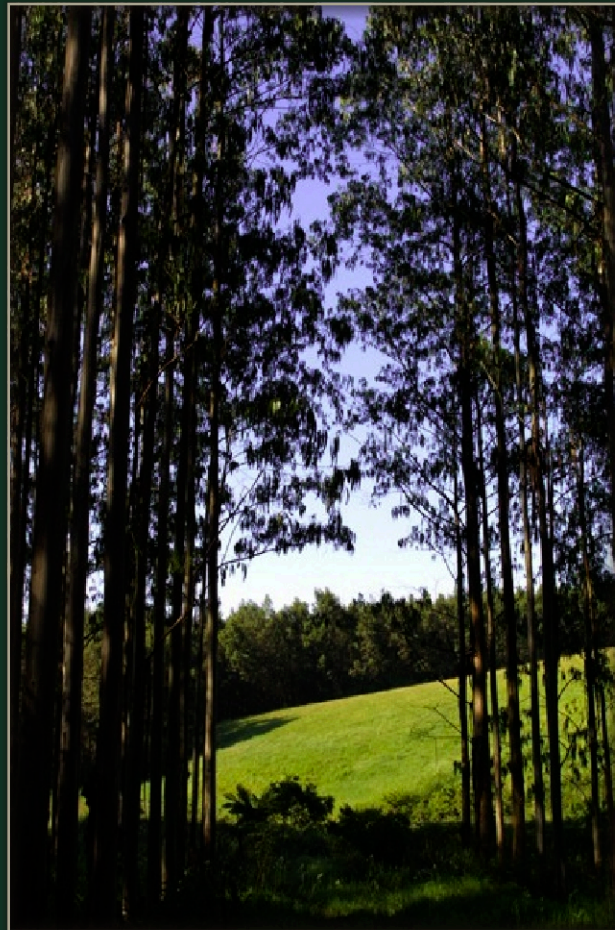


SUPPLY AND DEMAND
STUDY OF SOFTWOOD SAWLOG
& SAWN TIMBER
in South Africa



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ASSOCIATES

SUPPLY AND DEMAND STUDY
OF SOFTWOOD SAWLOG AND SAWN TIMBER IN SOUTH AFRICA

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1. BACKGROUND

South Africa's lumber milling industry is founded upon timber from intensively managed plantations of exotic Pines and Eucalypts. Some of these plantations are amongst the most productive in the world. The country's sawlog plantations produce high quality raw material. Growing conditions are favourable and with few exceptions management is efficient. Seventy-five percent of South African plantations are FSC accredited, which is amongst the highest percentage in the world. The sawn timber is used for a variety of purposes, but the national consumption in South Africa is very low at approximately 46 m³ per 1,000 people per annum compared with 421 m³ in the USA, 548 m³ in New Zealand and 136 m³ in South Korea.

The area under plantation softwood sawlog regime amounts to 480,667 hectares (ha) or approximately 35.6% of the total plantation area in South Africa. The rate of growth is approximately 11.2 m³ of sawlogs/hectare/annum on 25 to 35 year rotations. However, because of overfelling in the past, and a recent surge in demand for sawn timber and therefore sawlogs, there is concern about the ability of the resource to meet the expected demands. The purpose of this study is to address and quantify the shortage.

In 2001, the South African Lumber Miller's Association (SALMA) estimated the number of direct employees in the sawmilling industry from plantation to product at 113,000 made up as follows:

Table 1: Number of Employees

	No. of Employees
Sawlog Plantations	32,000
Transport of Sawlogs	2,000
Lumber Mills	23,000
Manufacturing	24,000
Roof Trusses and Joinery	11,000
Wooden Boxes and Containers	8,000
Other Wooden Products	13,000
TOTAL	113,000

1.1 ABBREVIATIONS

a.s.l.	Above sea level	MAI	Mean Annual Increment
COMPAS	Computerised Plantation Analysis System	MTO	Mountain to Ocean Forestry
DBSA	Development Bank of South Africa	SABS	South African Bureau of Standards
DWAF	Department of Water Affairs and Forestry	SAFCOL	South African Forestry Company Limited
FOB	Free on Board	SALMA	South African Lumber Miller's Association
FSC	Forestry Stewardship Council	SANS	South African National Standards
GFP	Global Forest Products	SEO	Salma Exports Organisations
KDF	Knock Down Furniture	SYP	Southern Yellow Pine
LCM	Low Cost Sawmills	TMA	Timber Marketing Agreement
LPI	Lumber Price Index		



2. EXECUTIVE SUMMARY

The study concludes that the current softwood sawlog resource of 480,667 ha is unable to sustain the demand for sawn timber and that South Africa is likely to become an importer, rather than an exporter of sawn timber. In view of shortages, sawlog prices and sawn timber prices are likely to rise. Sawn timber prices are also likely to be restrained by the price of sawn timber imports. Should this happen some remanufacturing may become unprofitable and factories may have to close or relocate closer to the source of timber.

In order to survive, sawmillers will need to focus on increasing the value being converted from the log i.e. grade/mix.

There is an urgent need to husband the existing resource and to expand new plantings.

- 2.1 South Africa is faced with a softwood sawlog resource which is unable to supply the demand for sawn timber for the markets that have been created. South Africa faces having to import rather than export sawn timber (Section 6).
- 2.2 Currently the sawlog shortage amounts to 1,438,500 m³ per annum or 27% of demand and is expected to increase to 53% at the end of the window period of 30 years, prior to any adjustments (Paragraph 6.1).
- 2.3 The reasons for demand exceeding supply are:
 - The growth in demand for sawn board has exceeded expectations, having doubled from 1,227,992 m³ in 1994 to 2,549,217 m³ in 2003 (Paragraph 3.6).
 - The sawn timber sales have increased on average by 8.6% per annum over ten years, but have accelerated to 17% per annum in the past three years (Paragraph 3.7).
 - Overfelling has occurred for various reasons. One reason being the exporting of sawlogs in order to ratchet up the local sawlog prices, as well as boosting turnover of the forestry companies concerned and increasing supplies to pulpmills, etc. (Paragraph 5.2.2).
 - Plantation fires have accounted for an annual loss of 1.5% per annum since 1991, but the incidence of fires has increased to 24,000 ha in 2002/03 or 2.2% per annum in the past three years (Paragraph 5.7).
 - New plantings of softwood for sawlogs have been negligible at less than 2,000 ha per annum on a resource of 480,667 ha. The reasons being a lack of planting permits and low sawlog prices which provide little investment incentive to the grower on a 25 to 35 year rotation (Paragraph 5.6).
- 2.4 The effects of overfelling can be seen in the decline of felling age and log size. The average age in 1983 was 14.14 years and had fallen to 11.25 years in 2003. Likewise, the volume of large 'd' class logs declined from 23% in 1987 to 12% in 2003 (Paragraph 4.4.2).
- 2.5 Planned removals of 73,000 ha out of sawlog plantations for environmental and economic reasons will reduce the current resource of 480,667 ha to ±407,000 ha (Paragraph 5.5).
- 2.6 There is serious concern amongst sawmillers, not only about the scarcity of the sawlog resource, but also because of the concentration of ownership of the resources as a result of the sale of Komatiland's 116,000 ha



of sawlog plantations to Bonheur, a partnership between Global Forest Products and a black empowerment company Imbokodvo Lembalabala. If this is added to Global Forest Products estimated existing 57,000 ha, it gives Global Forest Products control of 75.4% of the Mpumalanga/Limpopo resource and 43% of the total South African resource by area (*Paragraph 6.1*).

- 2.7 In matching the market to the harvest no account has been taken of the sawmill capacity simply because if the sawlogs are available, the existing sawmills will process them, as the sawmills are merely 'the link between the market and the tree' and will, within reasonable limits, adapt to the needs (*Paragraphs 4.2 and 4.5*).
- 2.8 The future harvest was determined by applying the MAI in each region to the ages and areas in each region, assuming the trees will be felled as they reach the optimum economic rotation of 28 years and without attempting to smooth the harvest (*Paragraph 6.1*).
- 2.9 The forecast was extended to take into account how best to close the gap between supply and demand and thereby protect both the market and the resource. This shows that the gap can be reduced from 27% to 21% at the start of the 30 year window period and from 53% to 12% at the end (*Paragraph 6.2.2*).
- 2.10 If the demand estimates in the first year of the study were reduced to the average sales since 1999 (from a sawlog equivalent of 5,250,000 m³ to 4,623,964 m³) the shortage is reduced from 1,079,550 m³ to 453,514 m³, or 10% (*Paragraph 6.2.3*).
- 2.11 The study illustrates how urgent and important it is to expand the resource (*Paragraph 6.2*).
- 2.12 In 1993, the DBSA commissioned a Forestry Strategic Development Plan for the Transkei and recommended the planting of a further 215,000 ha. This study was done in consultation with a number of community representatives (*Paragraph 6.2.2*).
- 2.13 It is important that further removals from the plantation area be avoided and that planting permits be granted wherever possible (*Paragraph 6.2.2*).
- 2.14 This study assumes that sawn timber exports will decline by 75% over the next two years (*Paragraph 6.2*).
- 2.15 The forecast escalates the current market at 2.75% per annum for the first five years and 2.5% per annum thereafter. The growth in the past 10 years has been 8.6% per annum (*Paragraph 3.6, 3.7 and 6.1*).
- 2.16 It has been assumed that Zimbabwe will increase sales into South Africa by 25,000 m³ per annum (*Paragraph 3.4.1*).
- 2.17 It has also been assumed that sawmillers will increase recoveries by 1.25% every five years to 54% from the present 47% by year 2033 (*Paragraph 6.2.2*).
- 2.18 The alternative supply of sawn timber probably would be from South America (Chile, Brazil or Uruguay). Initial indications are that mill run *P.elliottii* could be delivered to Cape Town at between R1,200/m³ and R1,400/m³ (*Paragraph 6.3*).
- 2.19 If the eventuality described in paragraph 2.18 occurs then there is no incentive for manufacturers of KDF. It is possible that local factories could relocate to Chile, Romania or even Poland. This would result in substantial job losses but would relieve pressure on the sawlog resource.



3. SAWN TIMBER MARKET

Structural timber at one time comprised over 60% of the market. It carried the SABS mark and was subject to the compulsory grading regulations which were officially disbanded in 2002.

In 1974 the MG UG (Merchantable and Utility Grades) specifications were replaced with strength related grades. These have subsequently been revised frequently and have become more stringent, to the point where the most common structural grade matches the Australian equivalent F grade (See Appendix E).

From 1992 to 2000 the rate of growth in lumber sales was 8.15% per annum. In 2001 exports began to play a very meaningful part and this resulted in a dramatic increase in the market of 17% per annum to 2003. In ten years the market has doubled. In 2002, Lumber Index interpolated the amount exported as lumber, together with the volume of lumber used by re-manufacturers (doors, KDF, shelving, etc.) for export to account for about 38% of the market, but this declined when the Rand strengthened in 2003. While the weaker Rand of 1996 to 2001 triggered this dramatic increase in the market, a strong Rand is naturally having the opposite effect. To offset this, the interest rates in February 2004 were at their lowest level for years, which is helping the building industry to use more timber now than ever previously recorded. Low interest rates are also having a positive impact on the local retail market for wooden products such as furniture, shelving, decking, doors, etc.

3.1 HISTORICAL SALES BY END USER (VOLUME)

Softwood lumber sales by end user, comparing 2001, 2002 and 2003, are as follows:

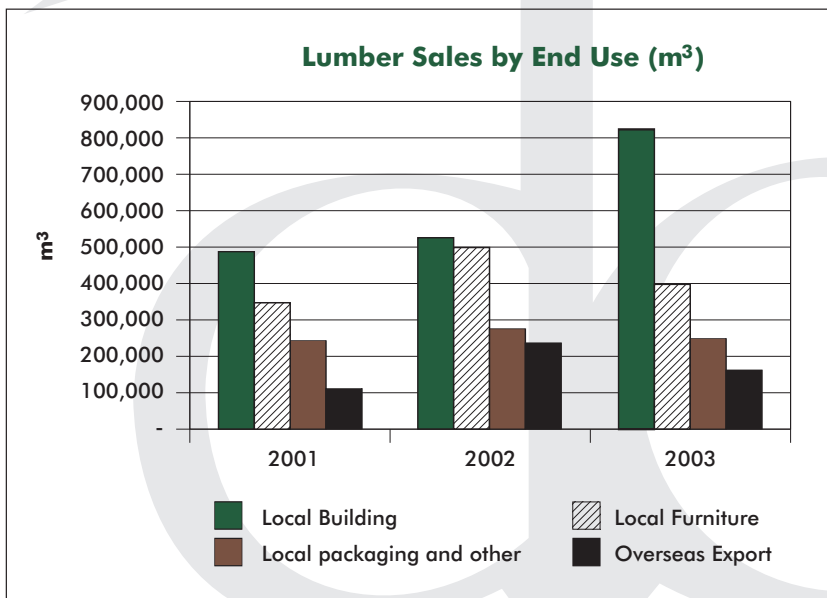


Figure 1: Lumber Sales by End Use (m³)

Source: Lumber Index



3.2 GRADES

Structural timber is still the most important part of the Formal Sawmills' market. While compulsory grading and price cartels have been removed, an estimated 80% of all structural timber is sold with the SANS (ex. SABS) mark.

At the other end of the market is crating grade, used largely for the manufacture of pallets, lug boxes for fruit, cable drums, etc. This accounts for approximately 250,000 m³, or 15.4% of the total annual market. An international phytosanitary specification is being introduced, which requires that this timber be heated or fully dried to the standard 14% moisture content. Any pallets used for export will have to comply which means that sawmills will have to have kilns. For the Formal Sawmills and some of the LCM's who have kilns, compliance to them will be no problem, but it will be for Bushmills and other LCM's.

Appearance grade timber is the other highly priced sector of the market next to structural timber and is made up of cosmetically attractive timber, mostly lumber sawn from the outer section of the logs, free of knots, stain, splits, etc. It comprises clear, semi-clear or furniture grade and accounts for about 17% of the market.

3.3 PRICES OF SAWN TIMBER

In 1994 the price cartel covered by the Timber Marketing Agreement (TMA) was dismantled in compliance with the requirements of the Competition Board. Since then prices have been negotiated between individual sawmills and their customers and generally negotiated on the availability of the particular grade and dimension or in the case of appearance grade, the cosmetic quality.

Prices for the various grades and dimensions are given in Appendix C. The price gradient is 1 : 3, e.g. R750/m³ for the lowest grade to R2,253/m³ for the highest grade. In the USA and Europe the gradient is much steeper at 1 : 6 favouring the better grades. We believe this will also be the trend in South Africa, particularly as the age of felling declines and therefore log size and quality, thereby creating a scarcity of high grade timber.

The closest comparative sawn timber to the South African Softwood is Southern Yellow Pine (SYP) whose price in the USA in November 2003 was R849/m³ compared with South Africa at R1,168/m³ on a comparable mix. For many years the South African softwood price trailed the SYP index, but recently the exchange rate has accounted for the rise in the Lumber Price Index expressed in Rands in South Africa compared to that of the SYP.



The Lumber Price Index (expressed in R/m³) trend has been as follows:

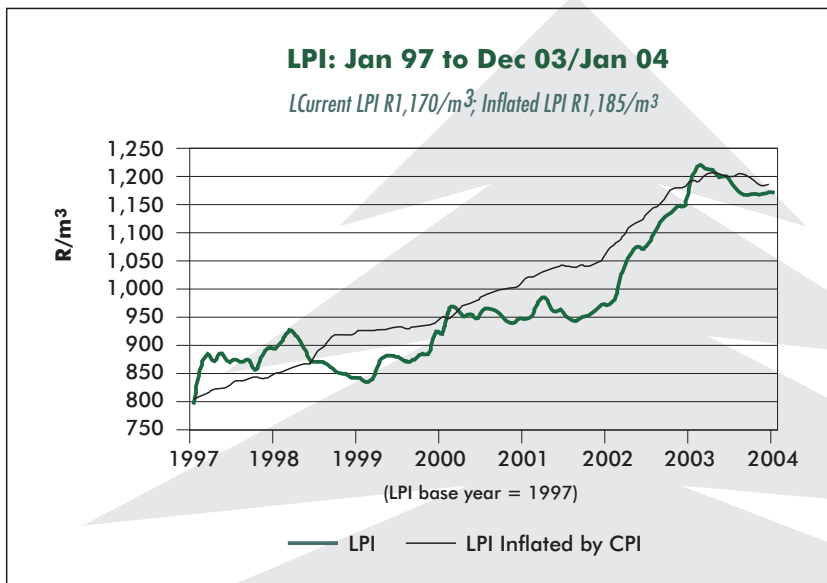


Figure 2: Lumber Price Index Trend

Prices have remained slightly below inflation rate.

3.4 NEIGHBOURING RESOURCES

3.4.1 Zimbabwe

Zimbabwe has supplied $\pm 85,000$ m³ of sawn timber to South Africa per annum for the past 10 years at prices of 5% to 20% lower than the equivalent grades in South Africa.

The Timber Producers Federation in Zimbabwe reported that the sale of sawlogs was 769,874 m³ in 2002/3. Zimbabwe has $\pm 73,118$ ha (excluding 2,000 ha of pulpwood), which at a sawlog yield of say 13m³ per hectare per annum has a potential sustainable yield of just under one million m³ per hectare per annum or more precisely 950,534 m³ per annum.

The age classes graphed below confirm the view expressed by experienced people that over-felling was done in the past. This is important because if there is to be a shortage, Zimbabwe is the closest alternative resource. Depending upon their local market and exchange rates, Zimbabwe could increase their supply of sawn timber to South Africa from 85,000 m³ to 110,000 m³ per annum.

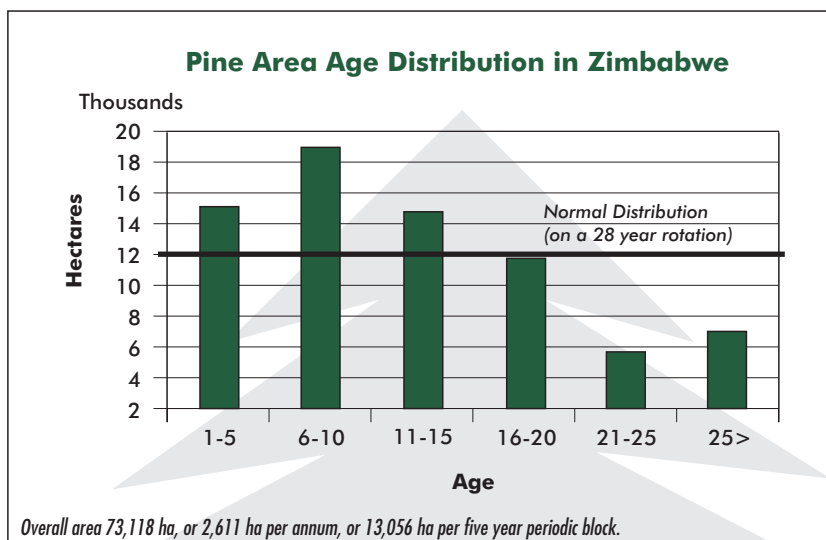


Figure 3: Pine Area age Distribution in Zimbabwe

3.4.2 Swaziland

Swaziland in the 1960's was part of the Natal Pine Producer's Agreement and has been accepted ever since as one of the South African sawn timber markets and as a result is included in this exercise. However, Piggs Peak plantation which consisted of 22,000 ha of Pine on a sawlog rotation has been converting to Eucalypts and it is understood that the remaining 9,000 ha Pine plantations will be phased out over the next three years. There are two other sawmills in Swaziland with their own resources of $\pm 4,700$ ha, which will generate 52,000 m³ of sawlogs per annum to sawmills that produce 25,000 m³ of sawn timber for the market.

The combined output into the South African market is expected to be as follows:

Years	Sawn Timber
2004-2007/8	41,000 m ³
2008 onwards	15,000 m ³

3.4.3 Namibia

Namibia is supplied by South Africa alone with peak demands of approximately 20,000 m³ sawn board per annum. At present the demand is thought to be at about 50% of peak.

3.4.4 Botswana

The Botswana market, which normally absorbs approximately 90,000 m³ per annum and used to be supplied by South African sawmills, is now supplied largely by the Zimbabwean sawmills.



3.5 EXPORTS

Since the closure of the TMA by the Competition Board in 1994, temporary relief was given in the form of concessions to subsidise exports with a levy on sawn timber sales into the local market and the establishment of the SALMA Exports Organisation (SEO). This however fell away two years later and the sawn timber overseas exports, as published in Lumber Index, have been:

Table 2: Export Volumes

Year	Exports per annum (m ³)
1995	49,675
1996	47,276
1997	51,610
1998	66,441
1999	121,828
2000	105,748
2001	115,349
2002	238,159
2003	163,088

The prices obtained in February 2004 were:

Table 3: Export Prices and Monthly Volumes

Country	Dimension	Grade	Monthly Volume (m ³)	FOB Price (R/m ³)
Australia	n/a	XXX	125	818
Australia	n/a	Furn	44	1,546
Australia	n/a	Furn	42	1,746
Australia	n/a	Ind	13	742
Australia	n/a	Struc	277	1,271
China	n/a	XXX	43	630
China	n/a	CL	259	1,001
China	n/a	Ind	207	719
China	n/a	Struc	487	768
China	38x76/152/228	S5	80	900
Europe	38mm	S CL	80	1,900
Hong Kong	n/a	XXX	15	583
Hong Kong	n/a	CL	97	1,183
Hong Kong	n/a	Ind	83	825
Hong Kong	n/a	Struc	209	808
Malaysia	n/a	Ind	2	725
Malaysia	n/a	Struc	158	725
Mauritius	n/a	XXX	4	1,060
Mauritius	n/a	Ind	229	1,083
Mauritius	n/a	Struc	24	1,062
Netherlands	n/a	Furn	43	2,029
Reunion	n/a	Ind	554	1,315



Country	Dimension	Grade	Monthly Volume (m ³)	FOB Price (R/m ³)
Reunion	25x228	Mill run	150	1,300FAS
Spain	n/a	CL	50	1,477
Spain	n/a	Ind	113	1,450
Spain	n/a	Struc	442	1,124
Sri Lanka	n/a	CL	40	1,972
Sri Lanka	n/a	Ind	168	817
Sri Lanka	n/a	Struc	30	822
Taiwan	n/a	XXX	121	631
Taiwan	n/a	Struc	18	818
Taiwan	n/a	CL	40	1,850
Taiwan	25x76/114/152	CL	40	1,850
USA	n/a	CL	163	1,371
USA	n/a	Furn	41	1,506
USA	n/a	Furn	3,773	812
Vietnam	25x76-125	CR	120	715

The exchange rate on 1st February 2004 was US\$ = R6.705

3.6 HISTORICAL SALES

The total volume of sawn timber sold over the past ten years is summarised as follows:

Table 4: Sawn Timber Sales Per Annum (m³)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Formal	1,227,992	1,206,765	1,157,187	1,209,901	1,131,346	1,151,448	1,169,315	1,188,085	1,543,220	1,624,297
Informal		438,684	488,262	435,548	300,000	653,599	653,599	653,599	707,500	839,920
Zimbabwe					67,773	71,759	71,759	71,759	85,000	85,000
TOTAL	1,227,992	1,645,449	1,645,449	1,645,449	1,499,119	1,876,806	1,894,673	1,913,443	2,335,720	2,549,217

Sawn timber sales have doubled in the last ten years and now exceed the capacity of the plantations to meet that demand on a sustainable basis.

The factors that could affect the demand for sawn timber in the future are:

- The exchange rate and the non-profitability of sawn lumber exports.
- The exchange rate and effect on the re-manufacturers with margins threatened as a result of the presently strong Rand (as at 1 February 2004: US\$ = R6.705, British £ = R12.5169, Euro = R8.42349).
- The price of sawlogs and the effect that this will have on the price of sawn timber and downstream products.
- The price of pulp on world markets and its effect on the price and demand for smallwood for pulping, thereby draining logs away from LCM's and Bushmills.
- Local interest rates and the effect on the building industry and demand for timber products.
- The extent of forest fires in the future.



3.7 PROJECTED DEMANDS

The volume of sawn timber produced has increased on average by 8.6% per annum over the past 10 years (including exports).

Various economists were consulted (including the economics division of one of the major banks) in order to get a view of the market growth of sawn timber over the next 30 years. The following factors were taken into account:

- The building industry is absorbing more sawn timber than ever before, but it is questionable whether this level of building activity can be sustained.
- The price of sawlogs in South Africa is likely to rise in keeping with log prices elsewhere in the world and is likely to accelerate as a result of the shortages. This may make sawn timber and remanufactured products less competitive on international markets and thereby restrict demand.
- Sawn timber prices will be contained relative to competing materials e.g. plastic, fibreglass and steel.

The forecast of the market growth for sawn timber used in establishing the overall future demand is a 2.75% increase per annum on the average sales over the past two years i.e. on 2,350,000 m³ for five years and 2.5% per annum thereafter.

Possible methods and factors that will bring about a reduction in the demand for softwood sawlog plantations in South Africa are dealt with in *Section 6* of this report.

Assumptions in the Projected Sawn Timber Demand

- i The base has been reduced from 2,462,000 m³ sold in 2003 to 2,350,000m³, which is an average of the 2002 and 2003 sales volumes.
- ii Current sale volumes of sawn timber will increase at the rate of 2.75% for five years and thereafter by 2.5% per annum (historical 8.6% per annum).
- iii The market forecast excludes Zimbabwe, but includes Swaziland.
- iv Peeler log demand escalates at the same rate as sawn timber.
- v Recovery rates will improve every five years by at least 1% per annum from the current 47% to 51% in 2024 (average for Formal, LCMs and Bushmills). A second scenario in *Paragraph 6.2* assumes an increase in recovery of 1.25% every five years.
- vi Export of logs ceases with immediate effect.
- vii Swaziland has been responsible for delivering 41,000 m³ per annum, but this will be reduced to 15,000 m³ with effect from 2008.



Table 5: Summary of Demand for Sawlogs (expressed in '000 m³)

Year		Sales (‘000 m ³)	Recovery (%)	Roundlog Equivalent (‘000 m ³)	Peeler Logs (000’ m ³)	TOTAL Required (‘000 m ³)
2004	1	2,350	47	5,000	250	5,250
2005	2	2,415	47	5,138	257	5,394
2006	3	2,481	47	5,279	264	5,543
2007	4	2,549	47	5,424	271	5,695
2008	5	2,619	47	5,573	279	5,852
2009	6	2,685	48	5,593	286	5,879
2010	7	2,752	48	5,733	293	6,026
2011	8	2,821	48	5,877	300	6,177
2012	9	2,891	48	6,024	308	6,331
2013	10	2,964	48	6,174	315	6,489
2014	11	3,038	49	6,199	323	6,522
2015	12	3,114	49	6,354	331	6,686
2016	13	3,191	49	6,513	340	6,853
2017	14	3,271	49	6,676	348	7,024
2018	15	3,353	49	6,843	357	7,200
2019	16	3,437	50	6,874	366	7,239
2020	17	3,523	50	7,045	375	7,420
2021	18	3,611	50	7,222	384	7,606
2022	19	3,701	50	7,402	394	7,796
2023	20	3,794	50	7,587	404	7,991
2024	21	3,888	51	7,624	414	8,038
2025	22	3,986	51	7,815	424	8,239
2026	23	4,085	51	8,010	435	8,445
2027	24	4,187	51	8,211	445	8,656
2028	25	4,292	51	8,416	457	8,873
2029	26	4,399	51	8,626	468	9,094
2030	27	4,509	51	8,842	480	9,322
2031	28	4,622	51	9,063	492	9,555
2032	29	4,738	51	9,290	504	9,794
2033	30	4,856	51	9,522	517	10,038

NOTE: The total estimated requirement is used in the Supply and Demand projection in Section 6.



4. SAWMILLING

Sawmilling has had a chequered career in South Africa. In 1988 there were 188 sawmills and today there are 45 formal softwood sawmills and two formal hardwood sawmills left. However, there are approximately 106 low cost (low capital) softwood mills (LCMs) and some 230 bushmills. From 1960 to 1990 the industry suffered from isolation and the ills of price cartels and it was generally very inefficient. Today the 45 mills produce more than the 188 mills did in 1988. The softwood sawlog area accounts for 68% of the total softwood area, the balance being devoted to pulpwood production.

4.1 DEFINITIONS OF DIFFERENT TYPES OF SAWMILLS

Definition of a Formal Sawmill: Log intake of not less than 15,000 m³ per annum, increasing to the largest mill in the country of ±250,000 m³ per annum. These mills dry the lumber and supply SANS (SABS) grade, structural and appearance grade timber. They are location bound, operate throughout the year and supply 66% of the sawn timber market.

Definition of a Bushmill: These mills are highly mobile, often moving to burnt plantations. They usually supply the local community with wet or air dried timber at a low price and also produce pallet and cable drum timber for the nearest market and account for 7% of the market.

Low Cost Mills (LCM's): These are mills which have been upgraded from Bushmills, have become location bound and work throughout the year, normally having kilns and serving the appearance grade market with some of their production. They accounted for 27% of the market in 2003. They often use smallwood and 'a' class logs.

The Origin of the Supply by Sawmill Category in 2003 was:

Table 6: Sawmill Volumes Produced

Type of Softwood Sawmill	Volume Produced 2003 (m ³)	Sawlog Equivalent 2003 (m ³)
Formal Sawmills	1,624,297	3,383,952
Low Cost Mills	664,920	1,445,478
Bushmills (estimate)	175,000	417,000
TOTAL	2,464,217	5,246,430



The Sawmill Market Share by Region Compared to the Production by Region is:

Table 7: Sawmill Market Share by Region

Region	Market %	Production %
Gauteng	30.6	-
Mpumalanga, Limpopo & NW	9.7	54.2
KwaZulu-Natal	25.6	18.4
Western/Northern Cape	13.6	11.9
E.Cape, S Cape & Border	7.5	15.5
OFS & Lesotho	1.5	-
Botswana, Namibia & Neigh. Territories	2.3	-
Overseas Exports	9.2	-

NOTE: As the price is based on a delivered price, surpluses in one region are balanced by exporting, at the miller's expense, to the next region.

4.2 GEOGRAPHICAL DISTRIBUTION OF PRODUCTION BY SAWMILL CATEGORY

Table 8: Geographical Distribution of Production by Sawmill Category

Region	Formal		LCMs		Bushmills		TOTAL	
	No. of Mills	Approx. Volume Produced (m ³)	No. of Mills	Approx. Volume Produced (m ³)	No. of Mills	Approx. Volume Produced (m ³)	No. of Mills	Approx. Volume Produced (m ³)
Mpumalanga, Limpopo & NW	22	956,000	44	309,000	45	34,200	111	1,299,200
KwaZulu-Natal	11	265,000	26	168,000	40	30,400	77	463,400
Western/Northern Cape	6	226,000	17	52,000	25	19,000	48	297,000
E.Cape, S Cape & Border	6	255,000	19	98,600	120	91,300	145	444,900
TOTAL	45	1,702,000	106	627,600	230	174,900	381	2,504,500

4.3 SAWMILL CLOSURES: FORMAL AND LOW COST SAWMILLS

As set out in Table 9, over the past year, two Formal Sawmills and at least two Low Cost Mills have closed, which accounts for 101,860 m³ sawn timber production. In each of these cases the closures were due to a shortage of sawlogs. To offset this, the Yorkcor group reopened two mills that had been closed, accounting for a sawn timber production of 36,110 m³.

Table 9: Sawmill Closures

Sawmill	Closure Date	Approximate Annual Production (m ³) – output	Reason for Closure
Polela (Steinhoff)	2003	23,000	Shortage of logs.
Straalhoek (Steinhoff)	2003	9,260	Shortage of logs, resulting from fire.
Kwambonambi (Mondi/Versitrade)	2003	28,200	Log supply terminates in 2007 – liquidated.
Clan Sawmill (Sappi)	2003	41,400	Overfelled their 14,000 ha plantation – out of sawlogs.
Total log intake ± 216,700 m ³ p.a.		101,860	



A further nine sawmills, employing approximately 700 people and accounting for 323,000 m³ of sawn timber could close within five years as a result of a shortage of sawlogs.

4.4 SAWLOG PRICES AND SAWLOG MIX

Log prices were originally (circa 1945) determined by the Department of Forestry using the log price formula according to the log classes as they exist today. The log classes were developed to match the demand for different board widths used for construction i.e. 'a' class to provide 76 mm; 'b' class 114 mm; 'c' class 152 mm and 'd' class 228 mm. Structural timber had to be longer than 3.0 m. The longs were classified by a '2' and the shorts (<3.0 m) by a '1' after the log class, e.g. 'b1' or 'b2', etc.

With the exception of Brazil, South African sawlog prices are the lowest in the world. The more recent price history, per log class, is given in the table below:

Table 10: Average Log Prices Delivered at Roadside (R/m³)

Log Class	1993	1994	1995	1997	1998	2000	2001	2002	2003
a	24	27	31	60	66	70	85	90	104
b1	34	40	46	55	60	64	110	117	125
b2	61	74	85	92	102	108	135	143	143
c1	51	61	72	81	89	94	120	127	165
c2	91	109	129	144	159	168	145	154	198
d1	69	83	98	113	124	132	125	132	210
d2	107	129	153	176	193	205	175	186	249

Log prices prior to 2000 were set by SAFCOL as they were by far the largest producers of sawlogs, and their prices became the benchmark for other growers. Over the past three years log prices have been more flexible with higher prices being paid by some sawmillers as can be seen in Table 11, as at September 2003:

Table 11: Industry Average Log Prices Delivered at Roadside (R/m³)

Log Class	Average of 3 Lowest Prices R/m ³	Industry Average R/m ³	Average of 3 Highest Prices R/m ³
a	82	104	129
b1	99	125	149
b2	126	143	176
c1	115	165	213
c2	169	198	243
d1	143	210	280
d2	206	249	300

Industry Average Roadside Price of Sawlogs:

R169/m³

Source: Intermill Comparison

It is interesting to note that of the 28 formal softwood mills in the study, five of the most profitable mills pay the highest log price.



Table 12 illustrates how log size has been on the decline since 1987. The average rotation age has undoubtedly declined, but factual information of clearfelling age is not available. There is no doubt that the 30–35 year rotation of the past is now closer to 25 years. At current prices the optimum financial rotation is approximately 28 years, which has been used for forecasting the future harvest.

Table 12: Historical Log Mix by Percentage Per Class

Thin end Diam. (cm)	Class	1987 (%)	1989 (%)	1991 (%)	1993 (%)	1995 (%)	1996 (%)	1997 (%)	1998 (%)	1999 (%)	2000 (%)	2001 (%)	2002 (%)	2003 (%)
13 - 17.9	a	3.5	2.8	2.9	6.6	7.9	4.6	4.2	5.0	4.1	3.8	2.7	6.6	8.6
18 - 25.9	b1	6.9	8.9	7.9	12.5	17.1	13.7	12.5	12.7	9.7	7.3	7.1	11.9	14.5
18 - 25.9	b2	29.0	26.4	26.8	26.0	20.8	24.0	28.9	27.4	28.4	26.4	23.9	29.0	28.9
26 - 33.9	c1	4.4	5.5	3.7	7.6	8.2	5.3	6.1	7.1	7.0	6.5	8.5	8.8	8.8
26 - 33.9	c2	33.1	33.0	35.9	28.0	23.5	28.7	30.8	30.6	32.4	32.7	34.9	30.9	27.1
34 >	d1	2.3	3.2	1.8	4.5	11.2	9.4	4.4	2.8	3.2	4.9	7.0	2.6	2.8
34 >	d2	20.8	20.2	21.0	14.8	11.4	14.3	13.2	14.5	15.2	15.9	15.9	10.2	9.3

Source: *Intermill Comparison (sample size approx 72% of the formal sawmilling sector)*

NOTE 1: Since 1987 the percentage of 'd' class logs has declined from 23.1% to 10.2%

NOTE 2: With a decline in the size of logs, board widths in excess of 228 mm have been increasingly in short supply (228 mm boards are used mainly for scaffolding and resawing into purlins; 50mm x 76mm).

4.5 CAPACITY

The capacity of sawmills is not an issue and is dealt with in Paragraph 4.2. If the logs are there, the sawmills will process them whether this means capital for expanding and upgrading sawmills, extending working hours or even the number of shifts.

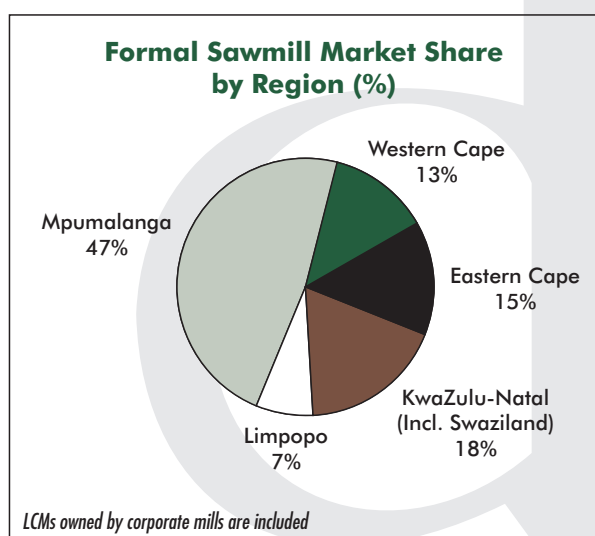


Figure 4: *Formal sawmill Market Share by Region*

Source: Crickmay & Associates

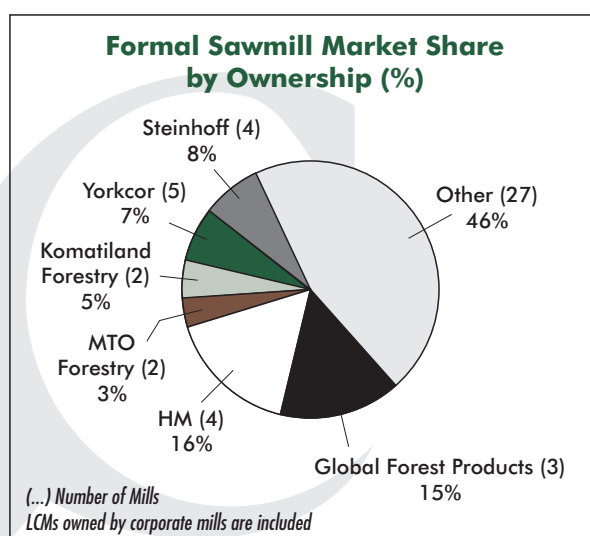


Figure 5: *Formal Sawmill Market Share by Ownership*

Source: Crickmay & Associates



5. THE RESOURCE

The softwood sawlog resource is confined to sites with a rainfall in excess of 750 mm per annum and consists of four main species, namely *P.patula* (45%) grown at altitudes above 900 m a.s.l.; *P.elliottii* (27%) the slowest grower but also the most site tolerant of all; *P.taeda* (5%) which requires the best quality sites and grows at most altitudes and *P.radiata* (12%), which is found in the winter and all year rainfall areas along the coastal strip of the Western and Southern Cape.

It is estimated that over 75% of the sawlog plantations are certified as FSC, one of the highest proportions of accredited plantations in the world.

The two basic silvicultural regimes, which are subject to variation according to site quality and specific conditions, are:

Table 13: Silvicultural Regimes

Standard	s/ha	Banana	s/ha
Plant	1,300	Plant	1,100
Thin 8 yrs	650	Thin 4 yrs	650
Thin 13 yrs	400	Thin 13 yrs	400
Thin 18 yrs	250	-	-
Clearfell 25–30 yrs	-	Clearfell 25 yrs	

Pruning is done to seven meters in four 'lifts' keeping the core diameter down to 100mm, so that all prunings are done while the branches are green. Pruning is generally done as follows:

Table 14: Pruning

1.5 m	at 3yrs
3.0 m	at 5yrs
5.0 m	at 7yrs
7.0 m	at 10yrs



5.1 GEOGRAPHICAL DISTRIBUTION

5.1.1 Sawlog Plantations

Table 15: Sawlog Plantation Areas

REGION/ZONE	SAWLOG PLANTATIONS	
	Softwood (ha)	Hardwood (ha)
Northern Regions		
• Limpopo Province	26,179	7,848
• Mpumalanga North	135,899	8,553
• Central Districts	3,423	0
• Mpumalanga South	67,386	333
TOTAL NORTHERN REGIONS	232,887	16,734
Middle Regions		
• Maputaland	5,771	0
• Zululand	13,828	480
• Northern Kwazulu-Natal	10,742	11
• Kwazulu-Natal Midlands	22,000	461
• Southern Kwazulu-Natal	25,763	279
TOTAL MIDDLE REGIONS	78,104	1,231
Southern Regions		
• Eastern Cape	95,539	209
• Southern Cape	58,652	1,392
• Western Cape	15,485	30
TOTAL SOUTHERN REGIONS	169,676	1,631
TOTAL SOUTH AFRICA	480,667	19,595
Swaziland	12,000	14,000

5.1.2 Age Distribution by Genus of the Total Plantation Resource in South Africa

Table 16: Age Distribution by Genus

Age Class (Years)	TOTAL	Pines and Other Softwood Species		Eucalyptus Species		Wattle		Other Hardwood Species	
	ha	ha	% of Total	ha	% of Total	ha	% of Total	ha	% of Total
Area temporarily unplanted	68,812	45,524	6.5	17,113	3.3	6,069	5.4	106	1.2
0-4	343,853	119,214	16.9	179,772	34.2	43,431	38.6	1,436	16.8
4-9	437,745	158,700	22.5	229,557	43.7	47,335	42.1	2,153	25.2
9-14	247,555	157,151	22.3	75,613	14.4	12,786	11.4	2,005	23.4
14-19	108,207	92,546	13.1	13,833	2.6	732	0.7	1,096	12.8
19-24	67,176	62,991	8.9	3,696	0.7	149	0.1	340	4.0
24-29	39,608	38,268	5.4	1,145	0.2	33	0.0	162	1.9
29-34	18,927	17,454	2.5	1,141	0.2	24	0.0	308	3.6
34+	15,042	12,261	1.7	2,288	0.4	55	0.0	438	5.1
Jungle	4,477	1,109	0.2	972	0.2	1,883	1.7	513	6.0
TOTAL AREA	1,351,402	705,218	100	525,130	100	112,497	100	8,557	100

Source: Commercial Timber Resources and Roundwood Processing in South Africa (2001/02)



5.1.3 Roundwood Sales by Product and Zone in 2002/03

Table 17: Roundwood Sales by Product and Zone

Region/Zone	Sawlogs and Veneer (m ³)
Northern Regions	
• Limpopo Province	361,525
• Mpumalanga North	1,476,841
• Central Districts	31,000
• Mpumalanga South	1,400,323
TOTAL NORTHERN REGIONS	3,269,689
Middle Regions	
• Maputaland	60,184
• Zululand	151,212
• Northern Kwazulu-Natal	56,240
• KwaZulu-Natal Midlands	263,567
• Southern Kwazulu-Natal	407,120
TOTAL MIDDLE REGIONS	938,323
Southern Regions	
• Eastern Cape	891,953
• Southern Cape	432,079
• Western Cape	145,802
TOTAL SOUTHERN REGIONS	1,469,834
TOTAL SOUTH AFRICA	5,677,846

Source: Commercial Timber Resources and Roundwood Processing in South Africa

5.2 AGE CLASS DISTRIBUTION

Table 18: Pine Sawlog Areas in Hectare by Species and Age Class in Five Year Age Groupings as on 31/03/2002

Age in Years	<i>P.patula</i>	<i>P.elliottii</i>	<i>P.taeda</i>	<i>P.radiata</i>	<i>P. pinaster</i>	Other	Total	%
Temporarily Unplanted	20,503	6,894	706	8,103	11	880	37,097	7.7
0 - 4	46,672	24,321	1,821	8,016	47	15,257	96,134	20.0
5 - 9	53,025	28,145	1,940	12,407	122	8,943	104,581	21.8
10 - 14	47,931	27,423	824	8,813	1,512	2,162	88,665	18.4
15 - 19	27,078	19,953	4,037	4,353	2,426	1,759	59,606	12.4
20 - 24	15,059	11,790	8,090	4,380	4,016	557	43,892	9.1
25 - 29	8,879	6,300	5,313	4,084	3,089	577	28,241	5.9
30+	4,745	4,555	1,930	3,782	6,693	1,168	22,452	4.7
TOTALS	223,892	129,381	24,660	53,938	17,915	31,302	480,667	100.0

Source: Commercial Timber Resources and Roundwood Processing in South Africa

NOTE: Temporarily unplanted area should not be more than one year in 28 years i.e. 3.65% and not 7.80% of total plantable area.

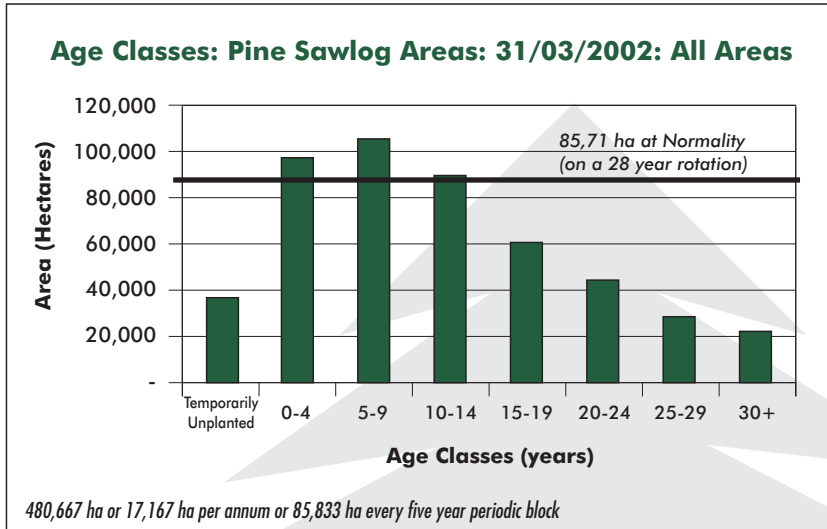


Figure 6: Age Classes

Source: Commercial Timber Resources and Roundwood Processing in South Africa

5.3 YIELD ESTIMATES EXPRESSED IN MEAN ANNUAL INCREMENT (MAI)

The basis of calculating the yields for our estimate of MAI is as follows:

Table 19: Calculation of Weighted MAI for Future Volume Estimation Purposes

Sub Division	Area (ha)	Areas for Removal: Phasing out Process	Areas after Phasing Out Process	FSC Removals 5%	Areas after FSC Removals	Estimated Total MAI at 20 years (m ³ /ha/annum)	Calculation Column for Weighted Average
Limpopo	26,179	-	26,179	1,309	24,870	16.0	397,921
Mpumalanga North	135,899	7,000	128,899	6,795	122,104	16.5	2,014,717
Central Districts	3,423	-	3,423	171	3,252	15.0	48,778
Mpumalanga South	67,386	-	67,386	3,369	64,017	17.0	1,088,284
Maputaland	5,771	-	5,771	289	5,482	11.0	60,307
Zululand	13,828	9,000	4,828	691	4,137	15.0	62,049
KwaZulu-Natal Midlands	22,000	-	22,000	1,100	20,900	17.0	355,300
Northern KwaZulu-Natal	10,742	-	10,742	537	10,205	16.0	163,278
Southern KwaZulu-Natal	25,763	-	25,763	1,288	24,475	16.5	403,835
Eastern Cape	95,539	-	95,539	4,777	90,762	16.0	1,452,193
Southern Cape	58,652	42,290	16,362	2,933	13,429	13.0	174,582
Western Cape	15,485	14,710	775	774	1	14.5	11
TOTALS	480,667	73,000	407,667	24,033	383,634	Avg. 16.2	6,221,255

Industry Average – Total MAI at 20 years: Pine Sawlog areas	16.2	m ³ /ha per annum
Estimated Saw timber MAI at 28 years: Pine Sawlog areas	11.2	m ³ /ha per annum

NOTE: MAI at 20 years is the mean or average annual increment calibration which is applied to the area concerned. It is an index to calculate the future yields from which the sawlog volume is derived, i.e. this is not the saw log increment index. The figure is expressed as cubic meters per hectare per annum (m³/ha/annum). As can be seen above, areas to be phased out were deducted from the areas before the weighted average MAI was calculated.



The total MAI per region in Table 19 was based on our knowledge of the areas. However, it is conceded that they are estimates and should be regarded as such, as should the resulting volume estimates produced from them.

For the purpose of projections of harvest, a rotation age of 28 years has been assumed and all trees of more than 28 years of age have been harvested in the first 10 years.

5.4 SAWLOG PLANTATION BY OWNERSHIP (CURRENT ESTIMATED OWNERSHIP OF THE SAWLOG RESOURCE)

Table 20: Sawlog Plantation Area by Ownership

	Softwood Sawlog (ha)
Komatiland	116,098
Global Forest Products	57,000
Amatola	18,000
Mountain to Oceans (MTO)	54,000
Thesen	14,000
Mondi, including Peak	12,000
Stevens Lumber	4,000
Bracken	3,000
RF Gevers	2,300
Singisi	54,000
Private individuals, Co-ops, Municipalities, Safcol and DWAF	146,2688
TOTAL HECTARES	480,666

5.4.1 Grey Area

LCM's often cut logs that are classified as pulpwood and not sawlogs. Conversely pulpwood being marketed as such invariably contains a surprisingly high volume of oversize logs, which should be classified as sawlogs and not as pulpwood. In the absence of appropriate data in this exercise, sawlogs have been taken to include 70% of 'a' class logs.

The sawlog supply figures were extended from the age class distribution for South Africa according to the *Commercial Timber Resources and Roundwood Processing in South Africa* published under the sponsorship of DWAF. We have applied our estimates of MAI to arrive at the projected yields.

5.5 AREAS TO BE PHASED OUT OF PINE SAWLOG PRODUCTION

Table 21: Removal Areas

Zone	Area (ha)	Phasing out period in years from 01/01/2004	Reason
Sand River Catchment Area	9,000	3 years	Environmental
St Lucia	7,000	3 years	Environmental
George Area (S. Cape)	42,290	15 years	Uneconomical
Western Cape	14,710	15 years	Uneconomical
TOTAL	73,000		



In the yield calculations, on which this study is based, the removal of the areas was done by simply not replanting the annual areas to be removed. No additional areas were felled in the simulation during this process.

5.6 NEW PLANTINGS (EXPRESSED IN HECTARES)

Between 1991/92 and 2001/02 there has been a steady downward trend in new afforestation for softwood sawlog production, as is shown in Table 22 and Figure 7:

Table 22: New Plantings in Hectares

Year	Area Afforested for Softwood Sawlog Production (ha)
1991/92	5,450
1992/93	5,067
1993/94	3,650
1994/95	2,405
1995/96	1,853
1996/97	2,279
1997/98	538
1998/99	1,279
1999/00	427
2000/01	1,180
2001/02	1,740
Average Per Year	2,352

Source: Commercial Timber Resources and Roundwood Processing in South Africa

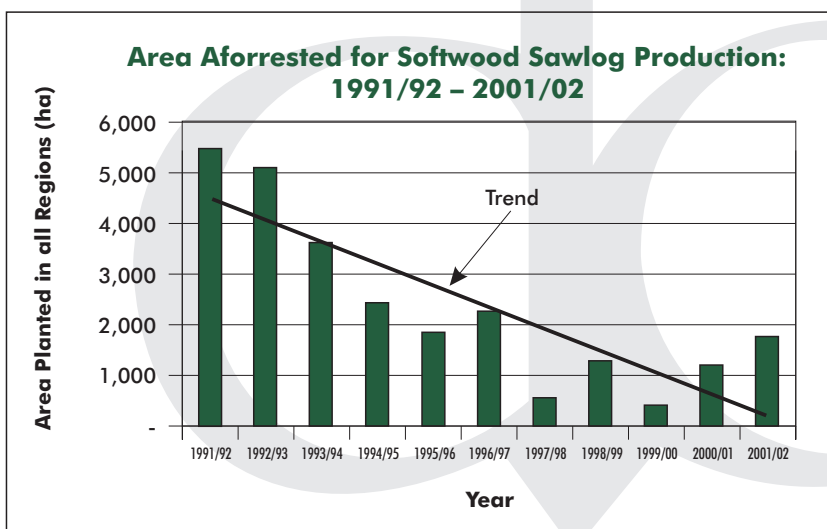


Figure 7: Softwood Sawlog Plantings

Source: Commercial Timber Resources and Roundwood Processing in South Africa



5.7 FIRE DAMAGE

Plantation fires have destroyed an average of 10,314 ha or 1.5% of softwood sawlog area per annum since 1991. However since 1998 there has been a dramatic increase to 13,545 ha per annum and the most serious ever recorded in 2002/03 was an estimated 24,000 ha bringing the average for the past three years to 2.2% per annum.

The long term average has been used in projecting the future sawlog availability, which may well be low, in view of the increase in fire damaged areas, subsequent to 1998.

Table 23: Fire Damaged Softwood Areas 1991–2001

Year	Area Damaged (ha)
1991/1992	5,684
1992/1993	7,590
1993/1994	14,124
1994/1995	20,106
1995/1996	7,044
1996/1997	8,071
1997/1998	5,109
1998/1999	11,001
1999/2000	10,649
2000/2001	12,219
2001/2002	11,860
Average per Year	10,314
Total Softwood Area	705,217
Average Annual Fire Damage (%)	1.5%
2002/2003 (Est.)	24,000
3 year Average	2.2%

5.8 SIREX

The Sirex woodwasp, *Sirex noctilio*, was first discovered in the Western Cape in 1994 at the Tokai Plantation, which is in close proximity to Cape Town. Since 1994 Sirex has spread quickly throughout the country, with current infestations being found in and around the Umgeni River, in the Natal Midlands.

Sirex is known to infest all major commercial Pine species, such as *Pinus patula*, *P.taeda* and *P.elliottii*. No pine species has shown to have resistance to Sirex infestations. Sirex has been seen to infest trees as young as eight years old, with the age group 12–20 years being the most susceptible. The degree of infestation and subsequent mortality is highest in the Eastern and Western Cape (30 to 40% in some cases) and lower in the Natal Midlands (20% to 25% in some cases).

Trees that are stressed are more susceptible to infestation. Thrifty stands are least likely to be infested. Infestations occur mainly in stands where tree stocking is high, silvicultural practices are poor and in stands on steep slopes with shallow soils. Pulpwood stands are most commonly affected. Well maintained sawlog stands show little or no infestation (<1%). Sirex poses little risk to quality sawlog production, if good silvicultural practices are adopted and compartments are kept clear of dead trees and old timber.



The natural rate of spread is said to be 50kms per year, however the rapid spread to the Natal Midlands has been attributed to Sirex being transported with timber by road. The time frame for when Sirex will reach Mpumalanga is uncertain, it could take a number of years or not, depending on whether the proposed prohibition on transporting timber during the wasp's flight season is adopted.

The biological control agent, a nematode *Deladenus (Beffingia) siricidicola* was first released in March 2004 with the latest releases in the last week of April 2004. Although Sirex can never be eradicated it is possible to have an overall infestation rate of less than 5% if the biological control agents are successful.

5.9 HISTORICAL SAWLOG SALES AND PROJECTED HARVEST

The projected harvest takes the following into account:

- The MAI, including thinnings, applied to the ages for each region.
- A rotation age of 28 years with all over-age timber being felled over the first 10 years.
- The planned removals were taken through to maturity, but assumed not to be replanted.
- 70% of 'a' class logs have been assumed to be sawlogs.
- Volumes were reduced by the percentage lost to fire in each region.
- The projected harvest for each region is summarised in Table 24:

Table 24: Projected Harvest by Region (m³)

SUMMARY BY REGION				
Region	Sawlog Sales (m ³)		Predicted Sawlog Availability (m ³)	
	2000 to 2001	2001 to 2002	2004 to 2008	Average 30yrs
Limpopo	176,638	251,793	245,520	265,300
Mpumalanga North	1,232,863	1,309,009	1,304,128	1,561,200
Combined: Central Districts & Mpumalanga South	596,034	496,230	613,056	827,000
Combined: Maputaland/Zululand/ Northern KwaZulu-Natal	119,545	398,664	173,340	297,900
KwaZulu Natal Midlands	247,616	259,070	150,632	257,000
Southern KwaZulu-Natal	256,979	49,960	189,732	292,100
Eastern Cape	592,279	725,369	747,192	1,037,000
Southern Cape	602,531	407,314	483,144	509,300
Western Cape	217,346	144,354	136,462	147,400
TOTAL FOR SA	4,041,832	4,041,765	4,040,470	5,192,900

Source: *Commercial Timber Resources and Roundwood Processing in South Africa*

The sawlog sales in 2000/01 and 2001/02 of 4,042,000 m³ are very similar to the predicted supply from 2004 to 2008 when supply increases. However, the increase in supply is considerably slower than the increase in demand.



Table 25: Pine Sawlog Volume Estimates

Year	Area to be Planted	Clearfelling	Additional Clearfelling*	Volumes (m ³)						Final Volume Estimates #	
				a	b	c	d	Pruned and Semi-Pruned	Total a, b, c, d, Pruned and Semi-Pruned #		% Reduction for Fires
2004-05	7,252	7,600	3,083	323,725	1,716,137	1,207,004	392,782	214,147	3,670,000	1.5%	3,811,950
2005-06	6,387	6,942	3,083	310,361	1,652,165	1,139,913	361,301	203,327	3,670,000	1.5%	3,614,950
2006-07	6,887	7,646	3,083	292,789	1,668,379	1,217,827	399,738	216,123	3,800,000	1.5%	3,743,000
2007-08	7,486	8,397	3,083	316,320	1,943,101	1,320,377	443,285	234,657	4,260,000	1.5%	4,196,100
2008-09	8,964	10,086	3,083	355,861	2,254,550	1,519,596	513,202	270,530	4,910,000	1.5%	4,836,350
Annual Average: 2004 - 2008	7,395	8,134	3,083	321,011	1,846,867	1,280,944	426,065	227,757	4,102,000	1.5%	4,040,470
2009-10	9,484	10,821	3,083	375,379	2,350,994	1,609,932	553,091	287,823	5,190,000	1.5%	5,112,150
2010-11	10,358	11,702	3,083	413,260	2,339,990	1,711,428	588,294	306,731	5,350,000	1.5%	5,269,750
2011-12	11,526	13,020	3,083	306,482	2,309,231	1,847,274	644,835	334,548	5,440,000	1.5%	5,358,400
2012-13	10,207	11,290	3,083	265,611	2,208,200	1,653,249	561,345	295,615	5,000,000	1.5%	4,925,000
2013-14	8,934	10,877	3,083	286,532	2,307,806	1,615,604	532,202	285,112	5,020,000	1.5%	4,944,700
Annual Average: 2009 - 2013	10,102	11,542	3,083	333,453	2,303,244	1,687,497	575,953	301,966	5,200,000	1.5%	5,122,000
2014-15	8,306	12,717	-	302,005	2,237,403	1,475,712	487,314	260,238	4,760,000	1.5%	4,688,600
2015-16	8,497	13,276	-	403,518	2,432,906	1,542,145	500,560	271,667	5,150,000	1.5%	5,072,750
2016-17	10,182	13,672	-	249,593	2,062,121	1,588,351	535,868	282,892	4,720,000	1.5%	4,649,200
2017-18	14,936	18,242	-	242,492	2,306,364	2,081,808	724,407	376,853	5,740,000	1.5%	5,653,900
2018-19	17,597	21,044	-	247,415	2,468,571	2,389,835	837,791	434,810	6,380,000	1.5%	6,284,300
Annual Average: 2014 - 2018	11,904	15,790	-	289,005	2,301,473	1,815,570	617,188	325,252	5,350,000	1.5%	5,269,750
2019-20	19,092	22,432	-	275,431	2,727,736	2,553,642	866,326	462,661	6,900,000	1.5%	6,796,500
2020-21	18,293	20,679	-	330,904	3,167,835	2,398,016	833,446	430,514	7,170,000	1.5%	7,062,450
2021-22	14,934	16,932	-	215,955	1,940,904	1,914,704	655,309	348,214	5,070,000	1.5%	4,993,950
2022-23	17,762	19,703	-	215,752	2,096,335	2,217,932	781,910	406,539	5,720,000	1.5%	5,634,200
2023-24	21,256	23,933	-	239,972	2,432,204	2,685,050	952,404	493,791	6,790,000	1.5%	6,688,150
Annual Average: 2019 - 2023	18,267	20,736	-	256,003	2,473,003	2,353,869	821,879	428,348	6,330,000	1.5%	6,235,050
2024-25	20,537	23,334	-	252,456	2,420,035	2,620,266	919,043	480,271	6,690,000	1.5%	6,589,650
2025-26	19,017	20,951	-	253,124	2,214,229	2,368,934	847,777	435,855	6,110,000	1.5%	6,016,350
2026-27	19,821	21,157	-	262,186	2,266,279	2,394,282	861,751	440,674	6,240,000	1.5%	6,146,400
2027-28	16,817	17,925	-	252,578	2,020,432	2,026,161	696,474	367,591	5,360,000	1.5%	5,279,600
2028-29	15,122	16,240	-	245,761	1,908,135	1,840,409	639,199	334,161	4,950,000	1.5%	4,875,750
Annual Average: 2024 - 2028	18,263	19,923	-	253,221	2,165,822	2,250,011	792,849	411,710	5,870,000	1.5%	5,781,950
2029-30	18,707	19,851	-	262,991	2,272,768	2,240,235	795,125	409,544	5,980,000	1.5%	5,890,300
2030-31	34,634	37,097	-	364,335	3,799,211	4,121,425	1,320,452	738,348	10,360,000	1.5%	10,204,600
2031-32	7,927	10,930	-	284,560	1,585,782	1,205,308	290,337	200,664	3,560,000	1.5%	3,506,600
2032-33	1,152	1,335	-	241,292	740,666	168,793	43,192	25,857	1,220,000	1.5%	1,201,700
2033-34	7,252	7,552	-	259,575	1,225,296	833,284	307,419	152,406	2,780,000	1.5%	2,738,300
Annual Average: 2029 - 2033	13,934	15,293	-	286,551	1,954,749	1,713,809	551,305	305,368	4,780,000	1.5%	4,708,300
Average:									5,272,000		5,192,900

* See Assumptions.
rounded to 100's.
** Period 2024-2028 average has been used



6. SUPPLY AND DEMAND FORECAST

Sections 3 and 4 of this report have dealt with sawn timber that is needed to supply the market. Section 5 has dealt with the resource and what it will yield. This section will put the two together in an effort to quantify the shortage.

6.1 COMPARING SUPPLY AND DEMAND OF SAWLOGS (PRIOR TO ADJUSTMENTS)

No attempt has been made to smooth the yield, but rather to harvest strictly at year 28, other than the last five years which have been smoothed to eliminate abnormal differences from year to year.

Table 26: Supply and Demand of Sawlogs (Prior to Adjustments)

Year		Demand (Paragraph 3.6) (m ³)	Supply (Paragraph 5.9) (m ³)	Annual Shortage (m ³)	Percentage Shortage	Accumulative Shortage (m ³)
2004	1	5,250,000	3,811,950	1,438,050	27%	1,438,050
2005	2	5,394,000	3,614,950	1,779,050	33%	3,217,100
2006	3	5,543,000	3,743,000	1,800,000	32%	5,017,100
2007	4	5,695,000	4,196,100	1,498,900	26%	6,516,000
2008	5	5,852,000	4,836,350	1,015,650	17%	7,531,650
2009	6	5,879,000	5,112,150	766,850	13%	8,298,500
2010	7	6,026,000	5,269,750	756,250	13%	9,054,750
2011	8	6,177,000	5,358,400	818,600	13%	9,873,350
2012	9	6,331,000	4,925,000	1,406,000	22%	11,279,350
2013	10	6,489,000	4,944,700	1,544,300	24%	12,823,650
2014	11	6,522,000	4,688,600	1,833,400	28%	14,657,050
2015	12	6,686,000	5,072,750	1,613,250	24%	16,270,300
2016	13	6,853,000	4,649,200	2,203,800	32%	18,474,100
2017	14	7,024,000	5,653,900	1,370,100	20%	19,844,200
2018	15	7,200,000	6,284,300	915,700	13%	20,759,900
2019	16	7,239,000	6,796,500	442,500	6%	21,202,400
2020	17	7,420,000	7,062,450	357,550	5%	21,559,950
2021	18	7,606,000	4,993,950	2,612,050	34%	24,172,000
2022	19	7,796,000	5,634,200	2,161,800	28%	26,333,800
2023	20	7,991,000	6,688,150	1,302,850	16%	27,636,650
2024	21	8,038,000	6,589,650	1,448,350	18%	29,085,000
2025	22	8,239,000	6,018,350	2,220,650	27%	31,305,650
2026	23	8,445,000	6,146,400	2,298,600	27%	33,604,250
2027	24	8,656,000	5,279,600	3,376,400	39%	36,980,650
2028	25	8,873,000	4,875,750	3,997,250	45%	40,977,900
2029	26	9,094,000	4,708,300	4,385,700	48%	45,363,600
2030	27	9,322,000	4,708,300	4,613,700	49%	49,977,300
2031	28	9,555,000	4,708,300	4,846,700	51%	54,824,000
2032	29	9,794,000	4,708,300	5,085,700	52%	59,909,700
2033	30	10,038,000	4,708,300	5,329,700	53%	65,239,400

Interpretation: There is a 27% annual shortage immediately and this will increase to 53% at the end of the window period of 30 years.



6.1.1 General Comments

The shortages are alarming and before attempting to make adjustments the question of the accuracy of this information needs to be addressed.

- The areas and ages are taken from the *Commercial Timber Resources and Roundwood Processing in South Africa*. We believe they are reliable as they are consistent with figures from other sources.
- The Mean Annual Increments (MAI's) have been taken from several sources and checked against the experience of the authors and editors.
- The rotation used, of 28 years, could be questioned, but it has been used because it is the optimum economic rotation using current log prices. Had the forecast not allowed for the harvesting of all over 28 year old plantations in the first ten years the projected shortages would have been more serious.

Some sawmillers are concerned about what they perceive to be an imbalance in ownership of the sawlog resource, as a result of Global Forest Product's acquisition of Komatiland giving GFP control of 75.4% of the plantation area in Mpumalanga and Limpopo and 43% of the total of South Africa's resource after planned removals of 73,000 ha.

Thought was given to adding a 'best' and a 'worst' scenario based on MAI, but the idea was abandoned because it was felt that the provision of more data would merely detract from the focus of the study without materially improving the result. The forecast of harvest has been done for each region and actual sawlog sales have been added for the purpose of comparison.

The study has avoided introducing sawmill capacities because sawmills are merely the link between 'the market and the tree' and sawmills will expand or contract to suit market and log availability. If the logs are available, the sawmills will cut them.

6.2 POSSIBLE COUNTERMEASURES AND FACTORS LIKELY TO BE INTRODUCED TO PRESERVE THE MARKETS AND PROTECT THE RESOURCE

These are as follows, but have not been taken into account in the Table 26 given in *Paragraph 6.1*.

- Exporting of logs will cease in the first year.
- Exports of sawn timber will be reduced by 75% over the next two years.
- Because the price of sawlogs will rise, sawmillers will be compelled to accelerate recovery improvements (instead of 1%) to 1.25% every five years from the present 47% to 54% by 2033.
- An increase of $\pm 25,000$ m³ sawn timber per annum imported from Zimbabwe.
- A further 100,000 ha will be established in the Eastern Cape (former Transkei) over ten years. However, only the second and third thinnings and some early clearfellings will be harvested towards the end of the 30-year window period.
- Reducing the provision for peeler logs from an initial 250,000 m³ to 170,000 m³; this is a rather arbitrary estimate based on the declining availability of peeler logs in view of the decrease in ages and therefore size of logs – a chicken and egg situation.
- The rate of replanting should be increased to achieve a reduction in the temporarily unplanted areas from 6.5% total area to 3.6%, i.e. replant the year after felling and not two years after.



6.2.1 Supply and Demand after Adjustments

Table 27: Supply and Demand of Sawlogs (After Adjustments)

Year	Forecast of Supply & Demand after adjustments as explained in Paragraph 6.2 (expressed in terms of sawlog volumes as a recovery of 47%)												
	Demand (Section 3.6)	Supply (Section 5.9)	Annual Shortage	Percentage Shortage	Reduction of Sawn Timber Exports	Reduction in Peeler Logs	Increase in Imports from Zimbabwe	Additional Increase in Recovery	Establishment of 100,000ha in E. Cape	Total Adjustments	Revised Annual Shortage	Revised Percentage Shortage	Accumulate Shortage
2004	5 250 000	3 811 950	1 438 050	27%	130 000	80 000	53 200	95 300		358 500	1 079 550	21%	1 079 550
2005	5 394 000	3 614 950	1 779 050	33%	130 000	80 000	53 200	90 350		353 550	1 425 500	26%	2 505 050
2006	5 543 000	3 743 000	1 800 000	32%	130 000	80 000	53 200	93 580		356 780	1 443 220	26%	3 948 270
2007	5 695 000	4 196 100	1 498 900	26%	130 000	80 000	53 200	104 900		368 100	1 130 800	20%	5 079 070
2008	5 852 000	4 636 350	1 015 650	17%	130 000	80 000	53 200	120 900		384 100	631 550	11%	5 710 620
2009	5 879 000	5 112 150	766 850	13%	130 000	80 000	53 200	255 600		518 800	248 050	4%	5 958 670
2010	6 028 000	5 269 750	756 250	13%	130 000	80 000	53 200	263 850		527 050	229 200	4%	6 187 870
2011	6 177 000	5 358 400	818 600	13%	130 000	80 000	53 200	267 920		531 120	287 480	5%	6 475 350
2012	6 331 000	4 925 000	1 406 000	22%	130 000	80 000	53 200	246 250		508 450	896 550	14%	7 371 900
2013	6 489 000	4 944 700	1 544 300	24%	130 000	80 000	53 200	287 230		510 430	1 033 870	16%	8 405 770
2014	6 522 000	4 688 600	1 833 400	28%	130 000	80 000	53 200	351 600		614 800	1 218 600	19%	9 624 370
2015	6 686 000	5 072 750	1 613 250	24%	130 000	80 000	53 200	380 450		643 650	969 600	15%	10 593 970
2016	6 853 000	4 649 200	2 203 800	32%	130 000	80 000	53 200	348 670	250 000	861 870	1 341 930	20%	11 935 900
2017	7 024 000	5 653 900	1 370 100	20%	130 000	80 000	53 200	424 020	250 000	937 220	432 880	6%	12 368 780
2018	7 200 000	6 284 300	915 700	13%	130 000	80 000	53 200	471 300	250 000	984 500	-68 800	-1%	12 299 980
2019	7 239 000	6 796 500	442 500	6%	130 000	80 000	53 200	679 650	250 000	1 192 850	-750 350	-10%	11 549 630
2020	7 420 000	7 062 450	357 550	5%	130 000	80 000	53 200	700 250	250 000	1 213 450	-855 900	-12%	10 693 730
2021	7 608 000	4 993 950	2 612 050	34%	130 000	80 000	53 200	499 400	250 000	1 012 600	1 599 450	21%	12 293 180
2022	7 796 000	5 634 200	2 161 800	28%	130 000	80 000	53 200	563 420	250 000	1 076 620	1 085 180	14%	13 378 360
2023	7 991 000	6 688 150	1 302 850	16%	130 000	80 000	53 200	668 820	650 000	1 562 020	-279 170	-3%	13 099 190
2024	8 038 000	6 589 650	1 448 350	18%	130 000	80 000	53 200	675 460	650 000	1 588 660	-140 310	-2%	12 958 880
2025	8 239 000	6 018 350	2 220 650	27%	130 000	80 000	53 200	616 880	400 000	1 280 080	940 570	11%	13 899 450
2026	8 445 000	6 146 400	2 298 600	27%	130 000	80 000	53 200	630 000	400 000	1 293 200	1 005 400	12%	14 904 850
2027	8 656 000	5 279 600	3 376 400	39%	130 000	80 000	53 200	541 100	400 000	1 204 300	2 172 100	25%	17 076 950
2028	8 875 000	4 875 750	3 997 250	45%	130 000	80 000	53 200	500 000	400 000	1 163 200	2 834 050	32%	19 911 000
2029	9 094 000	4 708 300	4 385 700	48%	130 000	80 000	53 200	482 570	400 000	1 145 770	3 239 930	36%	23 150 930
2030	9 322 000	4 708 300	4 613 700	49%	130 000	80 000	53 200	494 370	3 400 000	4 157 570	456 130	5%	23 607 060
2031	9 555 000	4 708 300	4 846 700	51%	130 000	80 000	53 200	494 370	3 400 000	4 157 570	689 130	7%	24 296 190
2032	9 794 000	4 708 300	5 085 700	52%	130 000	80 000	53 200	494 370	3 400 000	4 157 570	928 130	9%	25 224 320
2033	10 038 000	4 708 300	5 329 700	53%	130 000	80 000	53 200	494 370	3 400 000	4 157 570	1 172 130	12%	26 396 450

Note: Log exports were not included in either the demand or the supply and therefore have not been included in the adjustments.



6.2.2 Comment

If all the possible adjustments are made, the 27% shortage in the initial year will be reduced to 21% and in the closing year from 53% to 12%.

The sawlog resource has to be expanded and the obvious location for major plantings is the former Transkei. In 1993 the Development Bank of South Africa commissioned a Forestry Strategic Development Plan for the future of Forestry in the Transkei. This plan researched not only the extent of suitable land, but how this land could become available for commercial afforestation. The plan proposed increasing the 65,000 ha to 280,000 ha. The projections contained in this study assume that only 100,000 ha would be afforested. The development plan also addressed ways in which such a scheme could be made acceptable to the Transkei farmers who would need to relinquish the land generally used for subsistence farming.

Although the resource study does not include expansion of the current forests in South Africa, it is obvious that the first priority is the protection and if possible expansion of the existing resource, for example:

- Exercise great care in the legislation of the removal of plantations for environmental and other reasons.
- Ensure that tree planting permits are granted wherever possible.

The increase in recovery by the sawmills of 1.25% every five years is a tall order, bearing in mind that this covers all categories of sawmills. It is however possible, particularly as it is likely to be driven by increasing log prices.

- 6.2.3** An assumption that the initial demand is based on the average sawn timber sales in 2002 and 2003 has been queried as being possibly too high as those were record sales years. Despite the current sales levels maintaining this tempo with no indication of easing of demand the forecast has been adjusted by reducing the sawlog demand from 5,250,000 m³ in year 1 to 4,623,964 m³. The adjustment was made by extending the two year average sales to an average of the sales subsequent to 1999. The effect is that the annual shortage of sawlogs is reduced from 21% to 10% or from 1,079,500 m³ to 453,514 m³ in Year 1, prior to adjustments dealt with in *Paragraph 6.2.*

Table 28: Supply and Demand of Sawlogs (After Adjustments) using Revised Demand Volume in Year 1



6.3 ALTERNATIVE SUPPLIES OF SAWN TIMBER

Forecast of Supply & Demand after adjustments as explained in Paragraph 6.2 (expressed in terms of sawlog volumes as a recovery of 47%)													
Year	Demand (Section 3.6)	Supply (Section 5.9)	Annual Shortage	Percentage Shortage	Reduction of Sawn Timber Exports	Reduction in Peeler Logs	Increase in Imports from Zimbabwe	Additional Increase in Recovery	Establishment of 100,000ha in E. Cape	Total Adjustments	Revised Annual Shortage	Revised Percentage Shortage	Accumulative Shortage
2004	4,623,984	3,811,950	812,014	18%	130,000	80,000	53,200	95,300		358,500	453,514	10%	453,514
2005	4,751,123	3,614,950	1,136,173	24%	130,000	80,000	53,200	90,350		353,550	782,623	16%	1,236,138
2006	4,881,779	3,743,000	1,138,779	23%	130,000	80,000	53,200	93,580		356,780	781,999	16%	2,018,137
2007	5,016,028	4,196,100	819,928	16%	130,000	80,000	53,200	104,900		368,100	451,828	9%	2,469,965
2008	5,153,969	4,836,350	317,619	6%	130,000	80,000	53,200	120,900		384,100	-86,481	-1%	2,403,484
2009	5,295,703	5,112,150	183,553	3%	130,000	80,000	53,200	255,600		518,800	-335,247	-6%	2,068,237
2010	5,428,096	5,269,750	158,346	3%	130,000	80,000	53,200	263,850		527,050	-368,704	-7%	1,699,533
2011	5,563,798	5,358,400	205,398	4%	130,000	80,000	53,200	267,920		531,120	-325,722	-6%	1,373,811
2012	5,702,893	4,925,000	777,893	14%	130,000	80,000	53,200	246,250		509,450	268,443	5%	1,642,254
2013	5,845,465	4,944,700	900,765	15%	130,000	80,000	53,200	247,230		510,430	390,335	7%	2,032,590
2014	5,991,602	4,888,600	1,303,002	22%	130,000	80,000	53,200	351,600		614,800	688,202	11%	2,720,792
2015	6,141,392	5,072,750	1,068,642	17%	130,000	80,000	53,200	380,450		643,650	424,992	7%	3,145,784
2016	6,294,927	4,649,200	1,645,727	26%	130,000	80,000	53,200	348,670	250,000	861,870	783,857	12%	3,929,640
2017	6,452,300	5,653,900	798,400	12%	130,000	80,000	53,200	424,020	250,000	937,220	-138,820	-2%	3,790,821
2018	6,613,608	6,284,300	329,308	5%	130,000	80,000	53,200	471,300	250,000	984,500	-655,192	-10%	3,135,628
2019	6,778,948	6,796,500	-17,552	0%	130,000	80,000	53,200	679,650	250,000	1,192,850	-1,210,402	-18%	1,925,226
2020	6,948,421	7,062,450	-114,029	-2%	130,000	80,000	53,200	700,250	250,000	1,213,450	-1,327,479	-19%	597,747
2021	7,122,132	4,993,950	2,128,182	30%	130,000	80,000	53,200	498,400	250,000	1,012,600	1,115,582	16%	1,713,329
2022	7,300,185	5,634,200	1,665,985	23%	130,000	80,000	53,200	563,420	250,000	1,076,620	589,365	8%	2,302,694
2023	7,482,690	6,888,150	794,540	11%	130,000	80,000	53,200	668,820	650,000	1,582,020	-787,480	-11%	1,515,214
2024	7,669,757	6,589,650	1,080,107	14%	130,000	80,000	53,200	675,460	650,000	1,588,660	-508,553	-7%	1,006,661
2025	7,861,501	6,018,350	1,843,151	23%	130,000	80,000	53,200	616,880	400,000	1,280,080	563,071	7%	1,569,732
2026	8,059,039	6,146,400	1,911,639	24%	130,000	80,000	53,200	630,000	400,000	1,293,200	618,439	8%	2,188,171
2027	8,259,490	5,279,600	2,979,890	36%	130,000	80,000	53,200	541,100	400,000	1,204,300	1,775,590	21%	3,963,761
2028	8,465,977	4,875,750	3,590,227	42%	130,000	80,000	53,200	500,000	400,000	1,163,200	2,427,027	29%	6,390,787
2029	8,677,626	4,708,300	3,969,326	46%	130,000	80,000	53,200	482,570	400,000	1,145,770	2,823,556	33%	9,214,344
2030	8,894,567	4,708,300	4,186,267	47%	130,000	80,000	53,200	494,370	3,400,000	4,157,570	28,697	0%	9,243,040
2031	9,116,931	4,708,300	4,408,631	48%	130,000	80,000	53,200	494,370	3,400,000	4,157,570	251,061	3%	9,494,102
2032	9,344,854	4,708,300	4,636,554	50%	130,000	80,000	53,200	494,370	3,400,000	4,157,570	478,984	5%	9,973,086
2033	9,578,476	4,708,300	4,870,176	51%	130,000	80,000	53,200	494,370	3,400,000	4,157,570	712,606	7%	10,685,691

Note: Log exports were not included in either the demand or the supply and therefore have not been included in the adjustments.



The quality of South African sawn timber is generally on a par with equivalent grades in Chile, Brazil, New Zealand and Australia (See Appendix E – a comparison of S grades of structural timber compared to F grades of Australia). The quality of appearance tends to be determined by the individual remanufacturers. The South African appearance grades are generally acceptable in the market.

The widths produced by South Africa are not compatible, being 75 mm, 152 mm and 228 mm with the international widths being 75 mm, 100 mm, 150 mm and 200 mm and this would need to be resolved.

Further research would be needed to establish with greater accuracy the possibilities and implications of importing sawn timber than has been given in this report. However, in compiling this study, discussions were held with and information was drawn from some of the most experienced timber traders in the country.

If large shipments of between 30,000 m³ and 40,000 m³ were to be purchased in thicknesses of 25 mm, 38 mm and 50 mm in kiln dried mill run (excluding pith), it could be landed in Cape Town or Durban at between R1,200/m³ and R1,400/m³. The timber would need to be offloaded and transported to an upgrading plant where the required grades would be extracted. The cost would be in the order of R600/m³ to which should be added the cost of conveying to the market at say R150/m³.

It seems reasonable to assume that it would be possible to land a mix of grades in Gauteng for approx. R2,200/m³. While this is still considerably higher than the local market price, if the log price were to increase substantially the difference would not be that great and import parity could become a reality.

Acknowledgements

Mr John Sartor, Interwil Pty

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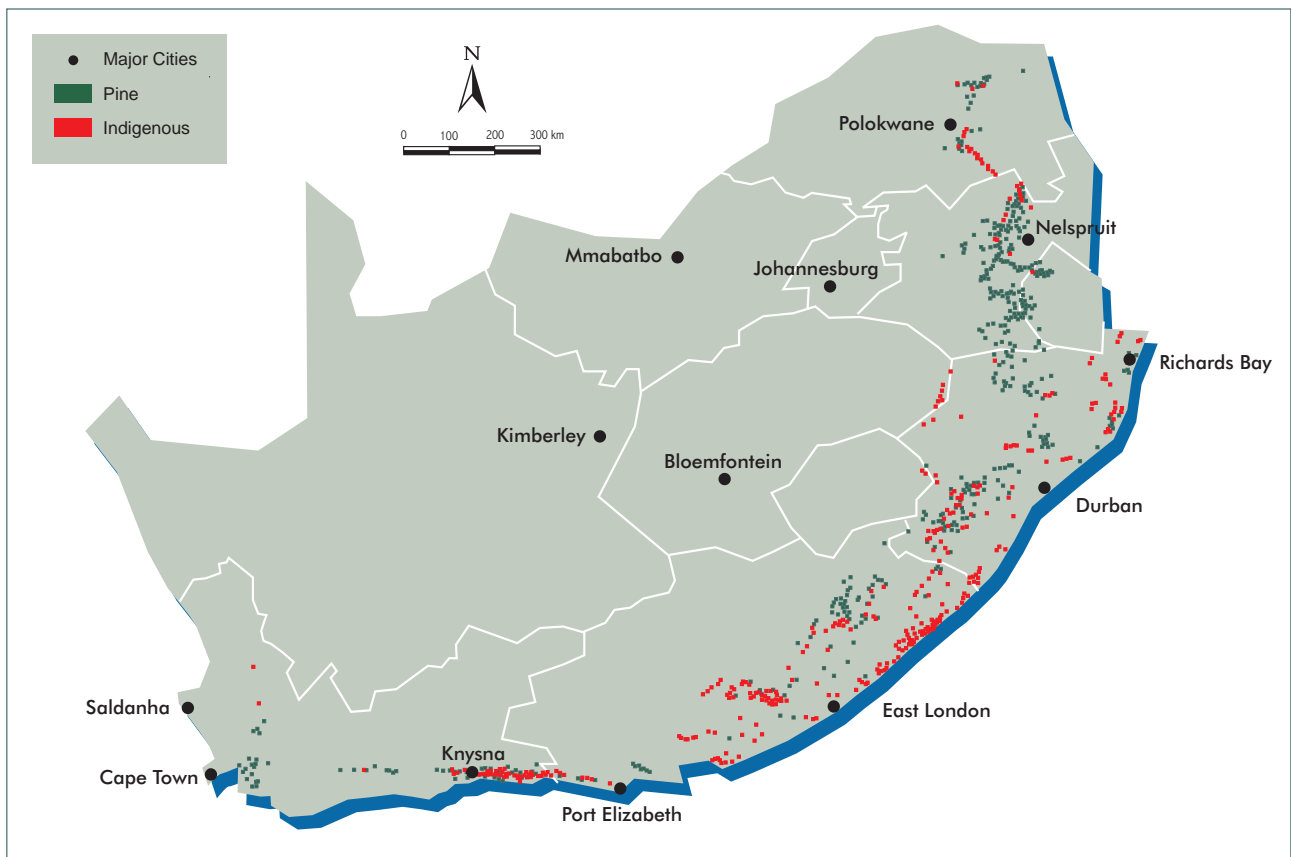
Prof. JA Stubbings

Mr John Le Brasseur

Mr Vincent Erasmus



Appendix A: Forestry Map of South Africa





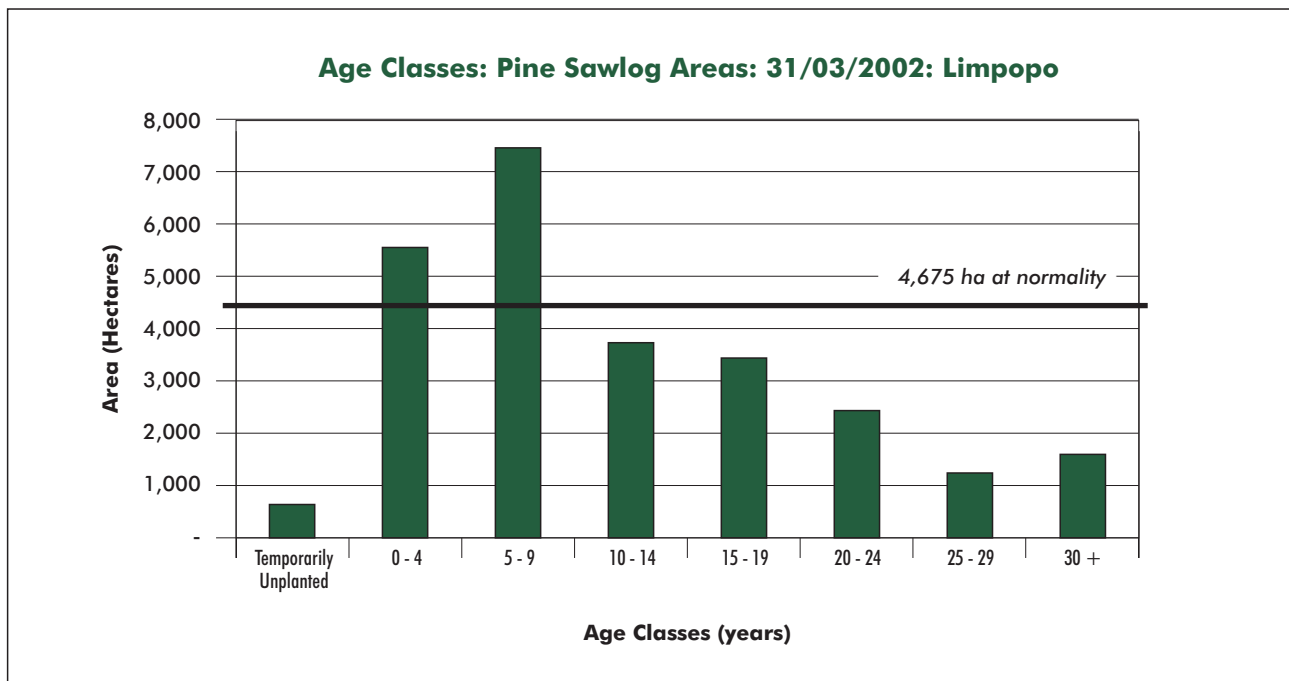


Appendix B: Age Analysis Per Region

LIMPOPO

**Pine Sawtimber Areas in Hectares by Species and Age Class
in Five Year Age Groupings as on 31/03/2002:
Limpopo**

Age in Years	P. patula	P. elliottii	P. taeda	P. radiata	P. pinaster	Other	TOTAL
Temporarily Unplanted	564	67	-	13	-	20	663
0 - 4	2,969	1,167	12	32	-	1,387	5,566
5 - 9	5,567	1,563	63	75	-	210	7,477
10 - 14	2,624	771	40	36	-	294	3,766
15 - 19	1,993	1,170	101	6	-	168	3,438
20 - 24	703	781	770	-	-	171	2,426
25 - 29	300	218	667	-	-	55	1,241
30 +	241	871	424	-	-	66	1,602
TOTALS	14,961	6,608	2,077	162	-	2,370	26,179



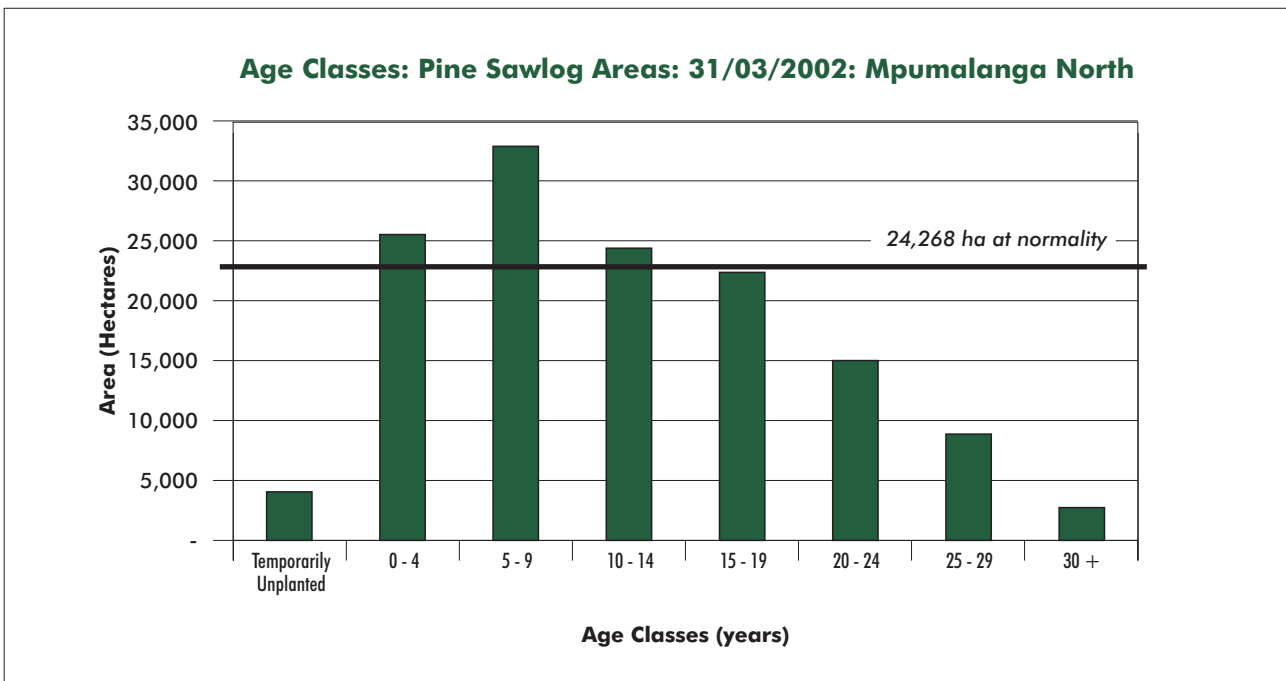
NOTE: Total area 26,179 ha or 935 ha per annum or 4,675 per five year periodic block.



MPUMALANGA NORTH

**Pine Sawtimber Areas in Hectares by Species and Age Class
in Five Year Age Groupings as on 31/03/2002:
Mpumalanga North**

Age in Years	P. patula	P. elliottii	P. taeda	P. radiata	P. pinaster	Other	TOTAL
Temporarily Unplanted	2,613	892	392	-	-	152	4,048
0 - 4	12,659	5,477	1,131	-	-	6,264	25,532
5 - 9	17,851	12,711	976	1	-	1,436	32,975
10 - 14	14,351	9,386	243	-	2	427	24,409
15 - 19	10,623	8,527	2,201	39	-	985	22,374
20 - 24	4,946	5,223	4,450	40	68	221	14,948
25 - 29	3,274	1,995	3,355	1	106	136	8,867
30 +	1,283	611	630	-	26	195	2,745
TOTALS	67,600	44,822	13,377	82	202	9,815	135,899

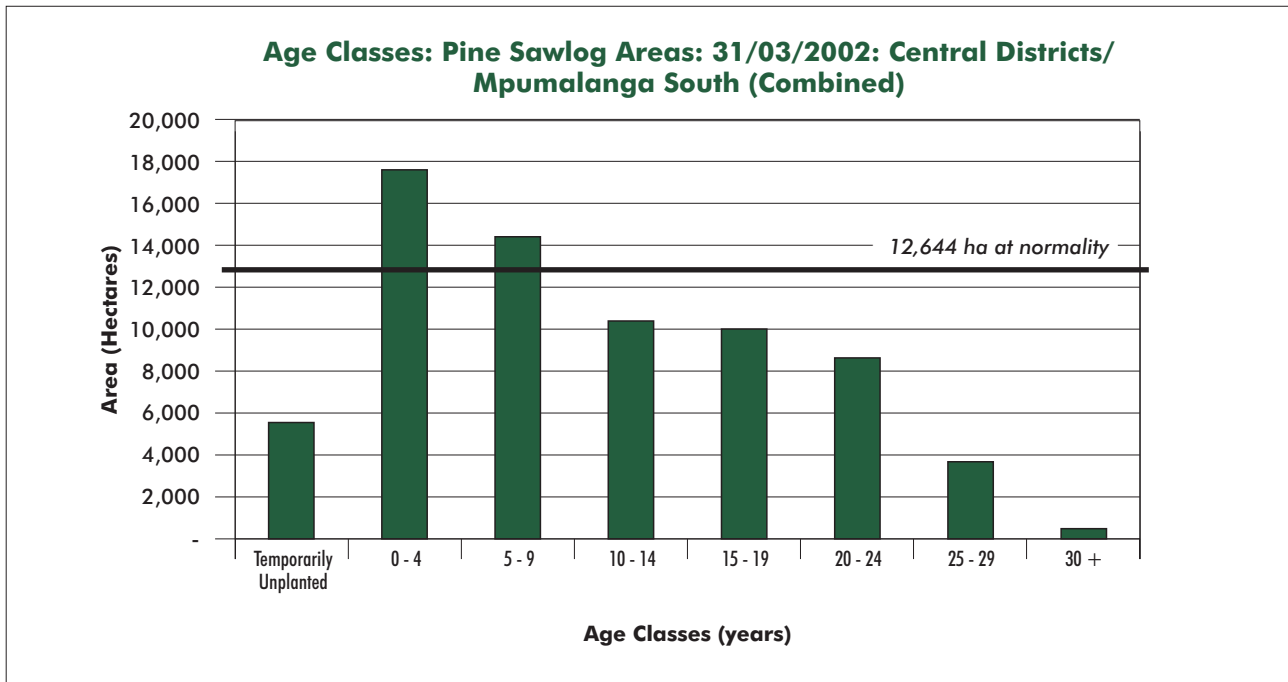


NOTE: Total area 135,899ha or 4,853 ha per annum or 24,268 per five year periodic block.



CENTRAL DISTRICTS/MPUMALANGA SOUTH (Combined)

Pine Sawtimber Areas in Hectares by Species and Age Class in Five Year Age Groupings as on 31/03/2002: Central Districts/Mpumalanga South (Combined)							
Age in Years	P. patula	P. elliottii	P. taeda	P. radiata	P. pinaster	Other	TOTAL
Temporarily Unplanted	4,485	790	189	-	-	56	5,519
0 - 4	13,297	3,221	75	-	-	1,067	17,661
5 - 9	10,471	3,631	62	5	-	334	14,504
10 - 14	7,011	3,083	99	-	-	202	10,395
15 - 19	6,649	2,263	949	1	-	93	9,955
20 - 24	5,182	1,992	1,365	2	-	67	8,607
25 - 29	3,051	277	244	-	-	83	3,655
30 +	400	45	14	-	-	54	513
TOTALS	50,546	15,302	2,997	8	-	1,955	70,809

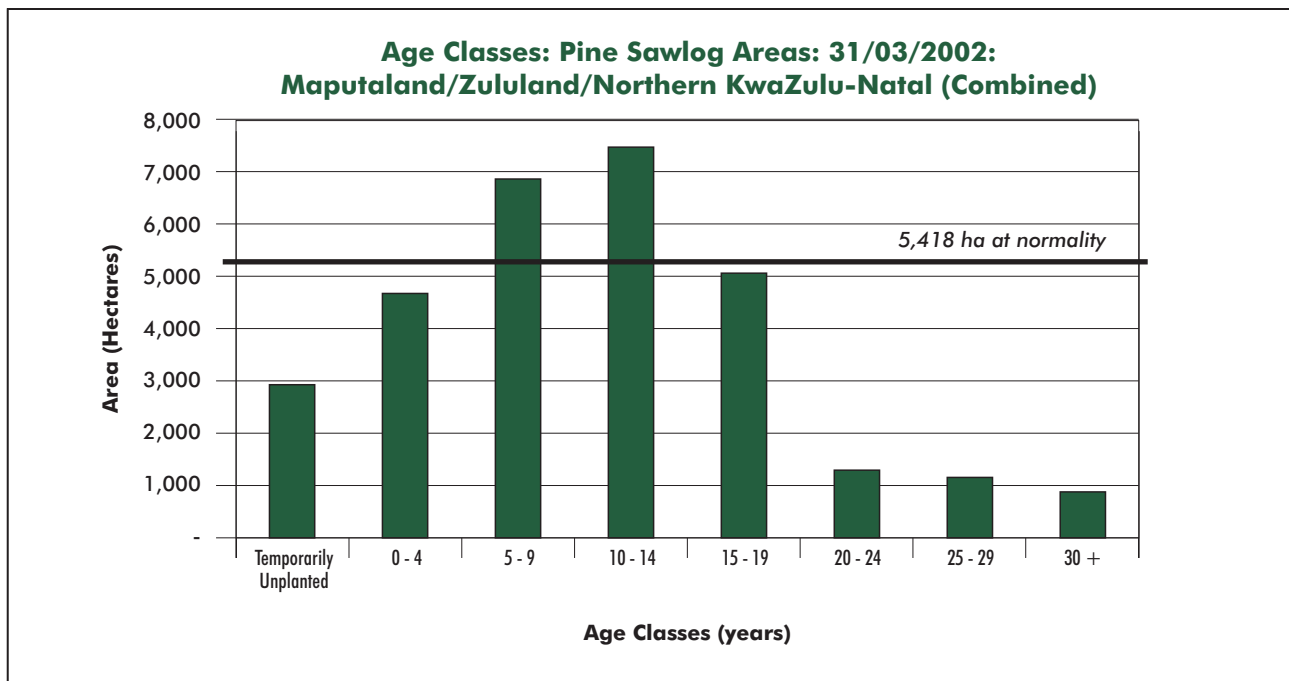


NOTE: Total area 70,809 ha or 2,529 ha per annum or 12,644 per five year periodic block.



MAPUTALAND/ZULULAND/NORTHERN KWAZULU-NATAL (Combined)

Pine Sawimber Areas in Hectares by Species and Age Class in Five Year Age Groupings as on 31/03/2002: Maputaland/Zululand/Northern KwaZulu-Natal (Combined)							
Age in Years	P. patula	P. elliottii	P. taeda	P. radiata	P. pinaster	Other	TOTAL
Temporarily Unplanted	765	2,151	-	-	-	-	2,916
0 - 4	906	3,671	9	-	-	83	4,670
5 - 9	1,518	4,727	31	-	2	596	6,876
10 - 14	1,800	5,245	58	-	3	393	7,499
15 - 19	1,114	3,295	258	-	-	408	5,075
20 - 24	402	650	234	-	-	-	1,287
25 - 29	192	776	78	2	-	97	1,146
30 +	32	719	29	-	-	93	874
TOTALS	6,729	21,234	698	2	6	1,671	30,341



NOTE: Total area 30,341 ha or 1,084 ha per annum or 5,418 per five year periodic block.

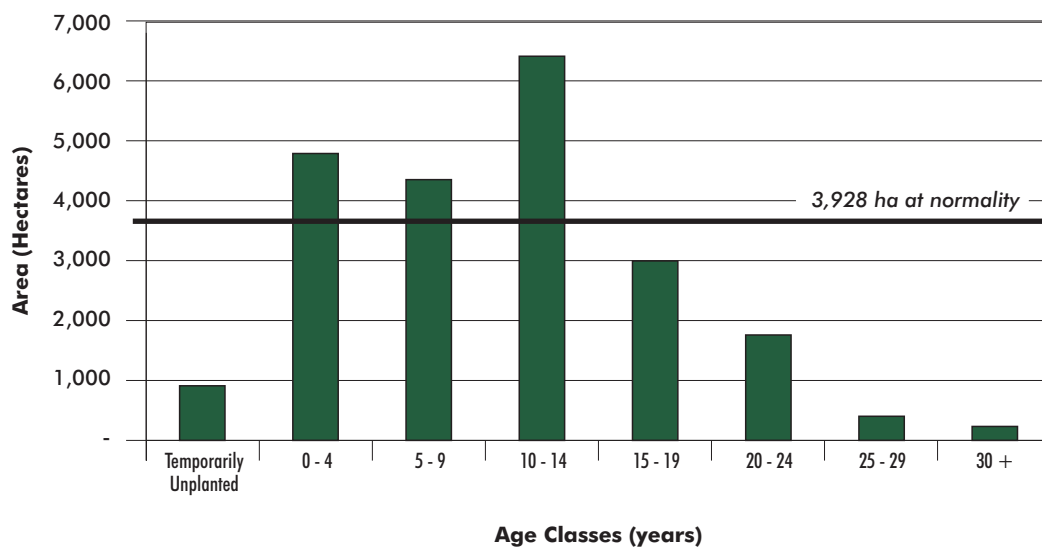


KWAZULU-NATAL MIDLANDS

Pine Sawimber Areas in Hectares by Species and Age Class
in Five Year Age Groupings as on 31/03/2002:
KwaZulu-Natal Midlands

Age in Years	P. patula	P. elliottii	P. taeda	P. radiata	P. pinaster	Other	TOTAL
Temporarily Unplanted	507	131	102	-	-	212	953
0 - 4	2,674	1,100	332	-	-	699	4,805
5 - 9	2,706	1,240	251	10	-	141	4,348
10 - 14	4,071	2,137	140	6	-	51	6,405
15 - 19	1,405	1,400	161	-	-	35	3,000
20 - 24	837	500	415	-	-	44	1,795
25 - 29	297	62	60	-	-	-	420
30 +	114	84	12	-	-	64	274
TOTALS	12,611	6,655	1,472	17	-	1,245	22,000

Age Classes: Pine Sawlog Areas: 31/03/2002: KwaZulu-Natal Midlands



NOTE: Total area 22,000 ha or 786 ha per annum or 3,928 ha per five year periodic block.

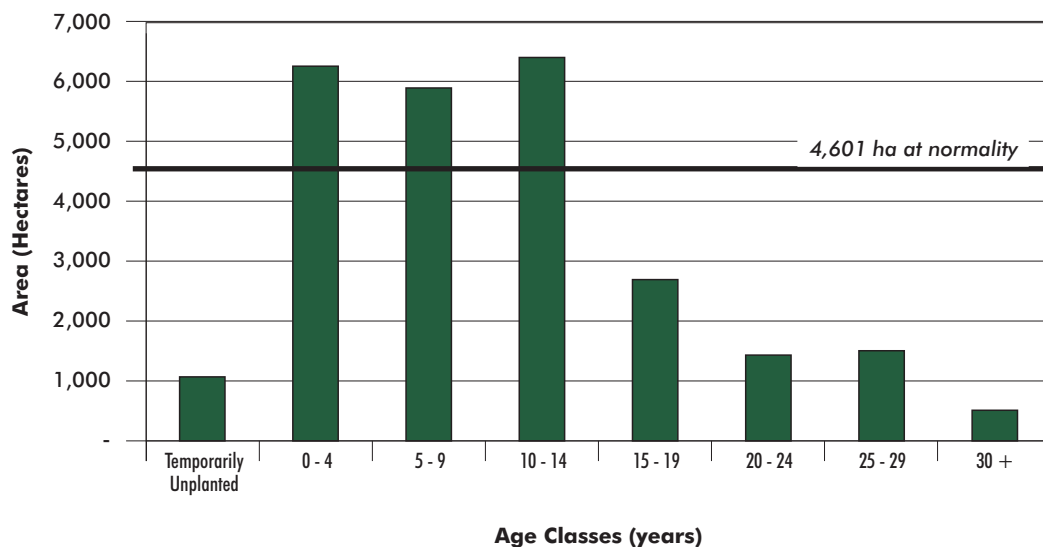


SOUTHERN KWAZULU-NATAL

Pine Sawimber Areas in Hectares by Species and Age Class
in Five Year Age Groupings as on 31/03/2002:
Southern KwaZulu-Natal

Age in Years	P. patula	P. elliottii	P. taeda	P. radiata	P. pinaster	Other	TOTAL
Temporarily Unplanted	954	79	24	-	-	57	1,114
0 - 4	4,319	924	40	20	-	910	6,213
5 - 9	5,018	615	17	-	-	205	5,855
10 - 14	5,672	707	6	12	1	-	6,398
15 - 19	1,716	745	175	-	18	27	2,681
20 - 24	644	515	309	-	-	-	1,468
25 - 29	228	672	497	3	-	107	1,507
30 +	45	86	176	176	176	288	527
TOTALS	18,596	4,344	1,244	211	195	1,593	25,763

Age Classes: Pine Sawlog Areas: 31/03/2002: Southern KwaZulu-Natal



NOTE: Total area 25,763 ha or 920 ha per annum or 4,601 per five year periodic block.

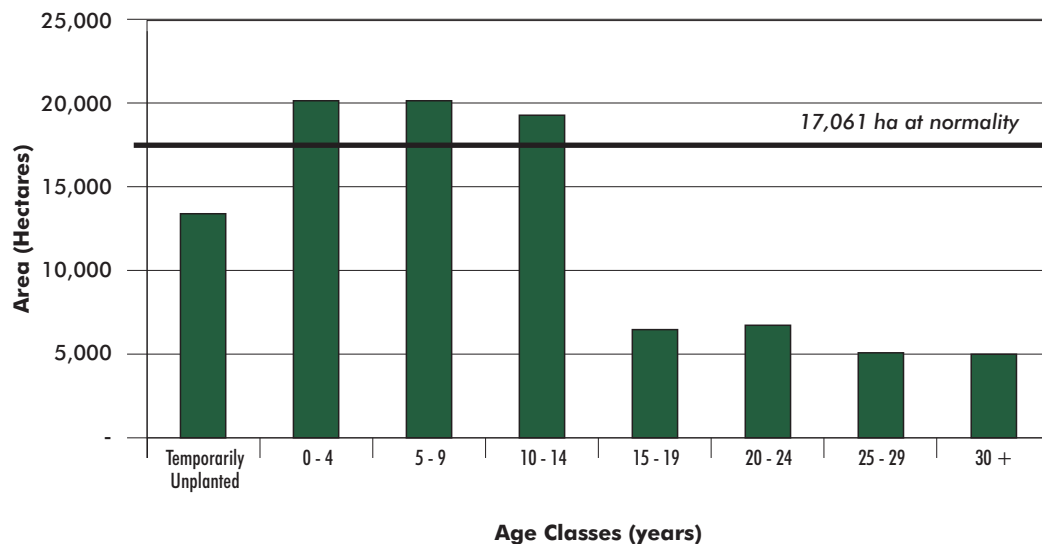


EASTERN CAPE

**Pine Sawimber Areas in Hectares by Species and Age Class
in Five Year Age Groupings as on 31/03/2002:
Eastern Cape**

Age in Years	P. patula	P. elliottii	P. taeda	P. radiata	P. pinaster	Other	TOTAL
Temporarily Unplanted	10,587	2,201	-	176	-	367	13,331
0 - 4	9,846	4,299	128	981	24	4,840	20,118
5 - 9	9,893	1,991	470	1,776	26	5,897	20,053
10 - 14	12,402	4,462	238	943	522	699	19,266
15 - 19	3,579	1,617	191	519	413	23	6,342
20 - 24	2,344	1,516	542	405	1,781	17	6,604
25 - 29	1,536	1,686	395	493	806	99	5,014
30 +	2,630	862	521	328	228	242	4,812
TOTALS	52,818	18,632	2,486	5,621	3,800	12,183	95,539

Age Classes: Pine Sawlog Areas: 31/03/2002: Eastern Cape



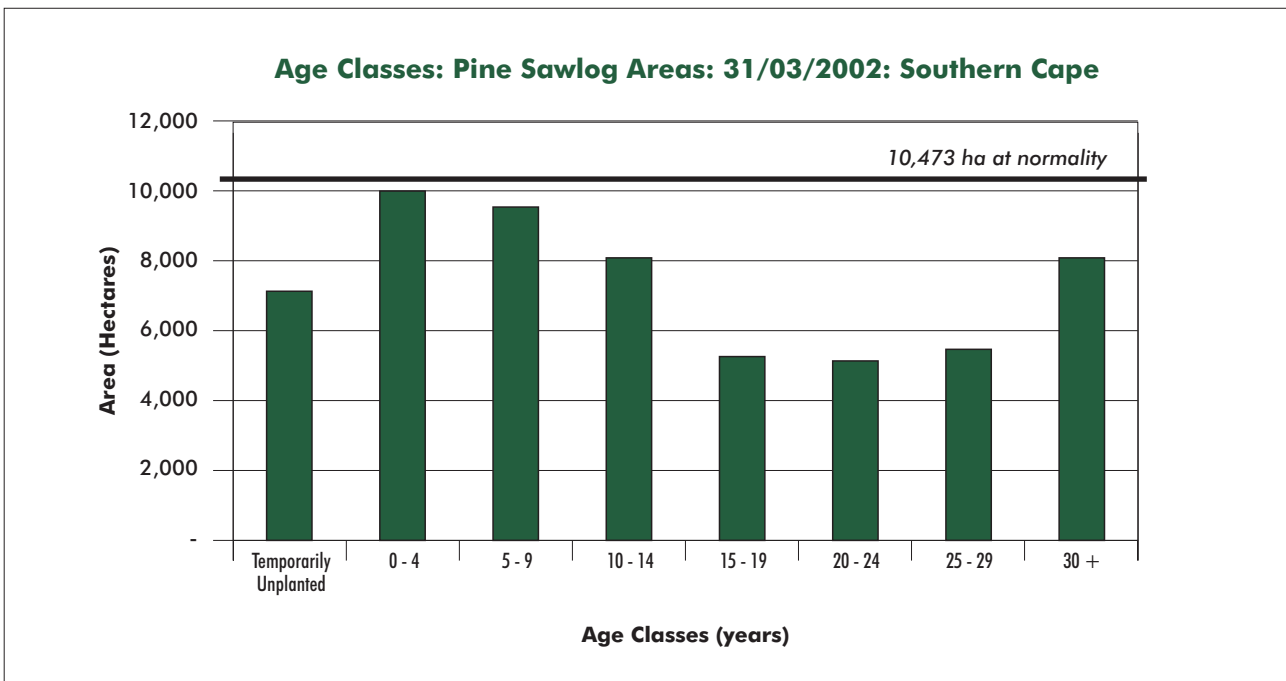
NOTE: Total area 95,539 ha or 3,412 ha per annum or 17,061 per five year periodic block.



SOUTHERN CAPE

**Pine Sawimber Areas in Hectares by Species and Age Class
in Five Year Age Groupings as on 31/03/2002:
Southern Cape**

Age in Years	P. patula	P. elliottii	P. taeda	P. radiata	P. pinaster	Other	TOTAL
Temporarily Unplanted	29	584	-	6,462	-	17	7,092
0 - 4	-	4,462	94	5,355	2	6	9,918
5 - 9	-	1,662	52	7,667	55	59	9,495
10 - 14	-	1,627	-	5,656	788	-	8,071
15 - 19	-	933	-	2,759	1,587	4	5,284
20 - 24	-	611	5	2,801	1,738	1	5,158
25 - 29	-	609	3	2,866	1,941	0	5,420
30 +	-	1,256	98	1,899	4,876	87	8,215
TOTALS	29	11,745	252	35,465	10,988	174	58,652



NOTE: Total area 58,652 ha or 2,094 ha per annum or 10,473 per five year periodic block.

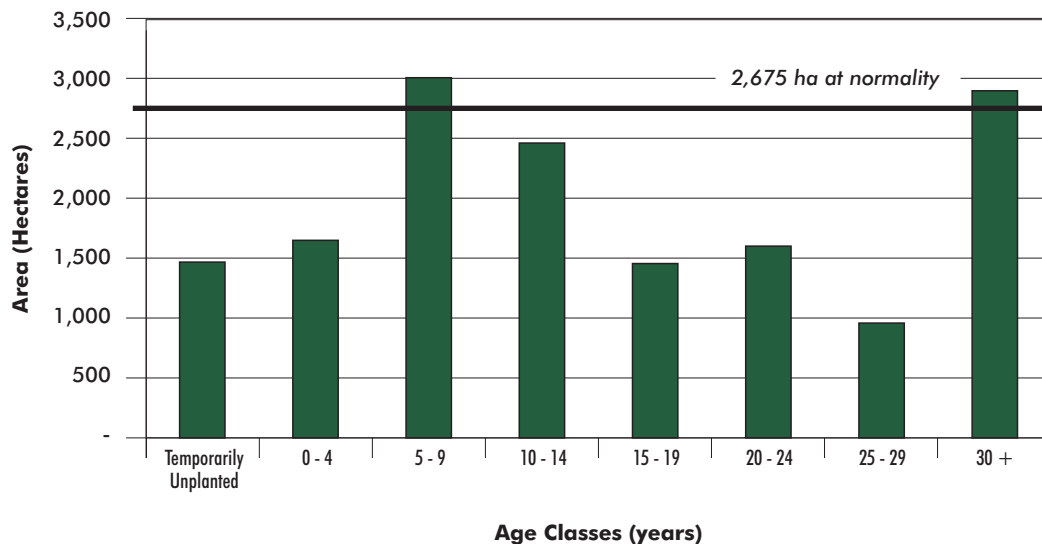


WESTERN CAPE

**Pine Sawtimber Areas in Hectares by Species and Age Class
in Five Year Age Groupings as on 31/03/2002:
Western Cape**

Age in Years	P. patula	P. elliottii	P. taeda	P. radiata	P. pinaster	Other	TOTAL
Temporarily Unplanted	-	-	-	1,452	11	-	1,463
0 - 4	-	1	-	1,628	21	-	1,651
5 - 9	-	4	18	2,872	38	66	2,998
10 - 14	-	5	-	2,160	196	96	2,457
15 - 19	-	3	-	1,028	408	18	1,457
20 - 24	-	2	-	1,132	428	36	1,599
25 - 29	-	3	13	719	235	-	971
30 +	-	21	25	1,379	1,387	78	2,890
TOTALS	-	38	57	12,371	2,724	295	15,485

Age Classes: Pine Sawlog Areas: 31/03/2002: Western Cape



NOTE: Total area 15,485 ha or 553 ha per annum or 2,675 ha (normality) but this is not applicable in view of the plans for phasing out.





Appendix C: Lumber Prices

MARCH 2004

4. Average Delivered Prices MARCH 2004 (R/m³)

(NB after discount, before commission, excluding VAT and loading)

Lengths (m)	0.9 - 2.7				3.0 - 6.0			
GAUTENG (incl. Mpumalanga, Limpopo and NW Provinces)								
1,207								
Structural	XXX	S5	S7	S10	XXX	S5	S7	S10
38 x 38	990 867	1,397 1,200	N/A	N/A	1,165 978	1,595 1,453	N/A	N/A
50 x 70	500	1,468 1,232	N/A	N/A	1,090 1,199	1,765 1,390	N/A	N/A
38 x 114	873 850	1,395 1,085	N/A	N/A	1,100 1,005	1,419 1,180	1,850 1,406	N/A
38 x 228	885 878	1,410	N/A	N/A	1,100 1,000	1,755 1,435	1,796 1,565	N/A
70 x 228	N/A	1,371	N/A	N/A	1,181	1,581 1,560	N/A	N/A
Wet off Saw	750				N/A			
Non-Structural	CR	IND	FURN	CL	CR	IND	FURN	CL
25 x 114	800 790	1,290 966	1,350 1,285	1,984 1,800	800 854	1,100 937	1,555 1,281	1,847
38 x 100 - 150	800 880	1,250 1,050	1,300 1,187	2,135 2,125	N/A	1,250	N/A	2,300
KWAZULU-NATAL								
1,242								
Structural	XXX	S5	S7	S10	XXX	S5	S7	S10
38 x 38	780 790	1,220 1,143	N/A	N/A	1,240 880	1,750 1,420	N/A	N/A
50 x 70	1,170 830	1,290 1,138	N/A	N/A	1,094 1,135	1,875 1,488	1,695	N/A
38 x 114	830 823	1,191 1,155	N/A	N/A	1,251 1,108	1,530 1,300	1,815 1,403	N/A
38 x 228	752	1,435 1,058	N/A	N/A	1,430 1,135	1,875 1,500	1,881	N/A
70 x 228	N/A	N/A	N/A	N/A	793	1,883 1,731	N/A	N/A
Wet off Saw	800				800			
Non-Structural	CR	IND	FURN	CL	CR	IND	FURN	CL
25 x 114	900 790	1,138 860	1,705 1,350	1,800 1,650	900 800	1,150 1,125	1,500 1,389	1,890 1,800
38 x 100 - 150	906 820	1,150 895	N/A	1,350 1,850	N/A	1,310 1,080	1,900 1,950	1,900
WESTERN CAPE								
1,252								
Structural	XXX	S5	S7	S10	XXX	S5	S7	S10
38 x 38	N/A	1,408	N/A	N/A	1,123	1,520 1,190	N/A	N/A
50 x 70	N/A	1,208 1,100	N/A	N/A	1,278	1,558 1,480	N/A	N/A
38 x 114	N/A	1,142 1,129	N/A	N/A	1,024	1,544 1,290	1,709 1,428	N/A
38 x 228	N/A	N/A	N/A	N/A	N/A	1,505 1,490	1,903	N/A
70 x 228	N/A	N/A	N/A	N/A	N/A	1,680	N/A	N/A
Wet off Saw	1,188 750				1,040			
Non-Structural	CR	IND	FURN	CL	CR	IND	FURN	CL
25 x 114	1,060	1,558 1,150	1,800 1,530	N/A	N/A	1,335 1,250	1,650	N/A
38 x 100 - 150	N/A	1,250	1,530	N/A	N/A	N/A	N/A	N/A

- Where two prices are shown, the figure above represents the highest and the one below the lowest of the average prices achieved by any sawmill or sawmilling group. Note the prices shown are averages for the company and are not the highest or the lowest for any company.
- These prices have been derived from 52% of the formal sawmilling industry.
- Represents an increase in price over the previously published figure.
- ▲ This is not the highest / lowest price received, but the second highest / lowest.
- Represents reported prices from the previously published figure.
- N/A = Not available.
- LJ Price Range = (High-Low)/Low*100.
- LJ Price Range may be slightly distorted due to a lack of detail on volumes in each province.

February 2004 Lumber Index
R 1,186/m³
 LJ Price Range: 18.72 %

March 2004 Lumber Index
R 1,227/m³
 LJ Price Range: 14.25 %

2

Source: SA Lumber Index





Appendix D: Composition of Lumber Price Index

The composition of the Lumber Index by percentage for each Province is as follows:

Gauteng	=	50.53%
KwaZulu-Natal	=	25.26%
Western Cape	=	24.21%

LENGTHS	0.9–2.7			3.0–6.6			
	XXX	S5	S7	XXX	S5	S7	S10
STRUCTURAL							
38X38	4.3				7.1		
50X76	1.0	1.0			2.5		
38X114	7.0	7.8		1.1	19.5	4.1	
38X228					1.5		
Wet off saw	1.1						
NON-STRUCTURAL	CR	IND	FURN	CR	IND	FURN	CL
25X114	5.0	9.0	6.0	2.0		1.1	3.0
38X100–150	2.5	6.6	5.3	1.0			0.5





Appendix E: Comparison of Structural Timber Grades with other Countries

Overall Summary: South Africa Vs New Zealand											
Grades											
New Zealand Structural Grades	No. 2			No. 1			Engineering				
Equivalent South African "S" Grades	S5			S7			S10				

Overall Summary: South Africa Vs Australia						
Grades						
Australian "F" Grades	F4	F5	F7	F8	F11	F14
Equivalent South African "S" Grades	S5		S7	S10		

Overall Summary: South Africa Vs British Standards									
Grades									
British Standards Softwood Strength Classes	SC1	SC2	SC3	SC4	SC5	SC6	SC7	SC8	SC9
Equivalent South African "S" Grades	XXX					S7	S10		

Overall Summary: South Africa Vs ISO							
Grades							
ISO Softwood Strength Grades	S10	S12	S14	S16	S18	S20	S22
Equivalent South African "S" Grades	S5		S7			S10	
ISO Softwood Strength Grades	S24	S27	S30	S35	S40	S45	S50
Equivalent South African "S" Grades	S10		No Equivalent				

Overall Summary: South Africa Vs Europe									
Grades									
European (EN 338) Strength Classes	C14	C16	C18	C22	C24	C27	C30	C35	C40
Equivalent South African "S" Grades	S5		S7			S10			No Equivalent

Overall Summary: South Africa Vs Southern United States											
Grades											
Southern States Structural Grades	SEL (SLF)	SEL (J&P)	No.1 (SLF)	No.1 (J&P)	No.2 (SLF)	No.2 (J&P)	CONST (LF)	STD (LF)	No.3 (SLF)	No.3 (J&P)	UTIL (LF)
Equivalent South African "S" Grades	S5		XXX								

Overall Summary: South Africa Vs Canada											
Grades											
Canadian Structural Grades	SEL (SLF)	SEL (J&P)	No.1 (SLF)	No.1 (J&P)	No.2 (SLF)	No.2 (J&P)	CONST (LF)	STD (LF)	No.3 (SLF)	No.3 (J&P)	UTIL (LF)
Equivalent South African "S" Grades	S5		XXX								