UNITED KINGDOM: NEW FORECAST OF SOFTWOOD AVAILABILITY

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Summary

Softwood availability in the United Kingdom continues to increase over the next 15 years from 12 million m^3 in the period 2007-2011, peaking in the period 2017-2021 at just over 14 million m^3. This peak value is lower than suggested by the previous published forecast prepared in the year 2000. The lower peak reflects progress in addressing sustainability issues, including sustainability of timber supply, from both the Forestry Commission (FC) Estate and private woodlands.

Softwood timber supply from the FC Estate has continued to match the 2000 forecast volumes in the period 2000-2005 despite the weakening of the timber market.

The 2005 forecast for the FC Estate has been refined to represent the expanding range of silvicultural practices and the increasing adoption of formalised multi-objective Forest Design Plans. The complementary forecast for the Private Sector has been developed in co-operation with CONFOR and representatives of other growers and processors in the Private Sector, who have advised on recent and likely future management and production trends in private woodlands.

Overall Wood Supply

This new softwood availability forecast covers the whole of the United Kingdom for the period 2006 – 2026. ***It should be noted that forecast data presented in this article have been arrived at through separate processes, and therefore represent different types of estimate***. Detail regarding the Forestry Commission Estate forecast and the GB Private Sector can be found in this article. The Forest Service Northern Ireland has compiled the softwood availability forecast for its estate from production forecasting information based on inventory plots and felling coupe areas. These Northern Ireland volumes represent an estimate of availability but include areas where current management planning may defer harvesting for economic, social or environmental reasons. The Forest Service has estimated Northern Ireland private sector softwood availability from private woodlands data.

As in previous forecasts, all annual volumes include 'thinning plus felling', and are presented as cubic metres overbark standing. In line with the 2000 published forecast, Table 1 shows the total amount of material available to a stated top diameter.

Average annual softwood availability, as illustrated in Figure 1, is set to rise from approximately 12 million cubic metres per year in the period 2007-2011 to 14.6 million in 2017-21. The fourth period of this forecast shows a small reduction to 14.2 million. Preliminary results show that the total volume will continue to decrease.

Comparison with the 2000 forecast for Great Britain indicates an overall decrease in timber availability of 11% in the period 2007-2011. This is due to reductions in forecast timber availability for both the Private Sector and the FC Estate. The reasons for these reductions compared to the 2000 forecast are explored in the detailed discussions for each sector.

The proportion of timber availability due to the Private Sector rises from 52% in 2007-2011 to 56% in 2022-2026. Just over 60% of timber availability is in the form of spruce – rising from 63% to 65% by the end of the forecast. The forecast proportion due to spruce is slightly higher than suggested by the 2000 forecast.

The proportion of volume falling potentially into the sawlog category, as forecast for the Private Sector and the FC Estate, is shown in Tables 2a and 2b respectively. The forecast of sawlog volume shows a marked reduction compared with the 2000 forecast in the potential sawlog volume in the Private Sector in Scotland and in the FC Estate in Wales, although these reductions are directly commensurate with the forecast reduction in overall volume.

It is important to distinguish when forecast results should be interpreted either as *planned timber production* or as *potential timber availability*. Clarification of this point is provided in the detailed discussions for each sector.

Figure 2 shows actual timber production in Great Britain compared with the 2000 forecast. In the period 2001-2005, production from the FC Estate has averaged 103% of the forecast volume. Private Sector production compared to the 2000 forecast is difficult to estimate but based on removals reported by harvesting companies, has averaged 85% across Great Britain. There will be variation across Great Britain and Table 4 shows an increased volume associated with stands beyond rotation age in England compared to the 2000 forecast. Given the differing natures of both the forecasts and the process of recording removals, a greater uncertainty is inevitable with the Private Sector figures.

Comparison (on an average annual basis) of the 2000 FC Estate forecast and actual production for sawlogs in the period 2002-2006 shows a consistent level of production of sawlog volume over the forecast period (Table 2c). This information is only available for the FC Estate.

It should be noted that this is the first forecast to include volumes for Northern Ireland, hence it is not possible to make comparisons with earlier published forecasts for Northern Ireland within the scope of this article.

Forestry Commission Estate Forecast

The volumes and assortments published in the forecast reflect the cumulative impact of managing the FC estate (as of 31st March 2005) in accordance with approved Forest Design Plans. For the period 1st April 2006 – 31st March 2011 the forecast represents a Production Plan for the FC Estate in each country. FC intend that, at national level, these or equivalent volumes will be available through a combination of existing contracts and

new opportunities for purchase. It is conceivable that a proportion of the areas currently planned for harvest may not be economically viable and the extent to which such areas are worked will depend on conditions prevailing at the time. Conversely there are limited and localised areas where additional volume may be brought forward in response to changing circumstances.

Forest Design Plans are subject to 5 yearly review and whilst the cumulative (national) impact of such reviews is unlikely to be significant in the first 5 years of the forecast, there is more uncertainty regarding the timing and nature of harvesting in subsequent periods. ***Forecast volumes and assortments post 2011 should therefore be regarded as a statement of likely availability rather than of definite management intent.***

Tables 2a, 2b and 3a show key changes in projected out-turn between the 2000 forecast (Smith, Gilbert and Coppock, 2001) and the 2005 forecast. Table 3a has been constructed to allow direct comparison with the 2000 forecast (Table 3b) but the divisions no longer represent the Forestry Commission's territorial structure or the marketing zones in Scotland, which have been amalgamated.

Reduction in forecast volume

Compared to the 2000 forecast, volumes have reduced over the period 2007-11 for a number of reasons:

- In England improved stand data through re-survey (particularly in East Anglia) and increased adoption of alternatives to clearfell (including areas covered by the Ancient Woodland policy) have been major drivers.

- In Scotland the net effect of revising many management plans has been a reduction in the previously forecast rate of increase in volume production. There is no single issue that accounts for this net movement, it is essentially a consequence of better data and therefore improved plans as woodlands begin to reach maturity.

- In Wales the drop in forecast volume was identified early in 2005 and the combination of reasons for the change has been fully discussed with trade representatives. A great deal of ground work and data analysis has taken place to validate the 2005 figures to build confidence that the forecast for Wales is achievable.

Comparisons of the 1995, 2000 and 2005 forecasts are shown in Figure 3.

Assumptions behind the FC Estate forecast

The 2005 forecast improves on the 2000 forecast in three key areas, all of which help give confidence that the timber volumes forecast will be available for the market.

1. Better stand data

Increased availability and use of aerial photography to delineate stand boundaries combined with local ground inventory has improved the quality of the stand data on which this forecast is based.

2. More comprehensive management plans

Forest Design Plans were a relatively new concept at the time of the 2000 Production Forecast (PF). Since then experience in creating and implementing such plans has developed considerably and the 2005 forecast is not only based on a more comprehensive coverage of the FC Estate but on plans that take account of lessons learnt in their early development and application.

3. Appropriate representation of intended management

The enhancements made to the methods for representing intended management constitute a substantial improvement in the 2005 forecast over the 2000 forecast.

The 2000 forecast assumed that all stands were managed on a clearfell basis and that any thinning was carried out exactly as described in the yield tables published in Forestry Commission Booklet 48 (Edwards and Christie, 1981). The forecast obtained estimates of volume production directly from these 'standard' tables. In cases where stands were older than the age range represented by a particular yield table, the forecast referred to the final entry in the table as the closest available estimate.

The 2005 forecast explicitly recognises that an increasing proportion of forest stands are managed on extended rotations and/or according to 'low impact silvicultural systems' such as shelterwood or selection forestry. Generally stand management involves 'non-standard' thinning cycles as well as patterns and intensities of volume removal that are very different from those described in the Booklet 48 tables. These tables were constructed in the 1970s and 1980s using a mixture of computer-based calculations and hand adjustments, but even at the time it was recognised that it might be possible to automate the entire process (Hamilton and Christie, 1973). The 2005 forecast has made use of a fully automated system for yield table construction to represent variations in stand management. In essence, the approach has involved modelling the balance between potential stand volume increment and removals of volume as thinnings or losses due to mortality over time. This enables projections to be made of the development of the growing stock in response to specified management interventions over as long a rotation as required.

Detail relating to the assumptions underlying the calculation of volume estimates will be the subject of a future technical publication. Figure 4 illustrates the diversity in the patterns of removal (and resultant stand responses) that can be represented by the improved forecast calculations. Projections of standing volume over time are shown for three simple but contrasting management scenarios applied to a stand of yield class 12 Sitka spruce with an initial tree spacing of 1.7 x 1.7 metres. As shown in the figure

(yellow line), the timing and intensity of thinning can be varied to forecast, for example, the impact on volumes and assortments of thinning to achieve low stocking densities conducive to the development of natural regeneration.

In detail, Figure 4 illustrates the development of standing volume in a stand of yield class 12 Sitka spruce under different management regimes:

- Red line: 'standard' Booklet 48 thinning but maintained during retention of stand on an extended rotation;
- Blue line: Application of a seven year thinning cycle involving a 'seven year cut', maintained during retention of stand on an extended rotation;
- Yellow line: 'standard' Booklet 48 thinning up to age 45, followed by removal of standing trees over 4 'crown' thinnings on a 10 year cycle;
- Black line: Standing volume estimates from basic Booklet 48 yield table for comparison.

Private Sector Forecast (Great Britain)

The Private Sector forecast is based on information about the species composition of forest stands obtained from the National Inventory of Woodland and Trees (Smith and Gilbert, 2001, 2002ab, 2003). This is combined with a set of prescriptions describing management and restocking in the Private Sector. These prescriptions were developed by Forecast Working Groups for each country, whose members were drawn together by FC Wales, FC England and FC Scotland and included representatives of private sector growers, harvesters and processors as well as the FC.

Private woodlands encompass a multiplicity of ownerships and prescriptions are intended to represent the broad patterns of stand management and restocking in the Private Sector rather than specific individual or collective plans to harvest timber at a particular time. ***Forecast results for the Private Sector therefore represent estimates of volume potentially available, rather than a forecast of production.*** These estimates are based on the full productive potential of the growing stock when managed according to the prescriptions provided by the Working Groups.

The National Inventory, based on a 1% sample of woodland area in Great Britain, provided the basic stand data in terms of the areas of the principal conifer species in private woodlands by planting year. The areas in the forecast are net productive areas. Information on areas of new planting since the National Inventory was carried out has also been incorporated. These basic inventory calculations have been carried out separately for geographic zones of Great Britain. Forecasts have also been made for each geographic zone and national forecasts derived by combining results for relevant zones within each country. Wales has been treated as one geographic zone and the boundaries used within England and Scotland are shown in Figures 5 and 6 respectively.

Table 2a shows key changes in projected out-turn between the 2000 forecast (Smith, Gilbert and Coppock, 2001) and the 2005 forecast.

Reduction in forecast volume

Compared to the 2000 forecast, the 2005 Private Sector forecast shows a decrease in the volumes available over the period 2007-2026. Table 2a gives the change in forecast volume availability for each country by period and it can be seen that, whilst there are small changes in England and Wales, an overall decrease arises primarily from a pronounced reduction in forecast volume in Scotland (see also Figure 7).

These changes occur for a number of reasons:

– In England and Wales, the modest changes are the net effect of the updating of many forecast assumptions by the Working Groups, in particular the allocation of yield classes, reduction in thinning, rotation ages and management prescriptions.

– In Scotland, the marked reduction is due substantially to changed assumptions about the yield class distribution in private woodlands. In addition, the extent of forest areas being thinned has been reduced significantly in this forecast compared to the 2000 exercise. For example, in the period 2007-11 the proportion of volume derived from thinning in stands of class 1 reduces from 31% to 12%. Historical avoidance of thinning also precludes thinning later in rotations for some areas.

Assumptions behind the Private Sector forecast

The forecasting process involves many assumptions and a list of the key variables and parameters used in the Private Sector forecast is given in Table 4.

The 2005 forecast updates the 2000 forecast in three key areas.

1. Yield classes based on consistent and transparent data

The yield class distribution applied to forest areas is a very significant factor in forecast calculations. In the 2005 forecast, assessments of the yield class distributions for different species in Forestry Commission woodlands in each geographic zone have been applied to private woodlands.

In Scotland, the Forecast Working Group explored the possibility of using data directly from Private Sector sources. However, despite considerable assistance from private estates and management companies it has not proved possible to arrive at a robust and comprehensive set of yield class estimates from such sources. The Scotland Forecast Working Group has recommended that the issue of yield class data availability is addressed as a priority, noting that this is essential to attain long term stability within the Private Sector forecasting process, which would help to underpin its usefulness to industry. Until this issue can be addressed in detail, Forestry Commission woodlands represent the only consistent and transparent source of yield class data.

2. Updated management and restocking prescriptions

The Forecast Working Groups in all three countries have been careful to account for evolving trends in woodland management in response to incentives or economic constraints.

In all three countries, the forecast has accounted for requirements to expand the area of open space within woodlands. In Wales, the introduction of low impact silvicultural systems in private woodlands was represented in the forecast.

Forecast Working Groups assign characteristic rotation periods to stands composed of different trees species and yield classes. However, a significant area of the woodland assessed in the National Inventory is already older than these prescribed rotations, constituting a substantial proportion of the growing stock. The Working Groups have therefore developed assumptions about how the volume associated with this area will be felled during the forecast period. The way in which the volume has been allocated varies with geographic zone, taking into account factors such as the different incentives for felling, retention and conservation.

The National Inventory obtained information on both stocking of stands and on whether there were physical factors that would impede removal of timber. This information has been used to establish volume reduction factors which have been applied in each geographic zone.

It has not been possible to include adjustments to allow for the loss of woodland areas due to conversion to other land uses. This issue has represented a problem within all three countries and options for accounting for the loss of woodland areas will be reviewed as part of the 2010 forecast exercise.

3. Appropriate representation of current and intended management

The 2000 forecast was calculated on a similar basis to the 2000 forecast for the FC Estate, as described earlier.

The 2005 forecast explicitly recognises that an increasing proportion of forest stands are managed on extended rotations and/or according to ‘low impact silvicultural systems’. Significant development work was undertaken to extend the age range represented in the yield tables referred to in forecast calculations. Additional yield tables were constructed to represent, in broad terms, the patterns of production and consequent patterns of volume increment that would be expected in stands managed according to low impact silvicultural principles. The assumptions made in constructing these models were developed in consultation with the Wales Forecast Working Group. Forecasting methods were also extended to enable complex restocking assumptions to be specified, including increases to the area of open space within woodlands. While it is recognised that there is still considerable scope for further refinement of the yield tables and other facilities available to the forecast, these improvements constitute a step change in the representation of the stands forming private woodlands.

Great Britain forecast: specific issues

Sawlog Forecasts

As noted in the summary, Table 1 illustrates the total amount of material available to a given top diameter. This represents maximum potential and takes no account of quality (see below) or marketing constraints. Tables 2a (Private Sector) and 2b (FC Estate) state and apply adjustments that generate a more realistic picture of likely out-turns but these remain indicative and, irrespective of un-quantified quality issues, actual out-turn will be highly dependent on the cross-cutting specifications adopted.

Timber quality

The FC Estate and Private Sector forecasts do not include any estimate of timber quality. It is possible to combine data on stem straightness in Sitka spruce with forecast data to provide estimates of potential green and red log out-turn under specific crosscutting regimes. Work to achieve this is continuing and will be reported in the 2010 forecast.

Long term forecast

Estimates of long-term timber availability from the FC Estate and Private Sector woodlands will be the subject of a future publication.

Understanding potential production in the long term is important to establishing the degree of 'smoothing' that might be needed to meet policy objectives. For both the FC Estate and the Private Sector, incorporation of different restocking scenarios into the long-term forecast will enable the potential impact of different restocking policy alternatives on production to be determined.

For the FC Estate, use of actual restocking intentions set out in existing forest design plans will enable the overall consequences of implementing existing plans to be understood. For the Private Sector, the Forecast Working Groups have ensured that long term forecasts can represent major changes in woodland composition and management. Detailed scenarios for the restocking of woodlands in each geographic zone to reflect a variety of trends have been developed.

Red band needle blight

Red band needle blight will have an effect on the production from Corsican pine. This is unlikely to be significant in the first five years of the forecast and research is being undertaken to estimate potential impact in later years. Currently the disease is known to be significantly reducing annual increment of infected Corsican pine stands in East Anglia.

Hardwoods

A summary of the estimated production from broadleaves in the FC Estate is provided in

Table 5. Whilst production from broadleaves is set to increase, at less than 2% of overall production, it remains a small proportion of the total estimated volume production from the FC Estate.

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Further forecasts of production for individual customers who require such information for planning purposes (as stated in the Timber Customers Charter set out on the Forestry Commission's website http://www.forestry.gov.uk/forestry/HCOU-4U4JGT). Please note that requests may attract a charge.

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Further detail for previous forecasts can be found in:

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

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Smith, S. and Gilbert, J. (2001) *Forestry Commission: National Inventory of Woodland and Trees. Country report for England*. Forestry Commission: Edinburgh.

National Inventory reports can be read or downloaded from the web at www.forestry.gov.uk\inventory

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Table 1 - United Kingdom: 2005 Forecast of Softwood Availability
Forestry Commission Estate, FS and Private Sector
(Average annual volume in thousands of cubic metres overbark standing)

Top-diam Class	2007-2011 FC / FS	PS	Total	% Spruce	2012-2016 FC / FS	PS	Total	% Spruce	2017-2021 FC / FS	PS	Total	% Spruce	2022-2026 FC / FS	PS	Total	% Spruce
North England																
7-14cm	259	136	395	72	264	133	397	75	220	129	349	73	173	122	295	73
14-16cm	90	55	145	74	89	60	149	74	82	61	143	75	69	59	128	75
16-18cm	81	58	139	72	79	67	146	72	75	71	146	73	64	69	133	74
to 18cm	339	313	652	56	356	386	742	58	336	450	786	59	292	477	769	59
Total	**769**	**562**	**1331**	**64**	**788**	**647**	**1434**	**66**	**713**	**711**	**1424**	**65**	**598**	**727**	**1325**	**65**
Central England																
7-14cm	62	73	135	14	48	60	108	15	42	52	94	15	35	51	86	15
14-16cm	22	32	54	13	19	28	47	15	19	25	44	14	16	23	39	15
16-18cm	21	36	57	12	19	34	53	15	20	32	52	15	18	29	47	17
to 18cm	153	284	437	12	180	322	502	13	192	360	552	14	190	375	565	14
Total	**258**	**425**	**683**	**12**	**266**	**443**	**710**	**13**	**273**	**469**	**742**	**14**	**259**	**478**	**737**	**14**
South England																
7-14cm	56	146	202	21	56	127	183	21	53	115	168	21	42	107	149	21
14-16cm	20	62	82	22	21	55	76	22	22	50	72	22	18	46	64	20
16-18cm	22	70	92	23	23	64	87	24	24	60	84	23	20	56	76	22
to 18cm	243	594	837	20	276	665	941	20	318	750	1068	20	262	788	1050	19
Total	**341**	**871**	**1213**	**21**	**376**	**912**	**1287**	**21**	**417**	**974**	**1392**	**21**	**342**	**996**	**1339**	**20**
England																
7-14cm	377	355	732	47	368	320	688	51	315	296	611	50	250	280	530	49
14-16cm	132	149	281	47	129	144	272	49	123	137	259	50	103	128	231	50
16-18cm	124	164	288	44	121	165	286	47	119	162	282	48	102	154	256	48
to 18cm	735	1190	1926	30	812	1373	2185	31	846	1560	2406	31	744	1640	2384	31
Total	**1368**	**1858**	**3227**	**37**	**1430**	**2002**	**3431**	**38**	**1403**	**2155**	**3558**	**37**	**1199**	**2201**	**3401**	**36**
Wales																
7-14cm	166	155	321	66	174	156	330	68	169	178	347	71	150	193	343	74
14-16cm	69	55	124	71	73	56	129	74	71	54	125	73	66	50	116	73
16-18cm	72	61	133	71	77	64	141	74	73	63	136	74	69	57	126	75
to 18cm	482	397	879	63	557	469	1026	66	480	466	946	66	461	446	907	68
Total	**789**	**669**	**1457**	**65**	**881**	**746**	**1626**	**68**	**793**	**761**	**1554**	**69**	**746**	**746**	**1492**	**71**
Scotland																
7-14cm	999	945	1944	68	1070	1033	2103	68	1054	1116	2170	67	908	1082	1990	67
14-16cm	357	402	759	75	413	459	872	74	438	501	939	74	397	497	894	73
16-18cm	336	420	756	77	401	496	897	76	438	548	986	76	405	555	960	75
to 18cm	1540	1894	3434	76	1885	2393	4278	76	2172	2675	4847	77	1987	2872	4859	77
Total	**3232**	**3661**	**6893**	**73**	**3769**	**4380**	**8150**	**74**	**4102**	**4840**	**8942**	**74**	**3697**	**5006**	**8703**	**74**
Great Britain																
7-14cm	1542	1455	2997	63	1612	1509	3121	64	1538	1590	3128	64	1308	1555	2863	65
14-16cm	558	606	1164	68	615	659	1273	69	632	692	1323	69	566	674	1241	69
16-18cm	532	645	1177	68	599	725	1324	70	630	773	1404	70	576	767	1342	70
to 18cm	2757	3481	6239	60	3254	4235	7489	62	3498	4701	8199	62	3192	4958	8150	63
Total	**5389**	**6188**	**11577**	**62**	**6080**	**7128**	**13207**	**64**	**6298**	**7756**	**14054**	**64**	**5642**	**7954**	**13596**	**64**
Northern Ireland																
7-14cm	79	2	81	89	100	2	102	91	82	2	84	91	69	2	71	91
14-16cm	42	2	44	89	56	2	58	91	56	2	58	91	42	2	44	91
16-18cm	42	4	46	89	56	4	60	91	48	4	52	91	42	4	46	91
to 18cm	289	12	301	89	367	12	379	91	386	12	398	91	376	12	388	91
Total	**452**	**20**	**472**	**89**	**579**	**20**	**599**	**91**	**572**	**20**	**592**	**91**	**529**	**20**	**549**	**91**
United Kingdom																
7-14cm	1621	1457	3078	63	1712	1511	3223	65	1620	1592	3212	65	1377	1557	2934	65
14-16cm	600	608	1208	68	671	661	1331	70	688	694	1381	70	608	676	1285	69
16-18cm	574	649	1223	69	655	729	1384	71	678	777	1456	71	618	771	1388	71
to 18cm	3046	3493	6540	61	3621	4247	7868	63	3884	4713	8597	64	3568	4970	8538	64
Total	**5841**	**6208**	**12049**	**63**	**6659**	**7148**	**13806**	**65**	**6870**	**7776**	**14646**	**65**	**6171**	**7974**	**14145**	**65**

The totals are not always the same as the table figures. This is due to rounding.

Table 1 – 2005 Forecast of softwood availability

Table 2a - Comparison of 2000 and 2005 Softwood Availability Forecasts GB
Private Sector
(Average annual volume in thousands of cubic metres overbark standing)

PRIVATE SECTOR - ENGLAND									
Period	Small Roundwood			Sawlogs			Total		
	2000	2005	% Change	2000	2005	% Change	2000	2005	% Change
2007-2011	475	504	6%	1491	1354	-9%	1966	1858	-5%
2012-2016	444	464	5%	1679	1538	-8%	2122	2002	-6%
2017-2021	426	433	2%	1776	1722	-3%	2202	2155	-2%
PRIVATE SECTOR - WALES									
Period	Small Roundwood			Sawlogs			Total		
	2000	2005	% Change	2000	2005	% Change	2000	2005	% Change
2007-2011	204	210	3%	464	459	-1%	669	669	0%
2012-2016	214	213	0%	517	533	3%	731	746	2%
2017-2021	215	232	8%	500	529	6%	714	761	7%
PRIVATE SECTOR - SCOTLAND									
Period	Small Roundwood			Sawlogs			Total		
	2000	2005	% Change	2000	2005	% Change	2000	2005	% Change
2007-2011	1843	1347	-27%	2600	2314	-11%	4443	3660	-18%
2012-2016	1997	1492	-25%	3354	2888	-14%	5351	4380	-18%
2017-2021	1950	1616	-17%	3763	3224	-14%	5713	4840	-15%
PRIVATE SECTOR - GB									
Period	Small Roundwood			Sawlogs			Total		
	2000	2005	% Change	2000	2005	% Change	2000	2005	% Change
2007-2011	2522	2061	-18%	4555	4126	-9%	7077	6189	-13%
2012-2016	2654	2168	-18%	5550	4960	-11%	8204	7127	-13%
2017-2021	2590	2282	-12%	6040	5474	-9%	8630	7755	-10%

Table 2a - Comparison of 2000 and 2005 softwood availability forecasts for Private Sector

Table 2b - Comparison of 2000 and 2005 Softwood Availability Forecasts GB FC Estate

(Average annual volume in thousands of cubic metres overbark standing)

FORESTRY COMMISSION ESTATE - ENGLAND									
Period	Small Roundwood			Sawlogs			Total		
	2000	2005	% Change	2000	2005	% Change	2000	2005	% Change
2007-2011	529	480	-9%	968	888	-8%	1497	1368	-9%
2012-2016	484	494	2%	998	936	-6%	1482	1430	-4%
2017-2021	412	488	18%	1002	915	-9%	1414	1403	-1%
FORESTRY COMMISSION ESTATE - WALES									
Period	Small Roundwood			Sawlogs			Total		
	2000	2005	% Change	2000	2005	% Change	2000	2005	% Change
2007-2011	356	316	-11%	650	473	-27%	1006	789	-22%
2012-2016	356	352	-1%	650	529	-19%	1006	881	-12%
2017-2021	356	317	-11%	650	476	-27%	1006	793	-21%
FORESTRY COMMISSION ESTATE - SCOTLAND									
Period	Small Roundwood			Sawlogs			Total		
	2000	2005	% Change	2000	2005	% Change	2000	2005	% Change
2007-2011	1451	1218	-16%	2026	2014	-1%	3477	3233	-7%
2012-2016	1504	1318	-12%	2252	2451	9%	3756	3769	0%
2017-2021	1692	1310	-23%	2740	2793	2%	4432	4103	-7%
FORESTRY COMMISSION ESTATE - GB									
Period	Small Roundwood			Sawlogs			Total		
	2000	2005	% Change	2000	2005	% Change	2000	2005	% Change
2007-2011	2336	2014	-14%	3644	3375	-7%	5980	5390	-10%
2012-2016	2344	2164	-8%	3900	3916	0%	6244	6080	-3%
2017-2021	2460	2115	-14%	4392	4184	-5%	6852	6299	-8%

Table 2b - Comparison of 2000 and 2005 softwood availability forecasts for FC Estate

Table 2c - Out-turn for 2002-2006 against 2000 softwood forecast
FC Estate
(Average annual volume in thousands of cubic metres overbark standing)

FORECAST	5 Yr TOTAL	ANNUAL	ANNUAL SRW	ANNUAL SRW	ANNUAL LOG	ANNUAL LOG	Total
England	6890	1378	567	41%	811	59%	1378
Wales	4825	965	365	38%	600	62%	965
Scotland	13910	2782	1221	44%	1561	56%	2782
GB	25625	5125	2153	42%	2972	58%	5125

ACTUAL	5 Yr TOTAL	ANNUAL	ANNUAL SRW	ANNUAL SRW	ANNUAL LOGS	ANNUAL LOGS	Actual v Forecast
England	6924	1385	485	35%	900	65%	101%
Wales	4865	973	399	41%	574	59%	101%
Scotland	14618	2924	1023	35%	1900	65%	105%
GB	26407	5281	1838	35%	3444	65%	103%

For Scotland and Wales, Sawlog/SRW outturn based on actual despatches from direct production and apportionment of standing sales volumes in line with forecast breakout for the weighted mean dbh of those sales. In England, direct production based on actual dispatches and standing sales calculated individually using mean dbh for each individual sale.

Table 2c – Comparison of out-turn for 2002-2006 against the 2000 softwood forecast.

Table 3a: GB 2005 Softwood Forecast by country
FC Estate
(Average annual volume in thousands of cubic metres overbark standing)

Period	Small Roundwood		Sawlogs		Total	
	Volume	% Spruce	Volume	% Spruce	Volume	% Spruce
England						
2007-2011	480	62%	888	44%	1368	51%
2012-2016	494	61%	936	41%	1430	47%
2017-2021	488	60%	915	39%	1403	46%
2022-2026	422	62%	777	41%	1199	49%
Wales						
2007-2011	316	72%	473	72%	789	72%
2012-2016	353	75%	528	75%	881	75%
2017-2021	318	75%	475	75%	793	75%
2022-2026	299	76%	447	77%	746	76%
North Scotland						
2007-2011	544	52%	1090	67%	1635	62%
2012-2016	620	54%	1330	68%	1950	63%
2017-2021	669	58%	1565	68%	2234	65%
2022-2026	603	58%	1459	67%	2062	65%
South Scotland						
2007-2011	674	84%	924	87%	1598	86%
2012-2016	699	85%	1120	90%	1820	88%
2017-2021	640	88%	1229	91%	1870	90%
2022-2026	533	89%	1103	92%	1636	91%
Scotland						
2007-2011	1218	70%	2014	76%	3233	74%
2012-2016	1319	71%	2450	78%	3770	75%
2017-2021	1309	73%	2794	78%	4104	76%
2022-2026	1136	72%	2562	78%	3698	76%

Table 3a – GB 2005 Softwood forecast FC Estate

Table 3b - GB 2000 Softwood Forecast by FE Territory
FC Estate
(Average annual 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 3b – GB 2000 Softwood forecast FC Estate

TABLE 4 - DATA AND KEY ASSUMPTIONS USED IN THE PRIVATE SECTOR FORECAST

	England	**Wales**	**Scotland**
Unproductive area Obtained from National Inventory.	7.1% open space	2.6% open space	10.9% open space
Timber potential National Inventory defines 3 productive classes of timber potential. Classes 1 and 2 are capable of producing sawlogs and small roundwood, class 3 is capable of producing small roundwood only.	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 Based on National Inventory data for extractability and stocking.	Overall adjustment: – North England 3.7% – Central England 4.4% – South England 5.1%	Overall adjustment: – Wales 2%	Overall adjustment: – North 2.8% – North-East 7.2% – East 5.7% – South 8.0% – West 6.8%
Yield class	Applied yield class distribution for FC Estate.		
Thin/non thin	Extensively modified from 2000 forecast to reflect reduced thinning activity.	Extensively modified from 2000 forecast to reflect reduced thinning activity but also an expanding range of silvicultural practices. In particular, 17% of conifer forest area converted to low impact silvicultural systems.	Extensively modified from 2000 forecast to reflect reduced thinning activity.
Rotation period	Modified from 2000 forecast, notably: – Low yield class stands assigned for either premature felling or retention Douglas fir stands placed on longer rotations for larger diameter material.	Modified from 2000 forecast. See comments under thin/non thin.	Modified from 2000 forecast.
Stands beyond rotation age Forecast assumes a proportion of the available volume will be felled during the forecast period.	11.4 million m^3 beyond rotation. Percentage of volume estimated in each zone as beyond rotation age assumed available: – North 10%, – Central 20%, – South 30%	1.8 million m^3 beyond rotation. Percentage of volume estimated in each zone as beyond rotation age assumed available: – Wales 70% Areas managed according to low impact silvicultural systems excluded.	13.0 million m^3 beyond rotation. Percentage of volume estimated in each zone as beyond rotation age assumed available: – North 39% – North-East 44% – East 50% – South 73% – West 86%.

Table 5 - Comparison of 2000 and 2005 Hardwood Availability Forecasts for the FC Estate

(Average annual volume in thousands of cubic metres overbark standing)

FC Estate			
Period	Hardwoods		
	2000	2005	% Change
2007-2011	90	97	8%
2012-2016	93	106	14%
2017-2021	96	107	11%
2022-2026		111	

Table 5 – Hardwood forecast for FC Estate

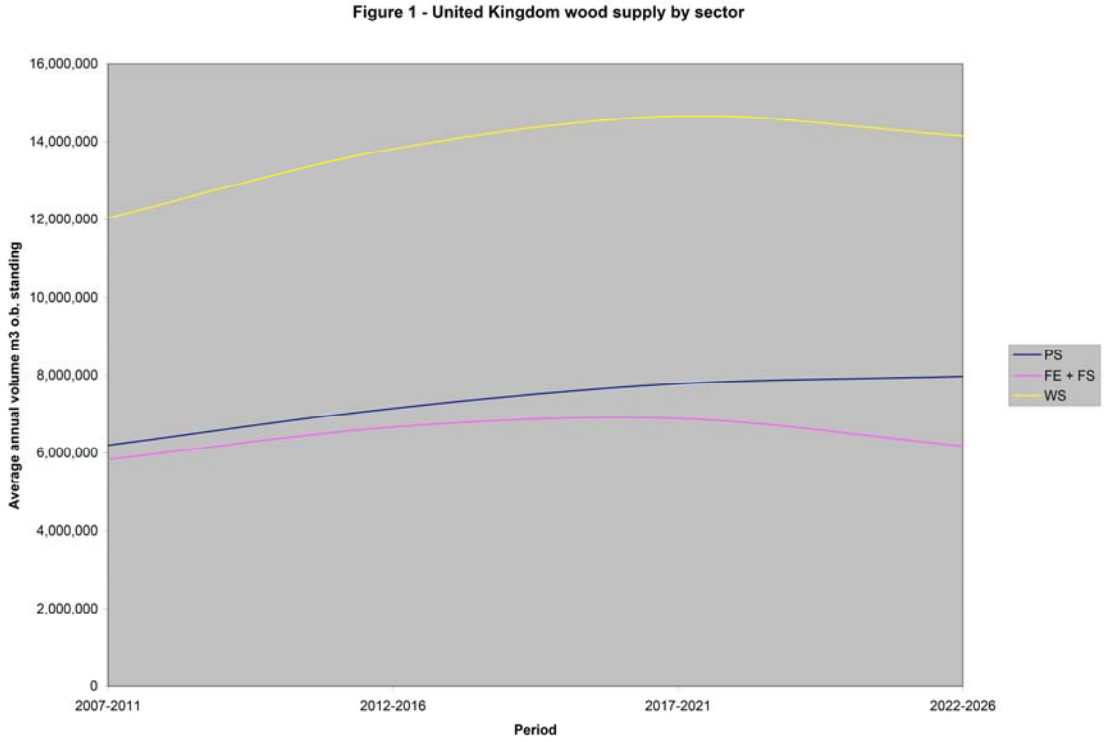

Figure 1 – Average Annual Softwood Availability

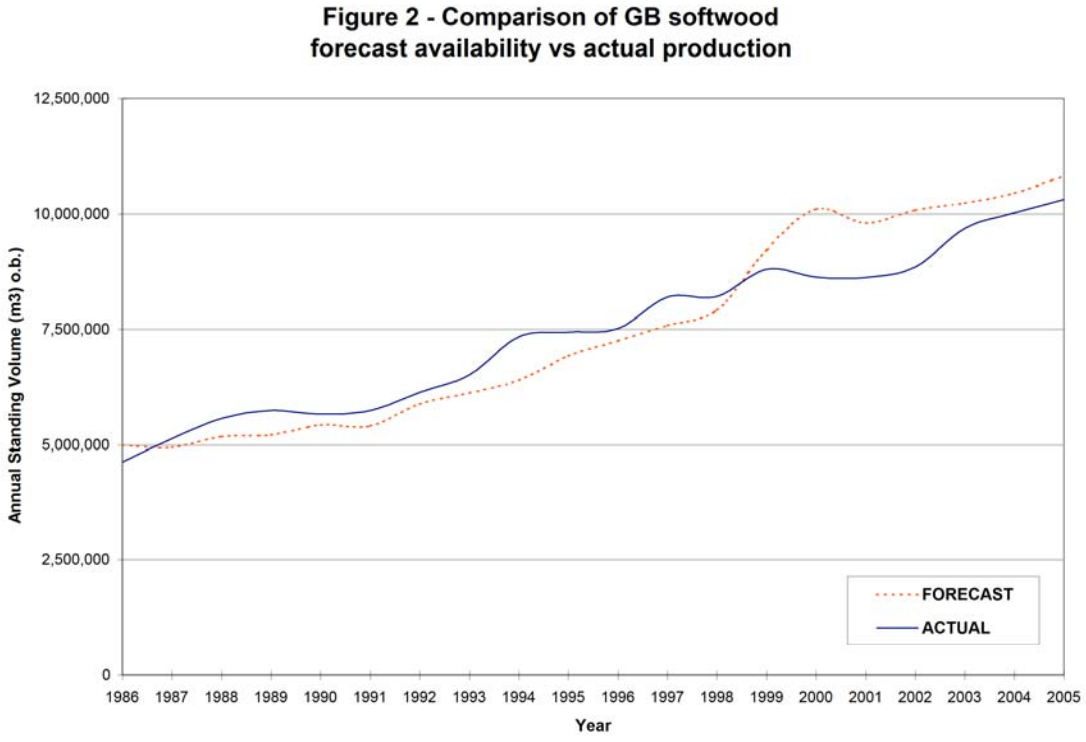

Figure 2 – Average Annual GB Softwood Availability vs Production

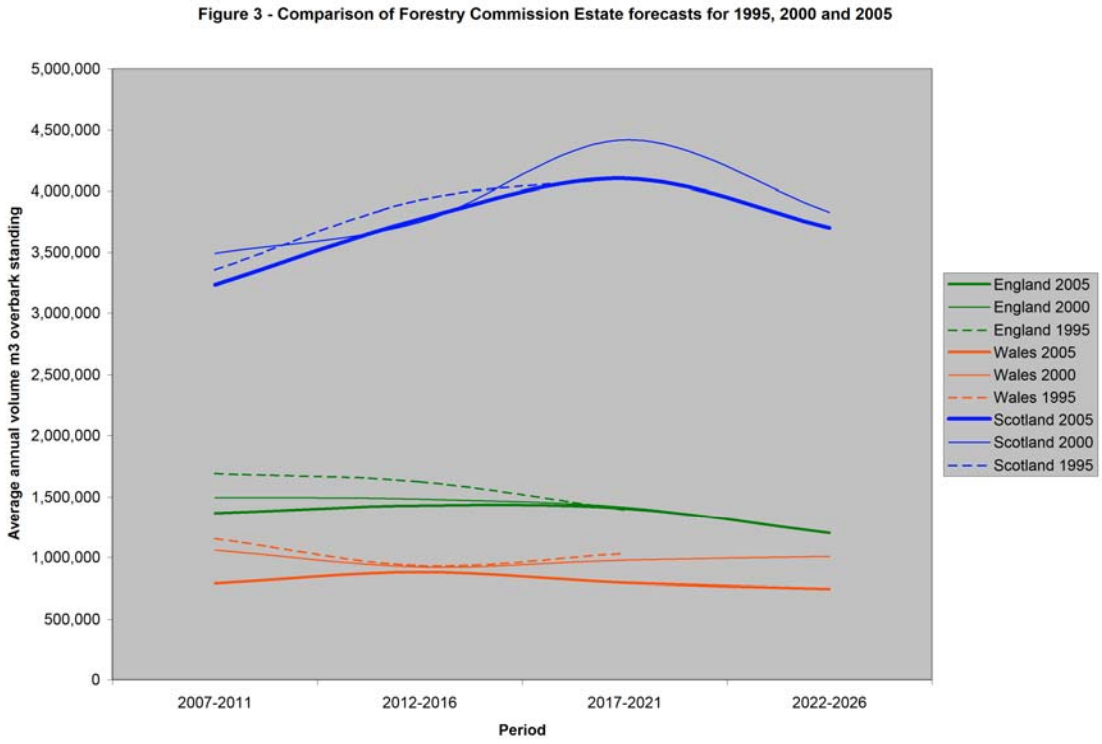

Figure 3 – Comparison of FC Estate forecasts for 1995, 2000 and 2005

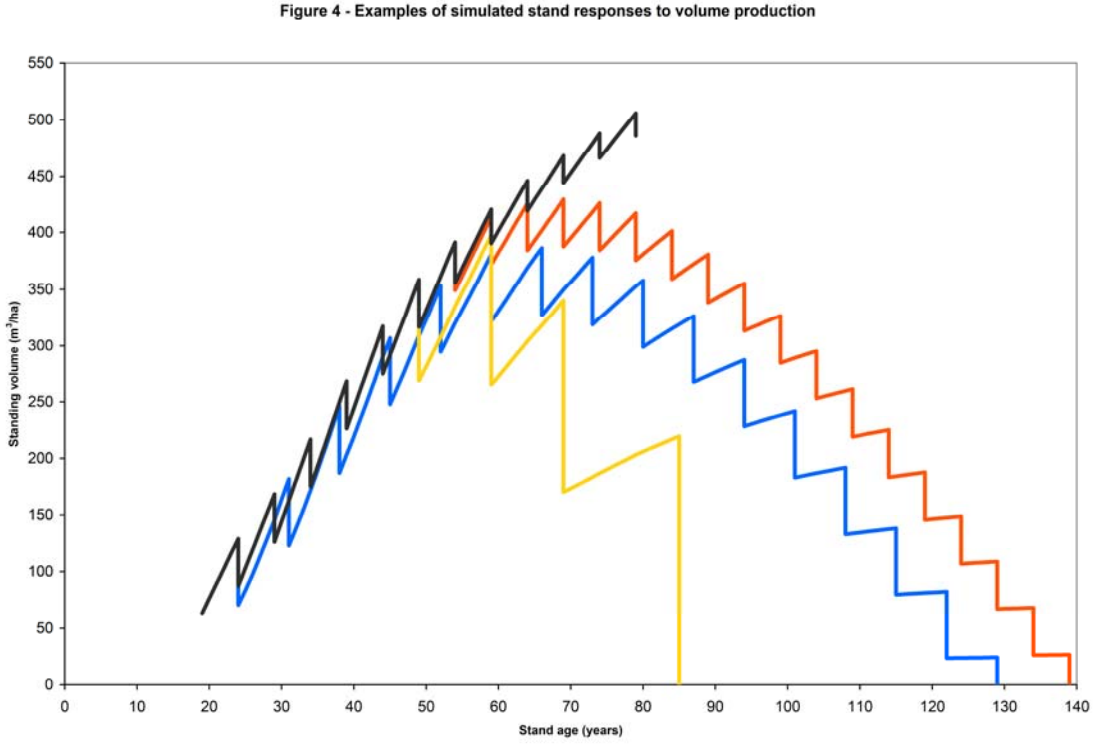

Figure 4 – Example of volume production

Figure 5 – England forecast zones

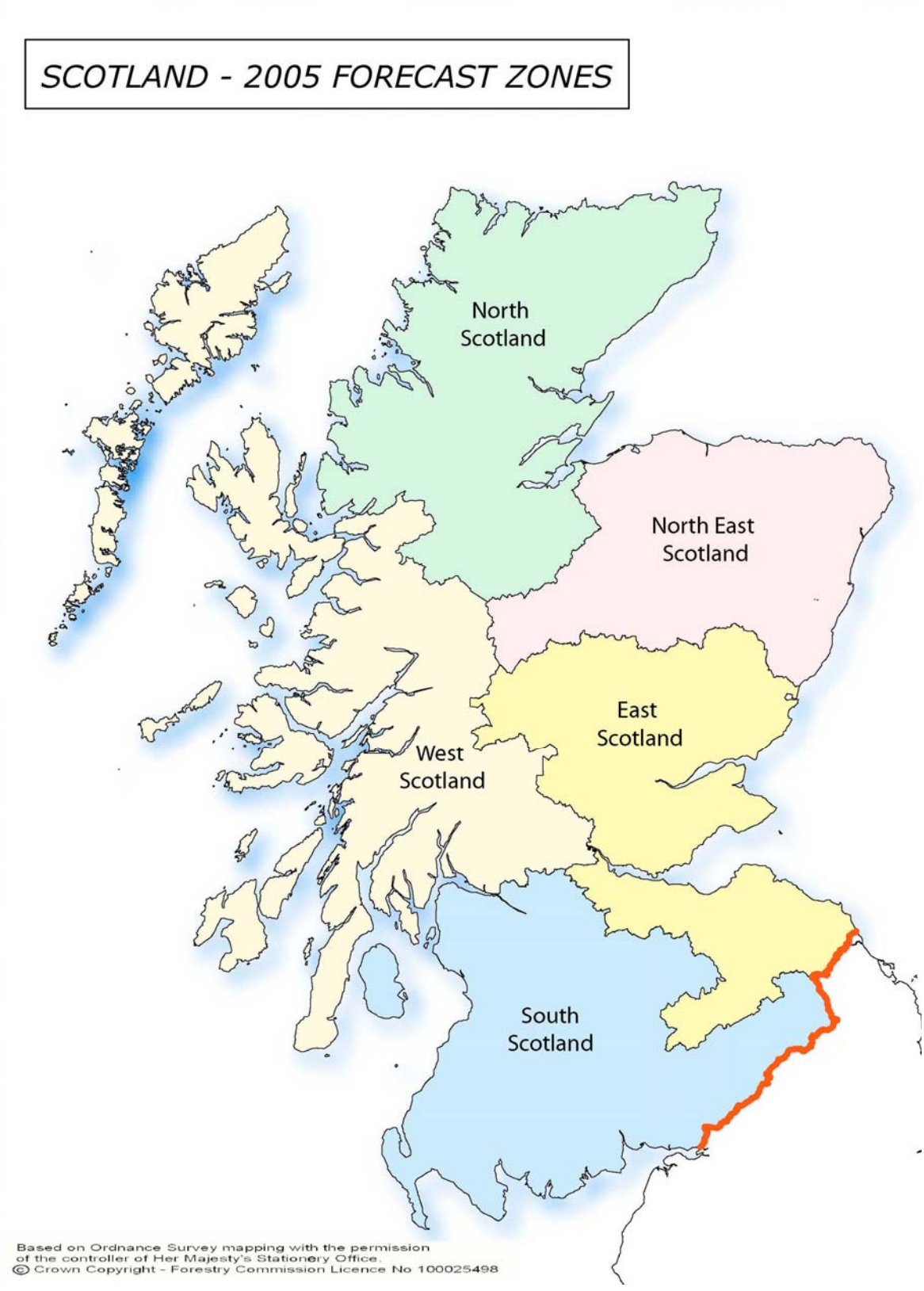

Figure 6 – Scotland forecast zones

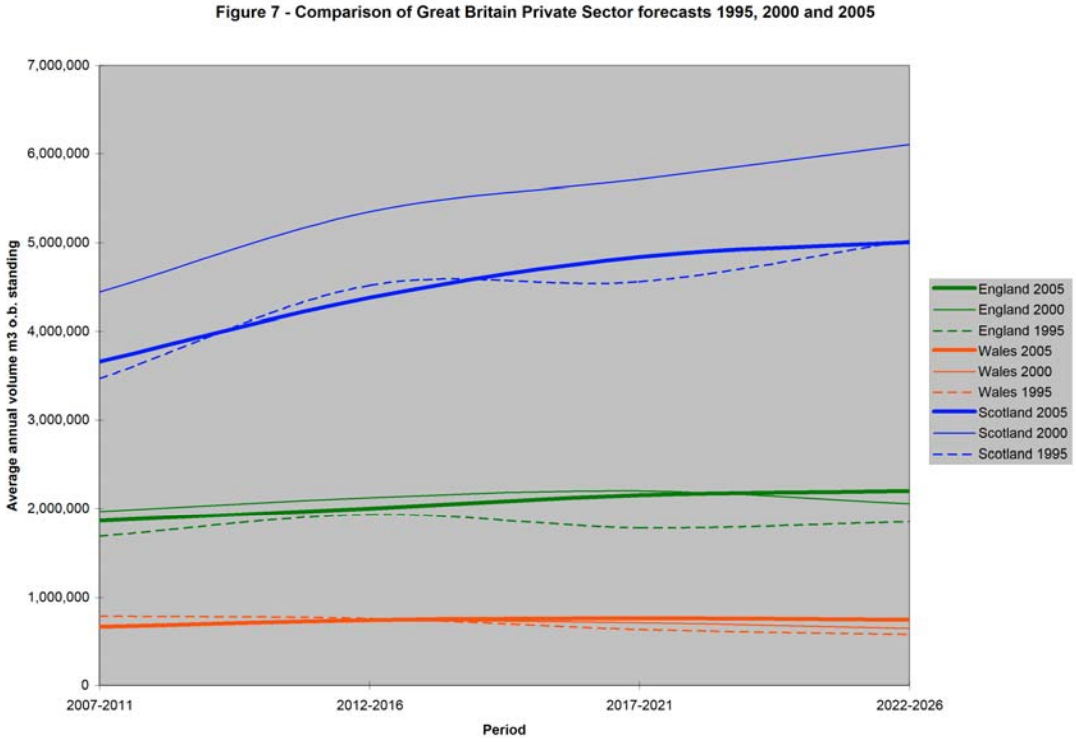

Figure 7 - Comparison of Private Sector forecasts for 1995, 2000 and 2005