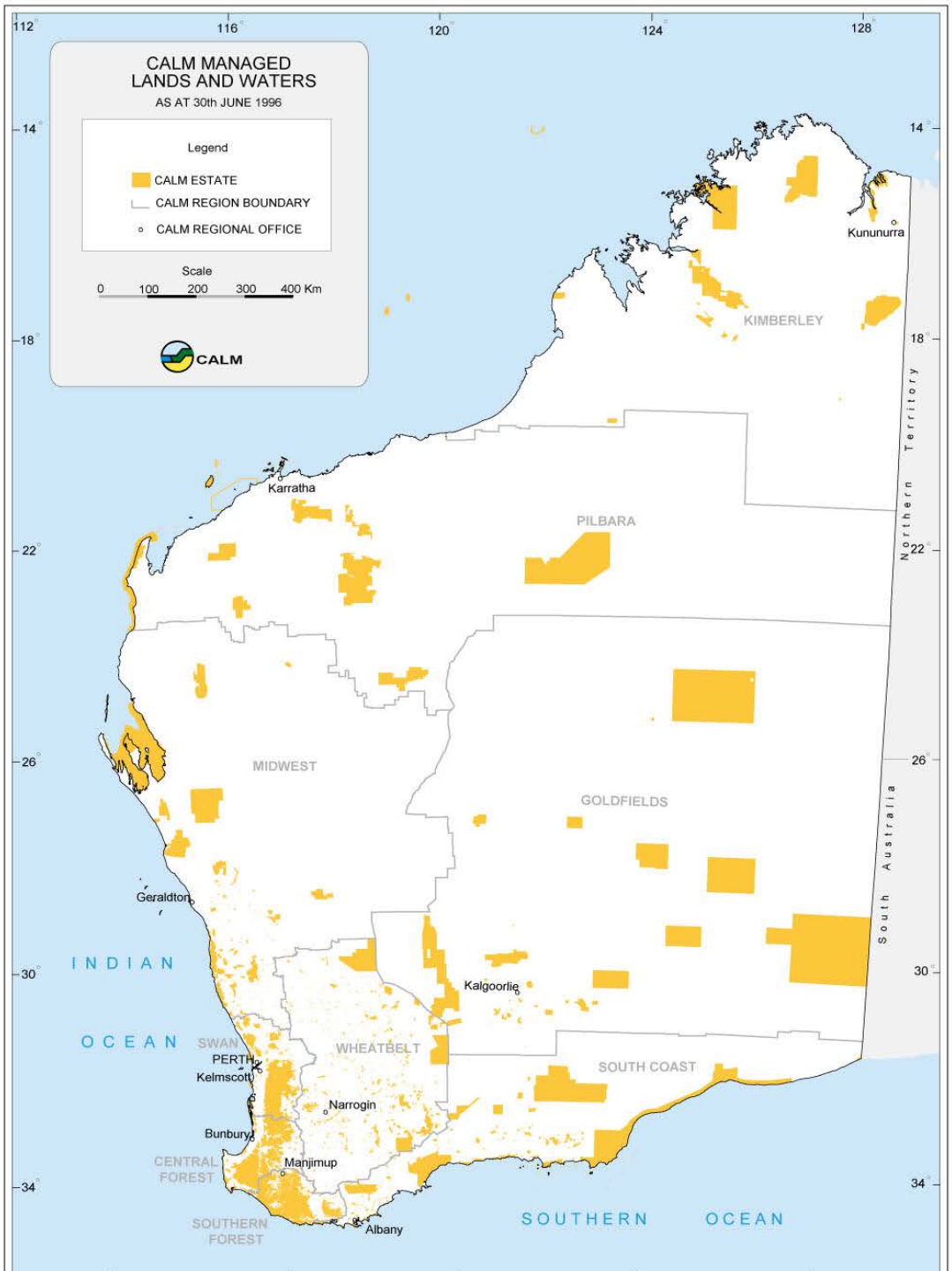
France occupies a land area about a quarter the size of Western Australia



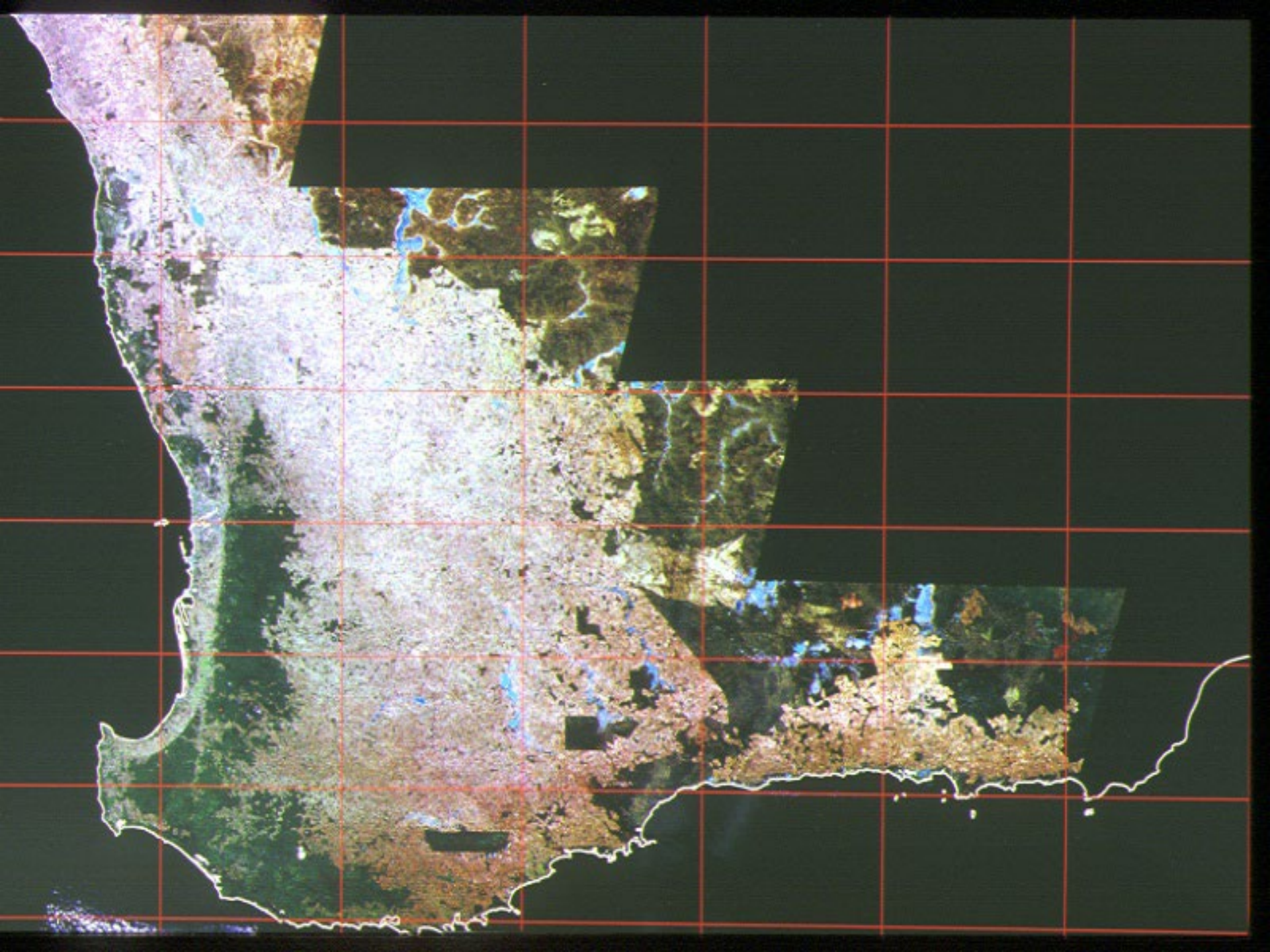
CALM manages a land area 51% the size of Japan



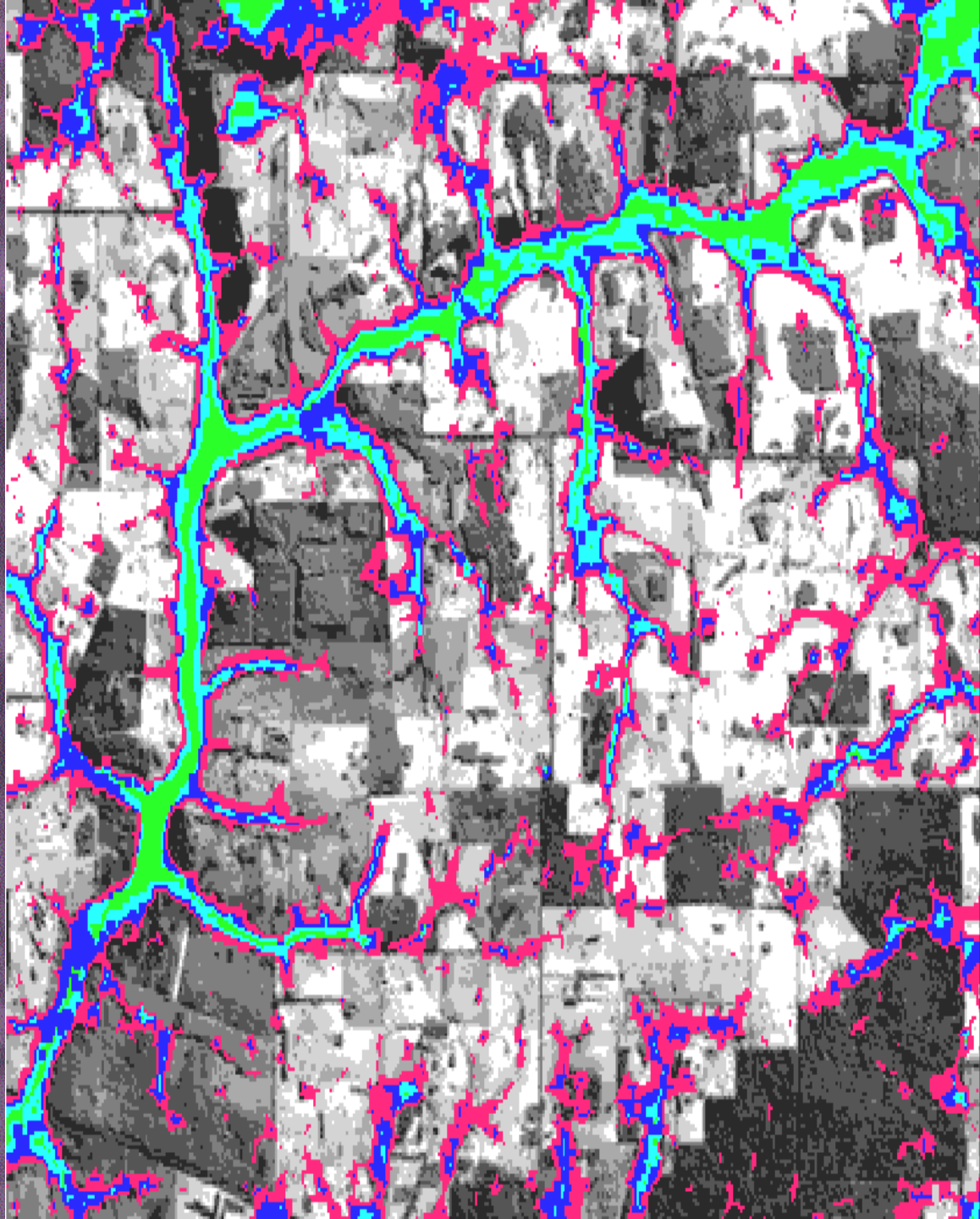
CALM managed lands and waters




INTEGRATION



Satellite imagery and salinity



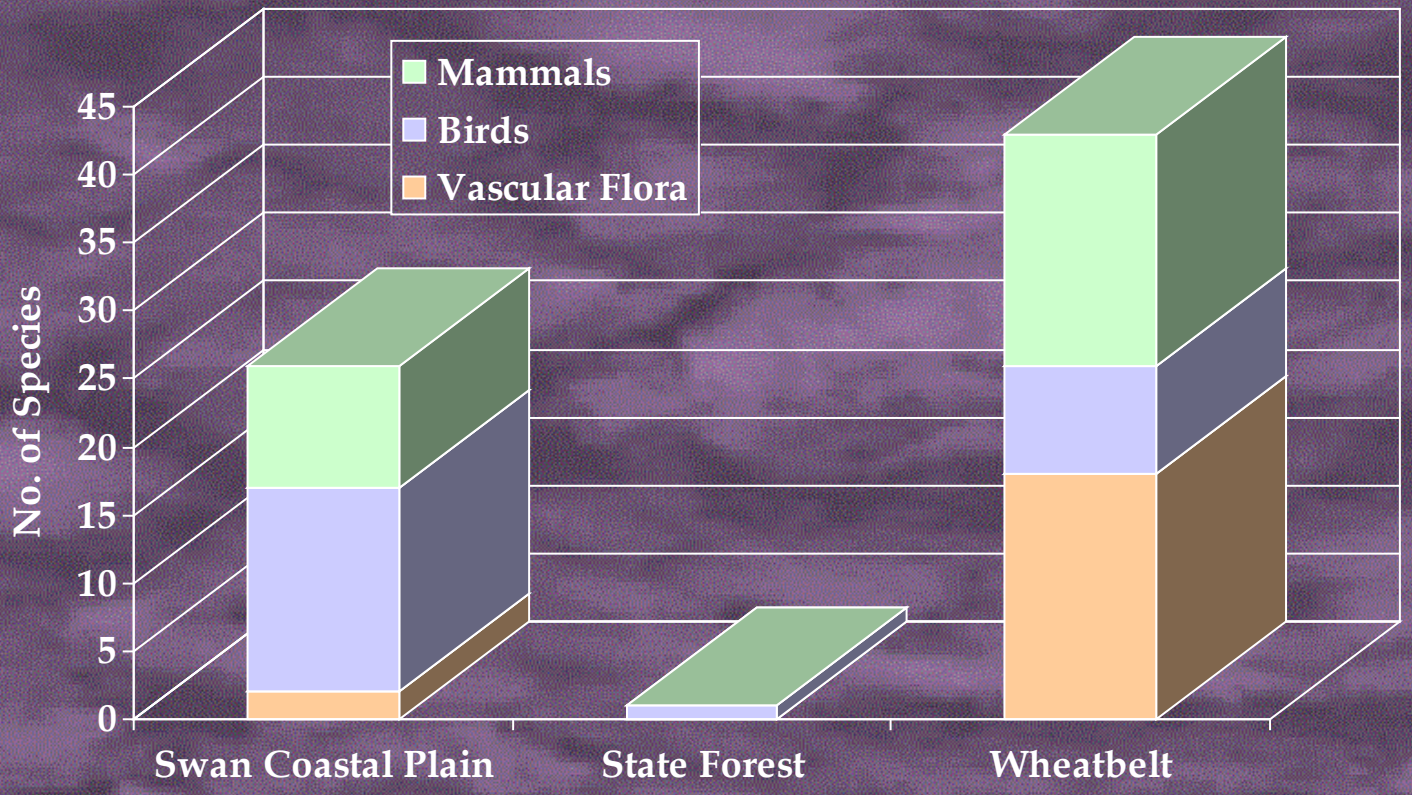
Estimated areas affected by salinity in 1994, 2020 and potential at full development

Region	Total Area 000ha	Salt affected 1994 000ha	%	Salt affected 2020 000ha	%	Potential area 000ha	%
South Coast	4 079	395	9.7	688	16.8	977	24.0
South West	3 310	274	8.3	596	18.0	820	24.8
Swan-Avon	7 591	759	10.0	1 290	17.0	3 035	40.0
Northern	4 252	376	8.8	723	17.0	1 276	30.0
Total	**19 231**	**1 805**	**9.4**	**3 296**	**17.1**	**6 111**	**31.8**

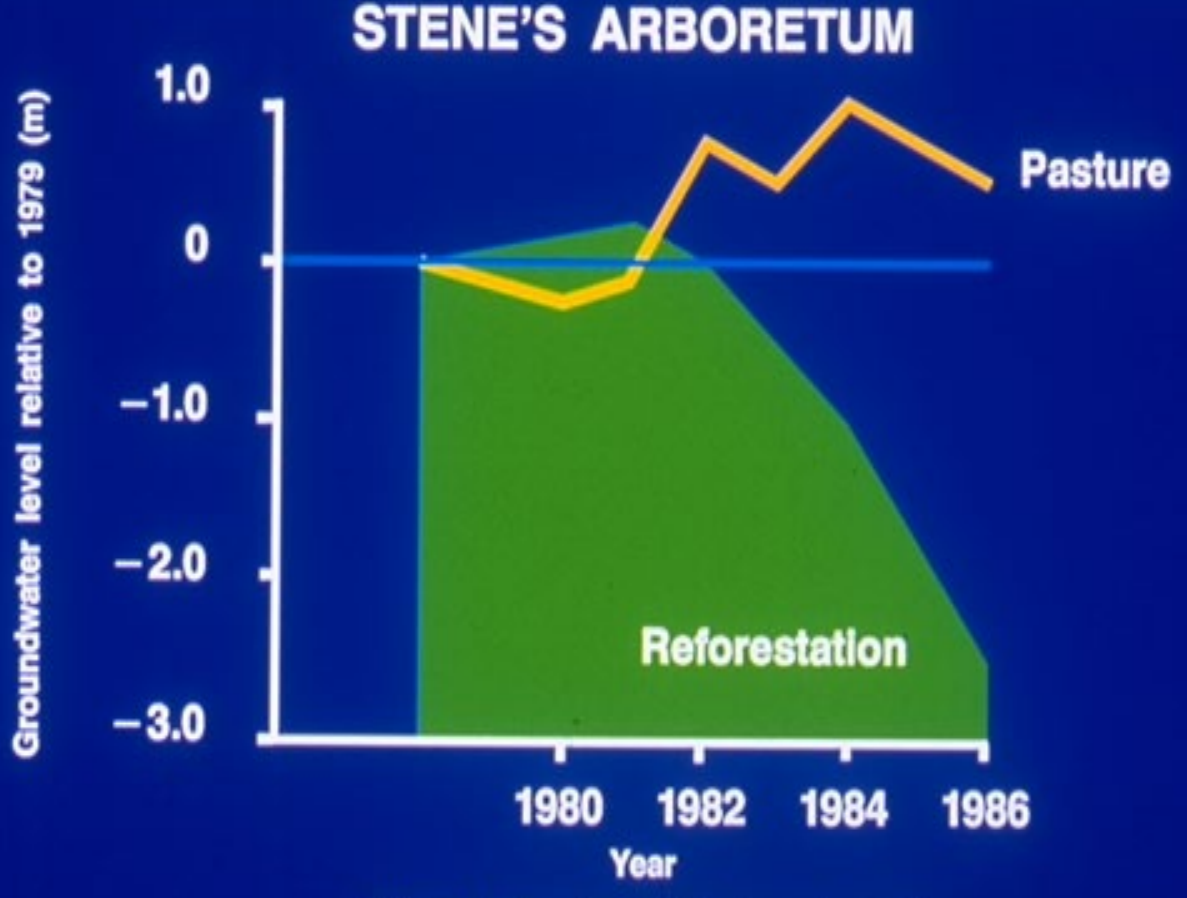
From Ferdowsian *et al*. 1996

Species extinctions since European settlement in 1829

(After Armstrong and Abbott, 1995)

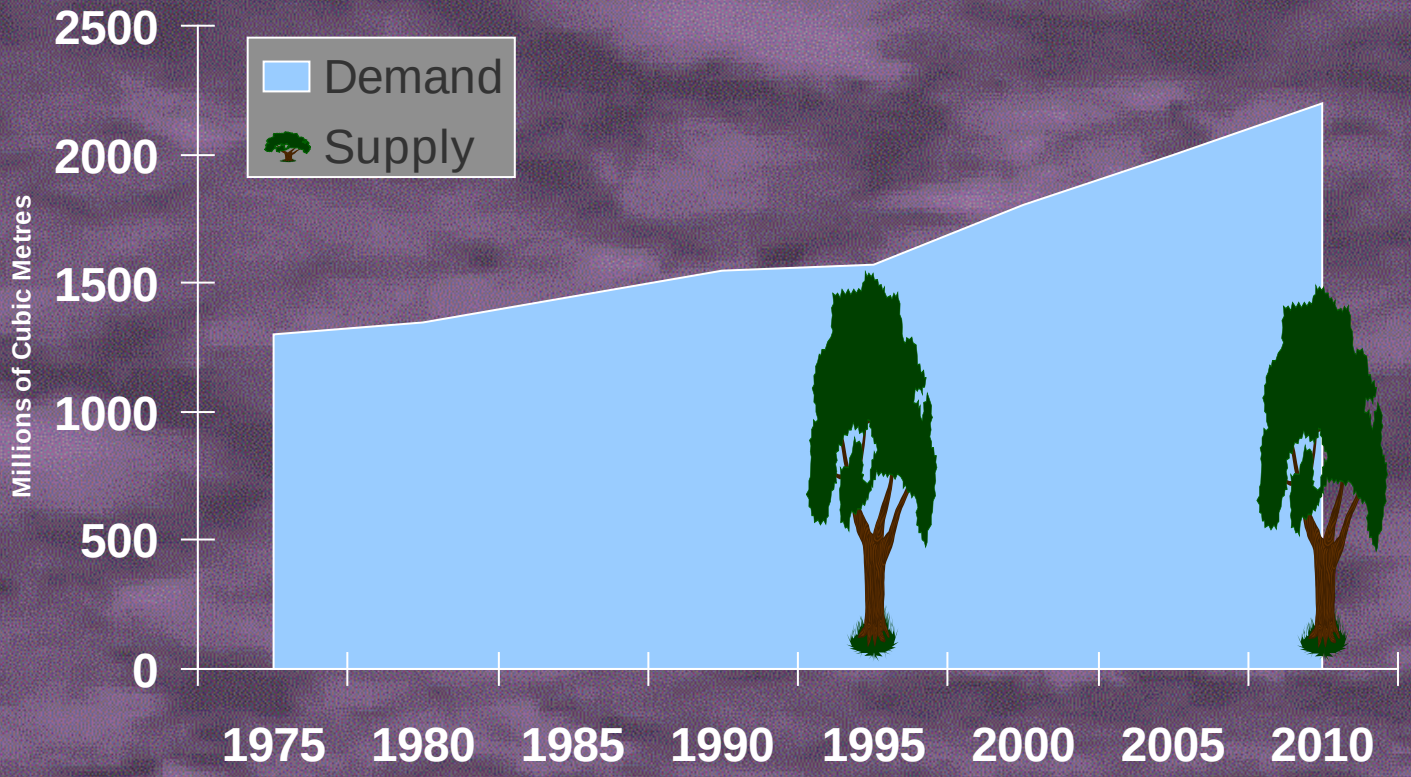


THE EFFECT OF TREE CROPS ON WATER TABLE LEVELS



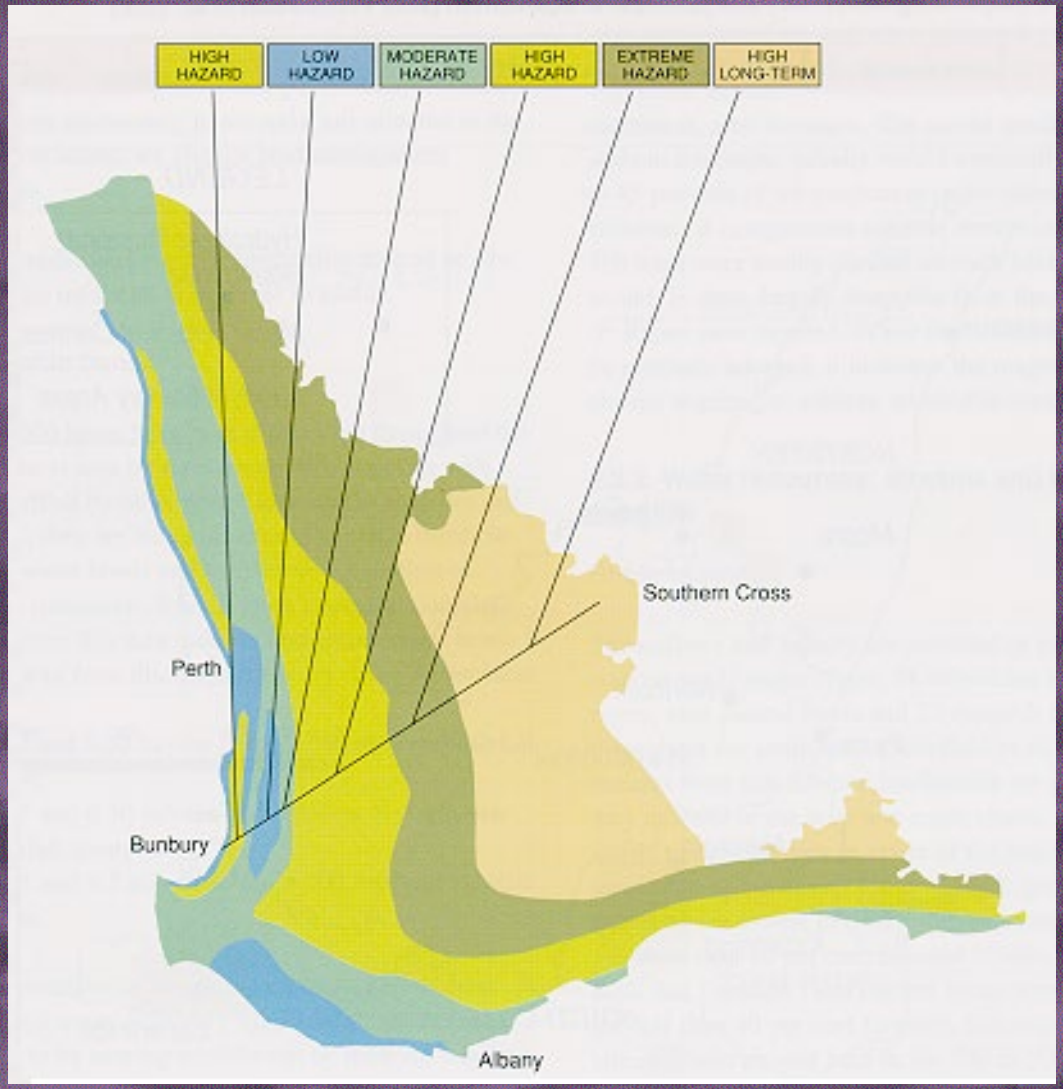
Water Authority of Western Australia
July 1989
Report No. WS 33

Global wood demand rises as supply falls



Sources: D A Neilson,UN FAO, Apsey & Reed, Jaakko Poyry, Widmans World Wood Reveiw, Xylem Investments Inc

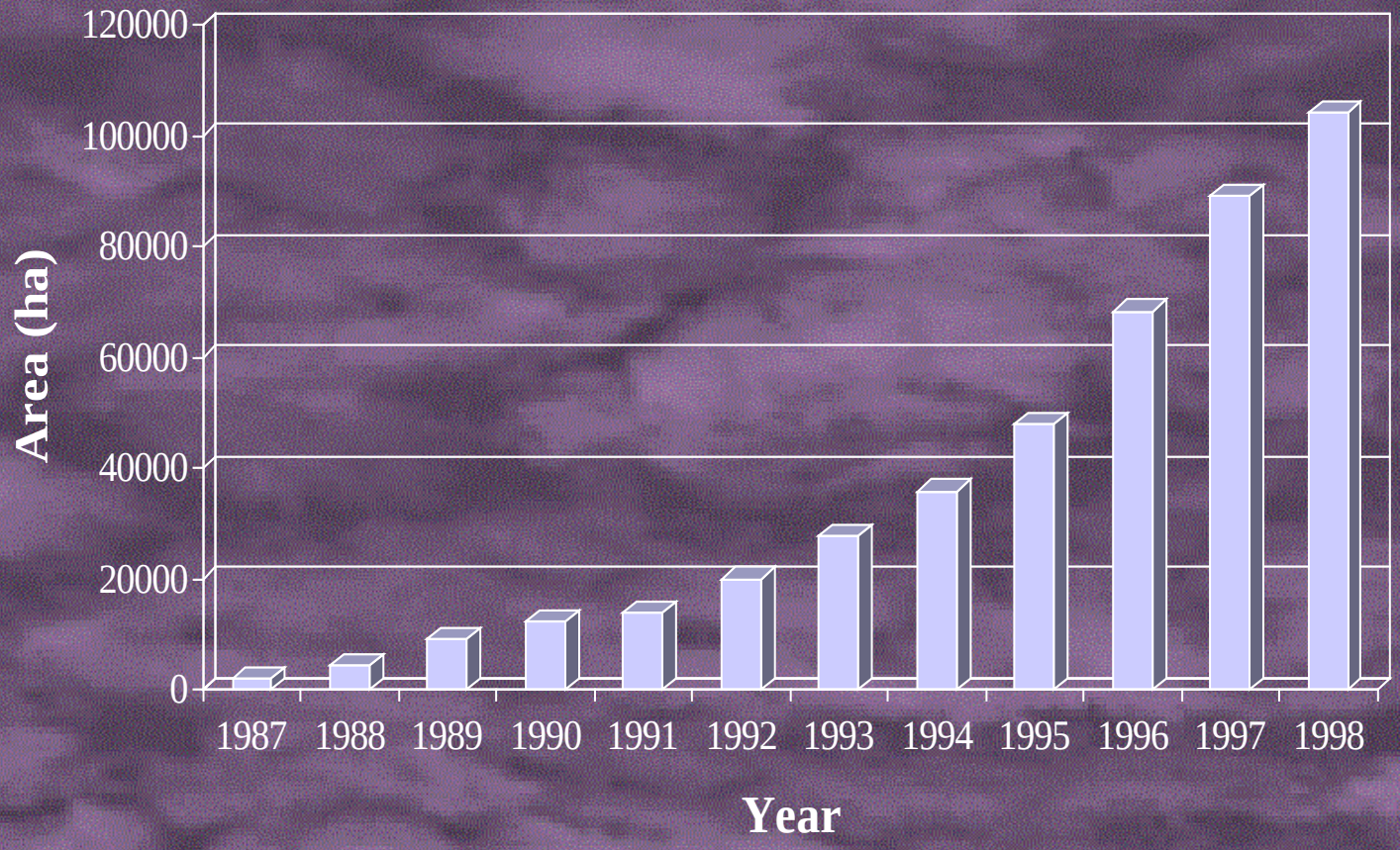
Salinity hazard zones in the South-west



Farm forestry zones by area and rainfall

Farm forestry zone	Rainfall	Area (in million ha)
Traditional pine and new bluegum	>600 mm	2
New martime pine	400 to 600 mm	6
Wheatbelt	<400 mm	10

Bluegum plantation development on private land since 1987

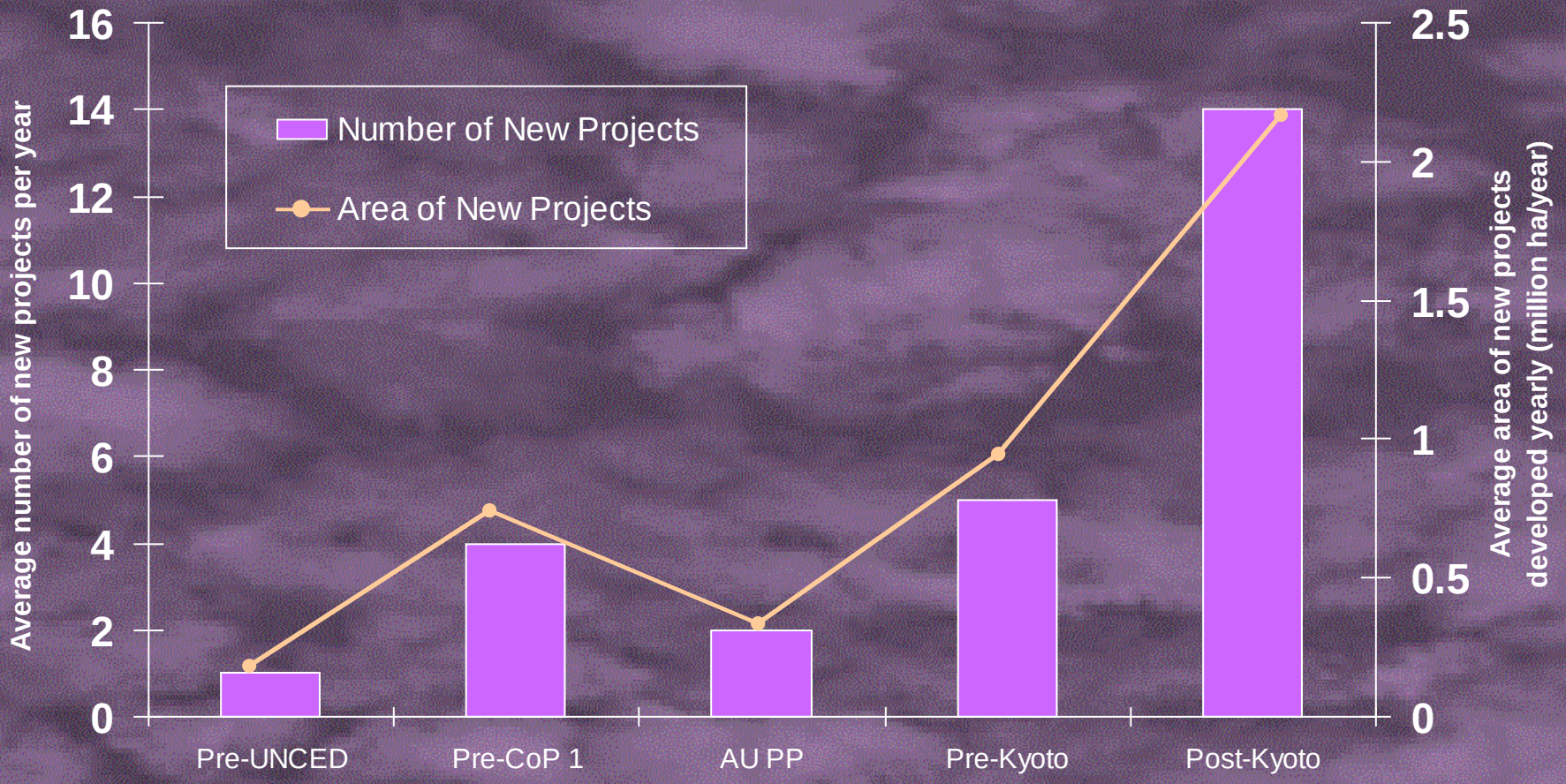


- Carbon Sequestration - Science and Governance

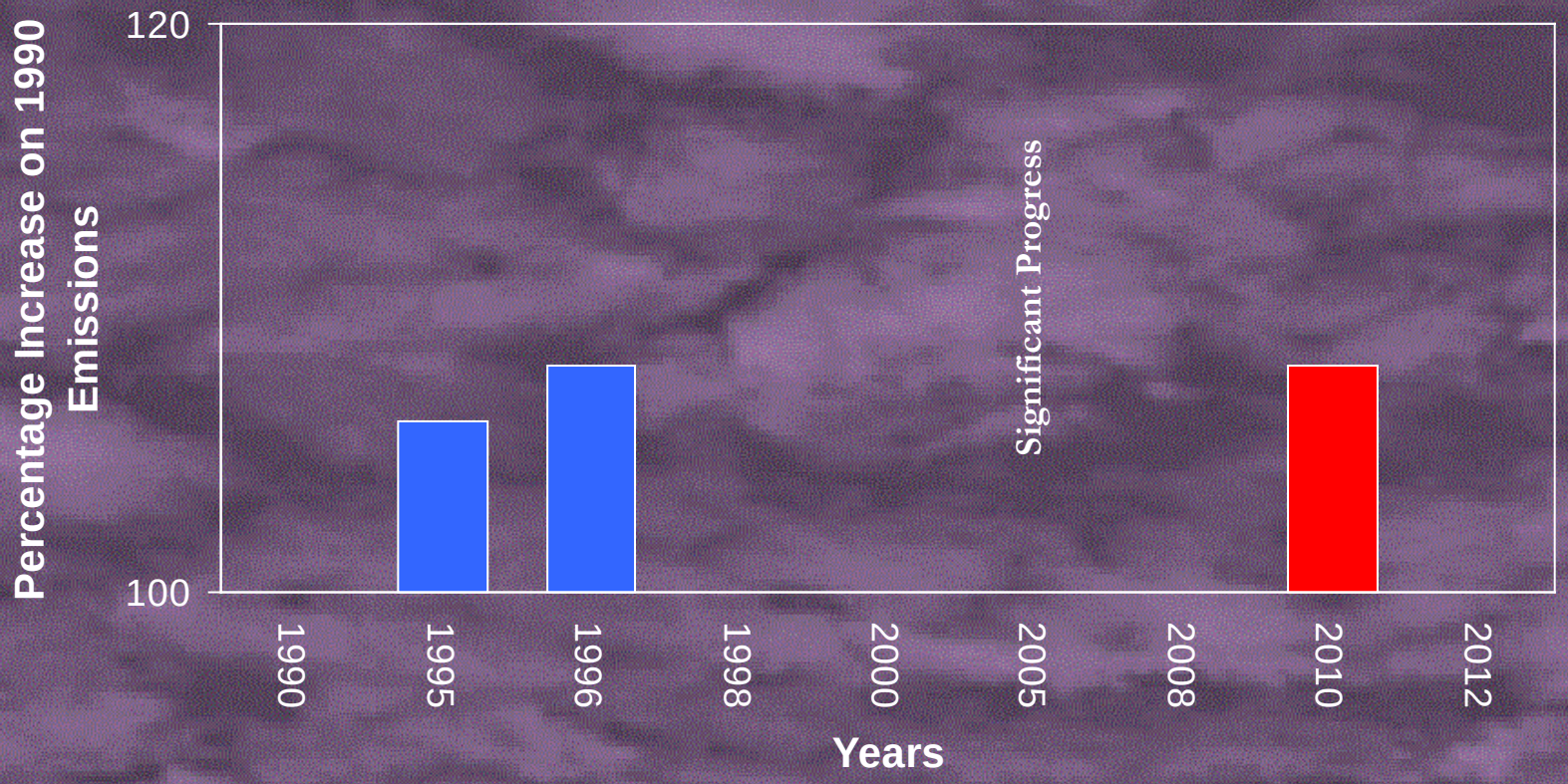
Australia's Kyoto Targets

Current proposed resource projects in Western Australia could consume Australia's allowable growth in emissions of approximately 40 million tonnes of CO_2.

Carbon Sequestration Projects



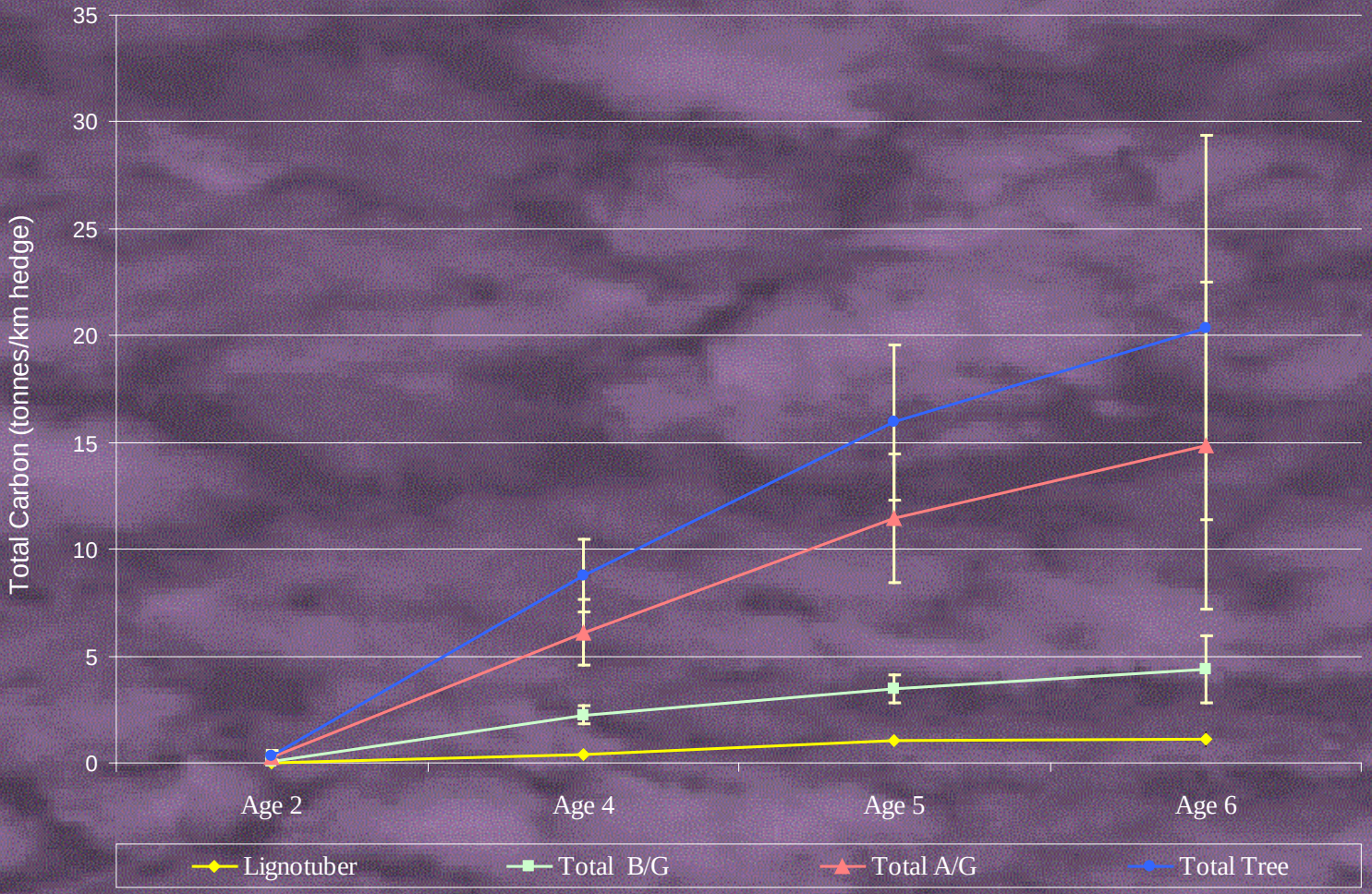
Australia's Kyoto Targets



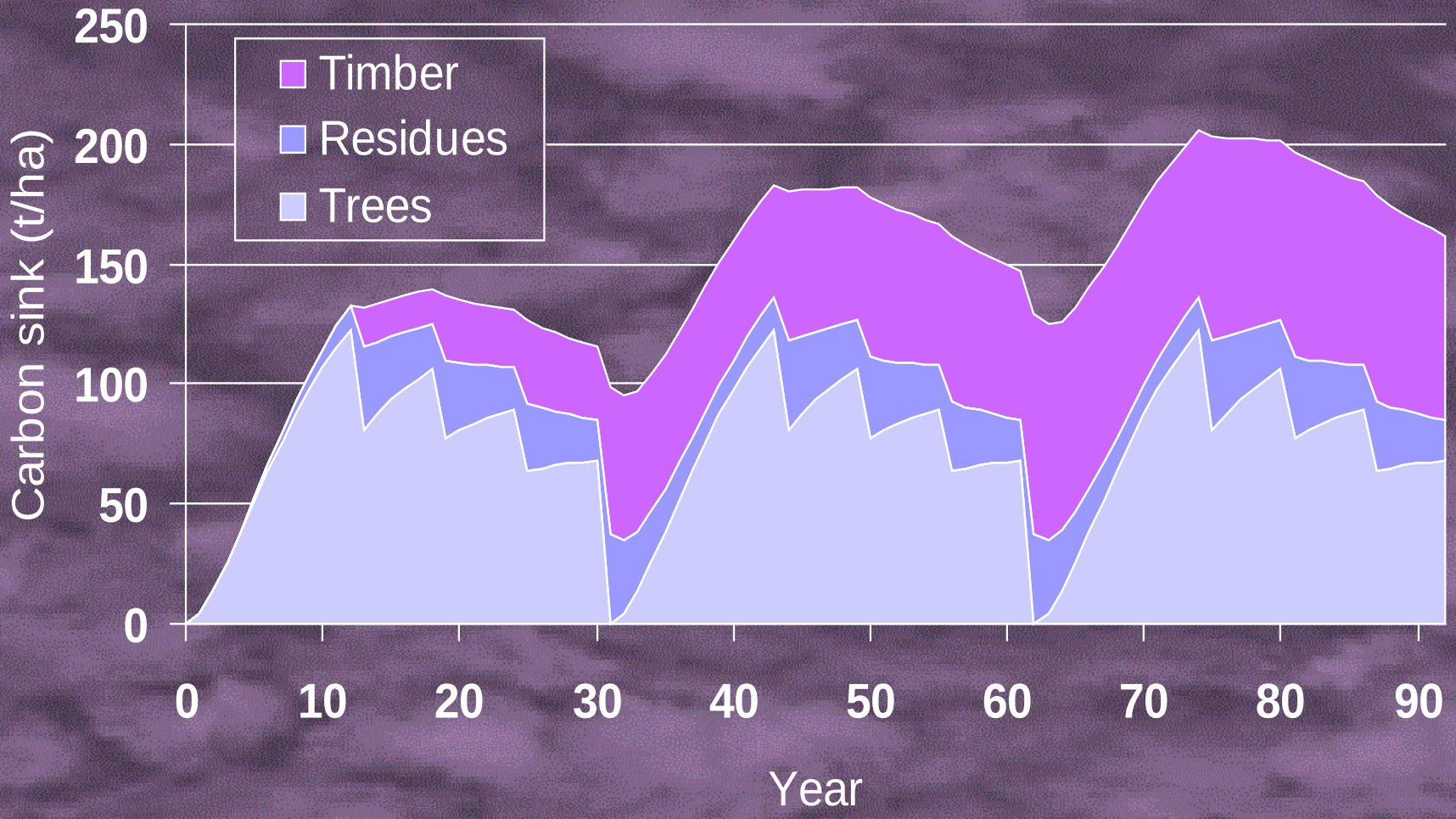

To infinity
and
beyond

- Measuring Carbon Sinks -

Total carbon per kilometre of hedge for *Eucalyptus plenissma* for different ages and tree components with standard deviation

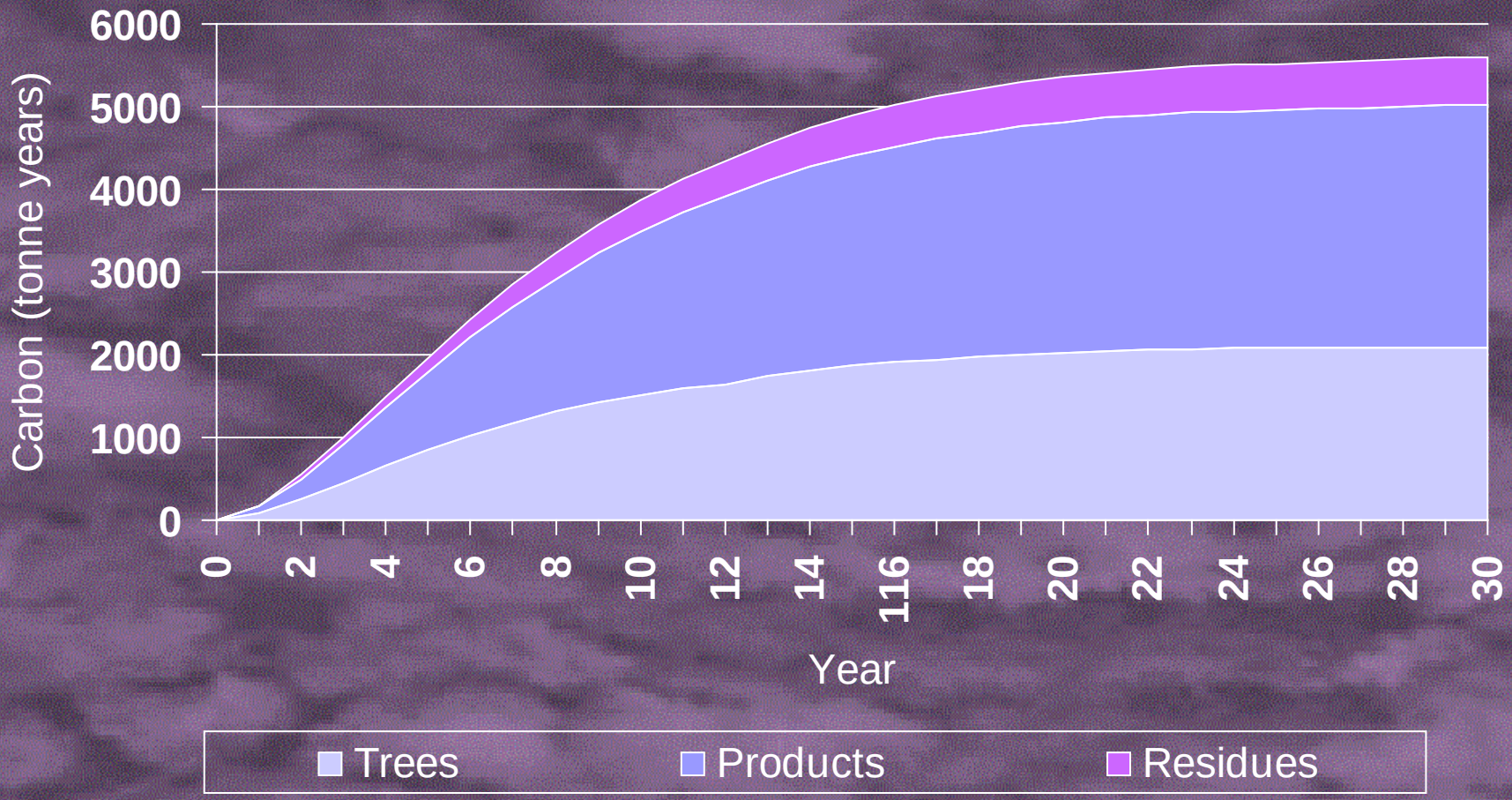


Carbon sinks from Maritime Pine

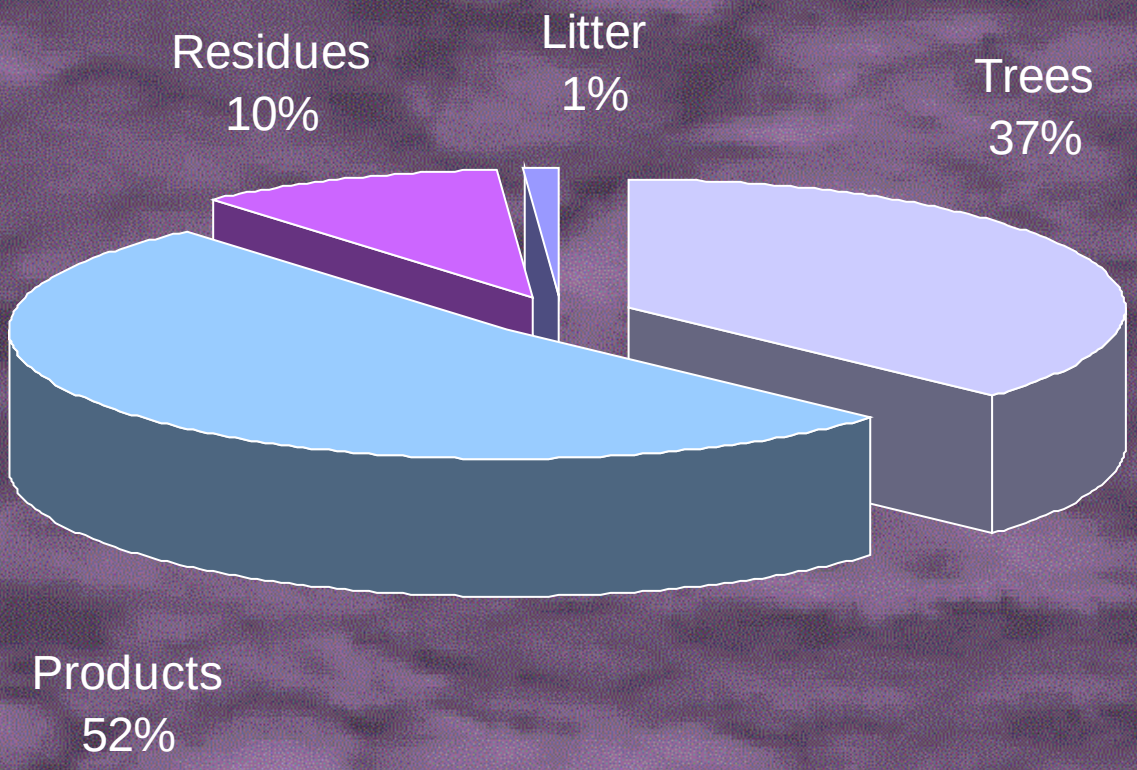


- Carbon Sequestration Measured in Carbon-Years -

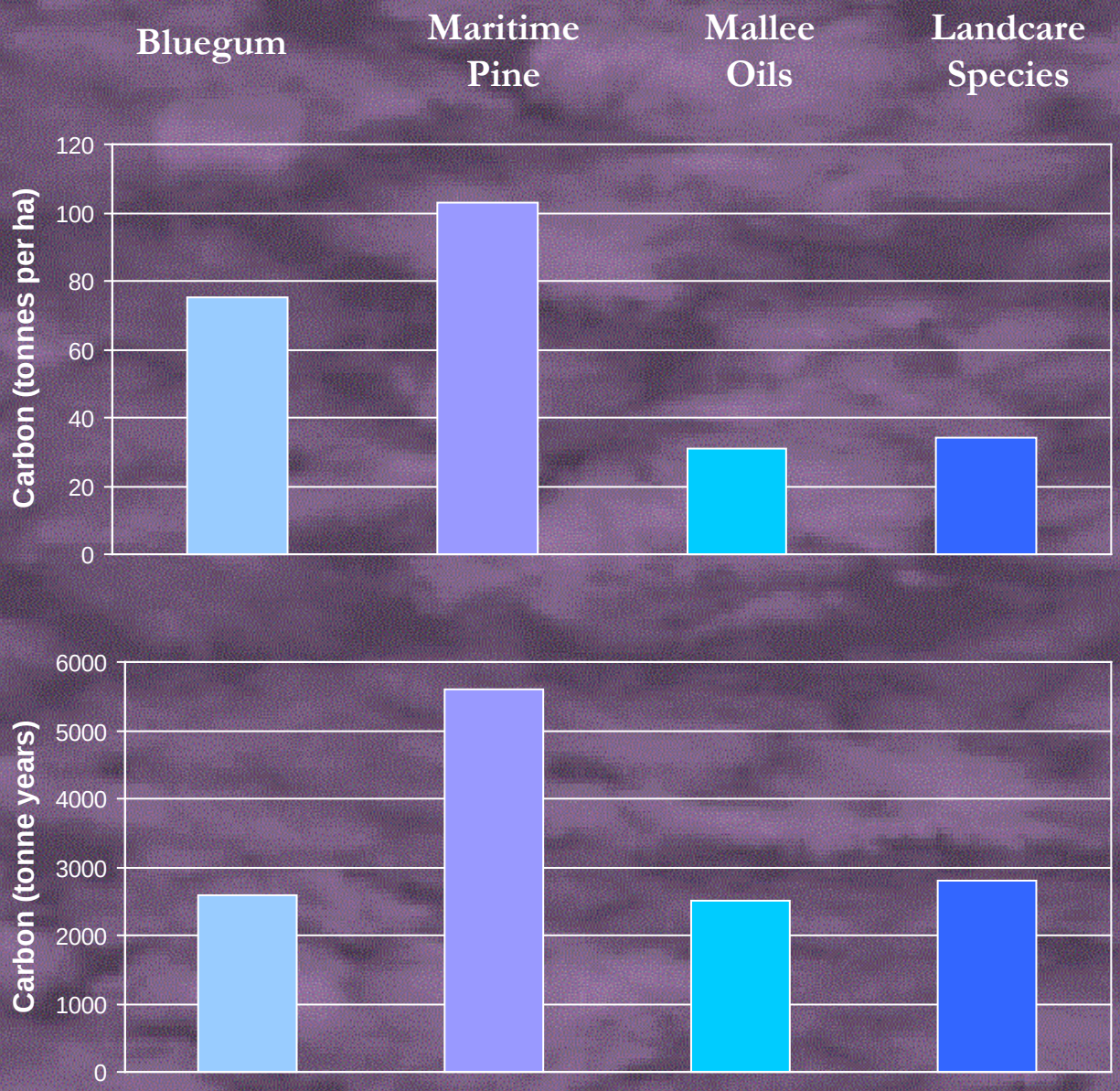
Cumulative carbon storage for one hectare of Maritime Pine (tonne years)



Contribution of each pool to carbon storage (tonne years) for one hectare of *P. pinaster*



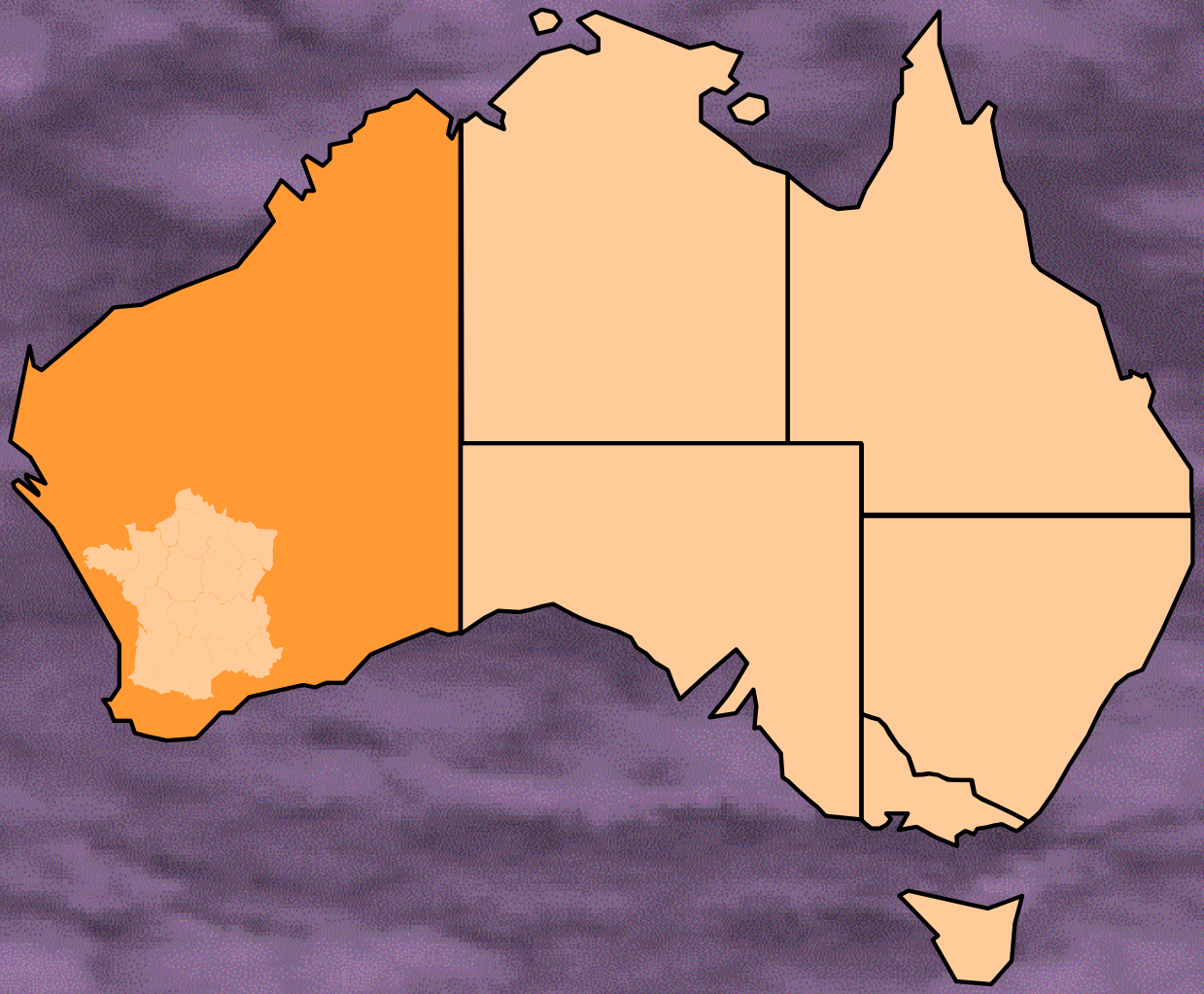
Carbon Sinks for Different Species

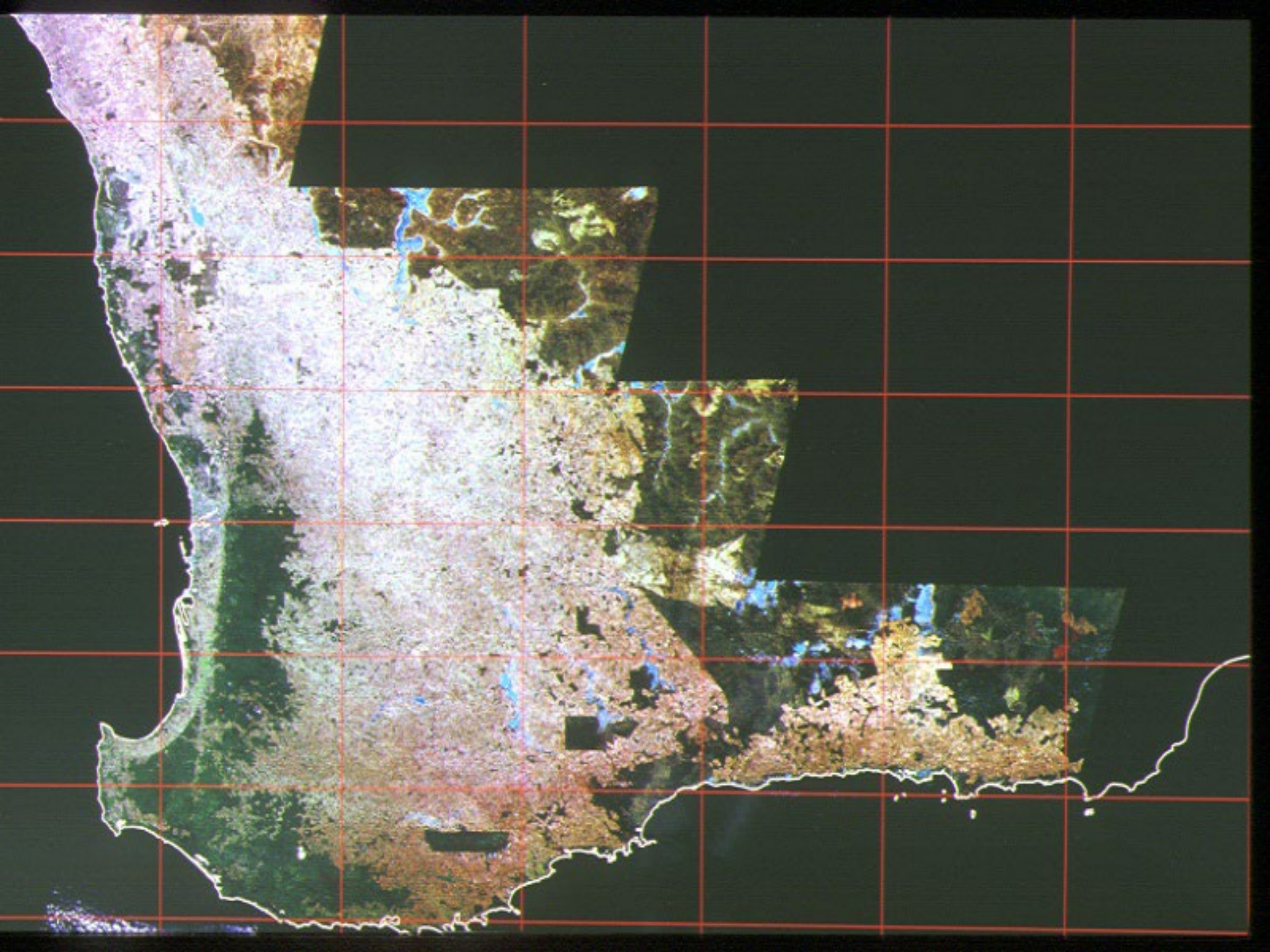


- Critical Elements of Carbon Sequestration Strategies -

Land Availability

France occupies a land area about a quarter the size of Western Australia





Landuse in the south-west of Western Australia

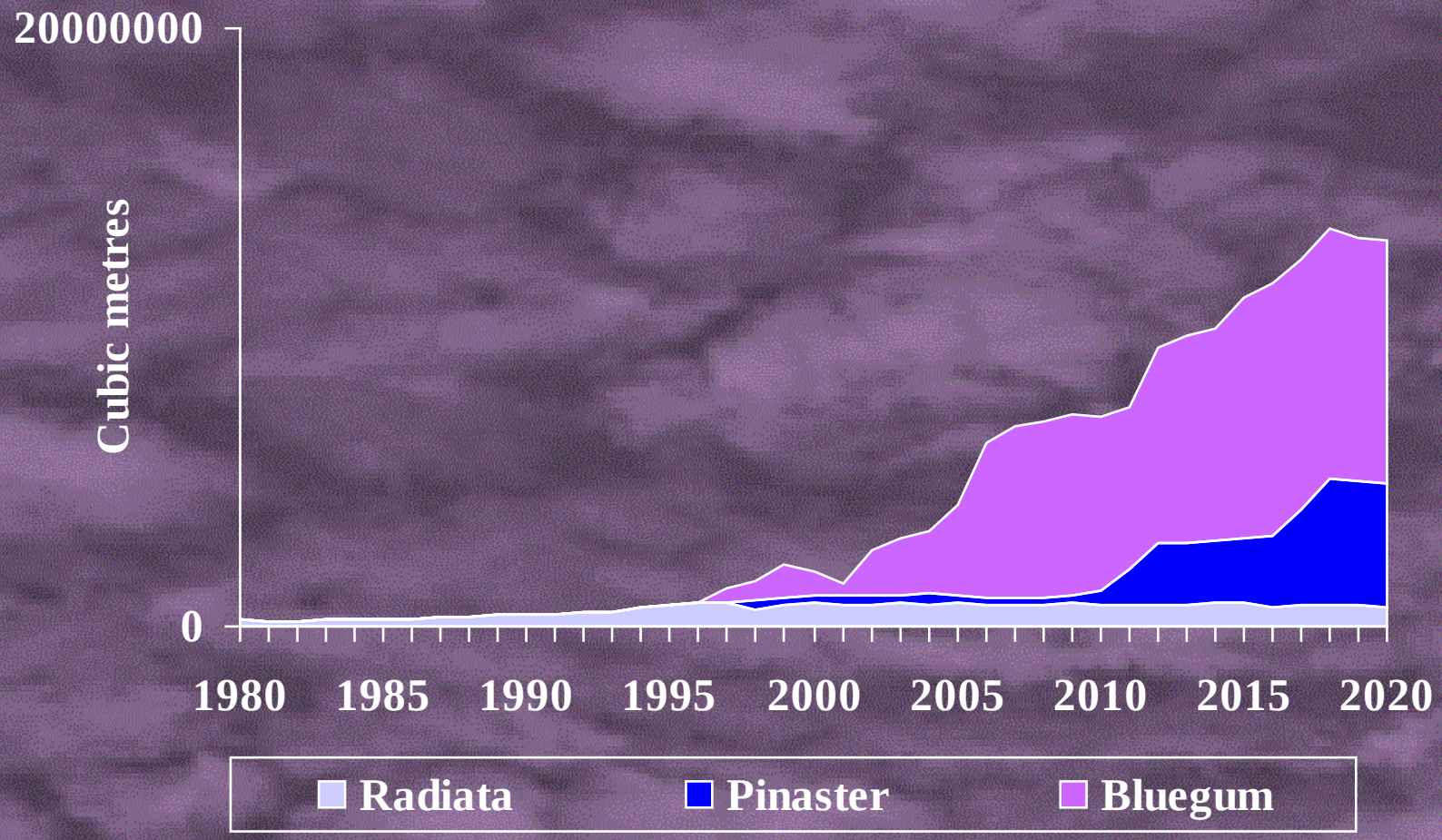
Land use	Area million ha	% of area within the agricultural region
Agricultural region (>250 mm rainfall)	5.25	100.0
Private land	20.73	82.0
Private land under agriculture	17.98	71.2
Private with original native vegetation	2.75	10.9
Public land (State forest, reserves, parks)	4.52	17.9

CALM has joint ventures with 1500 farmers

CALM has contracts with 84 land management contractors

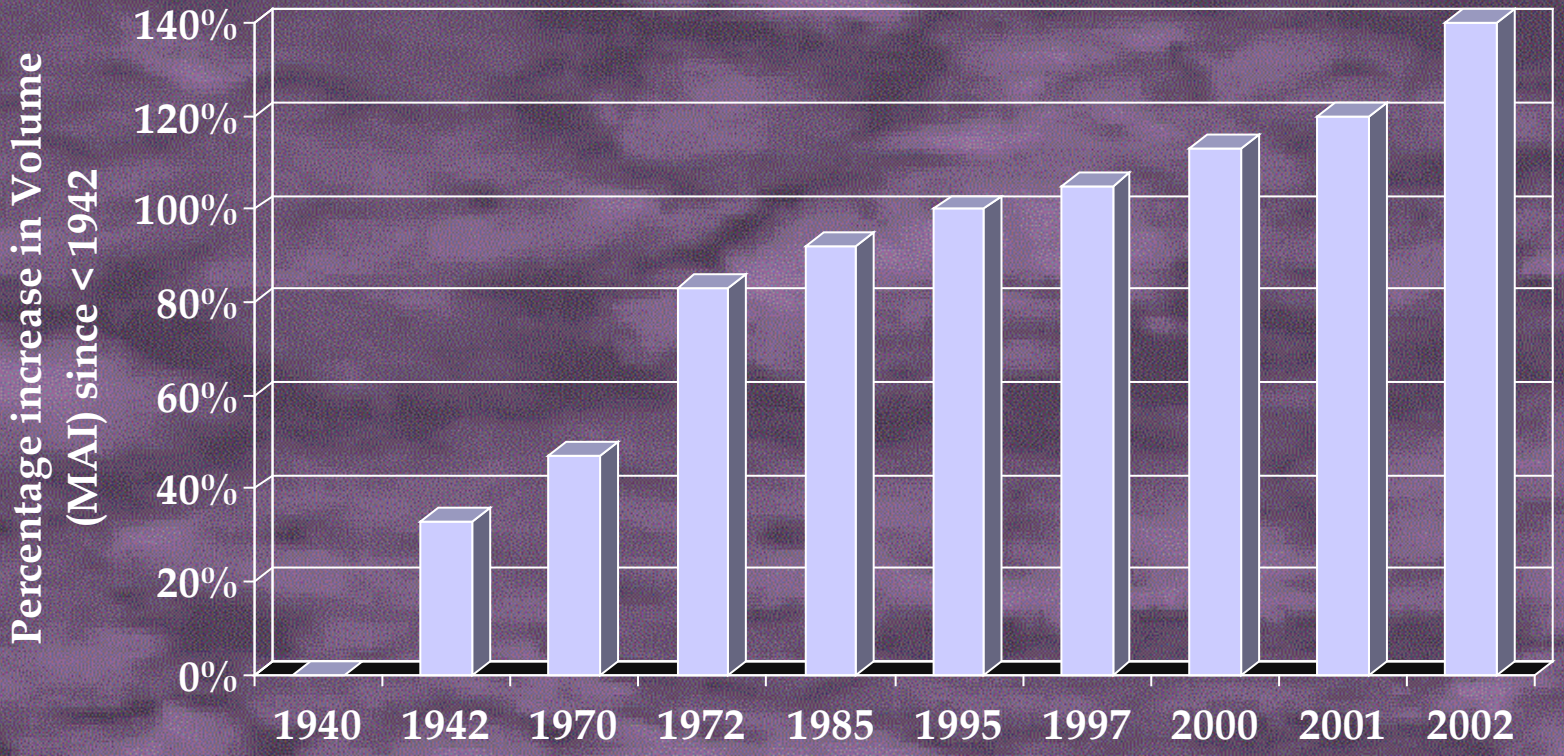
Integration with Environmental and Economic Objectives

Current and predicted wood fibre production from tree crops and plantations in Western Australia



Availability of Suitable Species

Volume gains from the tree improvement program for Maritime pine

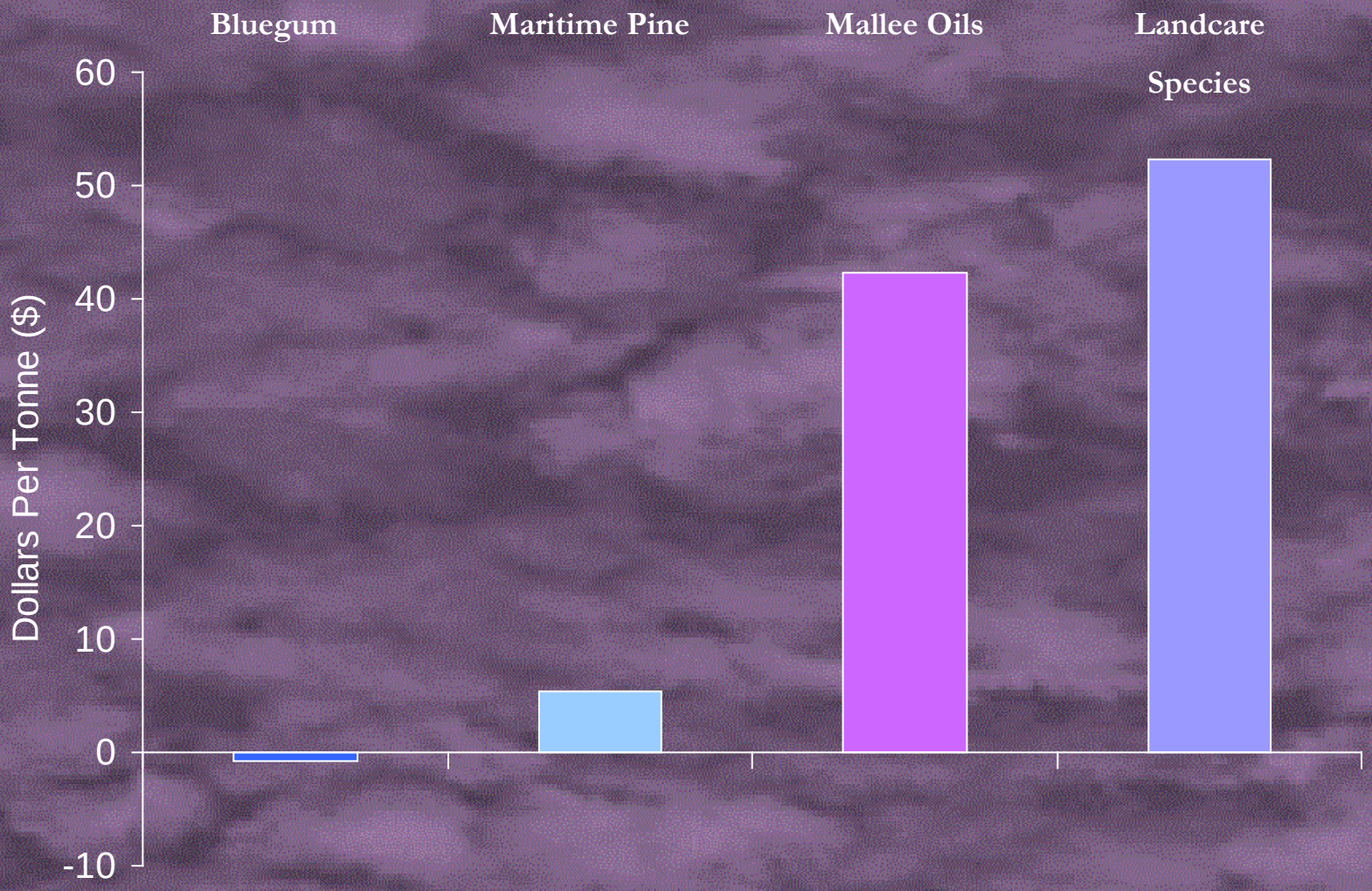



Western Bluegum
Tasmanian Bluegum
Trees are 2 years 8 months old

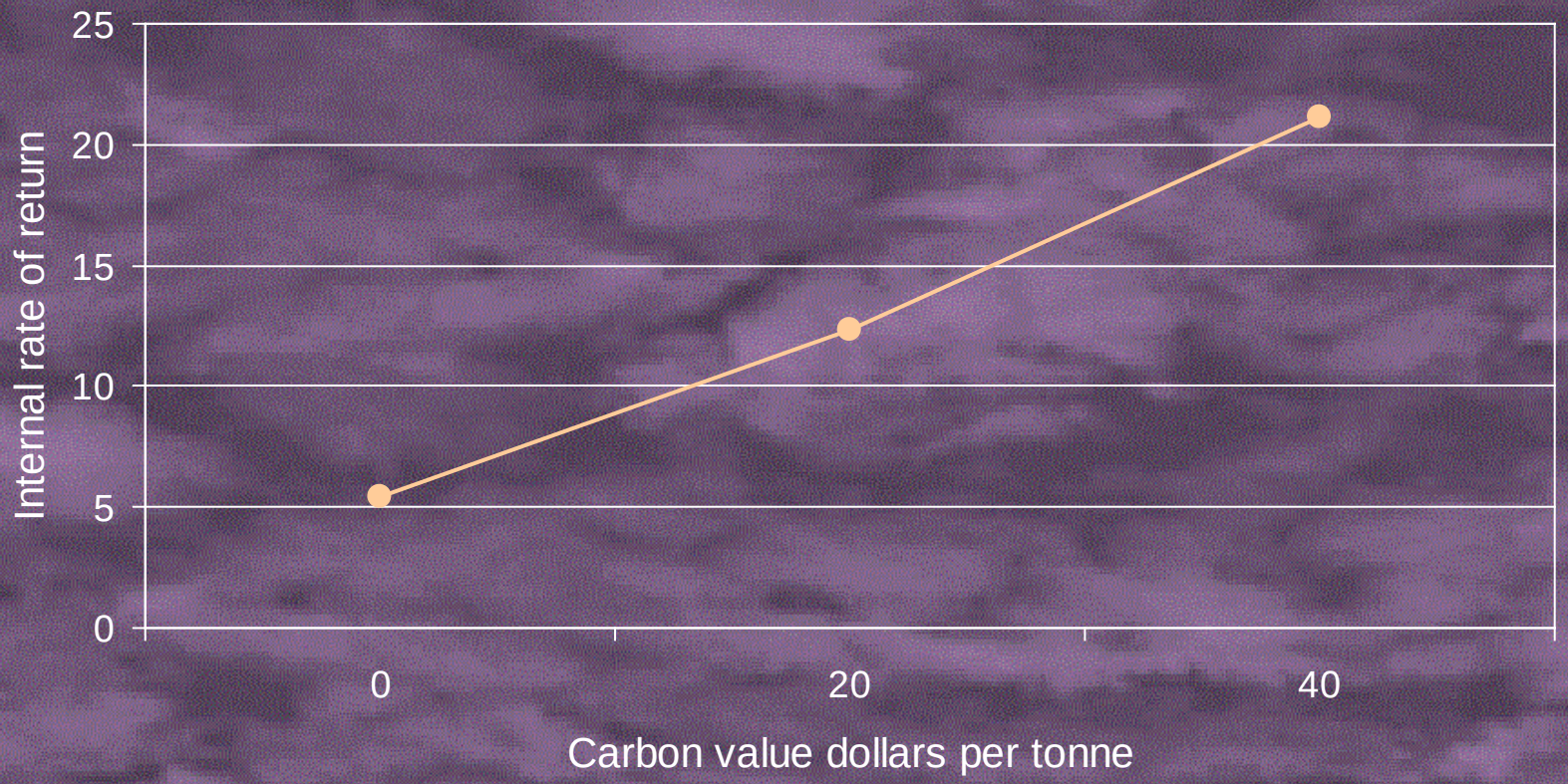
Infrastructure

Costs

Cost of Sequestering a Tonne of Carbon

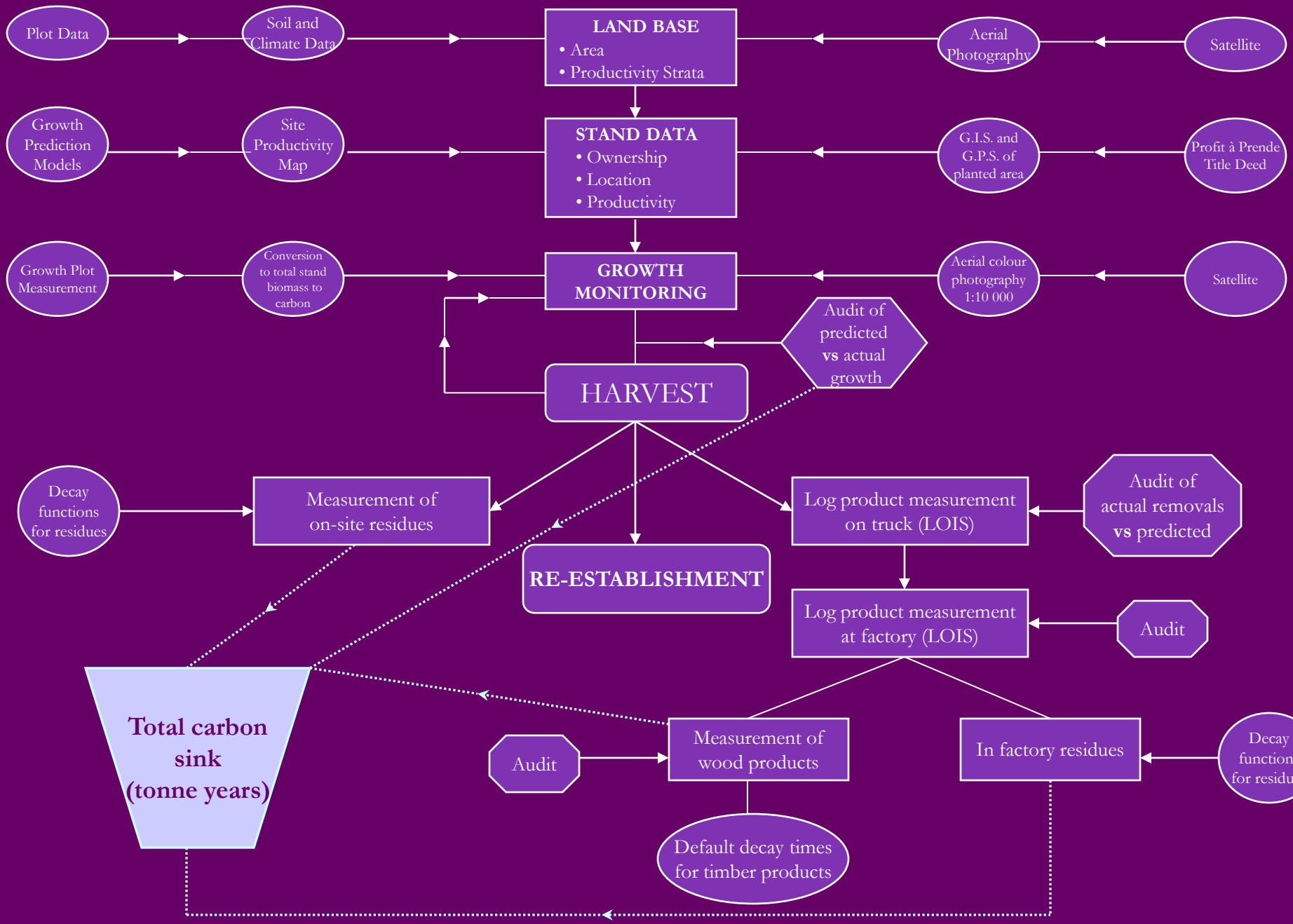


Return from Maritime Pine at Different Carbon Prices



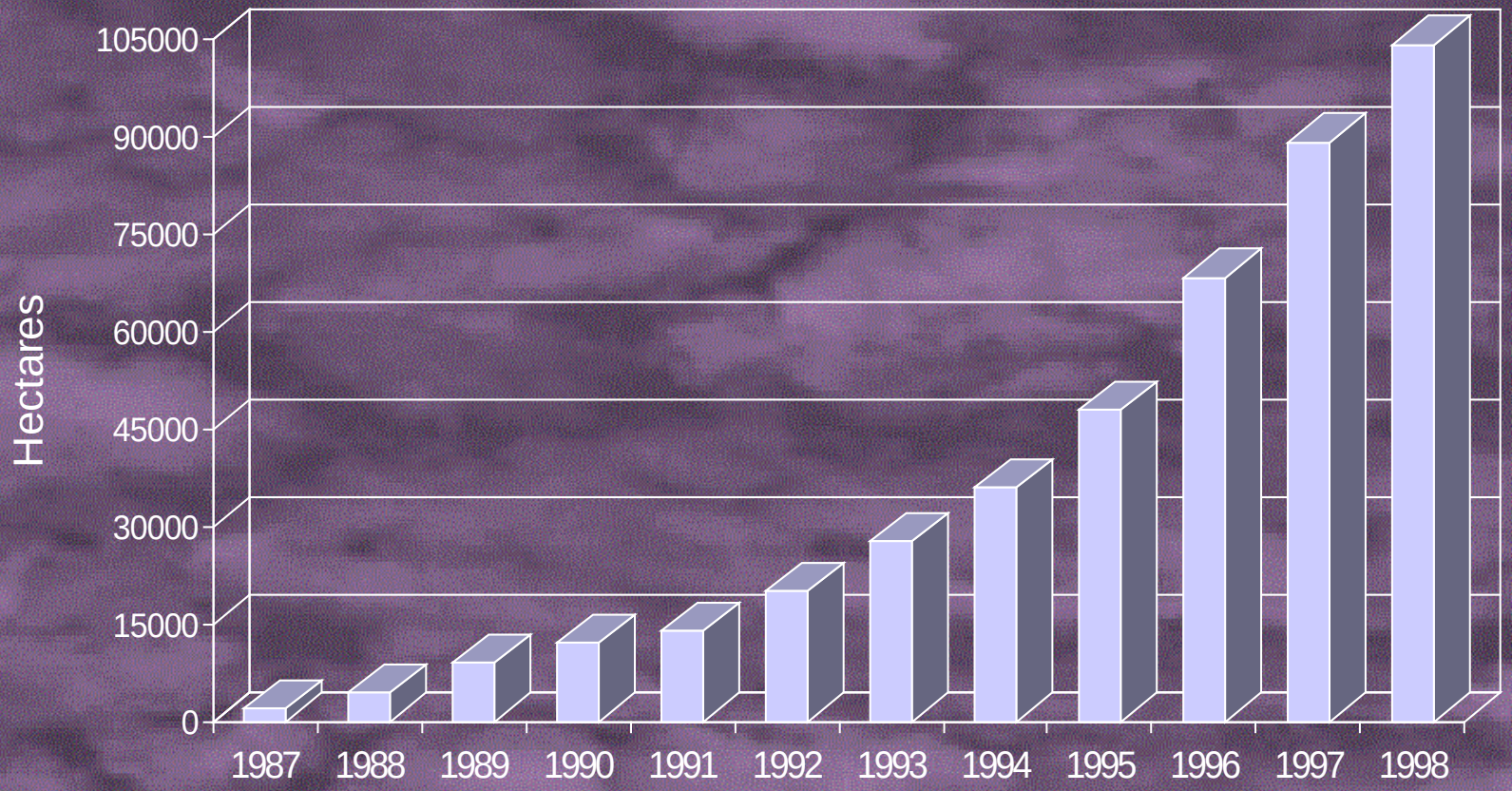
Measurement and Verification

Forecasting, Monitoring and Verification of Carbon Flows in Tree Crops from Establishment to Product Decay

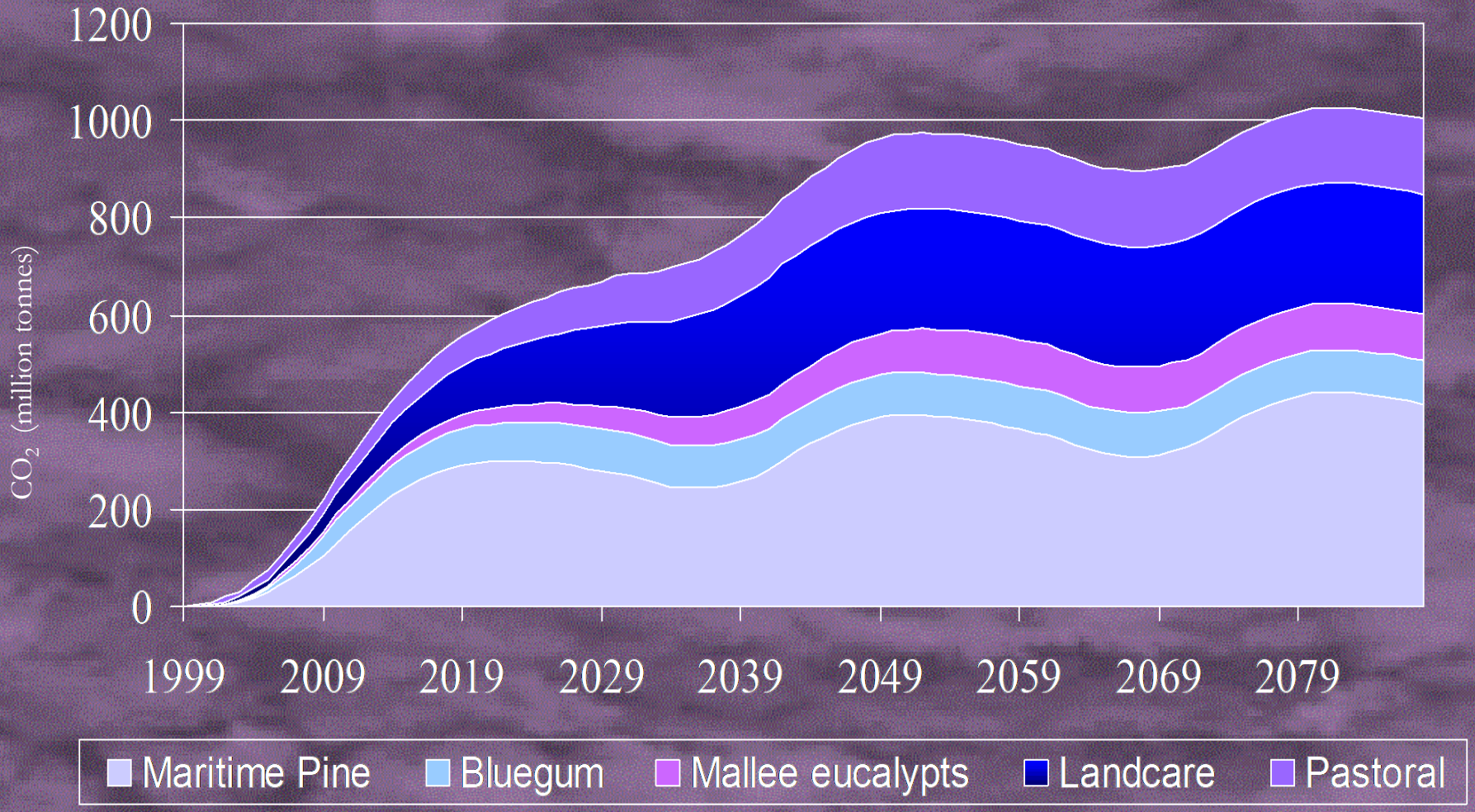


Implementation rate and scale

Total area of *E. globulus* in WA



Cumulative CO_2 pool over 90 years



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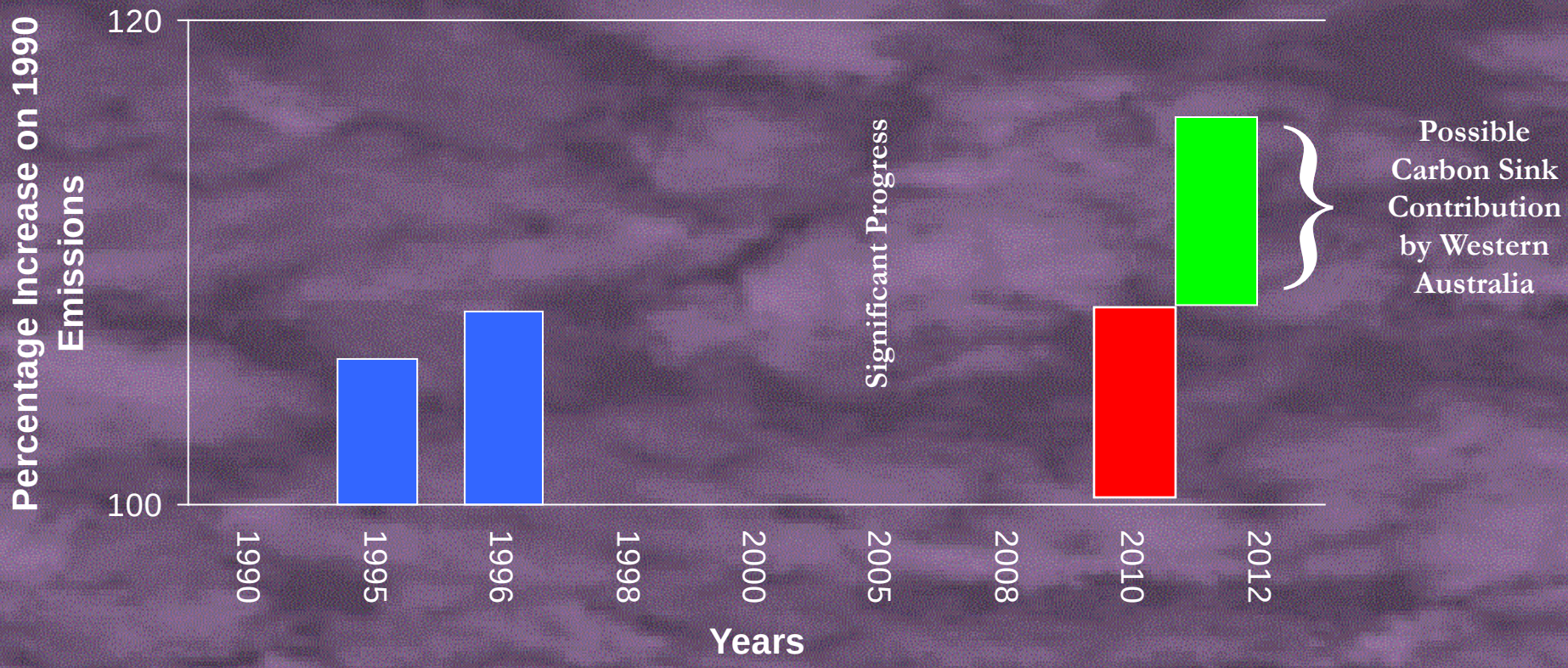
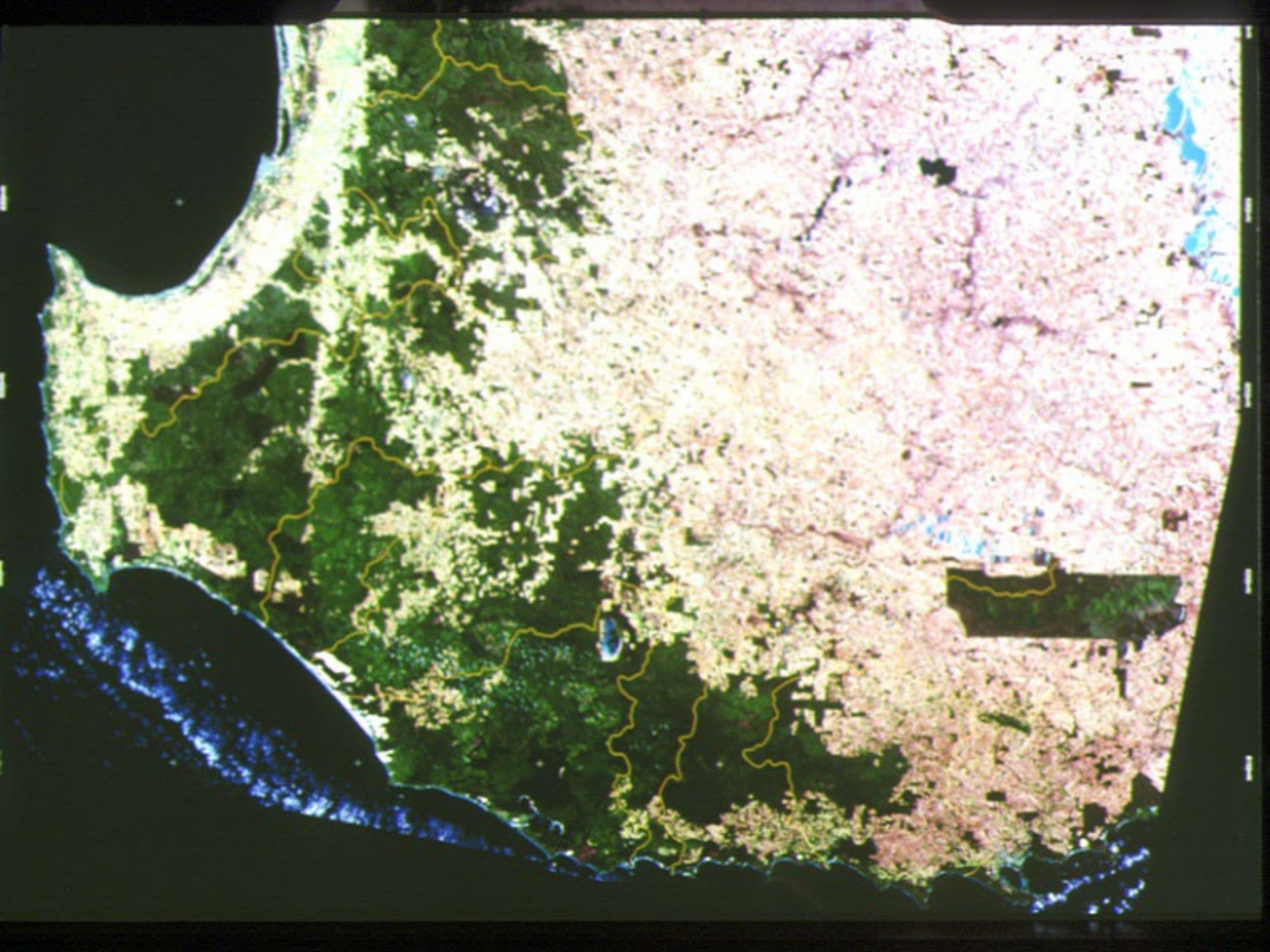
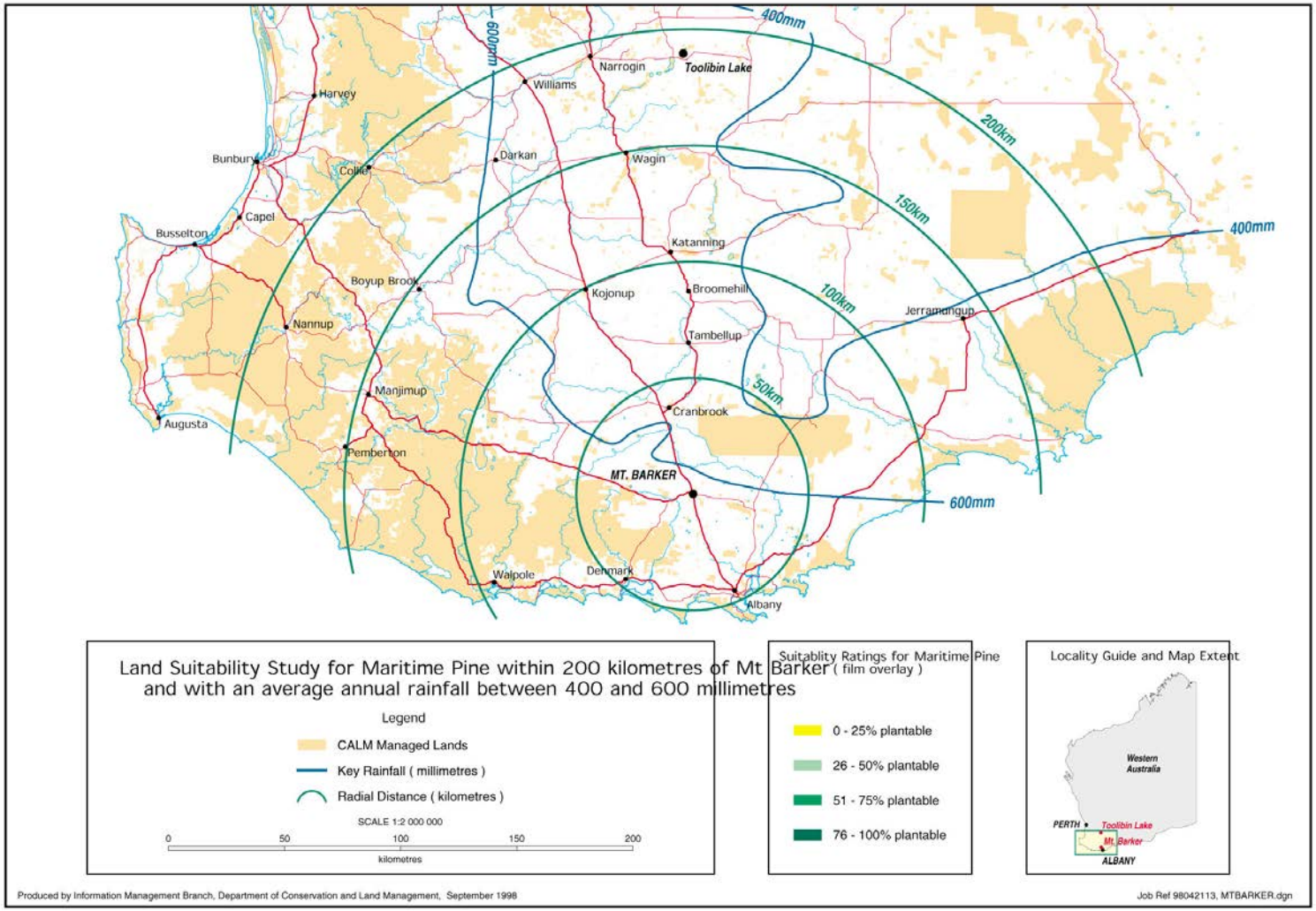
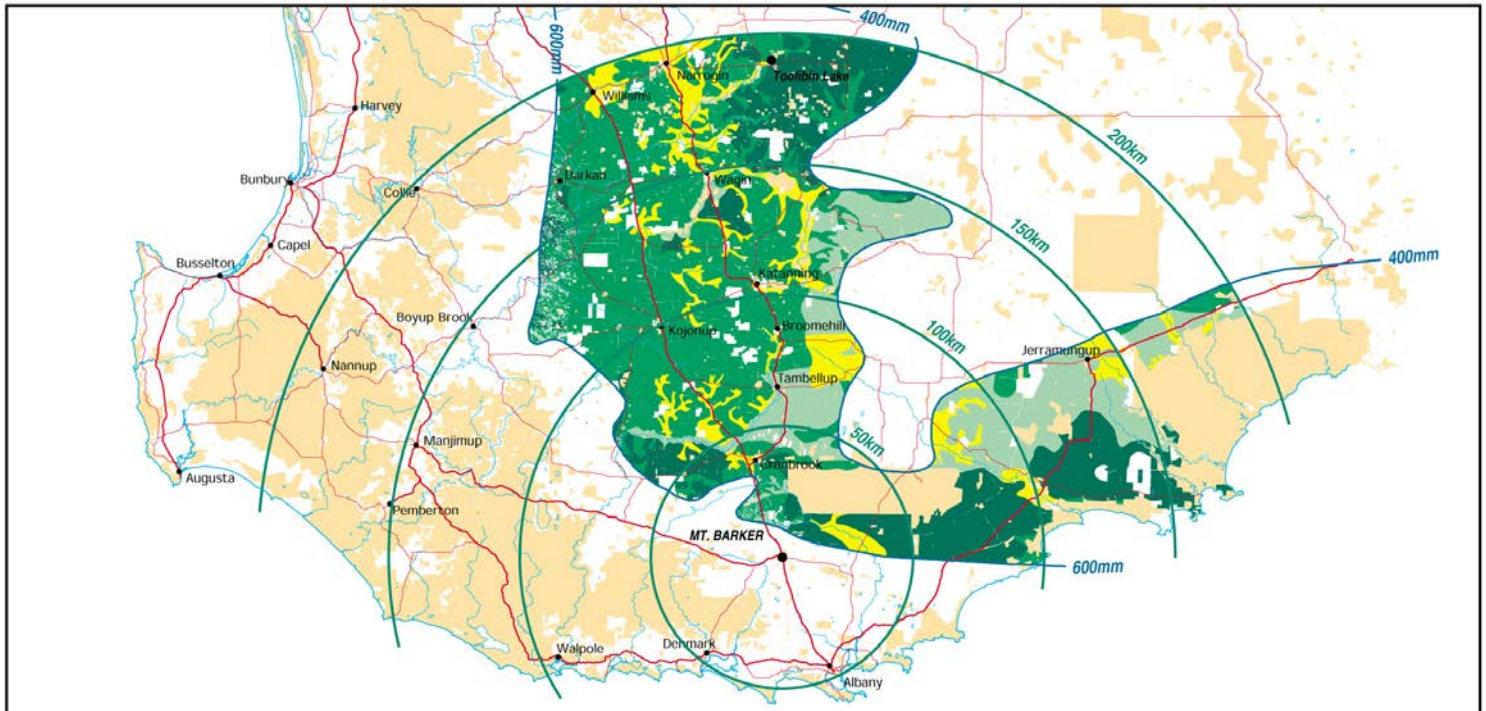


The BP Proposal




600mm
400mm
200km
150km
100km
50km
400mm
600mm
Narrogin
Toolibin Lake
Williams
Harvey
Darkan
Wagin
Bunbury
Collie
Capel
Busselton
Katanning
Boyup Brook
Kojonup
Broomehill
Jerramungup
Nannup
Tambellup
Manjimup
Cranbrook
Augusta
Pemberton
MT. BARKER
Walpole
Denmark
Albany
Land Suitability Study for Maritime Pine within 200 kilometres of Mt Barker and with an average annual rainfall between 400 and 600 millimetres
Legend
CALM Managed Lands
Key Rainfall (millimetres)
Radial Distance (kilometres)
SCALE 1:2 000 000
0
50
100
150
200
kilometres
Suitablity Ratings for Maritime Pine (film overlay)
0 - 25% plantable
26 - 50% plantable
51 - 75% plantable
76 - 100% plantable
Locality Guide and Map Extent
Western Australia
PERTH
Toolibin Lake
Mt. Barker
ALBANY
Produced by Information Management Branch, Department of Conservation and Land Management, September 1998
Job Ref 98042113, MTBARKER.dgn



Land Suitability Study for Maritime Pine within 200 kilometres of Mt Barker and with an average annual rainfall between 400 and 600 millimetres

Legend

- CALM Managed Lands
- Key Rainfall (millimetres)
- Radial Distance (kilometres)

SCALE 1:2 000 000

0 50 100 150 200

kilometres

Suitablity Ratings for Maritime Pine (film overlay)

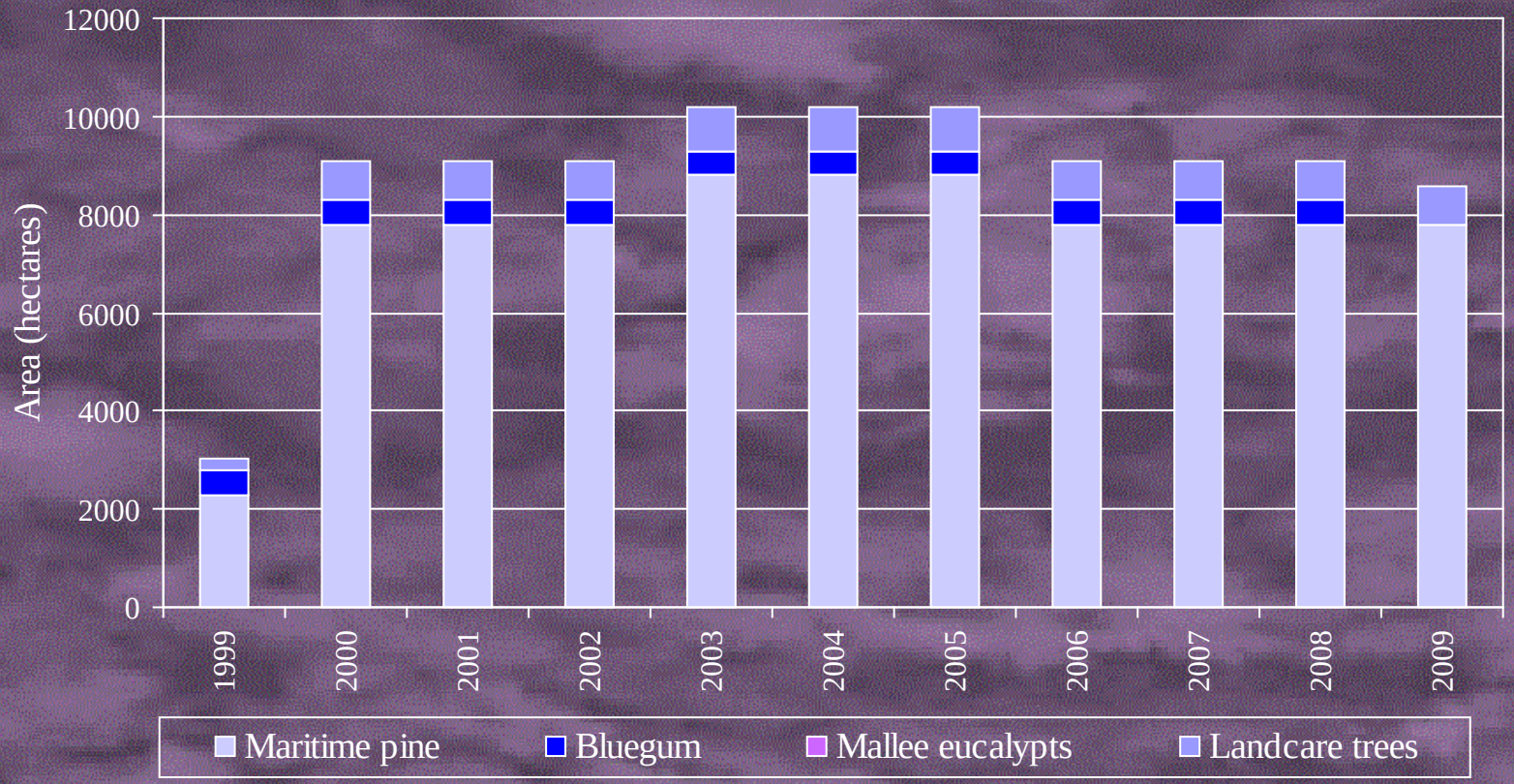
- 0 - 25% plantable
- 26 - 50% plantable
- 51 - 75% plantable
- 76 - 100% plantable

Locality Guide and Map Extent

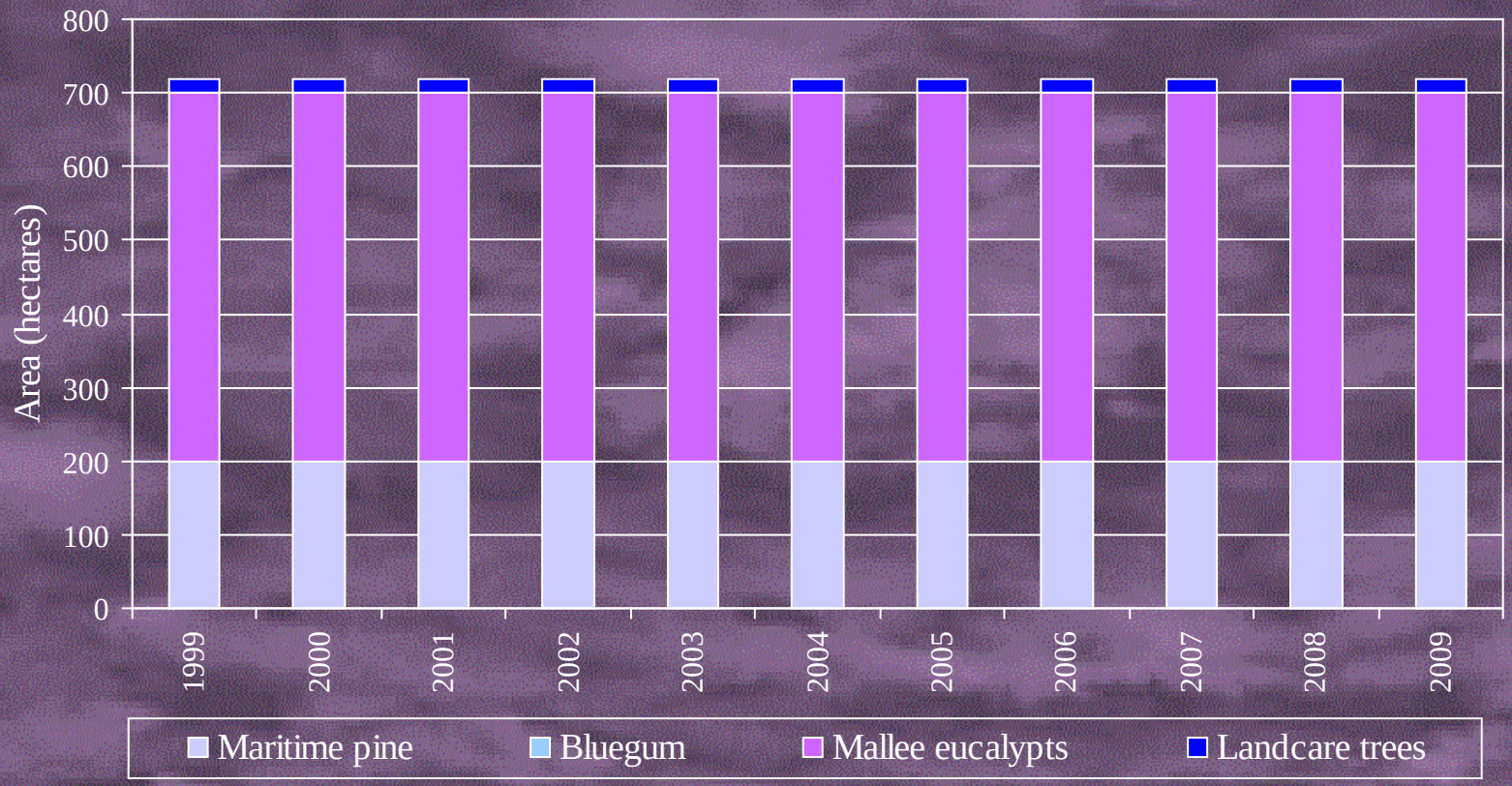
Produced by Information Management Branch, Department of Conservation and Land Management, September 1998

Job Ref 98042113, MTBARKER.dgn

Planting program for Mt Barker cell



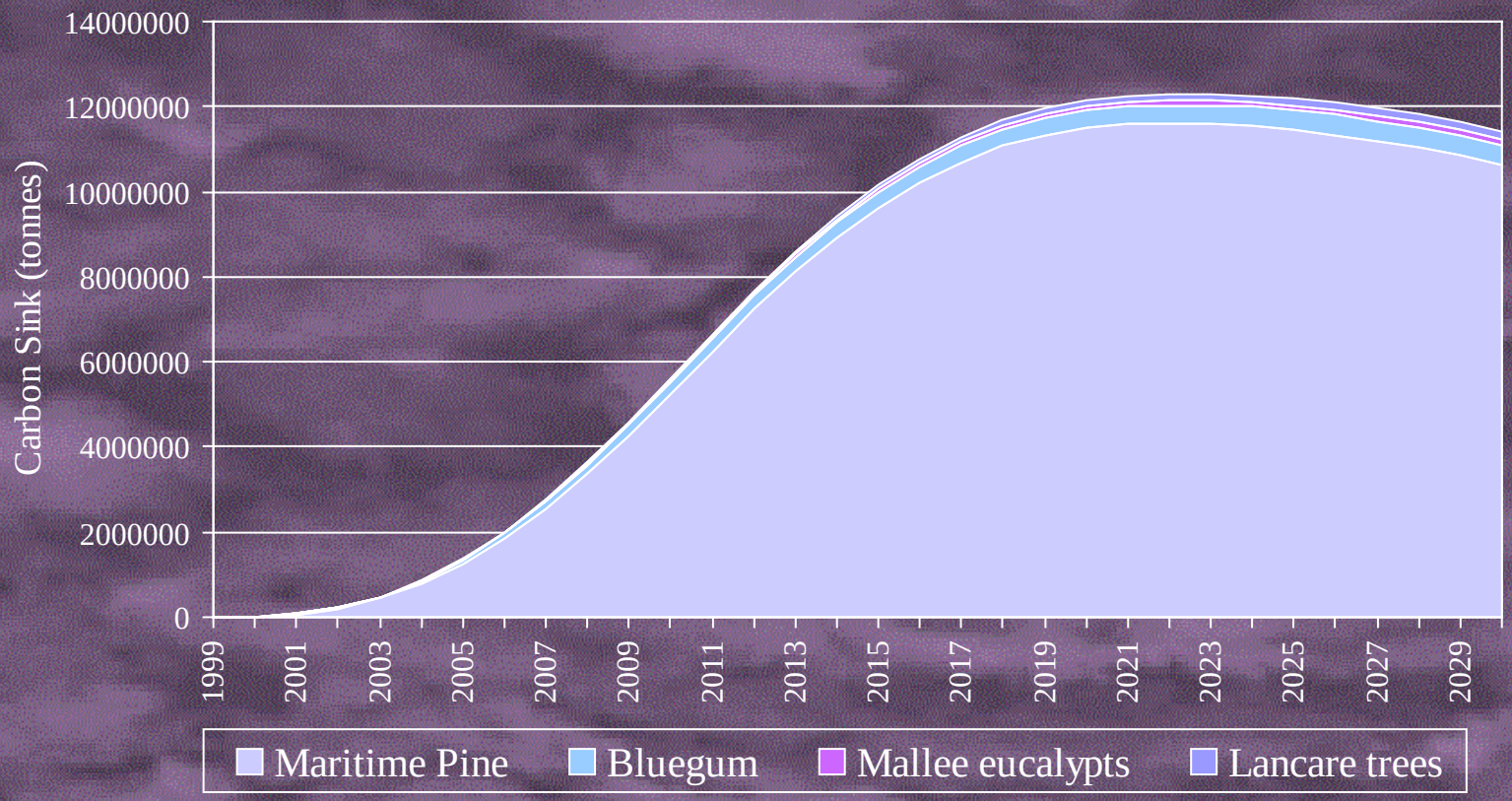
Planting program for Toolibin Lake cell



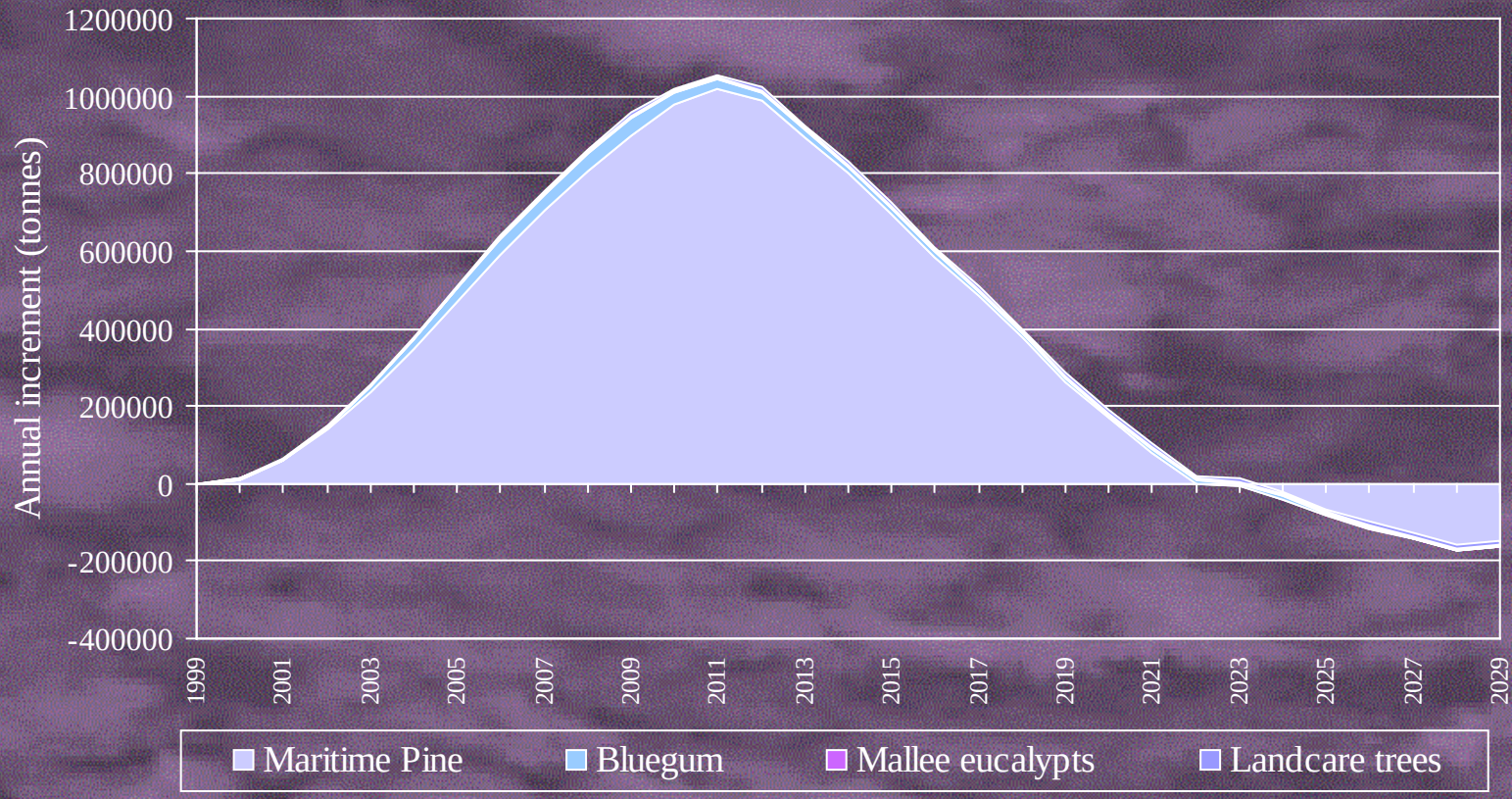
Estimated carbon sequestered

Crop	Rotation length (yrs)	Carbon in various pools (dry tonnes/ha)				Average carbon sink over 30 yrs (tonnes/ha)
		Top	Roots	Litter	Products	
Bluegum	3 x 10	49	16	-	10	75
Maritime Pine	30	59	15	15	14	103
Oil Mallee	2 x 15	3	28	-	-	31
Landcare	Long term	23	9	-	-	34

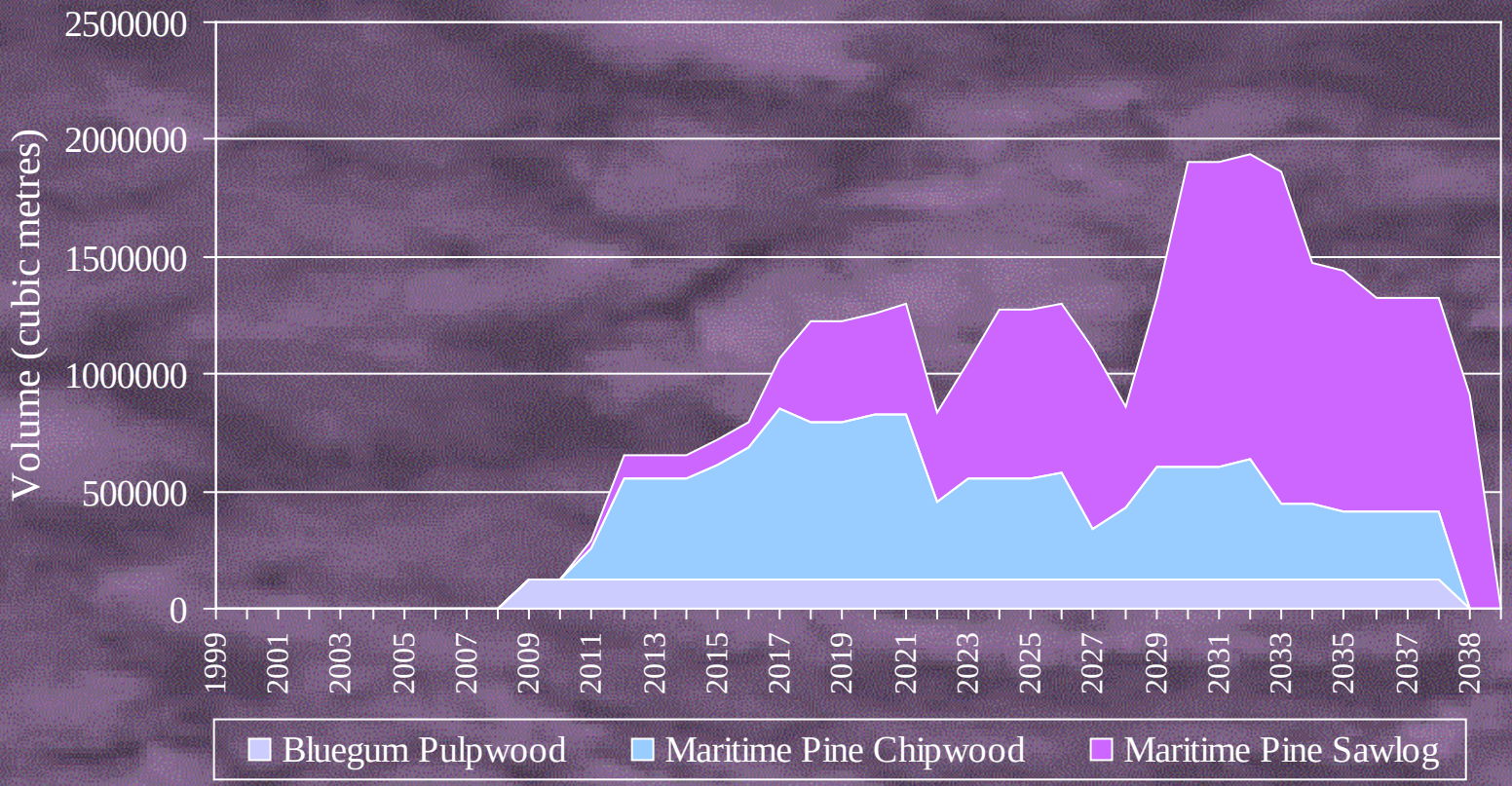
Carbon sink between 1999 and 2029 for the plantation proposal



Annual increment to the plantation carbon sink



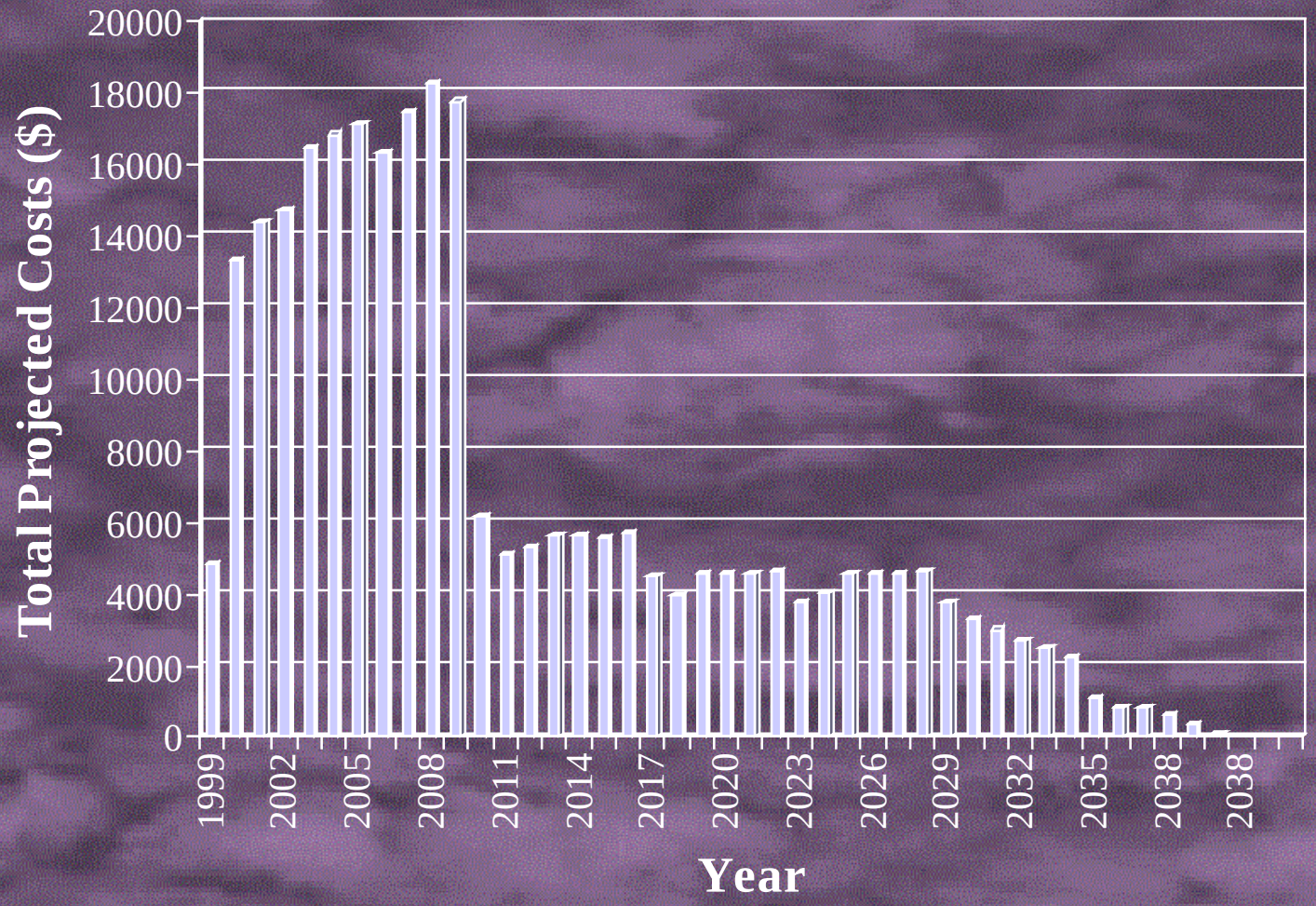
Projected wood flows



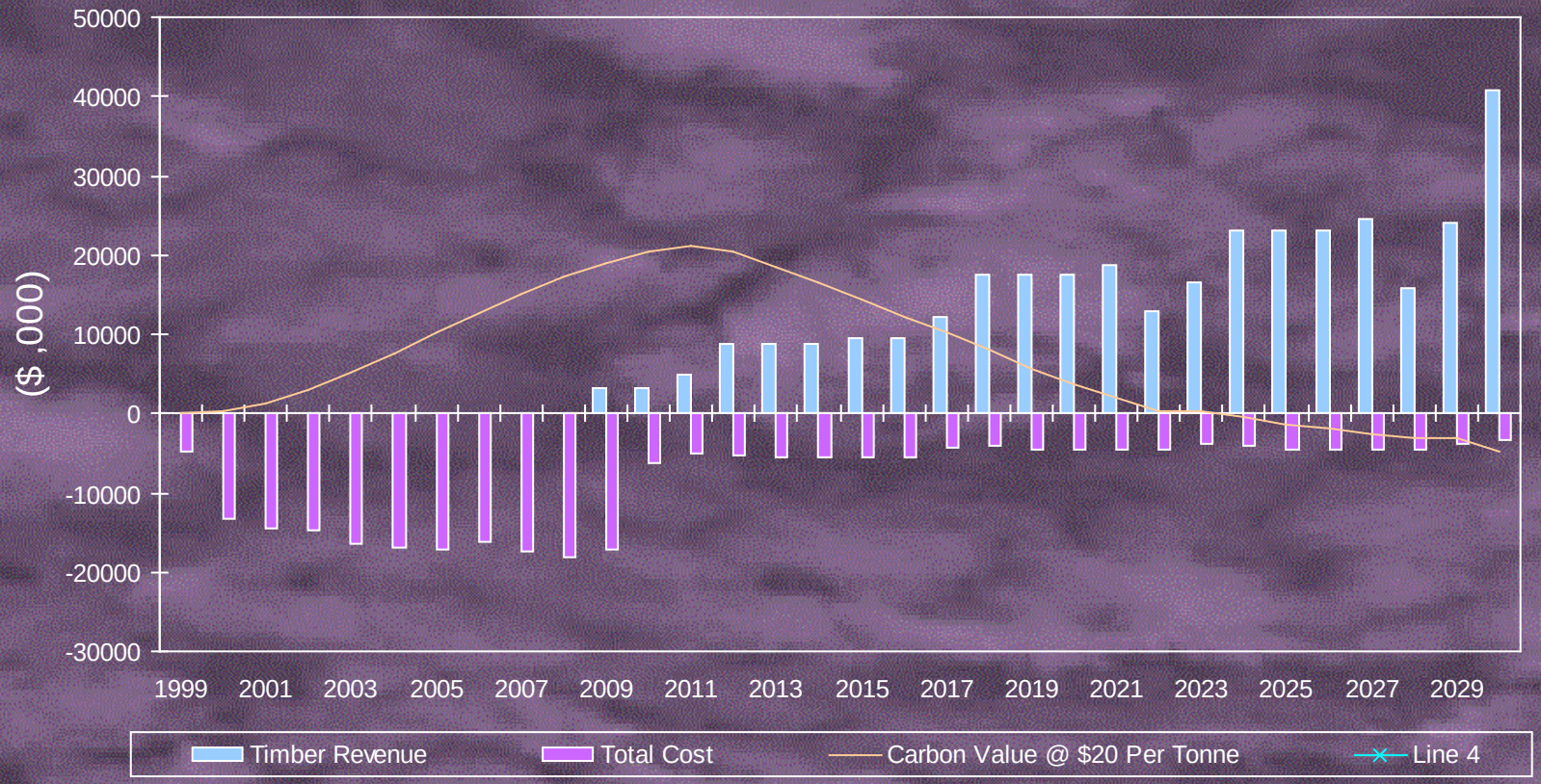
Costs per hectare of carbon sequestration based on a 30-year accounting cycle without replanting

	Bluegum	Maritime Pine	Oil Mallee	Landcare
Average stand carbon	65	89	31	34
Average total carbon	75*	103*	31	34
Total cost	$ 11, 598	$ 2, 340	$ 1, 300	$ 1, 700
Total revenue	$ 18, 750	$ 6, 518	Not yet commercial	$ 0
PV** of costs	$ 5, 228	$ 1, 701	$ 1, 051	$ 1, 424
PV of revenue	$ 5, 246	$ 1, 262	Not yet commercial	$ 0
PVC/tonne of net carbon	$ 69.70	$ 20.65	$ 42.36	$ 52.37
PVR/tonne of net carbon	$ 69.95	$ 15.32	Not yet commercial	$ 0
Net PV (cost)/tonne of net carbon	-$ 0.25	$ 5.33	$ 42.36	$ 52.37

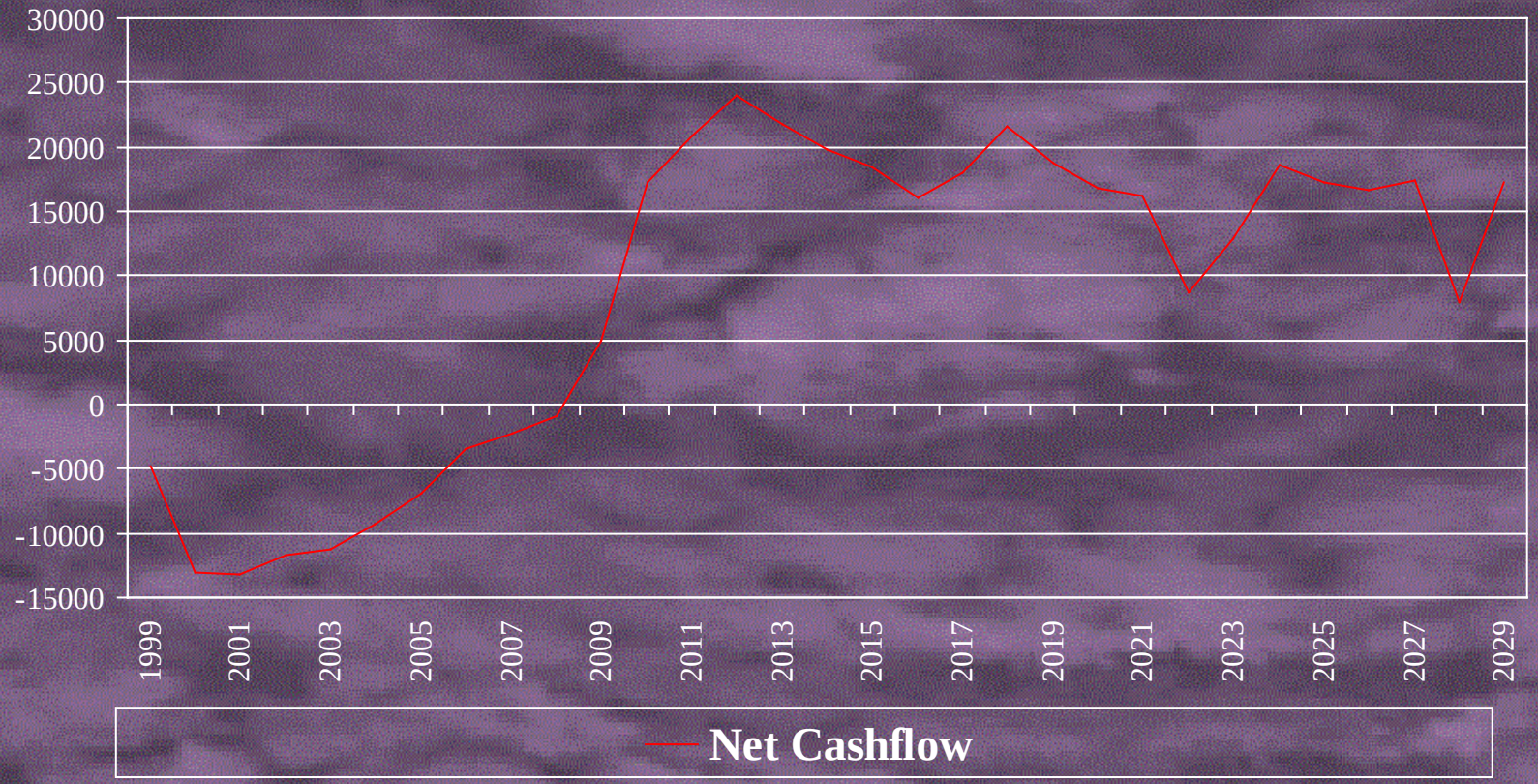
Projected costs for the proposed plantation establishment and maintenance program



Cashflow for the plantation proposal 1999 - 2030



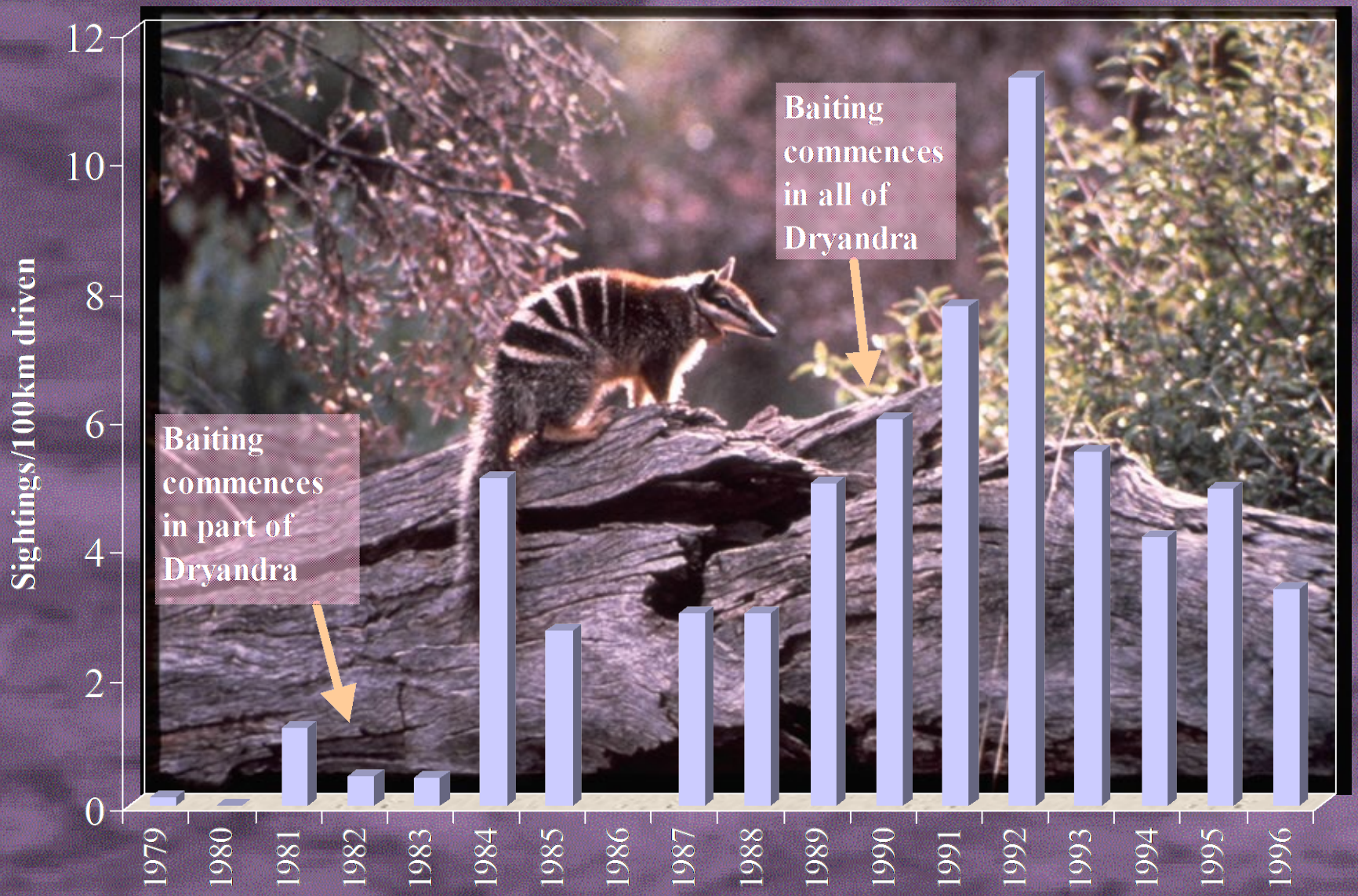
Cashflow for the plantation proposal 1999 - 2030



Yields, costs and commercial returns over 40-year period

Species	Area Planted	Average carbon sequestered over 30 years (tonnes)	Total project cost ($, 000)	Total project revenue ($, 000)	Net discounted cost per tonne of carbon sequestered	Carbon @ $ 0/tonne	Carbon @ $ 20/tonne	Carbon @ $40/tonne
Maritime Pine	85, 500	7, 591, 002	200, 320	557, 323	$5.33	5.4%	11.3%	21.1%
Bluegum	5, 000	319, 067	58, 471	93, 750	-$0.25	7.0%	10.8%	15.6%
Mallee Eucalypt	5, 500	68, 200	6, 515	0	$42.36		-8.3%	-2.0%
Landcare species	8, 550	95, 495	14, 565	0	$52.67		-8.8%	-3.2%
Project total	104, 550	8, 073, 764	279, 870	651, 073	$6.25	4.8%	9.9%	18.3%

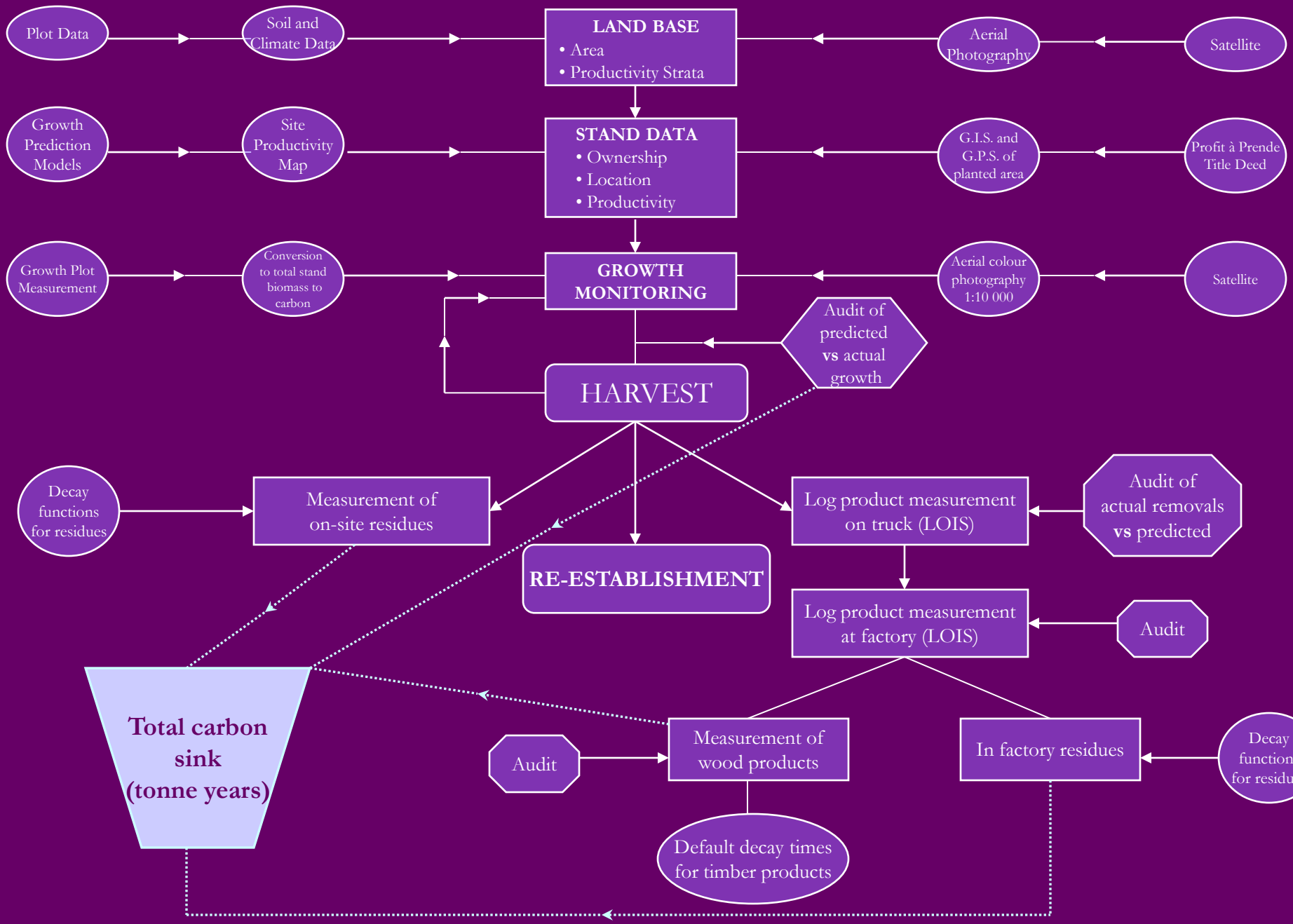
Numbat Sightings in Dryandra Forest



Quenda Response to Fox Control (Batalling Forest Block)

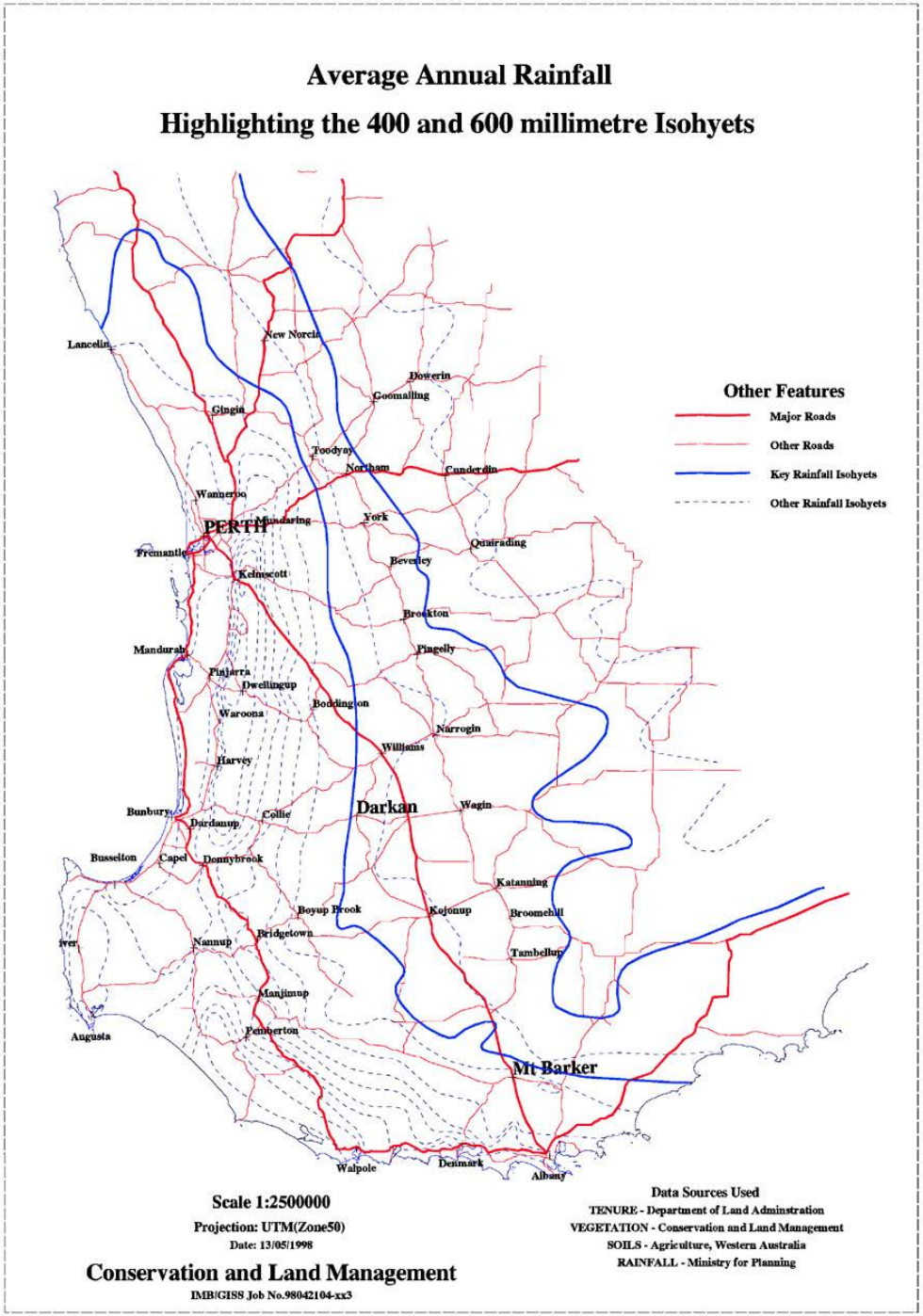
- Monitoring and Verification -

Forecasting, Monitoring and Verification of Carbon Flows in Tree Crops from Establishment to Product Decay

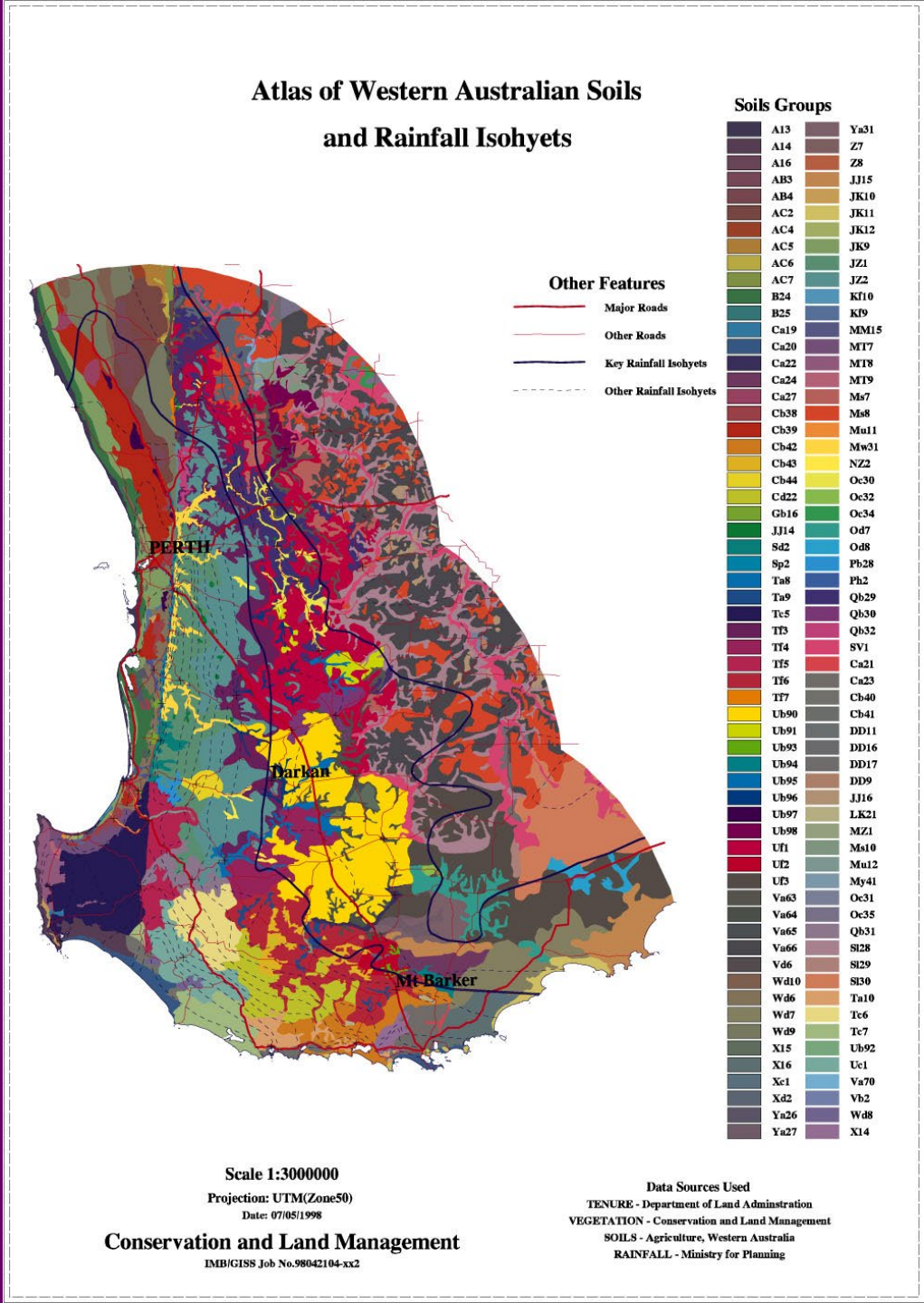


Forecasting, Monitoring and Verification of Carbon Flows in Tree Crops from Establishment to Product Decay

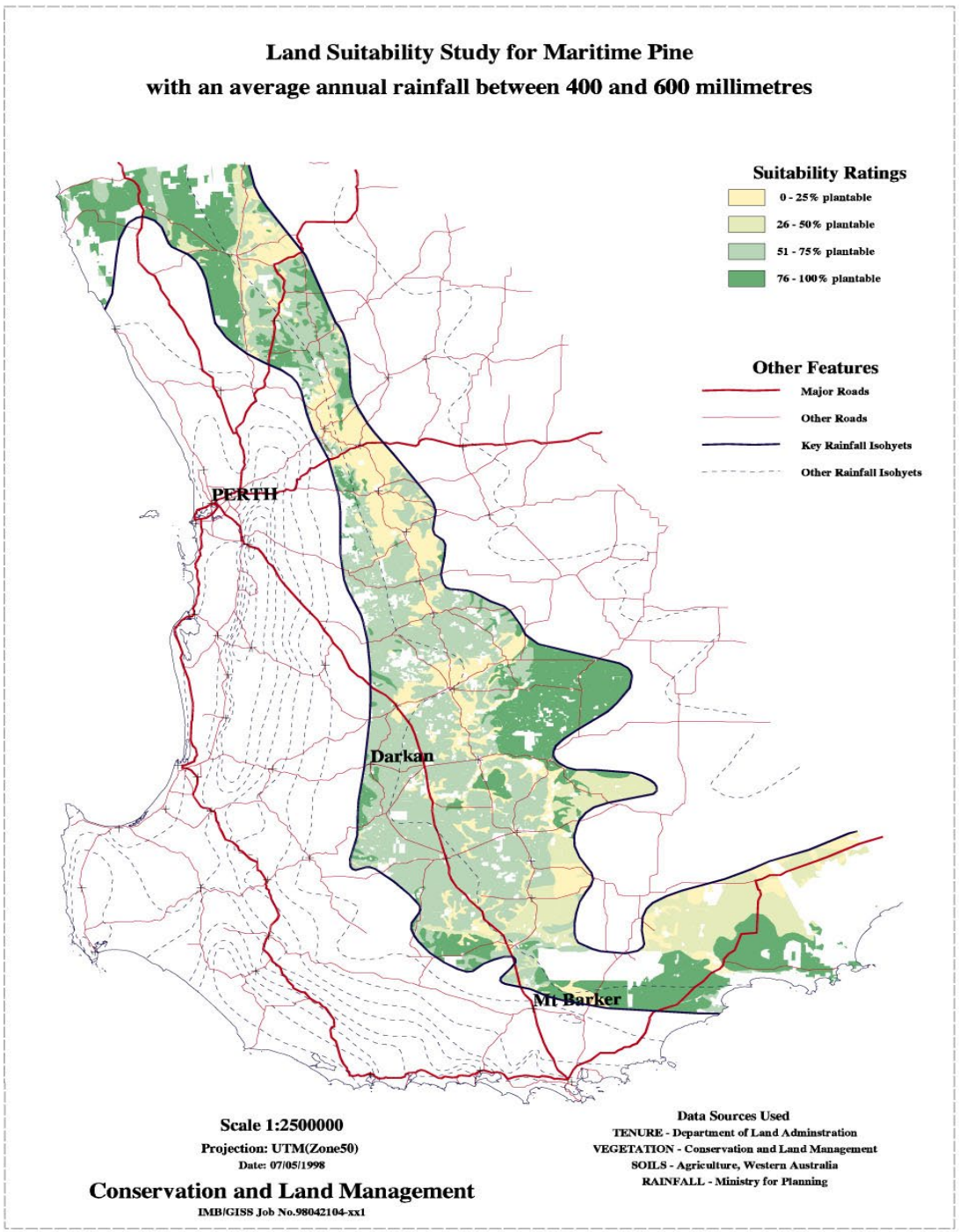
Rainfall Isohyets for South West of Western Australia



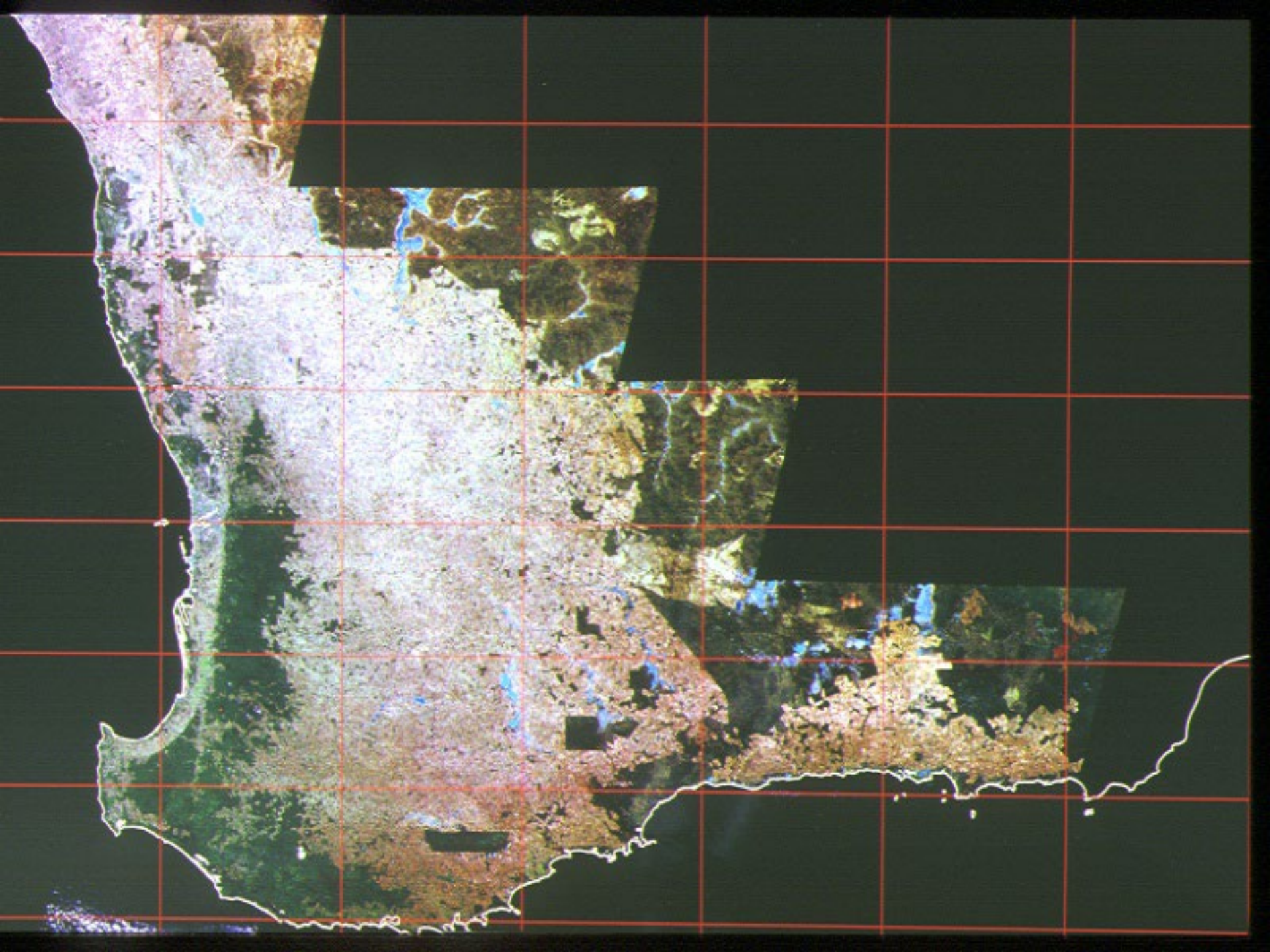
Atlas of Western Australian Soils

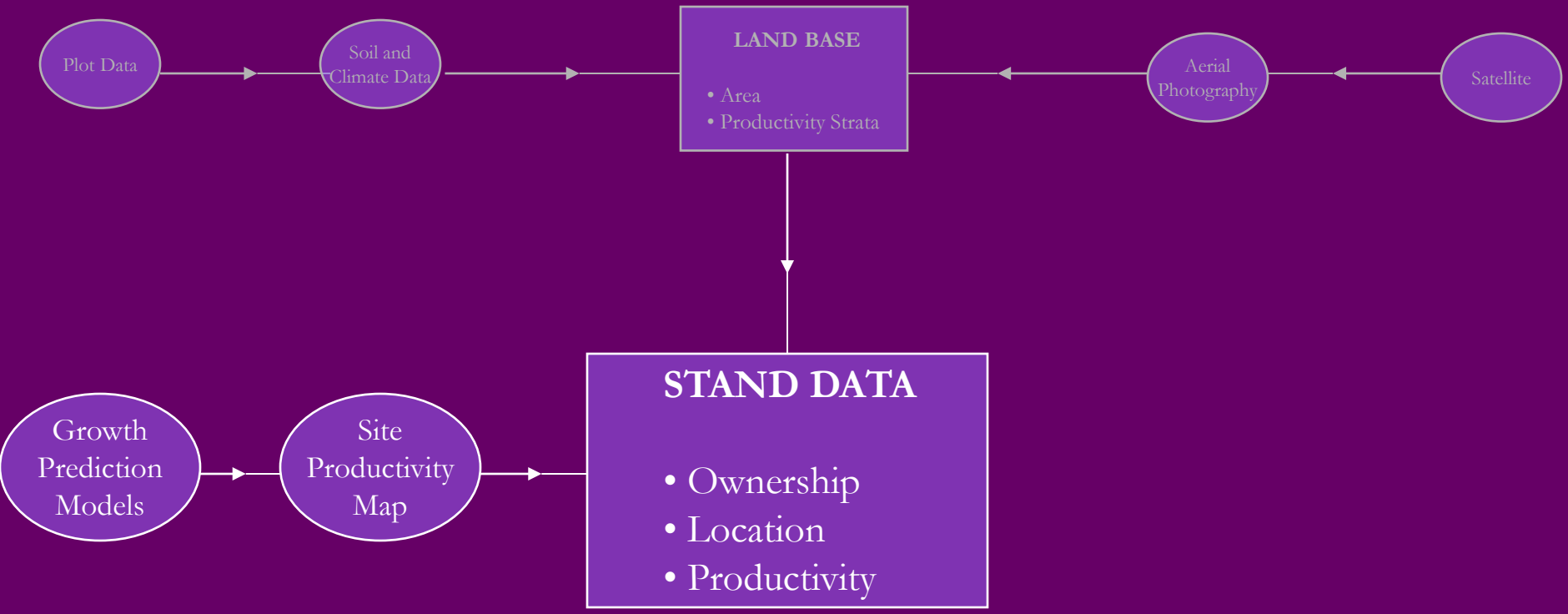


Land Suitability Study for Maritime Pine




Plot Data
Soil and Climate Data
LAND BASE
• Area
• Productivity Strata
Aerial Photography
Satellite

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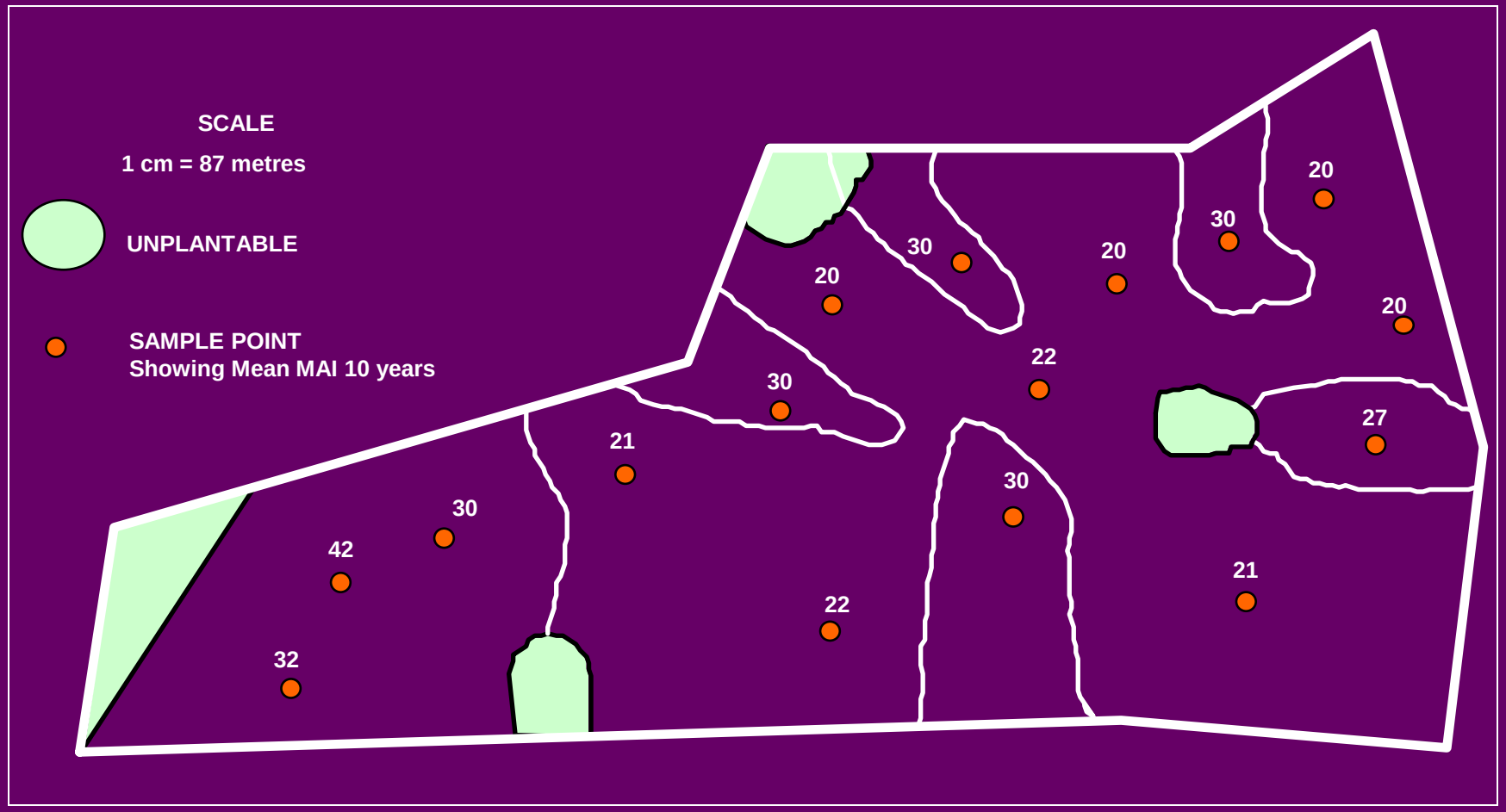
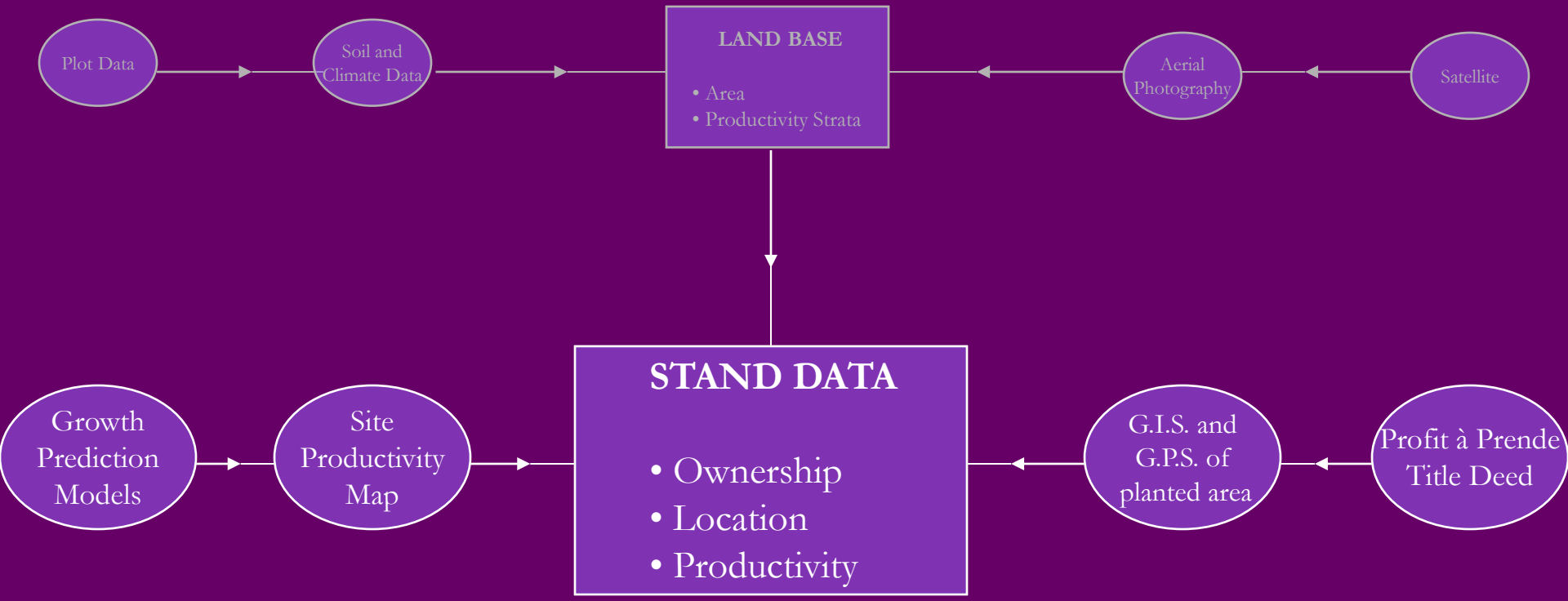
E. globulus site productivity assessment for a typical farm

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G.I.S. and G.P.S. of planted area
Profit à Prende Title Deed

CALM SHAREFARMS LOWER WEST

JACKSON

Nelson Loc's 2868, 2869 & 2870.

PLANTATION PLAN LEGEND

P.97 TREE CROP AREA E.globulus G.P.S. CAPTURE.	SEALED ROAD
P.96 TREE CROP AREA E.globulus G.P.S. CAPTURE.	UNSEALED ROAD
EXISTING BUSH G.P.S. Capture inside tree crop area only.	POWERLINE, PYLON
SALT AFFECTED G.P.S. CAPTURE.	SWAMP
PRIVATE PLANTING	DAM
CALM PLANTING	WATER POINT
FENCE	BUILDINGS
CADASTRAL BOUNDARY G.P.S. CAPTURE	CADASTRAL BOUNDARY NON G.P.S. CAPTURE

STATISTICAL REPORT

Categories	Area (ha)
P.97 TREE CROP AREA	372.5
TOTAL AREA	372.5

SHIRE: BOYUP BROOK
MAIN ACCESS ROAD: CRAIGIE ROAD
FIRE CONTROL DETAILS
OWNER:
CONTACT:
FIRE CONTROL CONTACTS:
1.
2.
3.
FIREBREAKS
10m BOUNDARY
10m ADJOINING 1st CLASS ROADS
10m ADJOINING 2nd CLASS ROADS
6m INTERNAL BETWEEN COMPARTMENTS
6m INTERNAL

NB.- The surrounding location boundaries have been determined using 50 series mapping and are for schematic purposes only, there may be inconsistancies between the G.P.S. plot and the Cadastral data. If this is important for the intended use then the matter must be resolved by reference to RMS.

DEPARTMENTAL PLAN FOR OPERATIONAL USE ONLY.

Part of CALM 1/50 000 map: 2230-4
Part of CALM 1/25 000 map: 2230-4SW & SE

G.P.S. (Global Positioning System).
The Global Positioning System used is a real time differential G.P.S. which obtains accuracy of +/-1.5m.

G.P.S. Surveyed By: JOHN MOSAJ	Date: MAY 97
Plan Compiled By: S. MOUNTFORD	Date: JULY 97
Plan Checked By:	Date:

SCALE 1:25 000

1000 800 600 400 200 0 500 1000 metres

PROJECTION: TRANSVERSE MERCATOR C.M. 117 E
HORIZONTAL DATUM: AUSTRALIAN GEODETIC DATUM 1966
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM 1971.

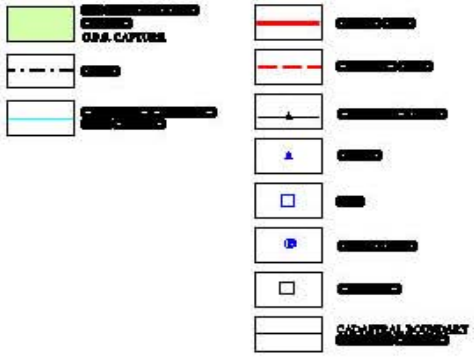
CALM
CONSERVATION AND LAND MANAGEMENT

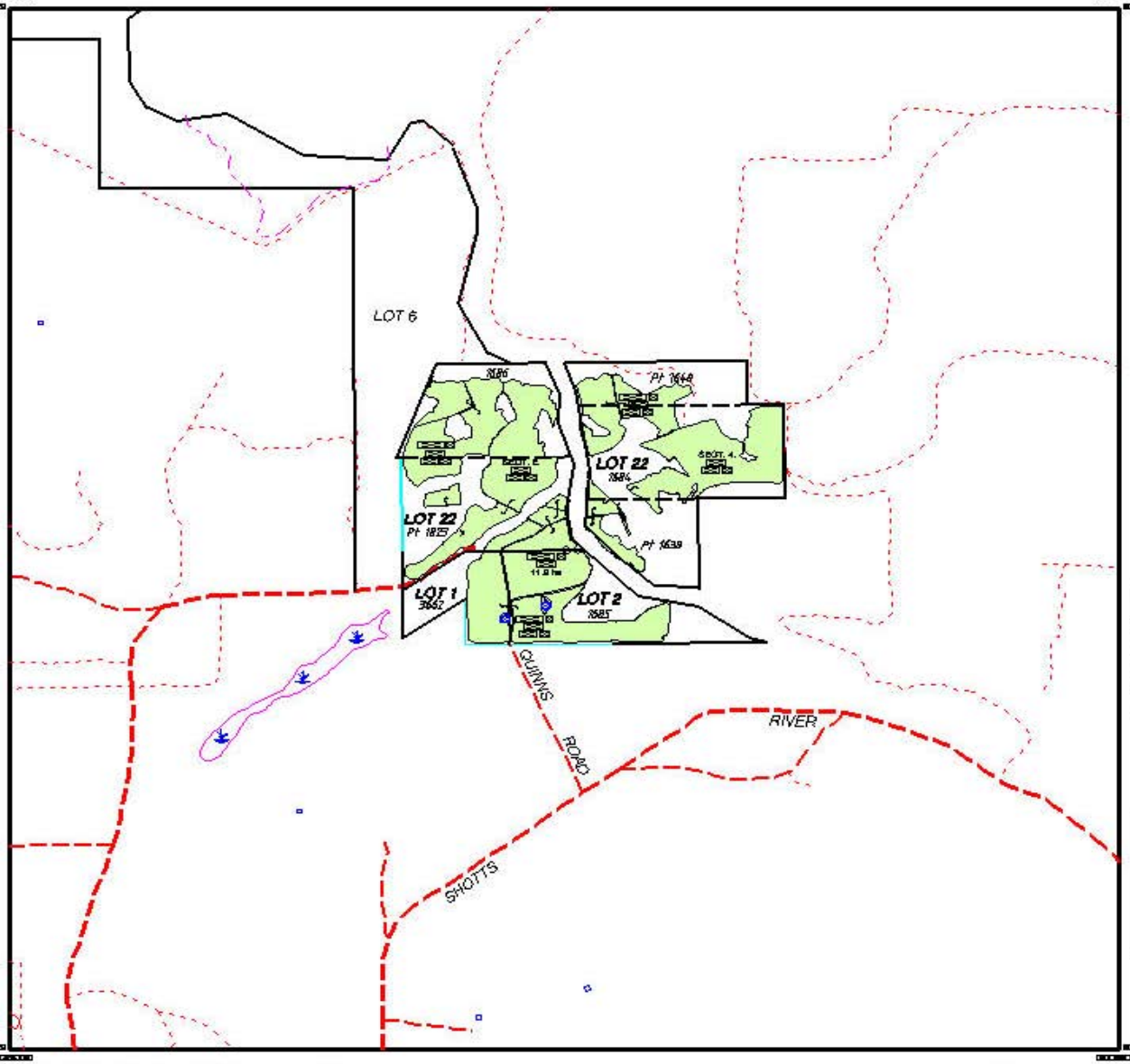
CALM SHAREFARMS
LOWER WEST

FLEAYS

Wellington Loc 3662 & Pt. Loc 1685 being Lot 1, Pt Loc 1685 being Lot 2, Loc's 1684, 1686, 4090 & Pt Loc's 1638, 1640, 1823 being Lot 22.

PLANTATION PLAN LEGEND





STATISTICAL REPORT

Categories	Area (ha)
P.94 TREE CROP AREA	98.9
TOTAL AREA	98.9

SHIRE: COLLIE
MAIN ACCESS ROAD: QUINNS ROAD

OWNER
EXECUTIVE DIRECTOR, CALM
OWNERS INITIALS

Plan of CALM MRS 000 map: COLLIE
Plan of DOLA MRS 000 map: COLLIE

G.P.S. Surveyed By: S. MOUNSFORD	Date: DEC 97
Plan Compiled By: S. MOUNSFORD	Date: FEB 98
Plan Checked By:	Date:

SCALE 1:25 000

1000 800 600 400 200 0 500 1000 metres

CALM

FORM P2
APPROVAL NO. B1629
WESTERN AUSTRALIA

TRANSFER OF LAND ACT 1893 AS AMENDED

PROFIT A PRENDRE

[Under s.34B Conservation and Land Management Act 1984 as amended]

DESCRIPTION OF LAND (Note 1)	EXTENT	VOLUME	FOLIO
Firstly, that portion of Wellington Location 1685 as is Comprised in Lot 1 on Diagram 64908	Part	1651	353
Secondly, portion of Wellington Location 1685 and being Lot 2 on Diagram 64908	Whole	1651	354
Thirdly, Wellington Locations 1684 and 4090 and portion of each of Wellington Locations 1638, 1640, 1686 and 1823 the whole of the said land being Lot 22 on Plan 19273	Whole	1971	796

ESTATE AND INTEREST (Note 2)

Fees simple

ENCUMBRANCES (Note 3)

As the land firstly above described: Restricitve Covenant contained in Transfer F157963 and Profit à Prende G469575
As to the land secondly above described: Restrictive Convenant contained in Transfer F157963
As to the land thirdly above described: Restrictive Convenant contained in Transfer F302179 and Profit à Prende G469575

OWNER (Registered Proprietor) (Note 4)

THE EXECUTIVE DIRECTOR OF THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT of Hackett Drive Crawley

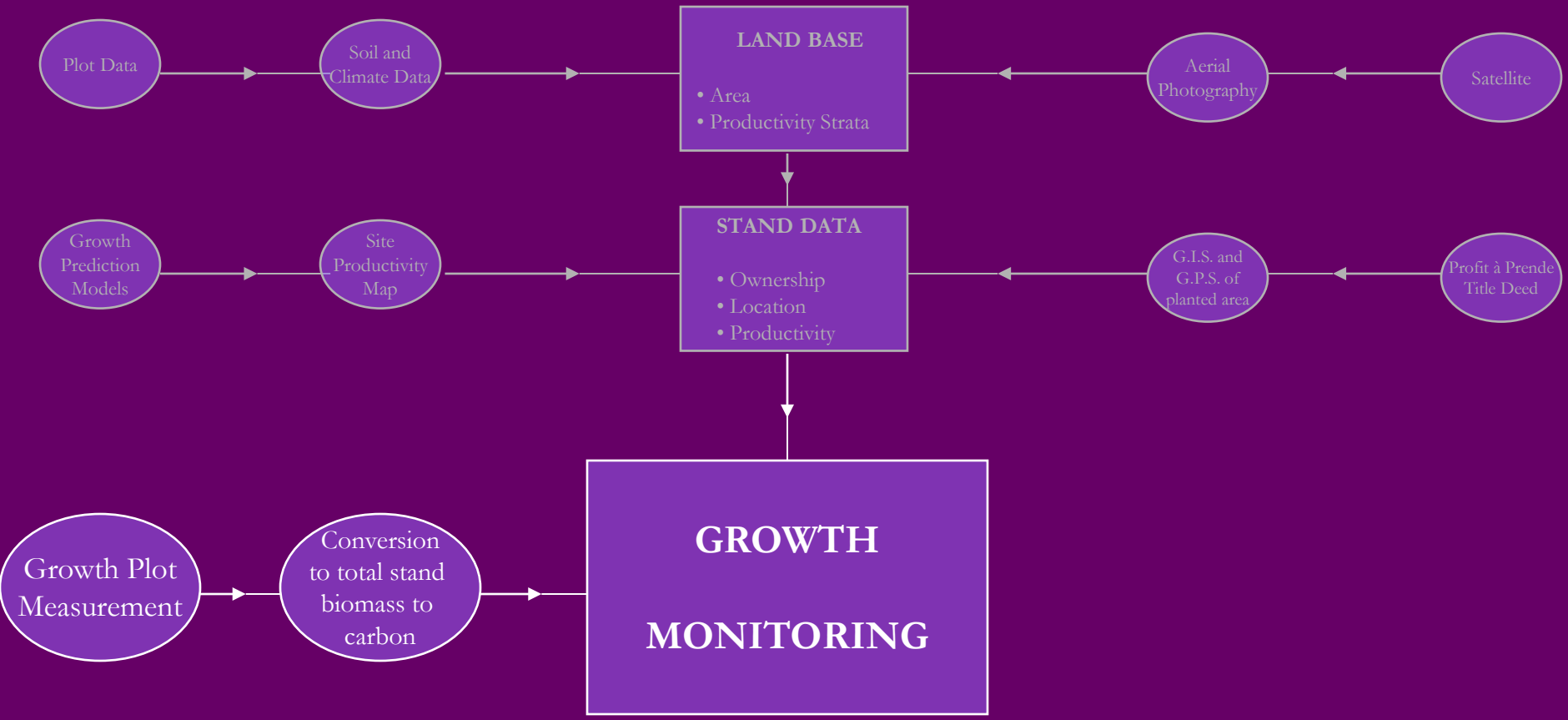
GRANTEE (Note 5)

HANSOL AUSTRALIA PTY. LTD. A.C.N. 061 693 856 of Suite 15, 64 Canning Highway Victoria Park

TERM OF PROFIT A PRENDRE (Note 6)

TWENTY EIGHT (28) YEARS, subject to earlier termination in accordance with clause 8, commencing on and including the First day of January 1999

The Owner hereby Grants a Profit a Prendre to the Grantee for the term specified above over the land described above subject to the encumbrances shown hereon in accordance with the terms and conditions contained in this Deed.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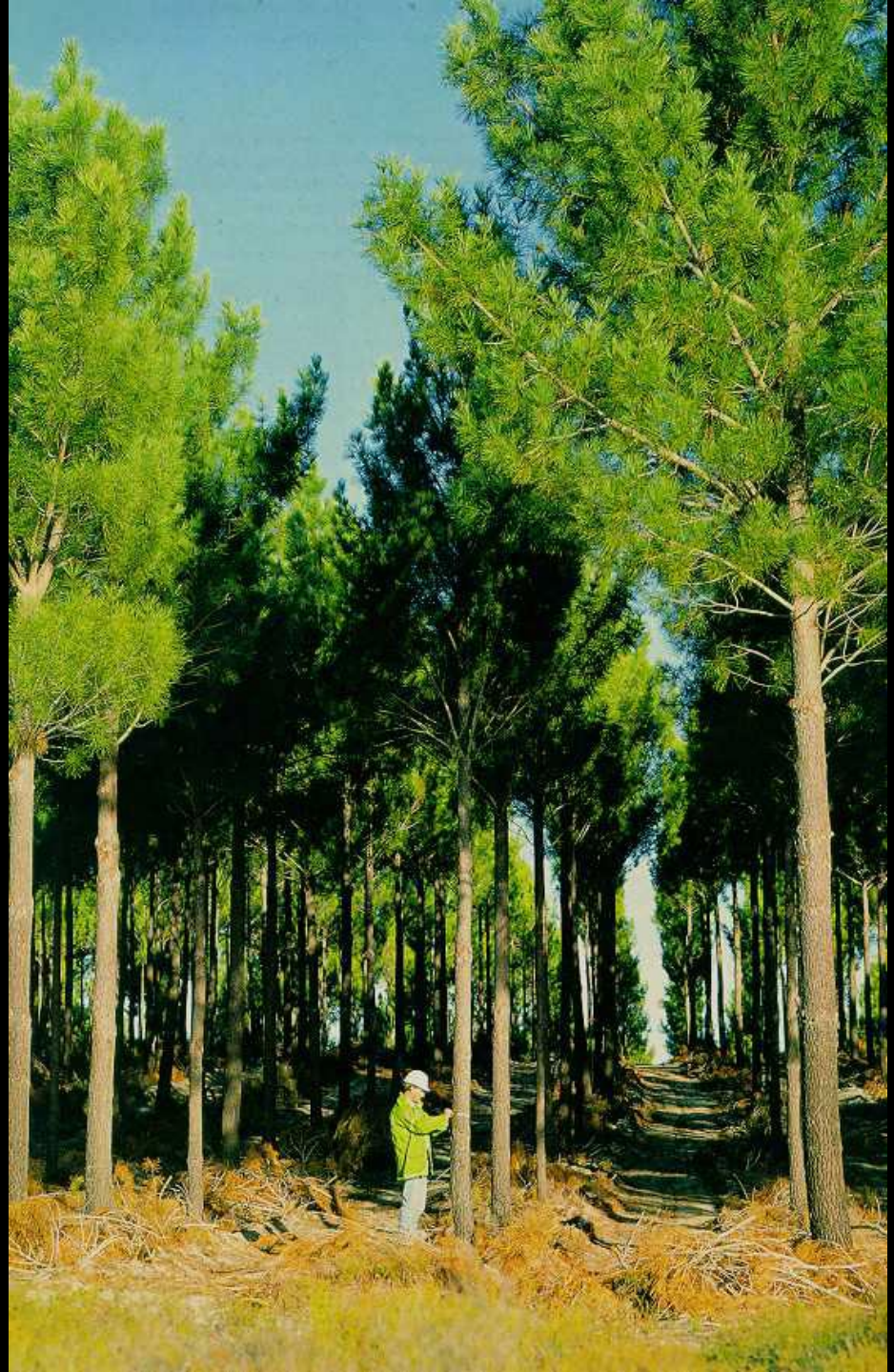
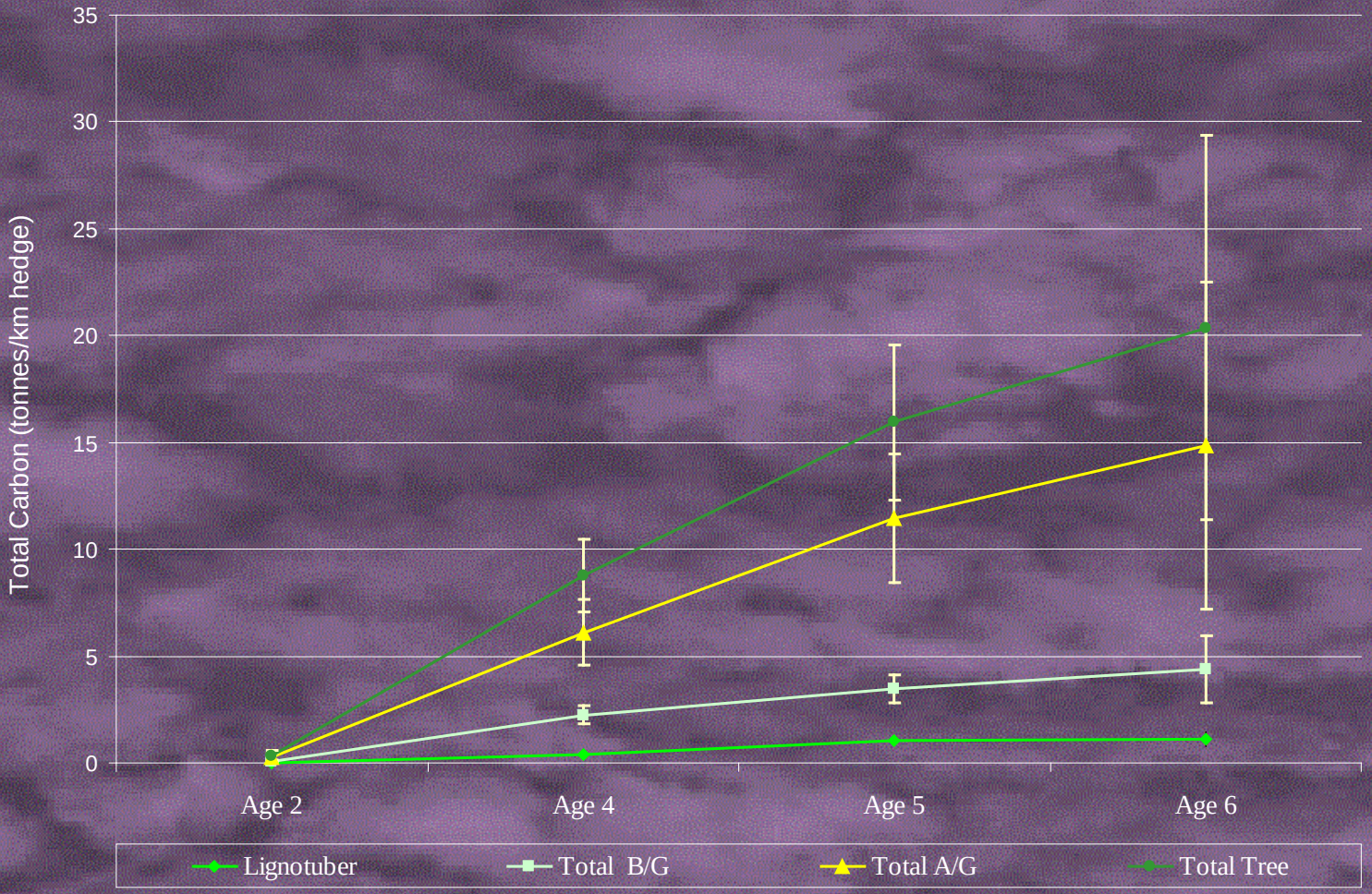
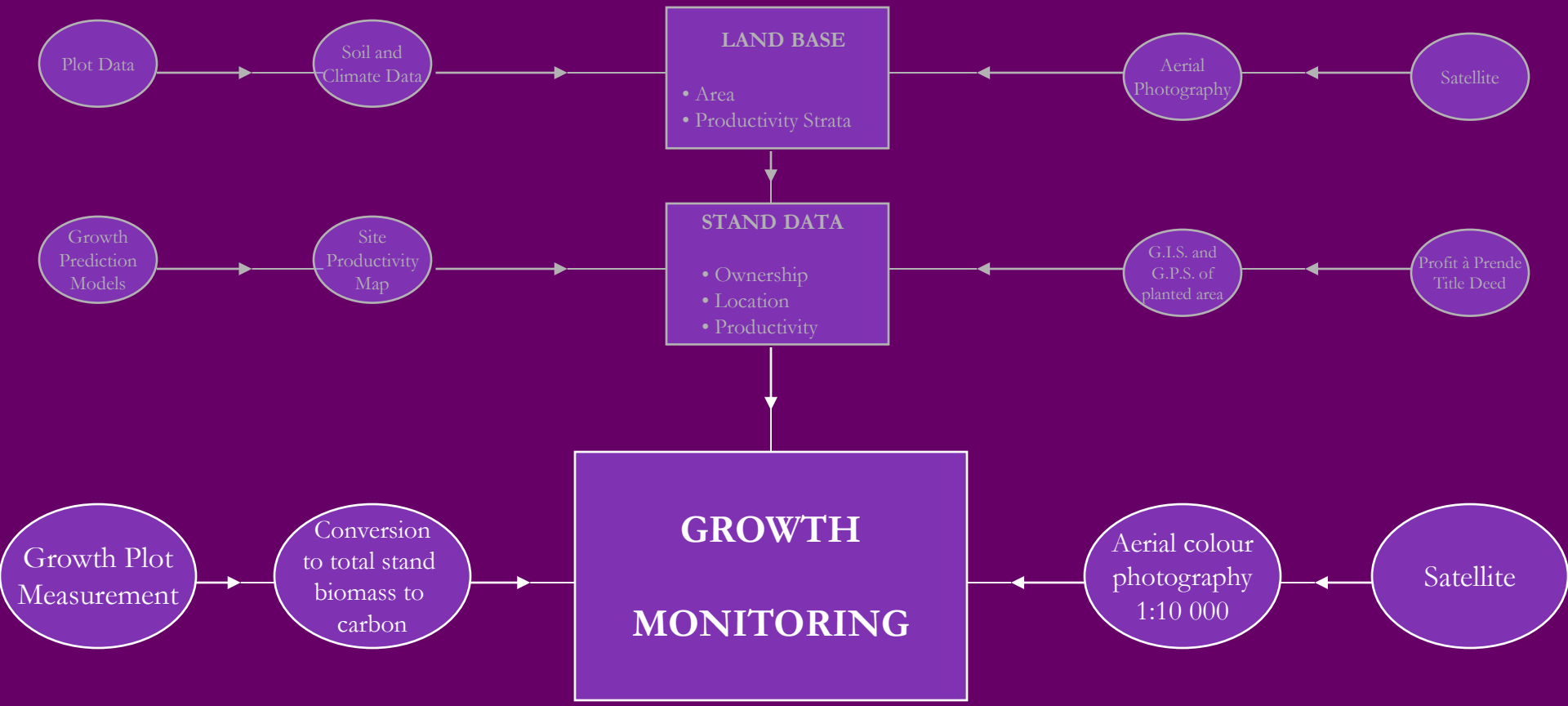
Profit à Prende Title Deed
Growth Plot Measurement
Conversion to total stand biomass to carbon
GROWTH
MONITORING




100m

Total carbon per kilometre of hedge for *Eucalyptus plenissma* for different ages and tree components with standard deviation

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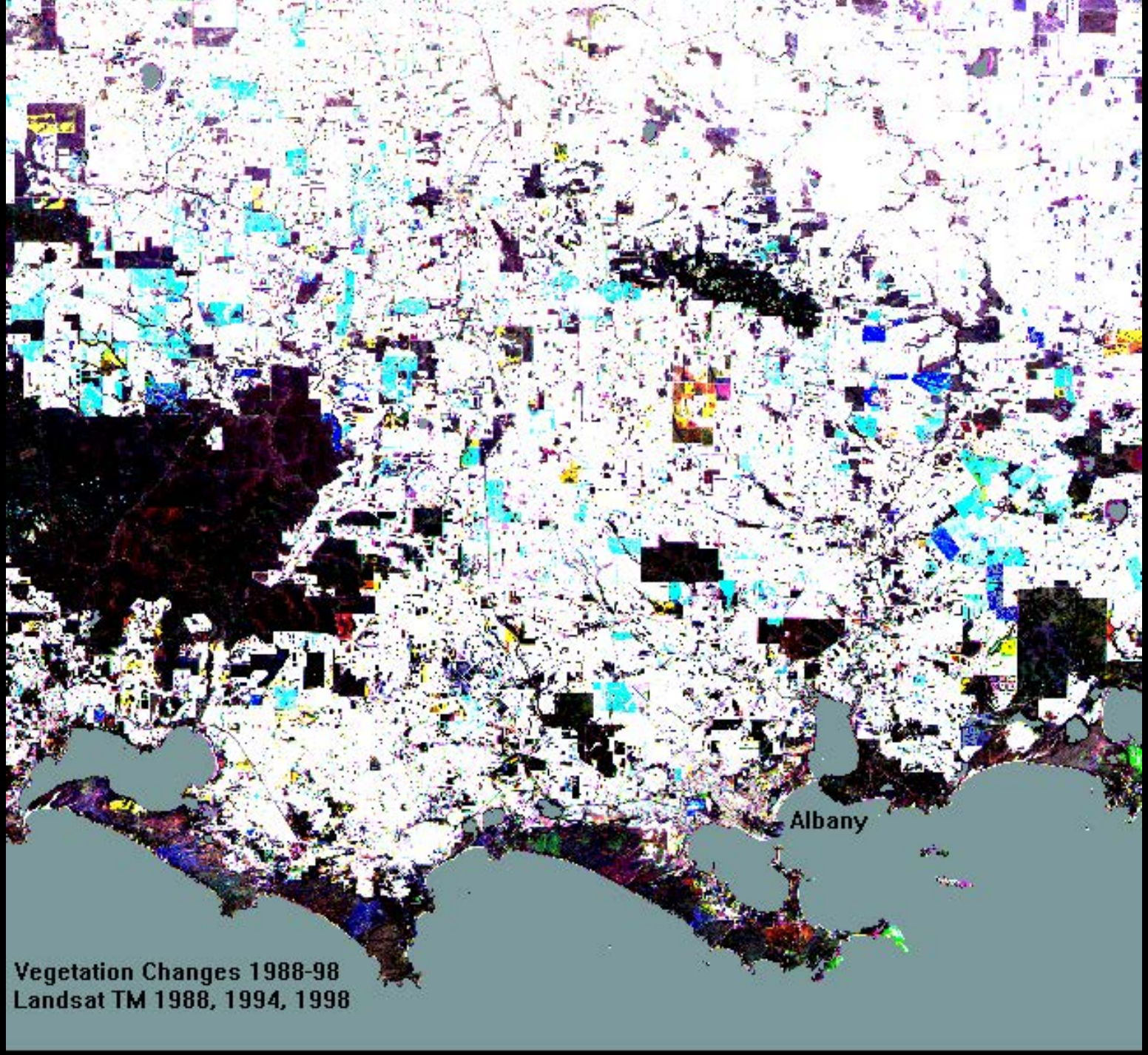
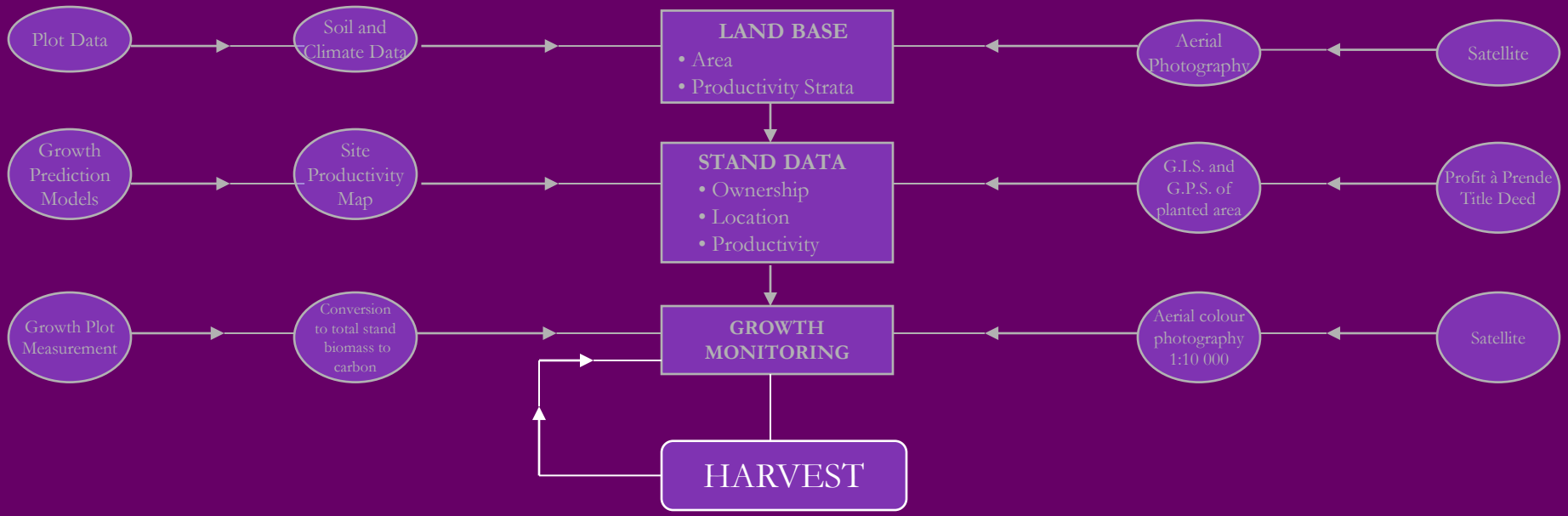

Albany
Vegetation Changes 1988-98
Landsat TM 1988, 1994, 1998

Forecasting, Monitoring and Verification of Carbon Flows in Tree Crops from Establishment to Product Decay



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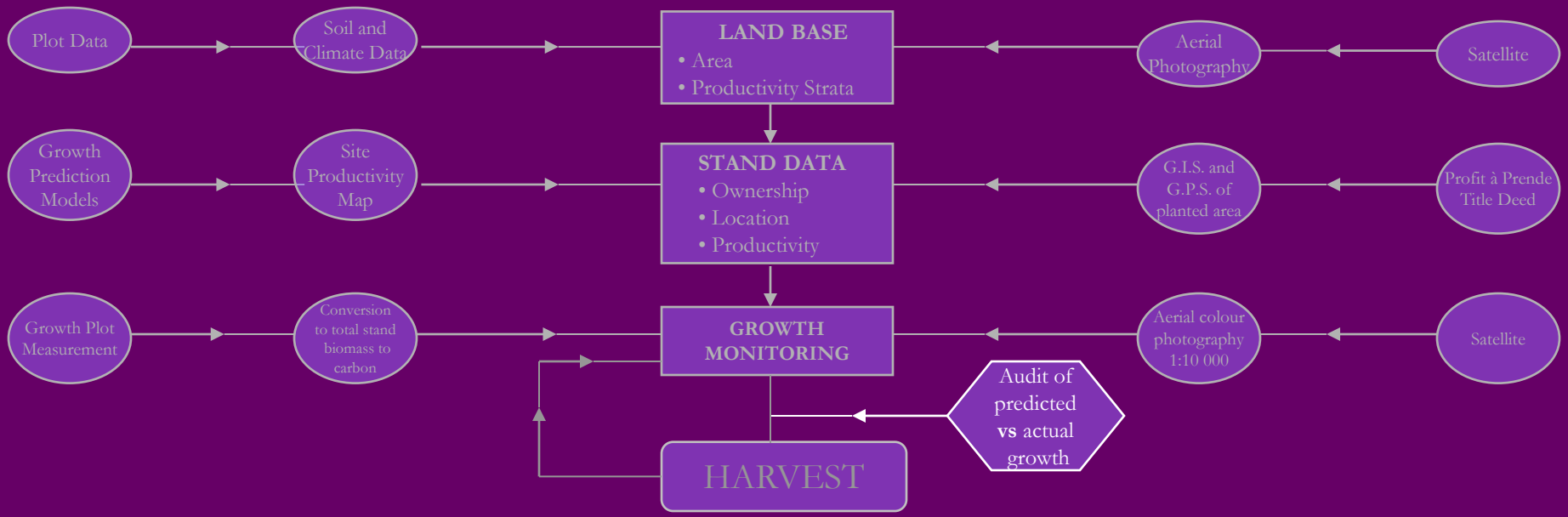

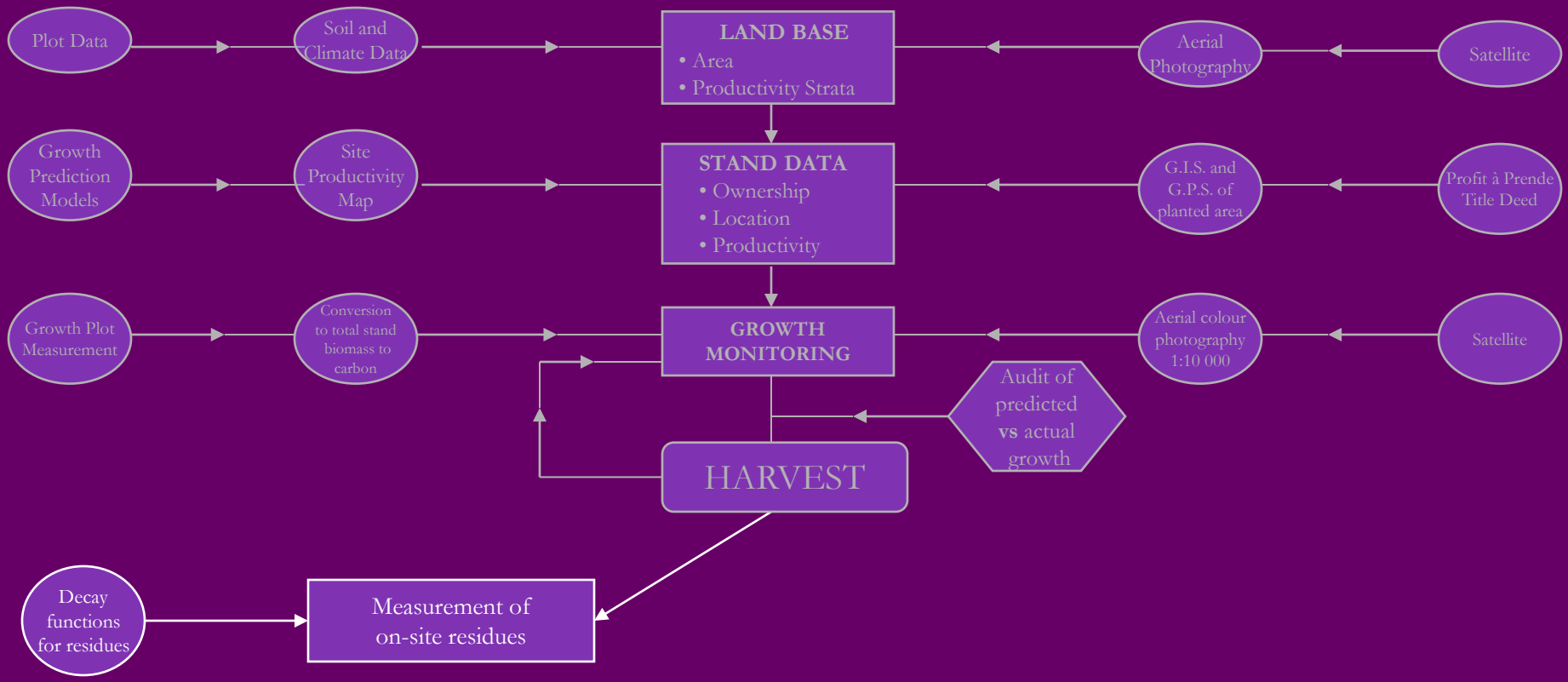
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Decay functions for residues
Measurement of on-site residues


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Log product measurement on truck (LOIS)
Audit of actual removals vs predicted

CLM 709 (1998)

LOGGING OPERATIONS INFORMATION SYSTEM (LOIS)

LOGGING OPERATION DETAILS

ACTION (√) ADD [/] DELETE [ ] UPDATE [ ]

Operation Name — District [A] [PERTH] Plantation /Block [DINGAN]

Compartment [09] Coupe [ ] Operation [A] [P5] [TPF2]

Operation Type [FLAT] Description [T2]

Operation Area [10] ha Supply Area [SWAN]

Contractor(S) Name [SLS] Contract No. [ ]

Name [ ] Contract No. [ ]

Name [ ] Contract No. [ ]

Start Date [20/04/98] End Date [30/05/98] Transition Dump [Y] [N]

Private Prop. Owner [ ] FOCIS Mgt Area [ ]

Silvicultural Type [S2Z] NEW / 2ND THN / 300 - 150 SPH

Contractor Payments To Be Printed At [PERTH]

WEST SIDE AQUA AS WESPINE THAN ORCHARD STOCK M1

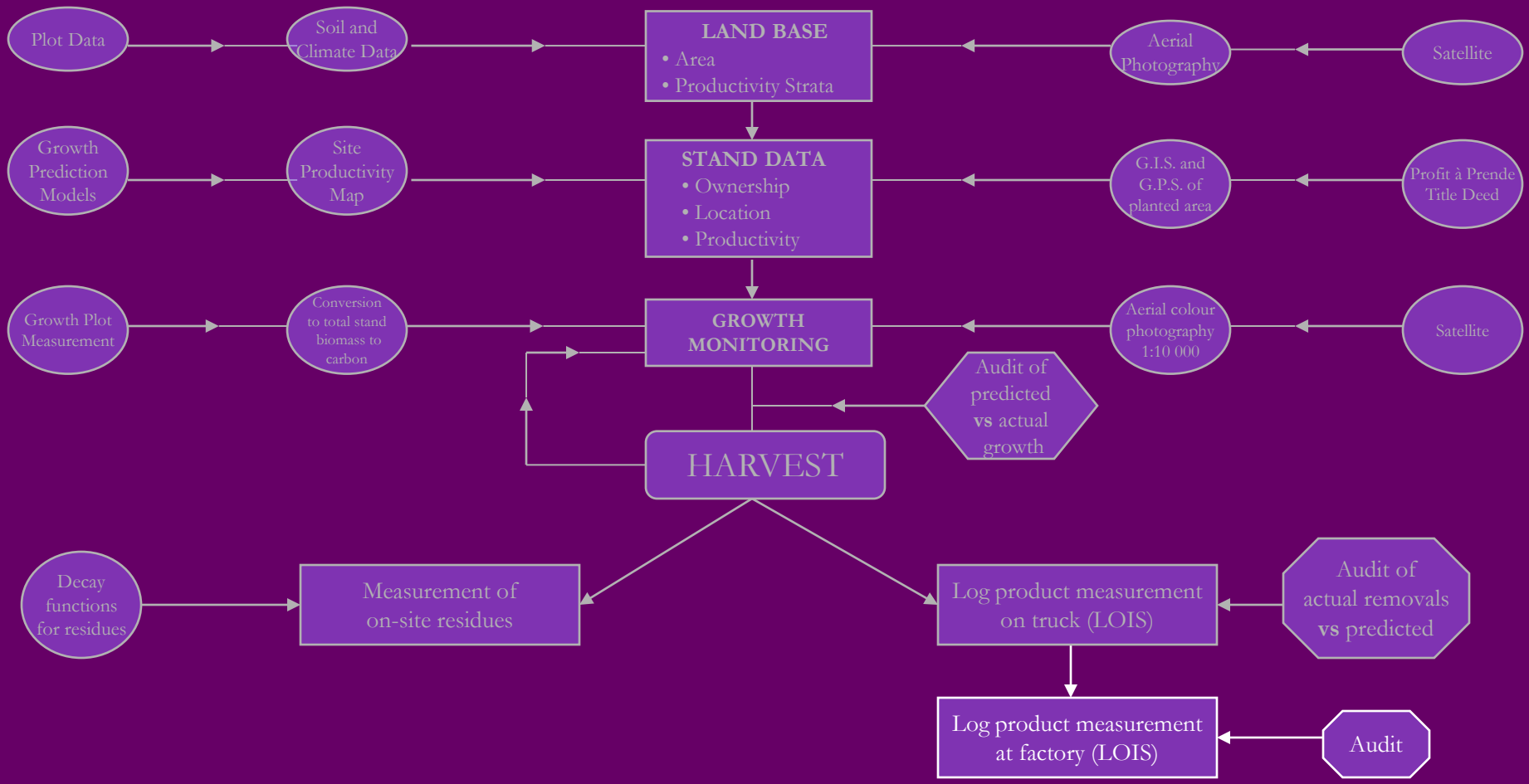
Delivery Location Distances
(and approved travel routes if applicable)

Delivery Location	Customer	Distance (km)	Approved Travel Route	Amendment (Date/Signature)
BASSENDEAN	DINGAN	49	AQUA / PINJAR / WAN / GN / ALBANY HWY	
WELSHPOOL	WESFI	61	" " " " " " / SW HWY	
ARMADALE	WESPINE	24.2	" " " " " " / SW HWY	
OSB PK	W/COAST	45	" " " / OCEAN DRIVE / SW HWY	

INPUT at STATE HEADQUARTERS
21 APR 1998
Date
Operator

Completed By: C. J. SANDERS Date 20/4/98

Business Unit Manager: Date 20/4/98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Audit of actual removals vs predicted
Log product measurement at factory (LOIS)
Audit

Department of Conservation and Land Management

SOFTWOOD LOG DELIVERY NOTE S 079859

Part A: Harvesting information - All shaded parts to be completed by Contractor before truck leaves bush landing

Date of loading 10/9/98 Time of loading 5-45 Date & time of delivery/unloading 10/9/98. 10-30.

Truck registration no. 9KT 041.

Terrain = F (flat) S (steep)
Op type = 1 (T1) 2(T2) 3(T3) C(clearfell)

Source of logs CLAYMORE (Plantation) Logging operation K (Dis) CH (Plant) RCF1 (Op No) (F/S 1/2/3/C)

Product species RADIATA. Product type SMALL SAW LOGS

Customer's name PMET TEC. Delivery location BASSENDEAN.

CALM contractor (Production) PME - HAULIERS. Harvesting contract no. 95/91 Ref no. ..... (Contractor use only)

Work description (√) Fall ✓ Extract ✓ Debark ☐ Prepare ☐ Measure ☐ Load ✓

CALM contractor (Delivery) " " Harvesting contract no. 95/91 Ref no. ..... (Contractor use only)

Work description (√) Load ☐ Cart ✓ Feller's ID code(s)

If point of sale is bush landing, tick box ☐

S. BERGISON R. MORTON

J. LODGE. (Felling)	(Processing)	P. ALLAN. (Extracting)

(Contractor use only)

CONTRACT OF SALE NO: 2393 (CALM Use Only)

Part B: Signatures - All shaded parts to be completed by Contractor before truck leaves bush landing

Loader operator [signature] Truck driver [signature]

Customer P. Lemma (Date 10/9/98. Time .....) Customer ref no. ..... (Customer Use Only)

Forest Officer conducting field check ..... (Date .....) ☐ Bush Landing ☐ On Road ☐ At Mill

Part C: Log Quantity - All shaded parts to be completed by Contractor before truck leaves bush landing (if measurement applicable)

(I) BIN MEASURE

Bin	Log Length (m)	Bin Width (m)	Bin Height (m)
1	2-4	2-3	1-7
2	2-4	2-3	1-8
3	2-4	2-3	2-0
4	2-4	2-3	2-0
5	2-4	2-3	1-8
6	2-4	2-3	1-8

Total Volume 2505-08 . 37.988 m³

or (II) SCANNER MEASURE

Bin	Log Length (m)	Log Tally	No. of Logs
1			
2			
3			
4			
5			
6			

No of logs on load

or (III) WEIGHT (see details as printed by weighbridge printer on this D/Note or on attached weighbridge docket)

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT 14 SEP 1998 COMO, W.A.

INPUT AT STATE HEADQUARTERS Date 14 SEP 1998

RECEIVED 14 SEP 1998

Net Load Weight: Tonnes

Part D: Distribution: (i)White original: CALM(via Customer) (ii) Pink duplicate: Customer (iii) Green triplicate: CALM Contractor (iv) Yellow quadruplicate: Remains in book at all times

Department of Conservation and Land Management
Logging Operations Information System
INVOICE ATTACHMENT - ROYALTY & PRODUCTION

Start: 01-SEP-1998 End: 15-SEP-1998

Customer: XXXXXXXXXXXXXX
XXXXXXXXXXXXXX
XXXXXXXXXXXXXX
XXXXXXXXXXXXXX Debtor Code: XXXXX

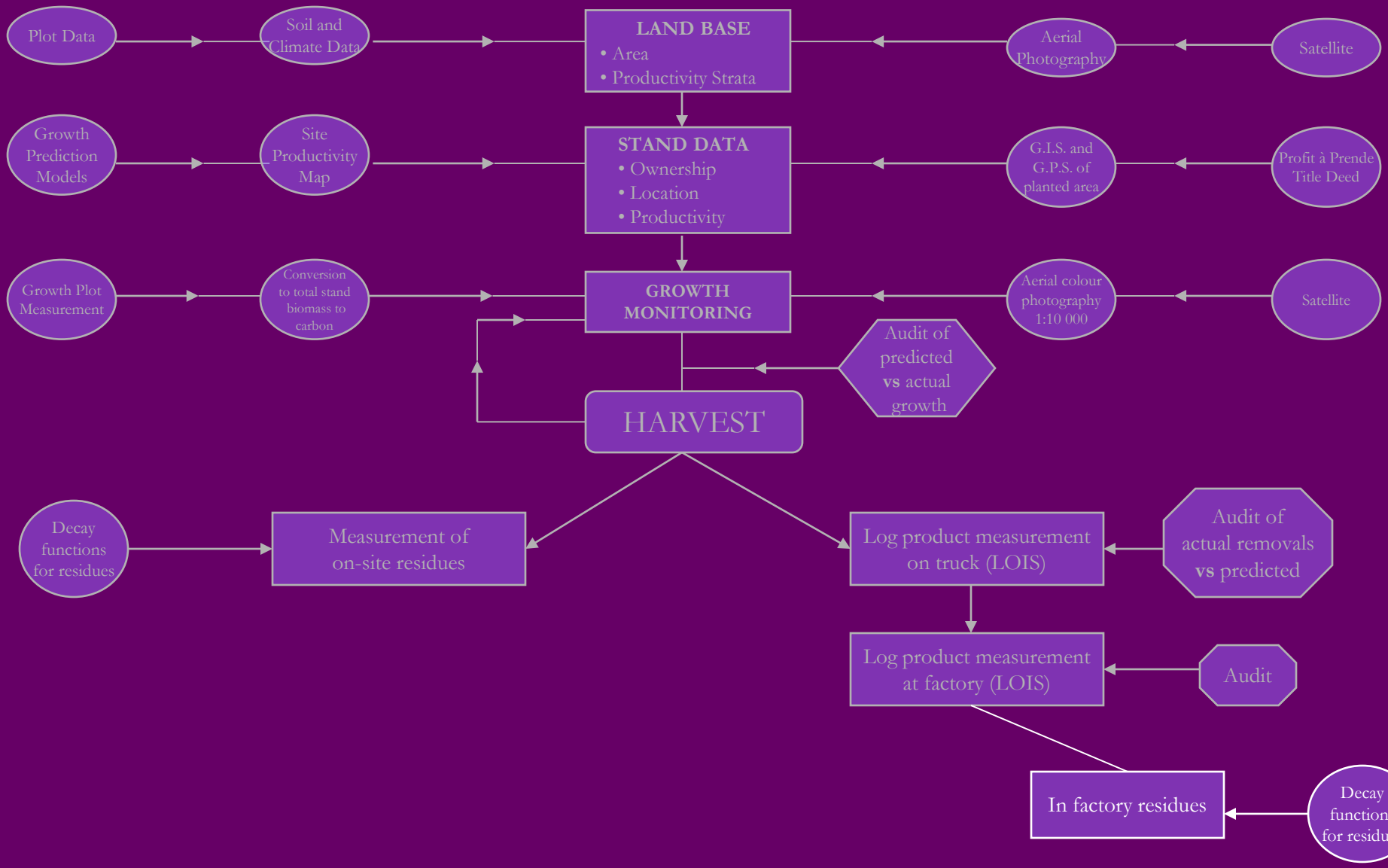
Location: YYYYYYYYYYYYYY
YYYYYYYYYYYYYY
YYYYYYYYYYYYYY
YYYYYYYYYYYYYY

Contract of Sale: 4444

Species/Product: PINASTER/SAWLOG (AUTO SCAN)

DNote	Date	Operatn	Logs	Volume	Tonnes	Dist	Prod	Cart	Royty/Stmp	Production	Cartage	Admin	Inforest	Roading	Other	Total
SOFTWOOD DELIVERIES																
S74130	02-Sep-98	ANN8CF3	79	33.468		208	95/P2	95/P2	1289.50	432.07	811.27	31.79	78.97	27.77	10.04	2681.41
S74135	04-Sep-98	ANN8CF3	20	11.726		208	95/P2	95/P2	468.02	151.39	284.24	11.14	27.68	9.74	3.52	955.73
S74136	07-Sep-98	ANN8CF3	42	20.822		208	95/P2	95/P2	871.69	268.81	504.71	19.78	49.14	17.28	6.24	1737.65
S74138	07-Sep-98	ANN8CF3	54	33.331		208	95/P2	95/P2	1449.26	430.30	807.94	31.64	78.66	27.66	9.99	2835.45
S74143	11-Sep-98	ANN8CF3	71	31.869		208	95/P2	95/P2	1320.71	411.43	772.50	30.28	75.22	26.45	9.57	2646.16
S74181	03-Sep-98	ANN8GFC	43	36.056		204	95/P2	95/P2	1863.87	465.48	873.99	34.25	85.09	29.94	10.82	3363.44
S79257	28-Aug-98	ANN8CF3	86	38.131		208	95/P2	95/P2	1431.11	492.27	924.30	36.22	90.01	31.64	11.44	3016.99
S79283	31-Aug-98	ANN8CF3	67	38.070		208	95/P2	95/P2	1496.22	491.49	922.82	36.16	89.85	31.59	11.43	3079.56
S79284	01-Sep-98	ANN8CF3	80	37.505		208	95/P2	95/P2	1480.11	484.20	909.12	35.63	88.51	31.12	11.26	3039.95
S79286	02-Sep-98	ANN8CF3	71	42.396		208	95/P2	95/P2	1708.56	547.33	1027.68	40.28	100.05	35.19	12.72	3471.81
S79288	03-Sep-98	ANN8GFC	53	39.318		204	95/P2	95/P2	1905.84	507.60	953.07	37.36	92.79	32.64	11.80	3541.10
S79290	04-Sep-98	ANN8CF3	77	38.194		208	95/P2	95/P2	1607.28	493.08	925.82	36.29	90.14	31.70	11.48	3195.79
S79294	08-Sep-98	ANN8CF3	92	38.373		208	95/P2	95/P2	1378.72	495.41	930.17	36.45	90.55	31.86	11.51	2974.67
S79296	09-Sep-98	ANN8CF3	88	38.001		208	95/P2	95/P2	1528.71	490.59	921.13	36.09	89.69	31.55	11.40	3109.16
S79298	10-Sep-98	ANN8CF3	84	37.031		208	95/P2	95/P2	1521.32	478.06	897.64	35.18	87.39	30.73	11.11	3061.43
S79300	11-Sep-98	ANN8CF3	63	38.054		208	95/P2	95/P2	1667.57	491.28	922.43	36.16	89.81	31.59	11.42	3250.26
S80702	14-Sep-98	ANN8CF3	59	41.114		208	95/P2	95/P2	1827.26	530.78	996.61	39.05	97.03	34.13	12.33	3537.19
S81601	01-Sep-98	ANN8CF3	90	34.367		208	95/P2	95/P2	1251.64	443.67	833.04	32.65	81.11	28.53	10.30	2680.94
S81611	04-Sep-98	ANN8CF3	82	37.939		208	95/P2	95/P2	1465.28	489.79	919.64	36.06	89.52	31.48	11.38	3043.15
S81614	08-Sep-98	ANN8CF3	56	34.848		208	95/P2	95/P2	1470.33	449.89	844.70	33.10	82.24	28.92	10.46	2919.64
S81621	11-Sep-98	ANN8CF3	69	34.135		208	95/P2	95/P2	1466.09	440.68	827.43	32.43	80.56	28.33	10.24	2885.76
S81623	14-Sep-98	ANN8CF3	53	34.436		208	95/P2	95/P2	1483.66	444.57	834.74	32.72	81.28	28.59	10.34	2915.90
S81651	02-Sep-98	ANN8CF3	82	35.244		208	95/P2	95/P2	1369.87	455.01	854.32	33.49	83.17	29.24	10.57	2835.67
S81653	03-Sep-98	ANN8CF3	70	34.862		208	95/P2	95/P2	1337.32	450.06	845.05	33.12	82.28	28.94	10.45	2787.22
S81655	07-Sep-98	ANN8CF3	71	35.769		208	95/P2	95/P2	1457.46	461.77	867.05	33.97	84.42	29.70	10.72	2945.09
S81656	09-Sep-98	ANN8CF3	51	35.752		208	95/P2	95/P2	1619.83	461.56	866.63	33.96	84.38	29.68	10.72	3106.76
S81658	10-Sep-98	ANN8CF3	52	35.218		208	95/P2	95/P2	1714.20	454.65	853.70	33.46	83.11	29.23	10.56	3178.91
S81659	14-Sep-98	ANN8AF3	61	37.739		206	95/P2	95/P2	1705.36	487.21	914.79	35.84	89.07	31.32	11.33	3274.92
S82093	31-Aug-98	ANN8CF3	86	33.226		208	95/P2	95/P2	1159.18	428.95	805.38	31.55	78.42	27.58	9.97	2541.03
S82095	04-Sep-98	ANN8CF3	64	35.383		208	95/P2	95/P2	1490.91	456.80	857.69	33.61	83.50	29.36	10.61	2962.48
S82097	07-Sep-98	ANN8CF3	80	37.295		208	95/P2	95/P2	1536.43	481.48	904.04	35.43	88.02	30.95	11.18	3087.53
S82099	08-Sep-98	ANN8CF3	61	35.260		208	95/P2	95/P2	1409.05	455.21	854.70	33.49	83.21	29.28	10.57	2875.51
S82124	31-Aug-98	ANN8CF3	84	34.779		208	95/P2	95/P2	1338.59	449.00	843.05	33.03	82.08	28.87	10.43	2785.05
Total PINASTER/SAWLOG (AU			****	1159.711	0.000				48090.95	14971.87	28111.39	1101.66	2736.95	962.58	347.91	96323.31

Species/Product: RADIATA/SAWLOG (AUTO SCAN)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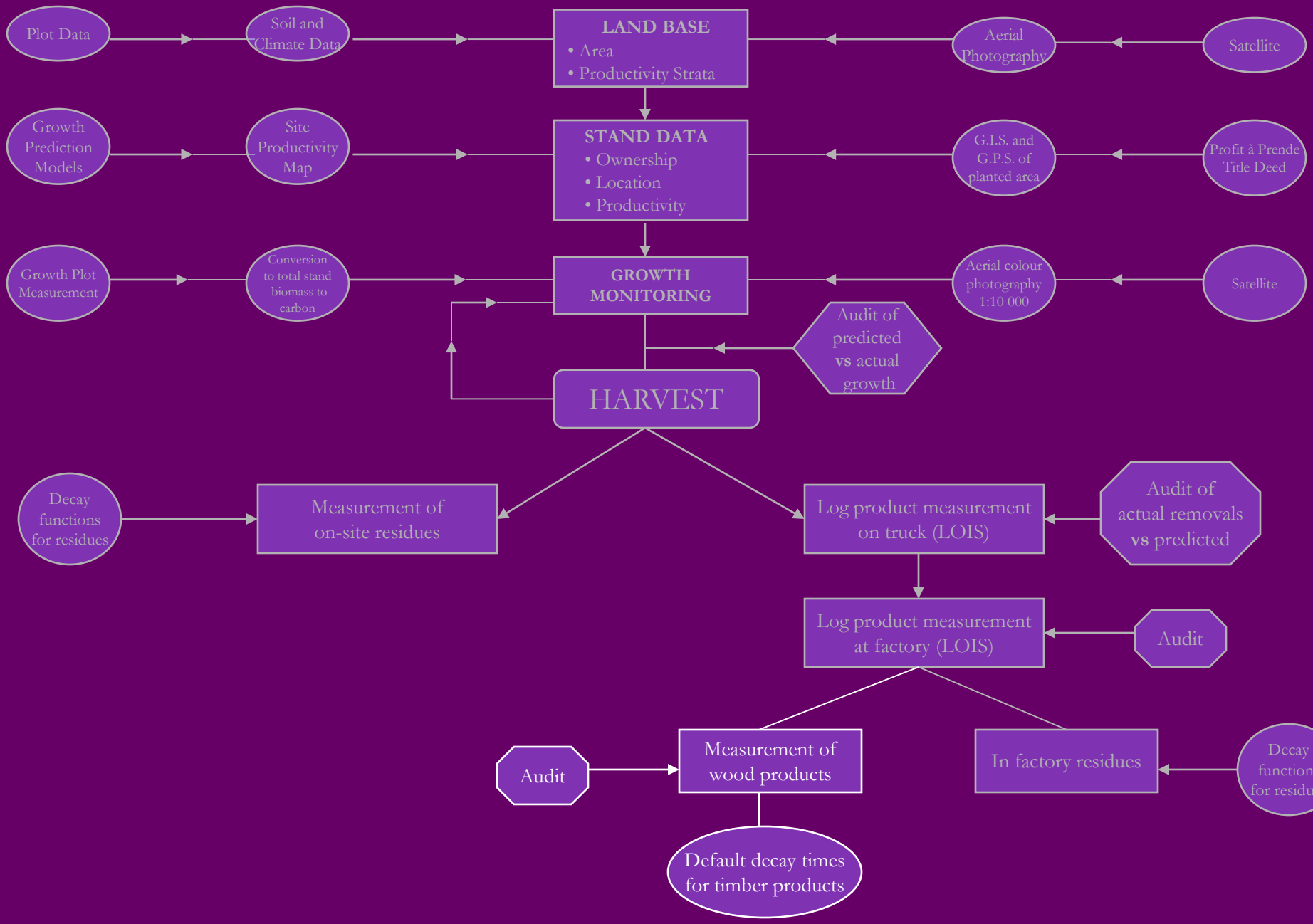
Decay functions for residues
Measurement of on-site residues
Log product measurement on truck (LOIS)
Audit of actual removals vs predicted
Log product measurement at factory (LOIS)
Audit
In factory residues
Decay functions for residues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Audit
Measurement of wood products
In factory residues
Decay functions for residues
Default decay times for timber products

LOG TIMBER RECEIVAL RECORD

(to be completed by Mill Owner/Manager and original forwarded to local CALM District office within 3 working day after end of calendar month

Buyers Name Wesfi Pty Ltd Month JUNE 19 98

Sawmill Welshpool

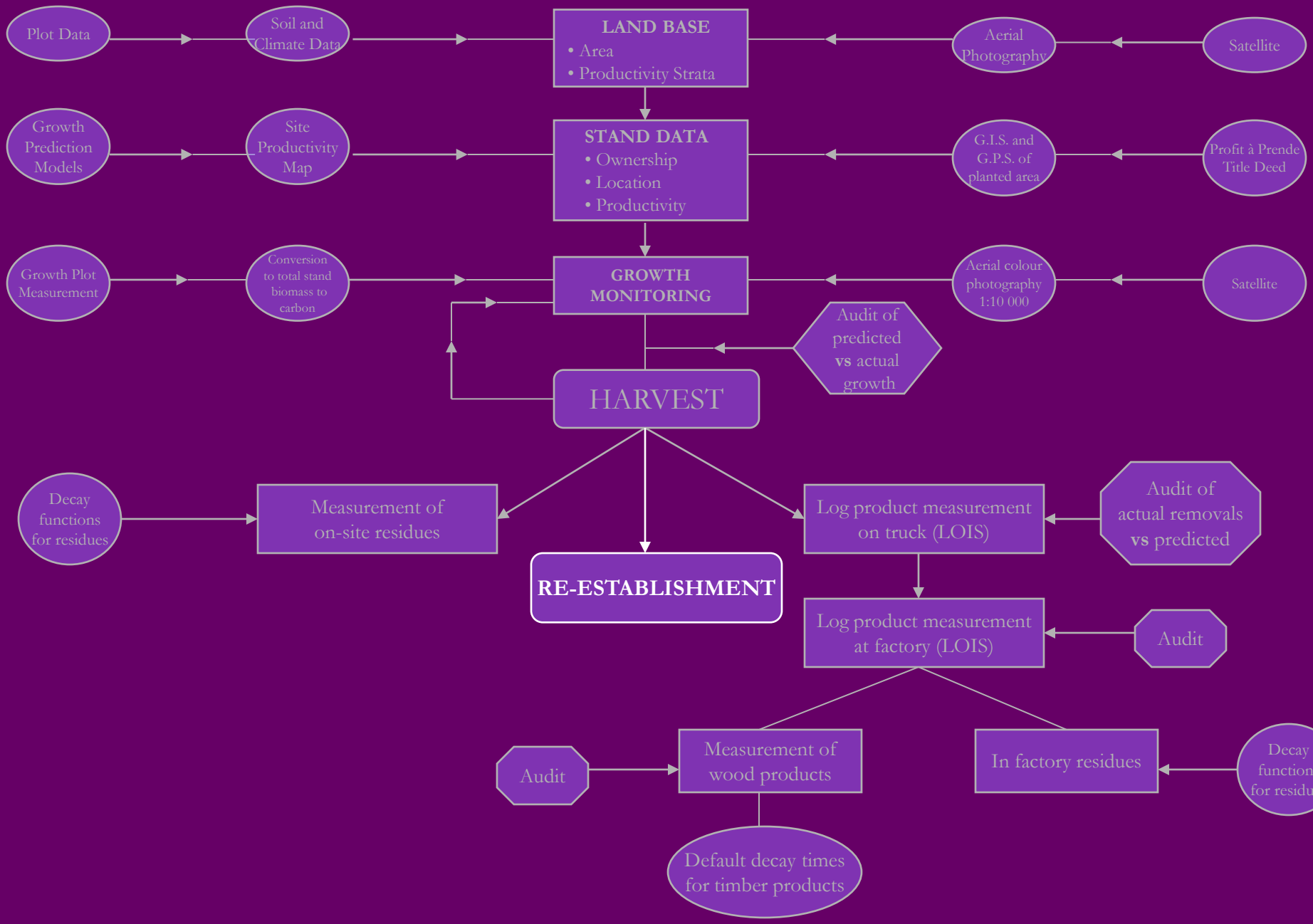
Delivery Date	Delivery Note No.	Product (species and type)	Quantity(✓) m³ ☐ No. of logs ☐ tonnes ☐	Delivery Date	Delivery Note No.	Product (species and type)	Quantity(✓) m³ ☐ No. of logs ☐ tonnes ☐
8/06/1998	S 073868	PinChip	✓ 29.00	10/06/1998	S 073702	PinChip	✓ 30.00
8/06/1998	S 073869	PinChip	✓ 28.30	10/06/1998	S 073703	PinChip	✓ 30.25
8/06/1998	S 073896	PinChip	✓ 30.25	10/06/1998	S 073704	PinChip	✓ 28.55
8/06/1998	S 073897	PinChip	✓ 28.05	10/06/1998	S 073754	PinChip	✓ 29.65
8/06/1998	S 073898	PinChip	✓ 29.30	10/06/1998	S 073755	PinChip	✓ 29.95
9/06/1998	S 073520	PinChip	✓ 30.05	10/06/1998	S 073756	PinChip	✓ 30.10
9/06/1998	S 073521	PinChip	✓ 32.50	10/06/1998	S 073757	PinChip	✓ 29.95
9/06/1998	S 073522	PinChip	✓ 27.65	10/06/1998	S 073785	PinChip	✓ 29.30
9/06/1998	S 073701	PinChip	✓ 30.55	10/06/1998	S 073786	PinChip	✓ 27.00
9/06/1998	S 073751	PinChip	✓ 28.35	10/06/1998	S 073787	PinChip	✓ 27.45
9/06/1998	S 073752	PinChip	✓ 29.30	10/06/1998	S 073873	PinChip	✓ 26.45
9/06/1998	S 073753	PinChip	✓ 29.80	10/06/1998	S 073874	PinChip	✓ 30.85
9/06/1998	S 073782	PinChip	✓ 29.50	10/06/1998	S 073875	PinChip	✓ 29.25
9/06/1998	S 073783	PinChip	✓ 32.05	11/06/1998	S 073677	PinChip	✓ 29.10
9/06/1998	S 073784	PinChip	✓ 29.85	11/06/1998	S 073678	PinChip	✓ 29.15
9/06/1998	S 073870	PinChip	✓ 29.25	11/06/1998	S 073679	RadChip	✓ 28.00
9/06/1998	S 073871	PinChip	✓ 30.80	11/06/1998	S 073705	PinChip	✓ 30.25
9/06/1998	S 073872	PinChip	✓ 28.70	11/06/1998	S 073706	PinChip	✓ 30.45
9/06/1998	S 073899	PinChip	✓ 29.20	11/06/1998	S 073707	PinChip	✓ 30.65
9/06/1998	S 073900	PinChip	✓ 29.90	11/06/1998	S 073758	RadChip	✓ 27.60
9/06/1998	S 073925	PinChip	✓ 31.60	11/06/1998	S 073759	RadChip	✓ 30.80
10/06/1998	S 073523	PinChip	✓ 25.90	11/06/1998	S 073760	RadChip	✓ 29.00
10/06/1998	S 073524	PinChip	✓ 31.90	11/06/1998	S 073788	PinChip	✓ 31.25
10/06/1998	S 073525	PinChip	✓ 32.30	11/06/1998	S 073789	PinChip	✓ 26.20
		Subtotal	714.05			Subtotal	701.20
						Monthly total	1415.25

NOTE: Deliveries ex private property to be underlined in *red*

RECORD OF FOREST OFFICERS' INSPECTIONS			Signatures	
Date	Particulars of Inspection and Results	Action Required	Forest Officer	Mill Manager

THIS BOOK TO BE AVAILABLE FOR INSPECTION BY FOREST OFFICERS DURING MILL WORKING HOURS

04738/11/91—250 Bks—S/9625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Forecasting, Monitoring and Verification of Carbon Flows in Tree Crops from Establishment to Product Decay