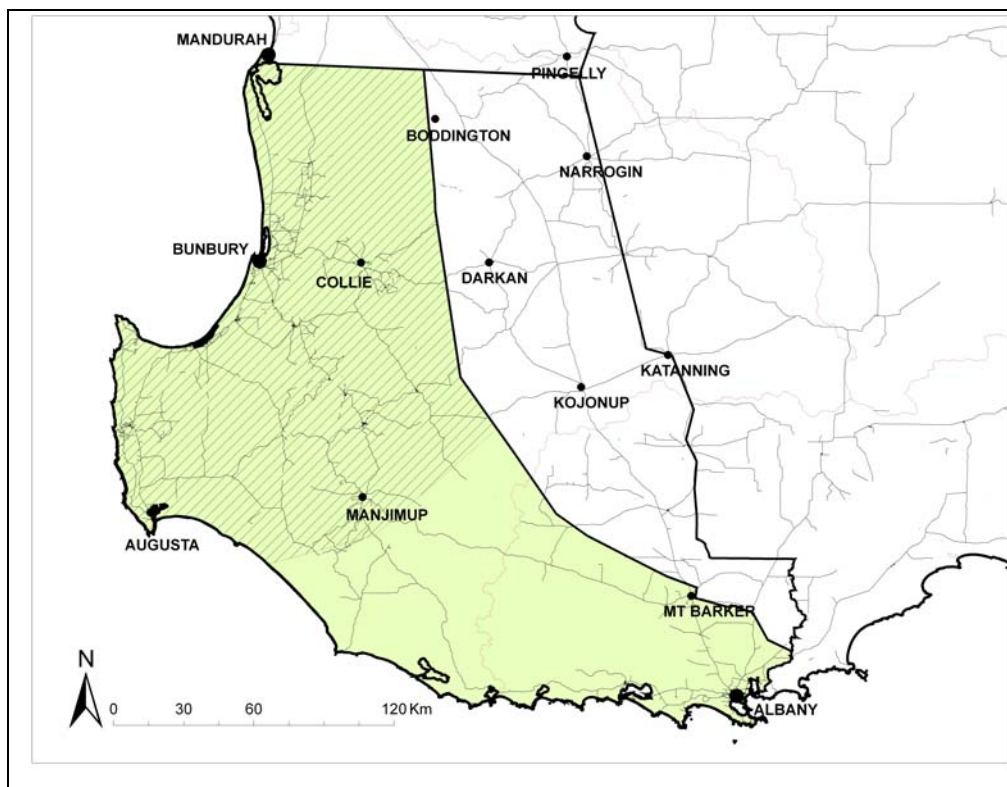


# Forest Products Commission's Tree Farming and Industry Development Plan: A 20 year vision

## Radiata Pine – South West



July 2006



## Turning the vision into reality

Forest Products Commission (FPC) has been planting trees for wood and environmental benefits for many years. The **Tree Farming and Industry Development Plans (“Development Plans”)** clarify FPC’s tree planting goals and direction. Individual plans have been created for four regional areas which make detailed recommendations for the planting of specific species, taking into account local conditions.

In September 2002, the Western Australian Government launched the Action Plan for Tree Farming, which outlined the Government’s intent to pursue environmental and timber supply objectives by planting trees. The Development Plans describe how FPC intends to realise the vision of the Action Plan for Tree Farming.

The FPC has used its knowledge as a plantation manager, together with other specialist information, to deliver the most comprehensive framework for regional forest-related industry development ever prepared for the State.

The Plan for the South West identifies an opportunity for the expansion of Radiata pine (*Pinus radiata*) plantations within an economic haul distance of Dardanup, where Western Australia’s largest pine sawmill and a particleboard plant are located. Increasing the planting of Radiata pine is necessary if these processing industries are to expand and stay world-competitive.

While supporting the expansion of Radiata pine, the Development Plan also recognises that private investments in growing and processing Tasmanian bluegum (*Eucalyptus globulus*) will continue to expand, bringing significant benefits to the South-west and State. The further expansion of the bluegum industry is making it difficult to expand the area of Radiata pine.

Beyond the economic haul distance of Dardanup, growing eucalypts for sawlogs may be undertaken without compromising FPC’s Radiata pine expansion goals. This may provide an attractive option for some land owners and at the same time build the critical mass of eucalypt sawlog plantings in the adjacent recovery catchment cell.

Other commercial tree species will be integrated with farming to benefit water, livestock and biodiversity as well as producing products that can be sold into existing and new niche markets.

Realising the vision of the Development Plans will require a coordinated effort across all levels of Government, the forest products industry, land owners, the private forestry industry, natural resource management (NRM) groups and other agencies.

## Responding to Comment

This Development Plan has been finalised by the FPC following an extensive consultation process with local communities, local and State Governments, natural resource management groups, and private industry and other stakeholders between May 2005 and January 2006.

FPC will review the direction of its Tree Farming and Industry Development Plans from time to time. Any comments on the Plans should be sent to the Manager of FPC’s Industry Development Branch at Locked Bag 888, Perth Business Centre, WA. 6849.

## Introduction

Western Australia has a proven track record in developing commercial plantations for local and regional forest products industries. Radiata pine and Maritime pine plantations developed over many years form the basis of a dynamic forest products industry in Western Australia.

Widespread planting of pines and bluegums on farmland since the 1980s is encouraging new forest product industries and delivering social and environmental benefits.

Radiata pine grown in the South West (see Figure 1) is the basis of a significant sawmilling and processing industry. The restructuring of the native hardwood sawmilling industry has hastened the trend towards Radiata pine becoming the dominant structural timber in Western Australia. This factor and the forecast growth in demand for structural timber provides a significant opportunity to expand the Radiata pine industry.



Growth in the total area of pine plantations has stagnated, in part because of the competition for land from other uses. If this trend continues it is likely that growth in local demand will lead to substantial imports and use of alternative materials for structural timber.

In addition to the growing demand for timber from traditional and emerging markets, worldwide pressure to reduce native timber harvesting provides a strong impetus for expanding WA's Radiata pine industry. A larger industry is more likely to be internationally competitive.

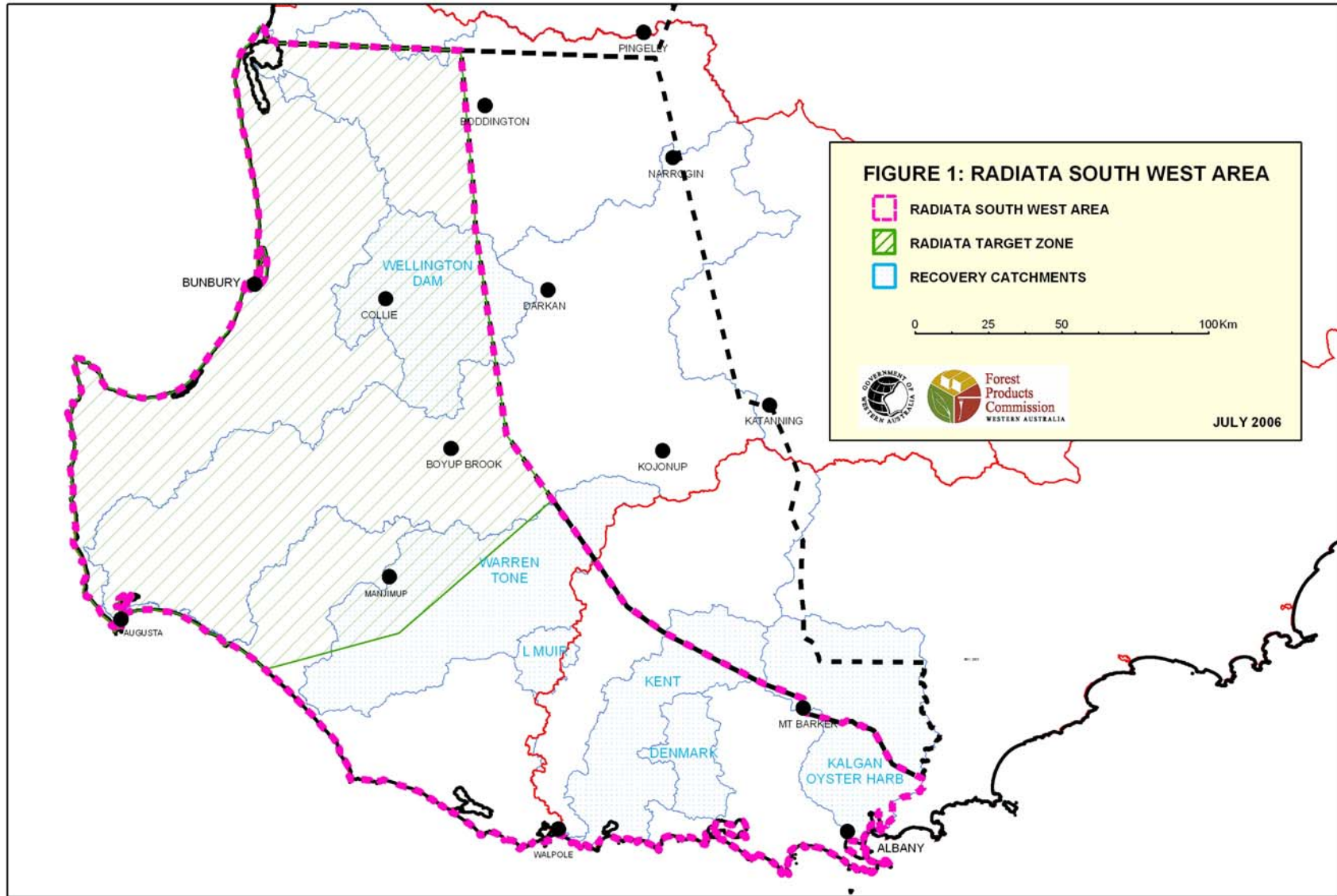
The Radiata pine industry in the South-west has an opportunity to expand the resource for local processing. This will not be an easy task given the competition for land from other industries and from the bluegum industry.

New tree plantings - whether Radiata pine or other species - will need to be integrated into the agricultural economy of the South West to deliver sustained economic and social benefits in an environmentally responsible way.

A coordinated effort is required and this will require broad industry and community support.

# TREE FARMING & INDUSTRY DEVELOPMENT PLAN

## RADIATA SOUTH WEST AREA



# The Opportunity

## Market and Industry Opportunities

The South West already supports a range of well integrated plantation product industries, including the State's largest pine sawmill and particleboard factory located at Dardanup. A summary of the existing plantation product industry in the south west is presented in Appendix 1.

Pine plantations have been established to meet the State's expanding demand for structural timber, but the rate of growth in the South West has stagnated in recent years. The substantial reduction of the harvest of native hardwood sawlogs (jarrah and karri) to 185 000 m<sup>3</sup> and a strong shift away from using native timbers for structural purposes has led to a gap between the supply of locally produced structural timber and predicted demand.

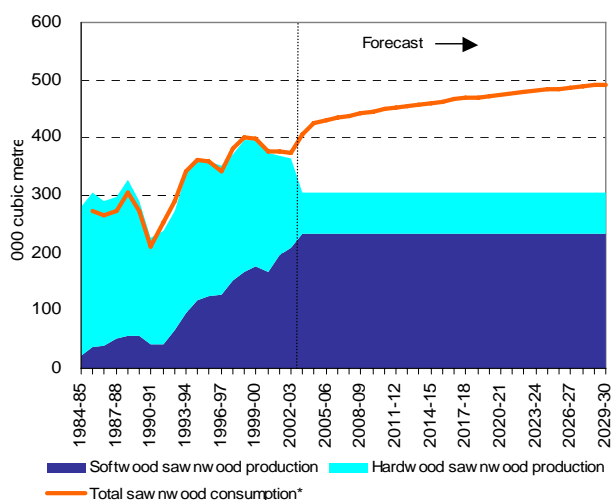


Figure 2: Actual & Forecast Sawnwood Trends for Western Australia

Radiata pine residue logs and mill waste from the pine sawmill are the main feedstock for producing particleboard near Bunbury. The Australian production and consumption of particleboard and medium density fibreboard (MDF) has been rising strongly

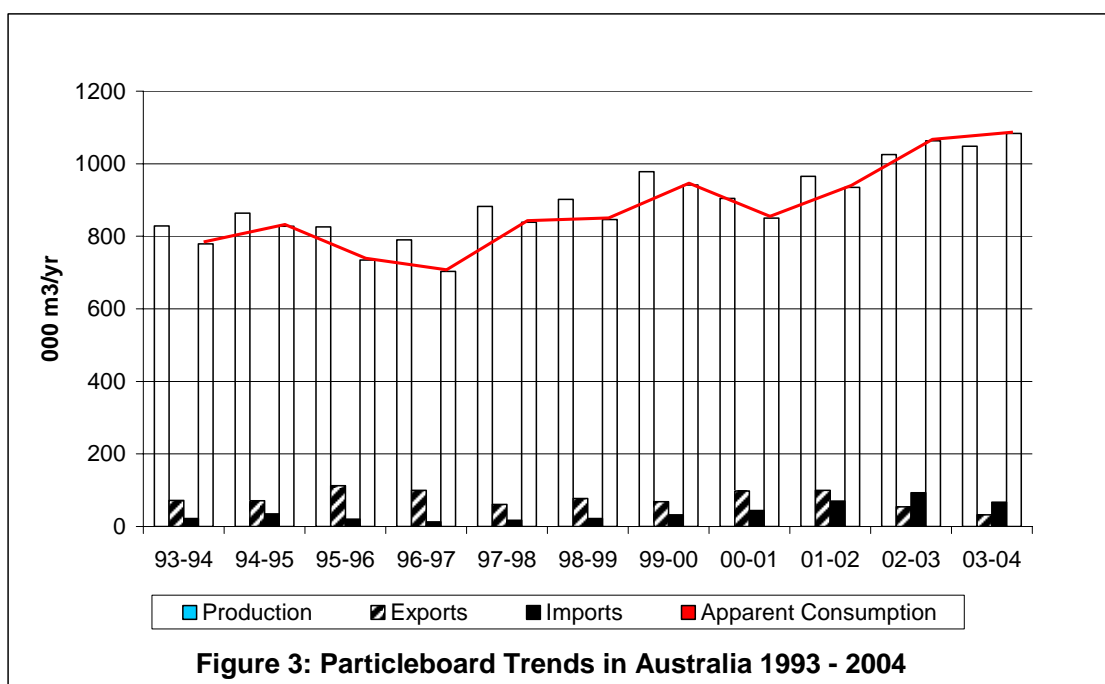
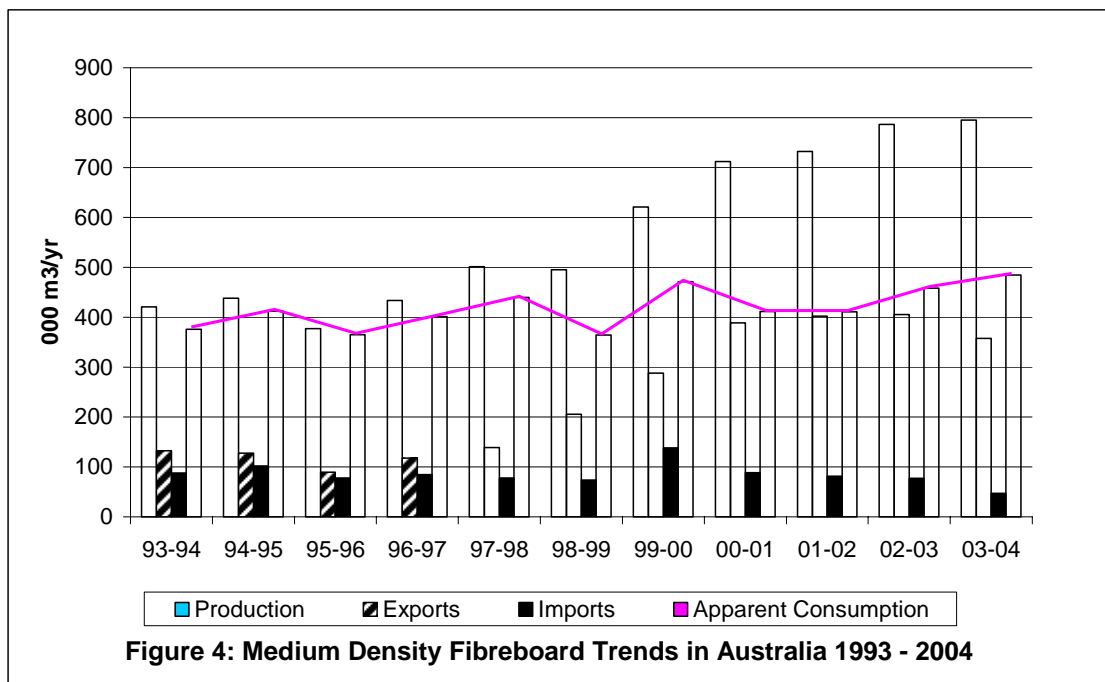


Figure 3: Particleboard Trends in Australia 1993 - 2004



Asian paper and pulp mills are expected to continue their demand for bluegum tree crops that were extensively planted during the 1980s and 1990s, and are now being exported as woodchips. The State supports the pine industry with a full range of processing and value adding. New processing opportunities currently identified for bluegum are based on engineered wood products and a pulp mill.

## Species

Radiata pine (*Pinus radiata*) is the key, or 'driver' species for this plan. Radiata pine has been proven suitable for the growing conditions of the region and achieves commercial growth rates on a range of the better soils (see Figure 5). Growers of Tasmanian bluegum look for similar soils and growing conditions.

Radiata pine is used to produce structural timber that is competitive in the construction industry with the residue suitable for particleboard and MDF production. It can also be peeled to produce LVL (laminated veneer lumber) and plywood. FPC's plans to expand pine plantings and establish another pine industry focal point in the Great Southern are on hold because of the rapid expansion of Tasmanian bluegum plantings.

Tasmanian bluegum is sought after within the pulp and paper manufacturing industries because of its desirable pulping qualities.

The region is also suitable for the growth of a range of support species. Two species with commercial applications being promoted by the FPC in the lower rainfall areas within and between the recovery catchments are Sydney bluegum (*Eucalyptus saligna*) and Sugar gum (*Eucalyptus cladocalyx*). Grown at wider spacings than in high rainfall areas and with high pruning, both species will produce high quality timber that can supplement the limited supplies of jarrah and karri.

Maritime pine (*Pinus pinaster*) has been planted as a support species and may continue to be planted where it can be grown within an economic haul distance of customers at Collie and Dardanup.

## Environmental Compatibility

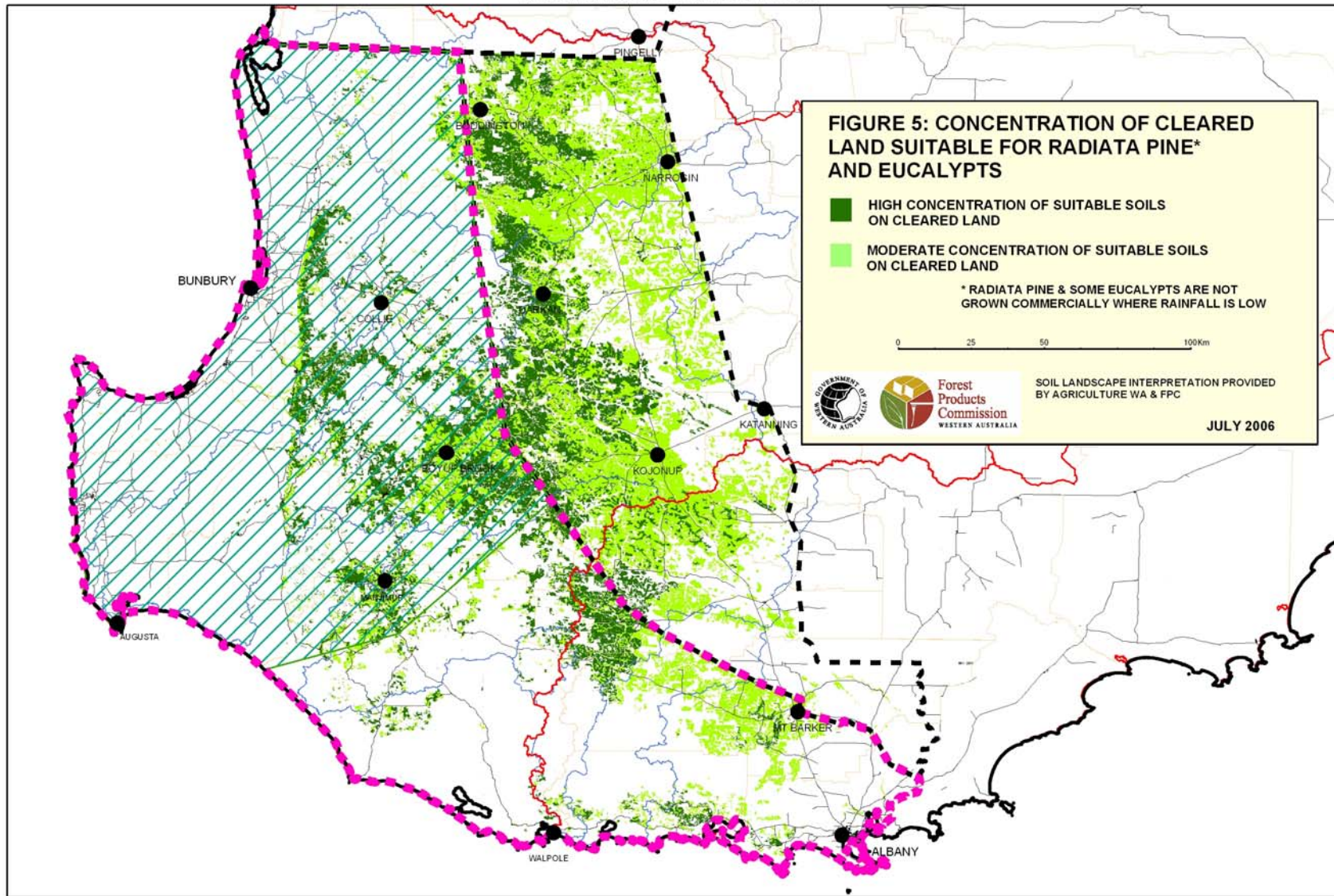
The risks from salinity in the South-west are not as serious as in some other parts of the State. Strategically planted trees can recover saline or high watertable areas and halt the movement of rising groundwater before it reaches critical levels. The South-west includes the key water catchments of Collie, Warren/Tone and Kent and several areas of high conservation value, including the Muir and Unicup lake areas where integrating trees with farming can limit dryland salinity and waterlogging as well as reduce stream salinity levels.

Trees are one of the key tools available to land managers to control the movement of water and nutrients into lakes and estuaries.

In many parts of the South-west, the impact of tree farming on water resources that are not saline will need to be recognised and managed. Compared with agricultural practices, tree farming requires low levels of fertiliser and pest control over a full rotation.

# TREE FARMING & INDUSTRY DEVELOPMENT PLAN

## RADIATA SOUTH WEST AREA



## Processing, Planting and Employment Targets

### Primary Product Target

It is estimated that planting 2000 additional hectares of Radiata pine per year over 20 years will supply sufficient resource to expand the existing sawlog mill at Dardanup and maintain its competitiveness. The additional structural timber produced can be sold to meet the expanding demand in WA.

Processing type	Current sizes		Future sizes* (2035)			Future hectares required
	Input (000 m <sup>3</sup> )	Output (000 m <sup>3</sup> )	Input (000 m <sup>3</sup> )	Output (000 m <sup>3</sup> )	Capital cost (\$AU million)	
Sawmill	400	200	800	400	130	80 000**

\* Internationally competitive size. Based on URS Forestry Internal Report 2003

\*\* Includes approximately 40 000 hectares of existing Radiata plantings

An expanding structural pine industry will be able to remain competitive and provide the platform for continuing to produce value added products (treated timber, furniture and joinery) in the future.

### Residue Product Options

More opportunities are emerging for residue products in a worldwide trend to maximise the value of timber harvesting commensurate with the growth in demand for reconstituted wood products. An expanded Radiata pine estate will provide the opportunity to expand the Particleboard plant or establish other wood products industries.

Processing Type	Current sizes		Future sizes* (2035)		
	Input (000 m <sup>3</sup> )	Output (000 m <sup>3</sup> )	Input (000 m <sup>3</sup> )	Output (000 m <sup>3</sup> )	Capital cost (\$AU million)
Particleboard plant	300	200	1,050	700	250

\* Internationally competitive size. Based on URS Forestry Internal Report 2003

Harvest and processing residues that cannot be economically made into wood products, could likely to be used for 'green' power generation near Bunbury and Albany.

## Employment

Expanding tree farming in the South-west has the potential to provide a major stimulus to employment opportunities in the area.

Based on the plantation target of 2000 additional hectares of Radiata pine per year for 20 years, and assuming that plantations are replanted after harvest, the following number of additional direct jobs could be created just in producing sawlogs and processing them into a kiln dried product.

	When	Jobs <sup>1</sup>
<b>Direct Employment (sawlogs)</b>		
Planting, tending, maintaining and harvesting <sup>2</sup>	by yr 1	20
	by yr 10	64
	by yr 20	100
Milling <sup>3</sup> (additional 400 000 m <sup>3</sup> /yr log input)	by yr 20	80 – 100
	<b>Direct employment by yr 20</b>	<b>180 – 200</b>
	<b>Indirect employment<sup>4</sup> by yr 20</b>	<b>360 – 400</b>
	<b>Total employment by yr 20</b>	<b>540 – 600</b>

<sup>1</sup> Jobs are full time equivalents additional to the current levels.

<sup>2</sup> Direct employment figures in plantation activities are from report by BIS Shrapnel. Employment rises steadily and plateaus when estate size is reached and harvesting and replanting are underway.

<sup>3</sup> Softwood milling includes kiln drying and dry product processing.

<sup>4</sup> Employment multiplier of 2.0

In addition, there would be additional employment in value adding and residue processing with a similar multiplier in the region.

## Implementation

One of the FPC's roles is to promote the forest products industry in Western Australia. In the South West, large commercial interests have a stake in the efficient growing and processing of Radiata pine and Tasmanian bluegum. However, the Commission recognises that various other groups such as State agencies, regional NRM groups and Local Government also have a stake in the introduction of large scale tree farming and in the development of associated industries.

To implement this Plan, the FPC will work with private industry and local interest groups to identify avenues to achieve target planting levels, which will deliver the benefits at a regional level and integrate those plantings with other land use objectives.

Because the area of Radiata pine has stagnated for more than a decade, considerable expansion of the Radiata pine resource is only likely if private industry and the State Government, through the FPC, work out ways to increase the profitability of growing Radiata pine. The price of land, long rotations, the low price of Radiata sawlogs and limited markets for residue logs are currently seen as significant barriers to private investment.

It is expected that funding for the implementation of other tree planting will come from a mix of sources including: the FPC's own planting; 'the share farming program; federal water quality funding (through the National Action Plan for Salinity and Water Quality); and private sector companies.



## Appendix 1 - Planting for the Future

### Planting Conditions for Driver Species (Radiata Pine)

The soil and climate of the area are suitable for the growing of Radiata pine, which requires sandy loams to gravelly clay loams of 2 - 3 m minimum depth (dependent on rainfall) in areas of rainfall of 650 mm or more. Figure 5 shows the distribution of soil landscape groups on cleared land that have a high or medium concentration of soils suitable for Radiata pine.

These conditions are also suitable for the growing of Tasmania bluegum.

As Figure 5 shows, this Plan covers about three and a half million hectares of the South-west corner of Western Australia from south of Perth to the east of Albany. Just over one million hectares of this area is cleared. The region supports a thriving and diverse economy based on mineral resources, and mixed agriculture including tree farms. Figures 1 & 5 show a Radiata Target Zone; the area within about a 150km haul from Bunbury and Collie where expansion of Radiata pine is most likely because it builds the existing industry. A review of the land types and land zoning has identified 108 000 hectares as suitable<sup>1</sup> and likely to be available for the planting of Radiata pine within this Target Zone.

	Hectares	% of total
Total area	3 470 000	
Cleared	1 170 000	34
• Land for Radiata pine or Tasmanian bluegum planting	171 000	4.9
• Land for Radiata pine or Tasmanian bluegum planting and in Target Zone	108 000	3.1

The area includes parts or all of the Shires of Murray, Collie, Harvey, Wandering, Boddington, Williams, Boyup Brook, Manjimup, Bridgetown-Greenbushes, Nannup, Kojonup, Cranbrook, Donnybrook-Balingup, Augusta-Margaret River, Busselton, Capel, Dardanup, West Arthur, Waroona, Plantagenet, Denmark and the Cities of Albany and Bunbury.

### Silviculture (forestry management practices)

Radiata pine is usually planted in a block formation at 1200 to 1500 stems per hectare. Trees are thinned at 12 years for particleboard and at 18 years for particleboard and sawlogs before the final harvest of larger sawlogs after 30 years.

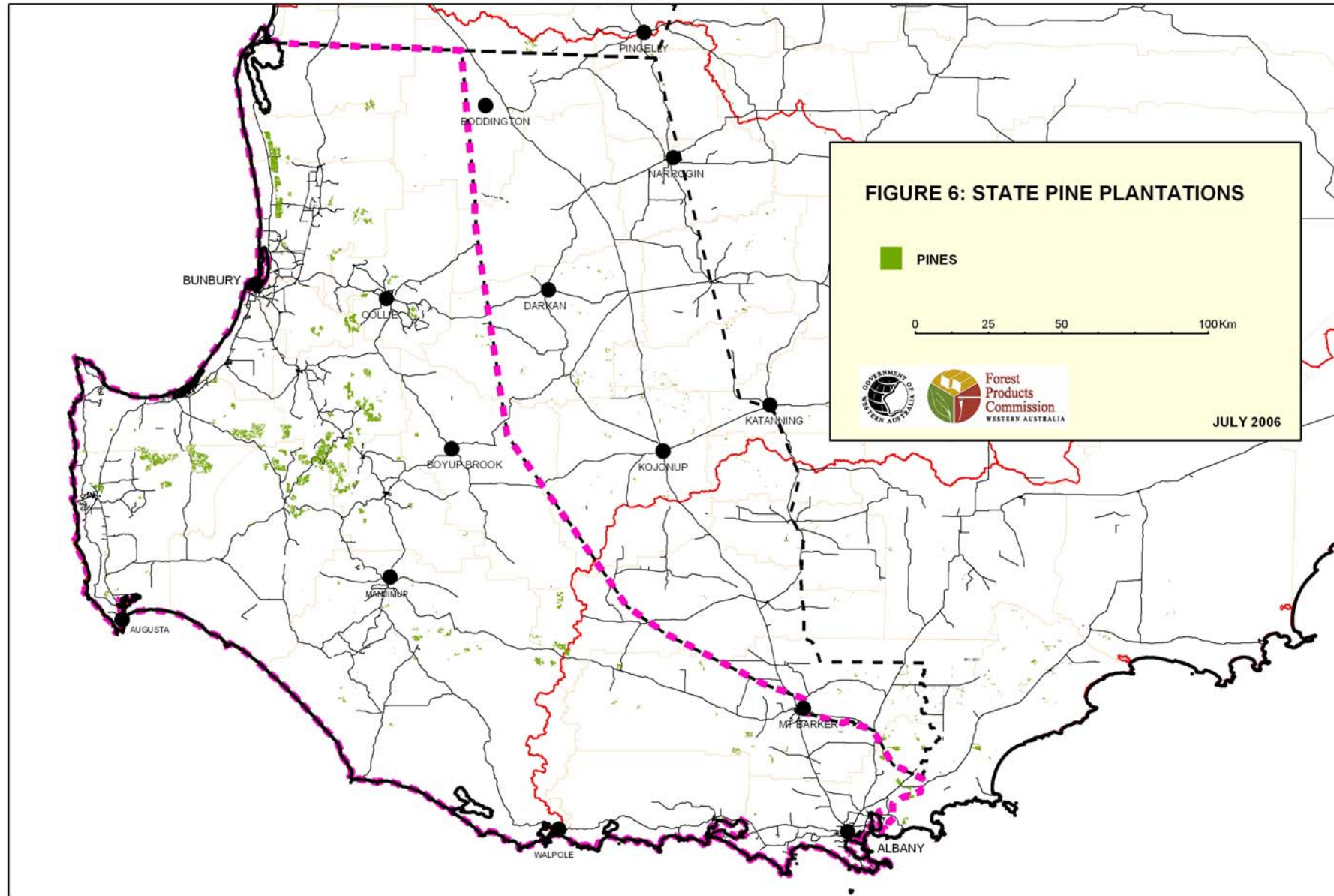
Tasmanian bluegum is commonly grown for woodchips in blocks at 800 to 1250 stems per hectare and harvested at age 10, but there may be opportunities for it to be grown in belts with a pruning program and thinning.

The silviculture applied to other species will vary.

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<sup>1</sup> Figure 5 shows a larger area having either a high or medium concentration of cleared land suitable for Radiata pine. The estimate of suitable area takes into account the distribution of unsuitable soils as well as the availability of land. Nearly a fifth of the estimated suitable and available area is in areas with a low concentration of suitable land.

# TREE FARMING & INDUSTRY DEVELOPMENT PLAN RADIATA SOUTH WEST AREA



## Appendix 2 - Setting the Scene

### Existing Plantations

The South-west is the most heavily planted tree farming region in Western Australia. More than 240 000 hectares of trees have already been planted in both private and Forest Product Commission-managed plantations. Figure 6 shows the distribution of FPC managed pine plantations.

Species	FPC(ha)	Private (ha)
Radiata pine ( <i>P. radiata</i> )	40 192	10 519
Maritime pine ( <i>P. pinaster</i> )	2 629	244
Tasmanian bluegum ( <i>E. globulus</i> )	100	184 417
Other eucalypts	454	1635
Other	207	0
<b>Total</b>	<b>43 582</b>	<b>196 815</b>

Sourced from CALM. Areas as of December 2004

### Infrastructure

The South-west region has a well established infrastructure base to support further development of the downstream processing of timber.

**Power** A 132 kV and a 66 kV line run south from Collie to Manjimup. The 132 kV line extends from Manjimup to Diamond chipmill (south of Manjimup) and west towards Augusta. The 66 kV line extends south from Manjimup to Quin nip.

A 132 kV line runs north from Collie along the eastern side of the jarrah forest. A 330 kV line runs more directly from Collie to Perth through the jarrah forest. Other lines of different sizes run north-south along the coastal plan between Bunbury and Perth.

A 330 kV line runs from Collie to the Kemerton sub-station. The Bunbury area is serviced by a number of 66 kV and 132 kV lines. Busselton and Margaret River are serviced by a 55 kV line running south from Bunbury.

Despite existing infrastructure, the development of significant new industry would need additional energy supplies, such as from coal or a renewable energy source, which would require major capital investment.

**Water** There are many public reservoirs across the South-west used for drinking water or irrigation. There are also significant underground water supplies that are partially used.

Large-scale capital investment would be required to provide water to any new significant industry developments.

**Rail** A goods and passenger rail system runs from Perth to Bunbury along the coastal plan with a well used good connection to Collie. A line from Bunbury to Manjimup is used regularly for woodchip transport, though there are maintenance issues on the section south of Greenbushes.

Roads	The South Western Highway from Perth to the south coast through Manjimup and the Albany Highway service existing industry. A road network east to west currently services existing industry, but there are local concerns about the social impact of trucks moving through local towns and the cost of road maintenance.
Port	Bulk loading is available via Bunbury and Albany. There are no container facilities at present, though this matter is being actively pursued for Bunbury.

## Existing & Potential Industry Opportunities

### Existing and in progress

Pine sawmill, Dardanup

Particleboard plant, Dardanup

Hardwood sawmills – Collie, Greenbushes, Manjimup, Pemberton, Nannup, Yarloop, Busselton, Great Southern

Pine sawmill at Collie (under construction)

Other pine sawmills - Pemberton, Mt Barker

Preservation treatment of rounds, Picton, Bridgetown, Mt Barker

Chip export from Bunbury (chips produced at fixed and field chippers)

Low grade pine log export from Bunbury

Chip export from Albany (chips produced at fixed and field chippers)

Small & mobile sawmills

### Potential

Substantially expand the Dardanup sawmill to remain world competitive

Expand the particleboard plant, Dardanup

Pulp mill

Export of pine woodchips and logs from Albany and Bunbury

Firewood

Bioenergy - renewable products such as a plantation residue to produce energy

Co-generation - supplementing existing energy sources with residue products

Figure 7 shows the major sawmill and timber processing facilities in Western Australia.

**Figure 7 Showing Major Sawmill & Timber Processing Facilities (printed separately as A3)**