

GREAT BRITAIN: NEW FORECAST OF SOFTWOOD AVAILABILITY

By Steve Smith, Justin Gilbert and Roger Coppock, Forestry Commission

Summary

Softwood availability in Great Britain is set to increase by approximately 50% over the next 20 years. The longer term trend indicates that this peak of just over 15 million m³ in the period 2017-2021, falls thereafter to around 10 million m³ by the period 2042-2046. The following tables and charts, prepared jointly by the Forestry Commission and the Timber Growers Association and endorsed by the Forestry Commission's Advisory Panel, show the forecast of softwood availability in detail for the first 20 years and in outline for a further 45 years up to the period 2062-2066.

Overall Wood Supply

This new softwood availability forecast for Great Britain covers the next 66 years, enabling interested parties to put the detailed forecast for the earlier years into the longer term context. The Private Sector and Forest Enterprise data have been brought together and are published here on behalf of the Forestry Commission's Advisory Panel. *However it is worth noting that the Forest Enterprise forecast and the Private Sector forecast data presented in this article have been arrived at through two quite separate processes, and therefore represent very different types of estimate.*

As in previous forecasts, all annual volumes include 'thinning plus felling', and are presented as cubic metres overbark standing. The format of [Table 1](#) has been improved to show four top-diameter classes, enabling the consumer to make the split according to technical requirements. Previous forecasts have used a fairly arbitrary 'sawlog/small roundwood' split.

Average annual softwood availability is set to increase over the next 20 years from 10.9 million m³ in the period 2002-2006 to 15.5 million m³ in the period 2017-2021 ([Table 1](#)). It is worth emphasising that this forecast is an estimate of *availability* rather than of *production*, especially in relation to the Private Sector. Whether the predicted volume is brought to market depends on a wide range of factors.

The longer term trend, shown in [Figure 1](#), indicates, according to the prescriptions and models in this forecast, that softwood availability would fall back almost to current levels over the following 25 years beyond the peak. [Figure 1](#) also shows that the FE production in the long term is less variable than Private Sector availability. Restocking is taken into account, but no allowance was made for new planting. However, production from new planting would only begin to have a significant effect beyond the trough.

The chart for contribution by country, [Figure 2](#), shows the forecast availability in England and Wales to be relatively consistent in the longer term. The forecast for Scotland, however, estimates an increase in availability of 65% over the next 20 years.

[Figures 3](#) and [4](#) show the long term forecast breakdown by tree species and top-diameter class. Sitka spruce is the dominant species overall, averaging around 57% of the annual volume. The top-diameter class chart illustrates that the 'small roundwood' element varies much less than the 'sawlog' element in the long term, with 'sawlogs' rising from 58% in 2002-2006 to 68% in 2017-2021.

Comparison with the 1995 forecast shows there to be an increase in available volume of around 8% over the first three periods ([Table 2](#)). The Forest Enterprise forecast has changed little, and the increase is due to an increase in the Private Sector availability. Some possible explanations are given in the Private Sector section below.

The longer term view has not changed greatly since 1995, and the robust nature of the long term trend can be illustrated by [Figure 5](#). This shows that, despite a completely new crop dataset for the Private

Sector, and despite review and adjustment of prescriptions being applied to the Private Sector forecast, the overall line shows a peak and a trough at around the same level and close to the same period as shown by the 1995 forecast.

The comparison of forecast availability against actual production, given for the previous 14 years in [Figure 6](#), shows that there has been a good correlation. During this period, though, the Forest Enterprise dominated production. That phase could be over, as the Private Sector now has the greater share of the total available softwood. This forecast, therefore, can only be realised if the Private Sector presents the potentially available timber to the market.

Forest Enterprise Forecast - productive capacity maintained, despite forest sales

The 2000 Forest Enterprise forecast of production is the first to be run using Forest Enterprise's new Geographic Information System. This system contains all of the data which previous runs were based on, but allows local staff much greater access to the information. As a consequence, the forecast reflects the productive capacity of Forest Enterprise's estate much more accurately than has been possible in the past.

The forecast for Forest Enterprise reflects corporate production policy, and is based on a continually improving inventory of its growing stock. It is derived from locally prepared forest design plans and management regimes. The first five years represent a production plan, and thereafter the forecast is indicative of future volume. The figures for conifer volumes are presented in a way that represents the current marketing zones into which the Forest Enterprise sells its timber plus the national breakdown ([Table 1](#)), and also the new Forest Enterprise Territorial structure ([Table 3](#)). The figures for Scotland update those published in 1999 together with the Private Sector forecast.

Since the previous forecast in 1995, the forecastable Forest Enterprise estate has reduced by 26,000 hectares as a result of forest sales to the Private Sector. Despite the effect of these disposals, the productive capacity of the Forest Enterprise estate continues to increase over the next 20 years ([Table 1](#)). Comparison with the 1995 forecast shows only a small reduction of 3% over the first 3 periods ([Table 2](#)). Much of the apparent improvement in productive capacity can be attributed to better quality data arising from investing in forest inventory survey work over the last 5 years. Forest design plans are impacting on the figures also, as they contribute to the overall smoothing of volume in the longer term ([Figure 1](#)).

Private Sector Forecast - softwood availability up on previous forecasts

The Private Sector forecast is based on the information about crops obtained from the recently completed National Inventory of Woodland & Trees (NIWT), together with a set of prescriptions. These prescriptions were provided by the members of Forecasting Working Groups for each country, appointed by the FC Advisory Panel's Supply & Demand Sub-committee, and supported in the north by data from a survey of Timber Growers Association members.

The woodland is in a multiplicity of ownerships and the input prescriptions do not include firm individual or collective plans to harvest timber at a particular time. The output for the Private Sector therefore represents a forecast of availability if expected behaviour is followed, rather than a forecast of production.

The fundamental methodology of the Private Sector forecast has not been changed significantly for this assessment. However, the final results were arrived at through a process of discussion and the modelling of various scenarios. A list of the key parameters used in the Private Sector forecast is given in [Table 4](#).

The NIWT provided the basic Private Sector crop data. The overall forecastable area of conifer woodland was 104K hectares, or 15%, more than that used in the 1995 forecast - this includes some

new planting, and some FE disposals, but it also indicates that the updating of 1980 Census data was becoming less reliable. The NIWT showed there to be some 8% open space within woodland for the Private Sector in Great Britain. The current forecast was therefore able to use net productive areas. This new information indicates that the 15% general reduction factor used in 1995 was a substantial overestimate.

Woodland that is currently already older than the rotation lengths adopted constitutes a considerable proportion of the overall current standing volume. Assumptions have to be made on the proportion of the total current standing volume in this category that will be felled in the time-span of the forecast. For the 1995 forecast it was estimated that 45% of this timber would be felled over the first 20 years of the forecast. For the 2000 forecast the percentages were adjusted for each geographic zone; taking into account factors such as the likelihood of felling, and retention for conservation.

In the 1995 forecast volume was reduced by nominal figures, from 5% to 9% in different areas, to account for 'under-stocked and/or non-productive crops'. The NIWT gathered information on both stocking and on whether there were physical factors which would impede extraction. This information was used to formulate the more objective volume reduction factors, which are given in [Table 4](#).

The Private Sector 2000 forecast, in keeping with previous trends, shows an increase in the volumes available, relative to the 1995 forecast. In this case the reasons include; an increased area of conifer woodland (despite some conversion to broadleaved), the new set of yield models, less open space allowed for, and slightly less taken off as an arbitrary reduction.

Over the period of the detailed forecast up to the period 2012-2016 the new Private Sector forecast shows 19% more volume available when compared with the 1995 forecast ([Table 2](#)). Various scenarios were run for the Private Sector forecasts in each country, and while the value of the peak and trough of the longer term forecast could be moved up or down a little, and the timing could be moved back and forth to some extent, the general shape of the trend line was robust.

Acknowledgements

We would like to acknowledge the considerable effort put into data collection and development by the Timber Grower's Association and the Supply & Demand Sub-committee of the Forestry Commission's Advisory Panel. Thanks especially to Guy Watt for collecting and compiling the TGA data, and to Robin Adam, George Webb, Andrew Smith, Chris Cloy, Ashley Williams, Gordon Waugh, John Searl, George Conway and David Hughes for considering every stage of the private sector modelling.

Further information on the 2000 forecast can be obtained from:

Steve Smith, Woodland Surveys, Forest Research (steve.smith@forestry.gsi.gov.uk)
Roger Coppock, Forest Planning, Forest Enterprise (roger.coppock@forestry.gsi.gov.uk)
Both at Forestry Commission, 231 Corstorphine Road, Edinburgh, EH12 7AT

Further detail for previous forecasts can be found in:

Thompson D A (1991), Forestry Commission. GB Softwood Output Forecast Moves Up. *In Forestry & British Timber (November issue)*.

Morris A (1991), Forestry Commission. Private Sector Softwood Forecast. *In Forestry & British Timber (November issue)*.

Rothnie B D and Selmes R E (1996), Forestry Commission. New Assessment of GB Softwood Availability. *In Forestry & British Timber (January issue)*.

Smith S and Gilbert J (1999), Forestry Commission. Scotland: New Forecast of Softwood Availability. *In Forestry & British Timber (July issue)*.

LIST OF TABLES AND CHARTS

[Table \(1\)](#)

Great Britain: 2000 Forecast of Softwood Availability - Forest Enterprise and Private Sector
(Average annual standing volume in thousands of cubic metres overbark)

[Table \(2\)](#)

Comparison of 1995 and 2000 Softwood Availability Forecasts for Great Britain
(Average annual standing volume in thousands of cubic metres overbark)

[Table \(3\)](#)

Forest Enterprise: GB 2000 Softwood Forecast by FE Territory
(Average annual standing volume in thousands of cubic metres overbark)

[Table \(4\)](#)

Data and Key Assumptions used in the Private Sector Forecasting Model

[Figure \(1\)](#)

Longer Term Trend in Softwood Availability for Great Britain by Sector

[Figure \(2\)](#)

Longer Term Trend in Softwood Availability for Great Britain by Country

[Figure \(3\)](#)

Longer Term Trend in Softwood Availability for Great Britain by Tree Species

[Figure \(4\)](#)

Longer Term Trend in Softwood Availability for Great Britain by Top-diameter Class

[Figure \(5\)](#)

Comparison of 1995 and 2000 Softwood Availability Forecasts for Great Britain

[Figure \(6\)](#)

Comparison of GB Softwood Forecast Availability vs Actual Production

Table 1																
Great Britain: 2000 Forecast of Softwood Availability - Forest Enterprise and Private Sector																
(Average annual standing volume in thousands of cubic metres overbark)																
	2002-2006				2007-2011				2012-2016				2017-2021			
Top-diam Class	FE	PS	Total	% Spruce	FE	PS	Total	% Spruce	FE	PS	Total	% Spruce	FE	PS	Total	% Spruce
North England																
7-14cm	281	123	404	72	258	124	382	73	226	129	355	73	172	136	308	72
14-16cm	88	44	132	72	88	50	138	73	82	56	138	73	68	61	129	75
16-18cm	76	44	120	69	79	51	130	71	77	58	135	71	66	64	130	73
to 18cm	267	246	513	52	315	306	621	55	324	372	696	54	304	416	720	57
Total	712	457	1169	63	741	531	1272	64	709	615	1324	63	610	677	1287	64
Central England																
7-14cm	67	76	143	14	67	63	130	13	68	51	119	12	62	44	106	11
14-16cm	26	29	55	11	28	28	56	11	28	24	52	11	27	21	48	11
16-18cm	27	30	57	11	29	31	60	11	30	29	59	12	31	27	58	12
to 18cm	212	235	447	10	256	283	539	10	258	317	575	11	266	336	602	11
Total	331	370	701	11	380	405	785	11	384	421	805	11	386	428	814	11
South England																
7-14cm	78	175	253	24	60	148	208	23	57	127	184	22	51	114	165	22
14-16cm	32	66	98	25	26	62	88	24	24	55	79	23	22	49	71	24
16-18cm	34	68	102	24	31	69	100	23	28	66	94	23	26	60	86	24
to 18cm	191	611	802	16	258	750	1008	18	280	836	1116	20	319	873	1192	23
Total	335	920	1255	19	376	1029	1405	19	389	1084	1473	21	418	1096	1514	23
England																
7-14cm	424	375	799	46	386	336	722	48	350	308	658	47	288	295	583	47
14-16cm	145	139	284	44	142	139	281	46	134	136	270	47	118	131	249	49
16-18cm	137	142	279	40	140	151	291	42	135	154	289	43	123	151	274	45
to 18cm	672	1092	1764	25	828	1340	2168	27	863	1525	2388	28	884	1625	2509	30
Total	1378	1748	3126	33	1497	1966	3463	34	1482	2122	3604	34	1414	2202	3616	35
Wales																
7-14cm	236	139	375	68	225	150	375	70	228	159	387	71	217	163	380	69
14-16cm	97	49	146	69	95	54	149	72	91	55	146	73	88	52	140	73
16-18cm	102	53	155	67	102	59	161	70	94	61	155	73	91	59	150	73
to 18cm	530	341	871	59	584	405	989	62	593	456	1049	64	610	441	1051	64
Total	965	582	1547	63	1006	669	1675	66	1006	731	1737	67	1006	714	1720	67
Scotland																
7-14cm	999	1174	2173	66	1086	1343	2429	68	1104	1431	2535	67	1217	1369	2586	70
14-16cm	333	404	737	74	408	500	908	74	444	566	1010	74	516	581	1097	75
16-18cm	306	375	681	75	388	486	874	74	430	578	1008	74	510	623	1133	75
to 18cm	1144	1462	2606	71	1595	2114	3709	73	1779	2776	4555	75	2190	3140	5330	74
Total	2782	3415	6197	70	3477	4443	7920	72	3756	5351	9107	73	4432	5713	10145	73
Great Britain																
7-14cm	1661	1689	3350	62	1693	1829	3522	64	1685	1897	3582	64	1717	1826	3543	66
14-16cm	576	592	1168	66	644	694	1338	68	670	757	1427	68	719	764	1483	70
16-18cm	546	571	1117	65	629	696	1325	67	660	793	1453	68	722	833	1555	69
to 18cm	2342	2895	5237	54	3015	3859	6874	57	3230	4758	7988	59	3693	5206	8899	60
Total	5125	5746	10871	59	5980	7077	13057	61	6244	8204	14448	62	6852	8630	15482	63

Table 2									
Comparison of 1995 and 2000 Softwood Availability Forecasts for Great Britain									
(Average <u>annual</u> standing volume in thousands of cubic metres overbark)									
PRIVATE SECTOR									
Period	Small Roundwood			Sawlogs			Total		
	1995	2000	% Change	1995	2000	% Change	1995	2000	% Change
2002-2006	1887	2280	17%	2796	3466	19%	4683	5746	23%
2007-2011	2044	2522	19%	3839	4555	16%	5884	7077	20%
2012-2016	2183	2654	18%	4972	5550	10%	7155	8204	15%
FOREST ENTERPRISE									
Period	Small Roundwood			Sawlogs			Total		
	1995	2000	% Change	1995	2000	% Change	1995	2000	% Change
2002-2006	2057	2152	5%	3054	2973	-3%	5111	5125	0%
2007-2011	2264	2242	-1%	3954	3738	-5%	6218	5980	-4%
2012-2016	2230	2220	0%	4277	4024	-6%	6507	6244	-4%
TOTAL WOOD SUPPLY									
Period	Small Roundwood			Sawlogs			Total		
	1995	2000	% Change	1995	2000	% Change	1995	2000	% Change
2002-2006	3944	4432	12%	5850	6439	10%	9794	10871	11%
2007-2011	4309	4764	11%	7793	8293	6%	12102	13057	8%
2012-2016	4413	4874	10%	9249	9574	4%	13662	14448	6%
Notes:									
The 1995 forecast split the 14-18cm top-diameter class 50/50 between sawlogs and small roundwood									
The 2000 forecast:									
- the Private Sector classed small roundwood as <16cm td and sawlogs as >16cm td									
- the Forest Enterprise used local market knowledge to make the small roundwood/sawlog split									

Table 3. Forest Enterprise: GB 2000 Softwood Forecast by FE Territory						
(Average <u>annual</u> standing volume in thousands of cubic metres overbark)						
Period	Small Roundwood		Sawlogs		Total	
	Volume	% Spruce	Volume	% Spruce	Volume	% Spruce
England						
2002-2006	567	59%	811	39%	1378	45%
2007-2011	529	59%	968	38%	1497	43%
2012-2016	484	55%	998	37%	1482	45%
2017-2021	412	58%	1002	40%	1414	42%
Wales						
2002-2006	365	66%	600	65%	965	65%
2007-2011	356	67%	650	68%	1006	68%
2012-2016	356	73%	650	72%	1006	72%
2017-2021	356	75%	650	72%	1006	73%
North Scotland						
2002-2006	567	51%	852	69%	1419	61%
2007-2011	636	56%	1154	69%	1790	64%
2012-2016	645	59%	1323	67%	1968	64%
2017-2021	812	61%	1789	67%	2601	65%
South Scotland						
2002-2006	654	80%	709	82%	1363	81%
2007-2011	721	83%	966	85%	1687	84%
2012-2016	736	86%	1052	88%	1788	87%
2017-2021	707	90%	1124	89%	1831	89%

Table 4
Data and Key Assumptions used in the Private Sector Forecasting Model

	England	Wales	Scotland
Crop area data:	Crop areas by species and planting year class from the National Inventory of Woodland and Trees (NIWT). All areas of conifer species were included from both coniferous and mixed woodland.		
Volume assortment:	The assortment is calculated in 4 top-diameter classes; 7-14cm, 14-16cm, 16-18cm and over 18cm as cubic metres overbark standing volume.		
Unproductive area: Derived from the proportions of open space within woodland found by NIWT.	6.8% open space.	3.9% open space.	10.6% open space.
Timber potential: NIWT defines 4 classes of timber potential. Classes 1 and 2 capable of producing sawlogs and small roundwood Class 3, of small roundwood only, volume included in 7-14 cm size class. Class 4 not included in forecast.	Includes classes 1 and 2. Class 3 not significant in England.	Includes classes 1, 2 and 3.	Includes classes 1, 2 and 3.
Volume adjustment: Volume reductions applied to the forecast, based on NIWT data for extractability and stocking.	Overall adjustment: North England 4% Central England 4% South England 5%	Overall adjustment: Wales 2%	Overall adjustment: North Scotland 5% Mid Scotland 3% South Scotland 4%
Yield class:	Applied FE YC distribution.	Applied FE YC distribution.	Distribution based on TGA survey.
Thin/non thin:	1995 forecast; modified in North England.	1995 forecast, modified by TGA survey.	Proportions from TGA survey.
Rotation length: Amendments applied to principal species in each forecast.	1995 forecast as basis; amended to reflect extended YC range and variation in management: 25% as per basic assumption, 50% five years later and 25% 10 years later.	TGA survey; amended to reflect re-structuring: fell 25% 5 years early, fell 25% as per basic assumption, fell 25% 5 years later and 25% 10 years later.	TGA survey; amended to reflect re-structuring: fell 25% 5 years early, fell 25% as per basic assumption, fell 25% 5 years later and 25% 10 years later.
Crops already older than rotation age: Private Sector forecasting model assumes a proportion of the standing volume will be felled over the first 20 years.	10.9 million m ³ beyond rotation allocated: North 45%, Central 35%, South 35%	2.4 million m ³ beyond rotation allocated: Wales 45%	15.6 million m ³ beyond rotation allocated: North 35%, Mid 40%, South 45%

Fig.1 LONGER TERM TREND IN SOFTWOOD AVAILABILITY FOR GREAT BRITAIN BY SECTOR

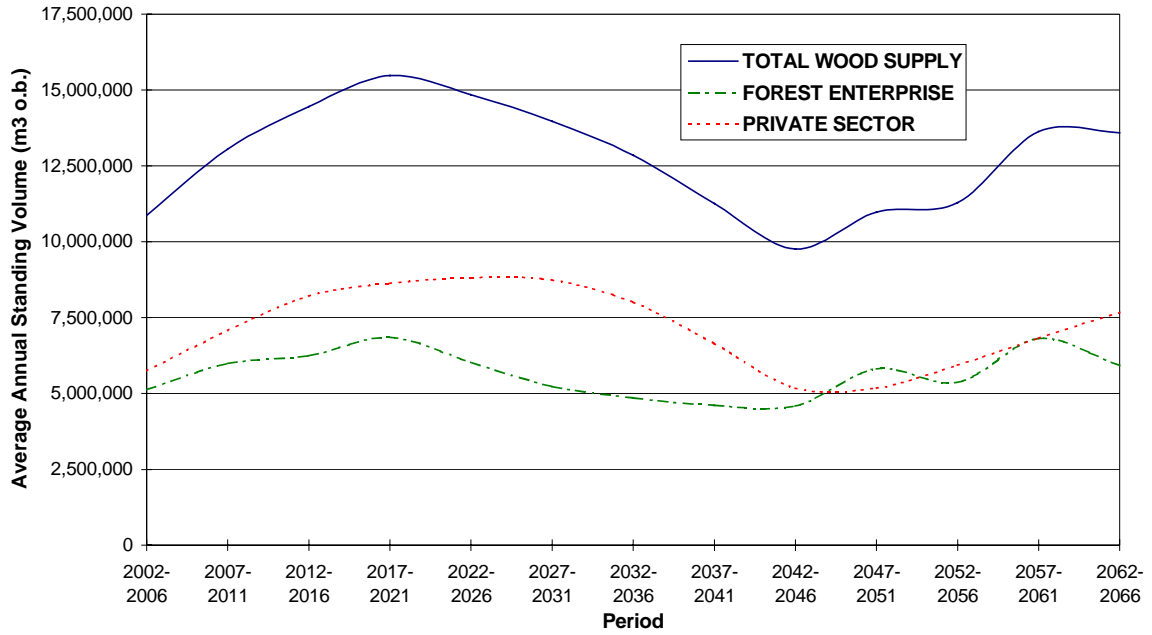


Fig.2 LONGER TERM TREND IN SOFTWOOD AVAILABILITY FOR GREAT BRITAIN BY COUNTRY

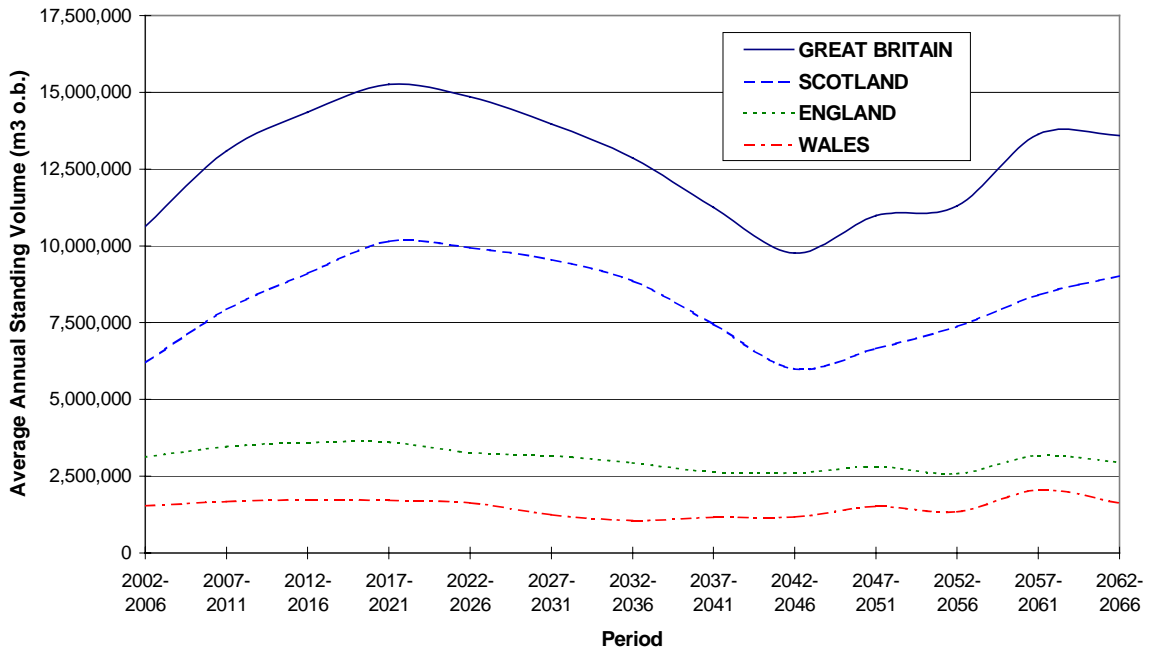


Fig.3 LONGER TERM TREND IN SOFTWOOD AVAILABILITY FOR GREAT BRITAIN BY TREE SPECIES

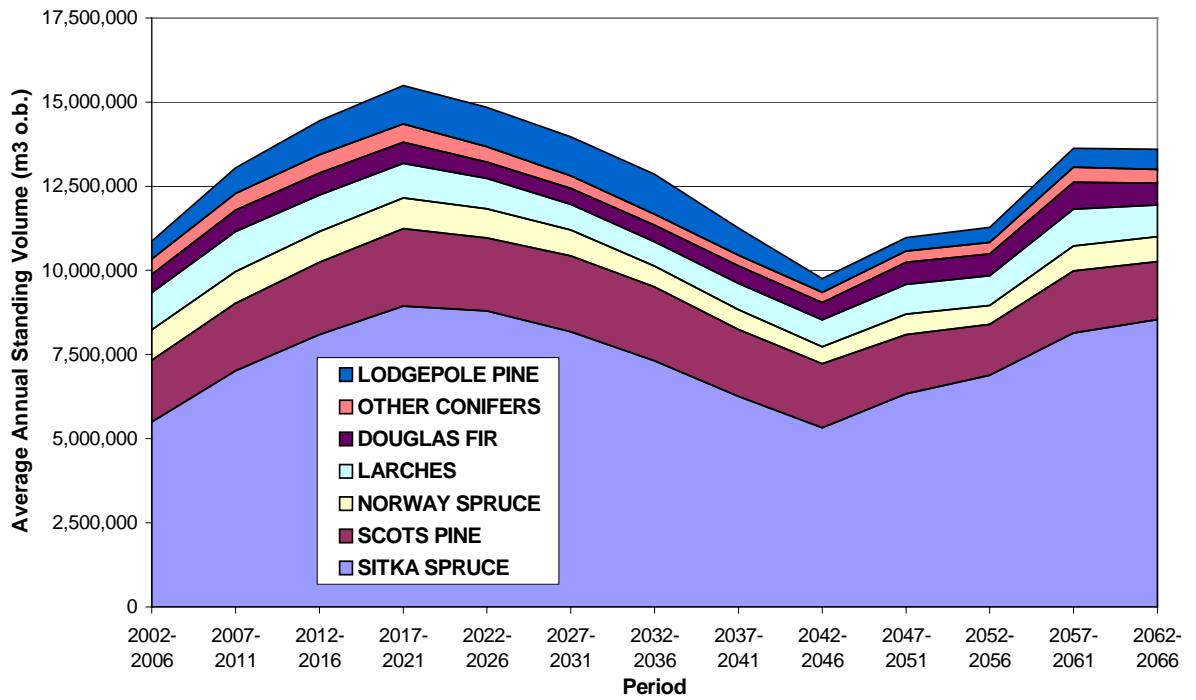
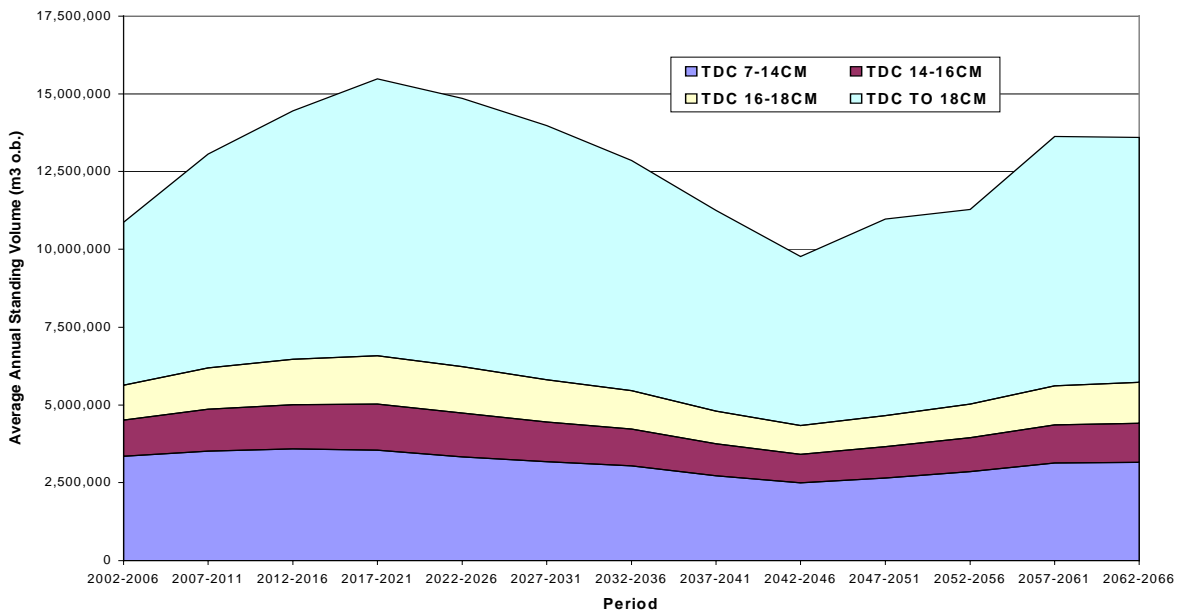


Fig.4 LONGER TERM TREND IN SOFTWOOD AVAILABILITY FOR GREAT BRITAIN BY TOP-DIAMETER CLASS



**Fig.5 COMPARISON OF 1995 AND 2000
SOFTWOOD AVAILABILITY FORECASTS FOR GREAT BRITAIN**



**Fig.6 COMPARISON OF GB SOFTWOOD
FORECAST AVAILABILITY vs ACTUAL PRODUCTION**

