NFI provisional estimates for woodland within 100 miles of Southampton

Issued by: National Forest Inventory, Forestry Commission,
231 Corstorphine Road, Edinburgh, EH12 7AT

Date: March 2015

Enquiries: Ben Ditchburn, 0300 067 5064
NFI@forestry.gsi.gov.uk

Statistician: Alan Brewer,
alan.brewer@forestry.gsi.gov.uk

Website: www.forestry.gov.uk/inventory
www.forestry.gov.uk/forecast

Summary

This report provides a detailed picture of the stocked area in woodland, the standing volume of timber and the associated live biomass and carbon stocks for woodland within a 100-mile radius of Southampton. These estimates are a subset of those published as part of the 2012 growing stock information presented in the National Forest Inventory (NFI) *50-year forecast of softwood timber availability* (2014) and *50-year forecast of hardwood timber availability* (2014). NFI reports are published at www.forestry.gov.uk/inventory.

In addition, the report provides forecasts of timber availability, standing volume and increment for softwoods and hardwoods arising from the stocked area and standing volume. Forecasts are based on the ‘headline’ harvesting scenario described in the 50-year forecasts NFI reports. An alternative forecast is provided using a harvesting scenario which brings all Private sector broadleaved woodland into production.

The estimates provided in this report are provisional in nature.

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Approach

The approach taken in the derivation of these results and to be used in their interpretation is described in the full suite of forecast reports which can be found at www.forestry.gov.uk/forecast. Refer to the *Standing timber volume for coniferous trees in Britain* (2012) and the *NFI preliminary estimates of quantities of broadleaved species in British Woodlands with special focus on ash* (2012) reports for a description of the underlying methodologies and interpretation, and also for the England and Great Britain (GB) context. Refer to the *NFI forecasts methodology* (2012) overview report for a detailed description and discussion of forecasting future availability of timber from NFI field survey data and from information in the Forestry Commission's sub-compartment database (SCDB). The wider context of forecasts of timber production from woodland in GB and its constituent countries under a range of harvesting scenarios can be found in the *50-year forecast of softwood timber availability* (2014) and the *50-year forecast of hardwood timber availability* (2014).

The estimates reported here are based upon field samples assessed between October 2009 and August 2013, the results of which have been subjected to rigorous data quality assurance procedures. These field samples constitute approximately two-thirds of the sites to be sampled within the first cycle of NFI field sampling. As a consequence, the estimates in this report are classed as provisional.

Results

The results presented in this report are estimates of standing volumes and stocked areas at 31 March 2012, and 50-year forecasts of softwood and hardwood availability under the 'headline' harvesting scenario and also under a scenario assuming all hardwoods are harvested in Private sector woodland within 50 miles of Southampton. The data sources used for the compilation of these estimates are the same as described in the NFI reports *Standing timber volume for coniferous trees in Britain* (2012), the *50-year forecast of softwood availability* (2014) and the *50-year forecast of hardwood availability* (2014). Estimates for the Forestry Commission (FC) estate and the Natural Resources Wales (NRW) estate[*] are derived from the NRW's SCDB, while those for the Private sector (i.e. non-FC in England and non-NRW in Wales) estate are derived from information collected in the NFI field survey. A fuller description of these data sources and how they are used in the production of estimates, including sampling standard errors (SEs) attached to the Private sector estimates, is provided in the earlier documents.

[*] The Natural Resources Wales estate in this report refers to the estate formerly managed by Forestry Commission Wales. It does not include former holdings in Wales of the Environment Agency or Countryside Council for Wales, which are regarded as Private sector woodland in this report.

Results are provided for stocked area at 31 March 2012 (**Figures 1–1a** and **Tables 1–3**), felled area (**Table 4**), standing volume at 31 March 2012 (**Figures 2–2a** and **Tables 5–7**), biomass and carbon stocks at 31 March 2012 (**Tables 8–9**), evidence of thinning in Private sector stands from the NFI field survey (**Figure 3**), the 'headline' 50-year forecast (**Figures 4–8** and **Tables 10–12**) and the 'unrestricted' 50-year forecast (**Figures 9–13** and **Tables 13–15**). **Figures 14–15** and **Table 16** compare the hardwood production under the two scenarios.

The values in the tables have been independently rounded, so may not add to the totals shown. In some breakdowns of Private sector estimates, the estimates in the body of the table may not sum to the quoted total because each individual value, including the total, has been independently generated by the estimation procedure used for results from the NFI sample survey. Sampling SEs attached to Private sector estimates are expressed in relative terms (%) to the right of the relevant estimate. Percentages in the pie charts may also not sum to 100 due to rounding.

Stocked area at 31 March 2012

Figure 1 Principal tree species composition by stocked area at 31 March 2012

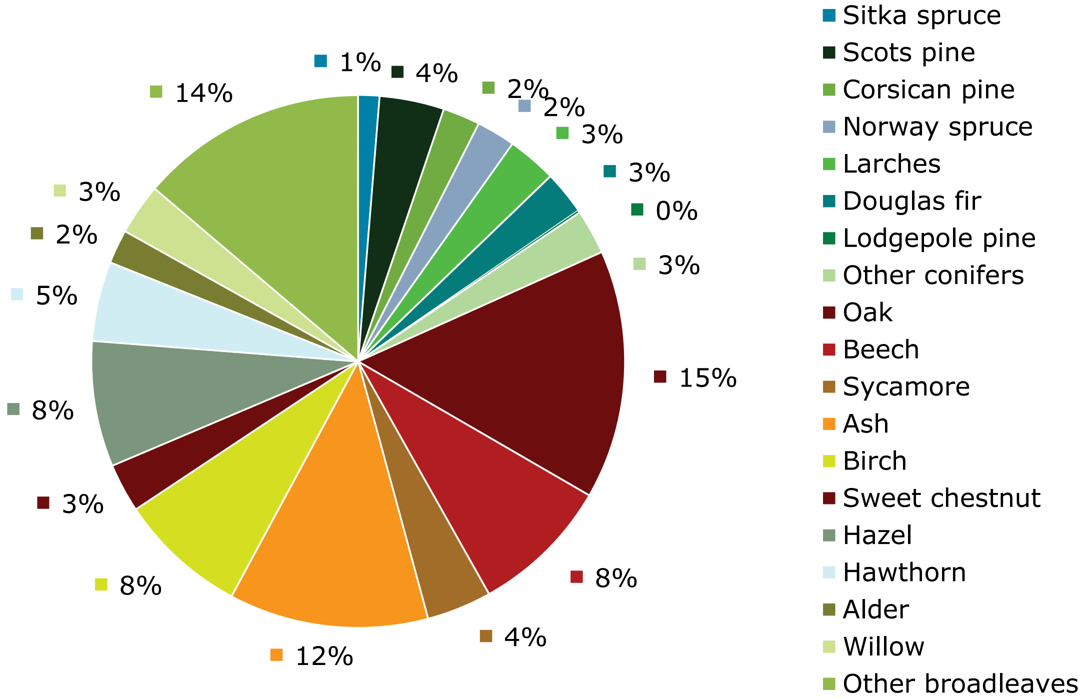


Figure 1a Principal conifer tree species composition by stocked area at 31 March 2012

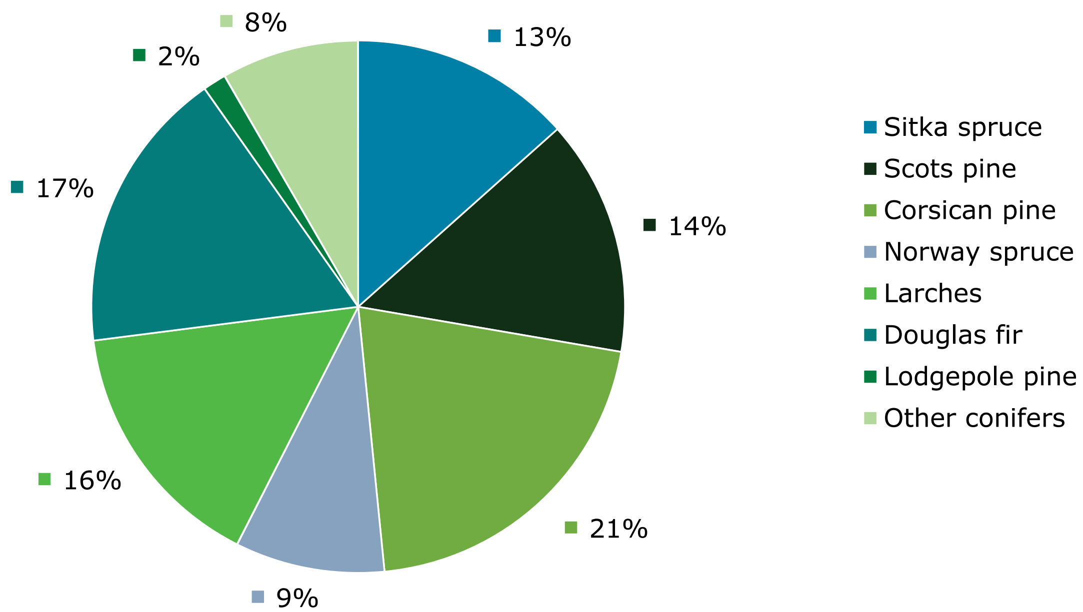


Table 1 Stocked area by principal tree species at 31 March 2012

Principal species	FC/NRW area (000 ha)	Private sector area (000 ha)	Private sector *SE%*	Total area (000 ha)
Conifers				
Sitka spruce	4.5	2.7	*21*	**7.2**
Scots pine	4.8	17.1	*7*	**21.9**
Corsican pine	6.9	5.8	*13*	**12.7**
Norway spruce	3.0	10.1	*9*	**13.1**
Larches	5.2	11.5	*8*	**16.7**
Douglas fir	5.8	9.0	*10*	**14.8**
Lodgepole pine	0.5	0.3	*43*	**0.8**
Other conifers	2.8	12.4	*9*	**15.2**
All conifers	**33.4**	**69.0**	***3***	**102.4**
Broadleaves				
Oak	11.6	73.0	*3*	**84.6**
Beech	10.6	37.0	*5*	**47.6**
Sycamore	0.4	21.6	*7*	**21.9**
Ash	1.7	66.1	*3*	**67.8**
Birch	2.1	41.5	*5*	**43.6**
Sweet chestnut	0.6	15.9	*9*	**16.6**
Hazel	0.2	42.5	*4*	**42.7**
Hawthorn	0.0	27.1	*6*	**27.1**
Alder	0.2	11.3	*8*	**11.5**
Willow	0.0	17.4	*7*	**17.4**
Other broadleaves	7.0	70.2	*4*	**77.2**
All broadleaves	**34.4**	**424.2**	***1***	**458.6**
All species				
All species	**67.9**	**493.2**	***1***	**561.1**

Table 2 Stocked area by age class at 31 March 2012

Age class	FC/NRW	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
All conifers				
0–10 years	2.7	2.0	*23*	**4.7**
11–20 years	3.6	2.3	*18*	**5.9**
21–40 years	7.6	18.9	*7*	**26.5**
41–60 years	14.2	33.9	*5*	**48.0**
61–80 years	3.7	8.6	*11*	**12.2**
81–100 years	1.2	1.8	*24*	**3.0**
100+ years	0.4	1.6	*21*	**2.1**
Total	**33.4**	**69.0**	***3***	**102.4**
All broadleaves				
0–10 years	1.5	47.1	*5*	**48.6**
11–20 years	1.7	55.3	*4*	**57.0**
21–40 years	2.5	118.5	*3*	**121.0**
41–60 years	8.0	71.9	*4*	**79.8**
61–80 years	7.8	52.6	*4*	**60.4**
81–100 years	2.7	47.2	*5*	**49.9**
100+ years	10.2	31.5	*6*	**41.8**
Total	**34.4**	**424.2**	***1***	**458.6**
All species				
0–10 years	4.2	49.2	*5*	**53.4**
11–20 years	5.3	57.7	*4*	**63.0**
21–40 years	10.2	137.5	*3*	**147.7**
41–60 years	22.1	105.9	*3*	**128.0**
61–80 years	11.5	61.2	*4*	**72.6**
81–100 years	3.9	49.0	*5*	**52.9**
100+ years	10.7	32.8	*6*	**43.5**
Total	**67.9**	**493.2**	***1***	**561.1**

Table 3 Stocked area by mean stand DBH class at 31 March 2012

Mean stand DBH	FC/NRW	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
All conifers				
0–7 cm	3.2	2.1	*20*	**5.3**
7–10 cm	1.3	2.5	*16*	**3.8**
10–15 cm	3.8	4.6	*12*	**8.4**
15–20 cm	3.2	7.3	*10*	**10.5**
20–30 cm	7.4	17.6	*7*	**25.0**
30–40 cm	7.4	17.6	*7*	**25.0**
40–60 cm	6.2	14.4	*8*	**20.7**
60–80 cm	0.8	1.8	*20*	**2.6**
80+ cm	0.2	1.1	*31*	**1.3**
Total	**33.4**	**69.0**	***3***	**102.4**
All broadleaves				
0–7 cm	2.3	59.4	*5*	**61.8**
7–10 cm	2.8	76.8	*3*	**79.6**
10–15 cm	3.4	60.0	*4*	**63.5**
15–20 cm	4.3	42.1	*4*	**46.3**
20–30 cm	10.2	62.7	*4*	**72.9**
30–40 cm	6.9	40.5	*5*	**47.4**
40–60 cm	3.5	49.9	*4*	**53.3**
60–80 cm	0.9	20.7	*6*	**21.6**
80+ cm	0.2	12.0	*10*	**12.2**
Total	**34.4**	**424.2**	***1***	**458.6**
All species				
0–7 cm	5.6	61.6	*5*	**67.2**
7–10 cm	4.1	79.4	*3*	**83.5**
10–15 cm	7.2	64.8	*3*	**72.0**
15–20 cm	7.4	49.4	*4*	**56.9**
20–30 cm	17.5	80.4	*3*	**97.9**
30–40 cm	14.3	58.1	*4*	**72.4**
40–60 cm	9.7	64.2	*4*	**73.9**
60–80 cm	1.7	22.3	*6*	**23.9**
80+ cm	0.5	13.1	*10*	**13.6**
Total	**67.9**	**493.2**	***1***	**561.1**

Table 4 Felled area at 31 March 2012

Clearfelled area	FC/NRW	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
	2.2	2.7	*24*	**4.8**

Standing volume at 31 March 2012

Figure 2 Principal tree species composition by standing volume at 31 March 2012

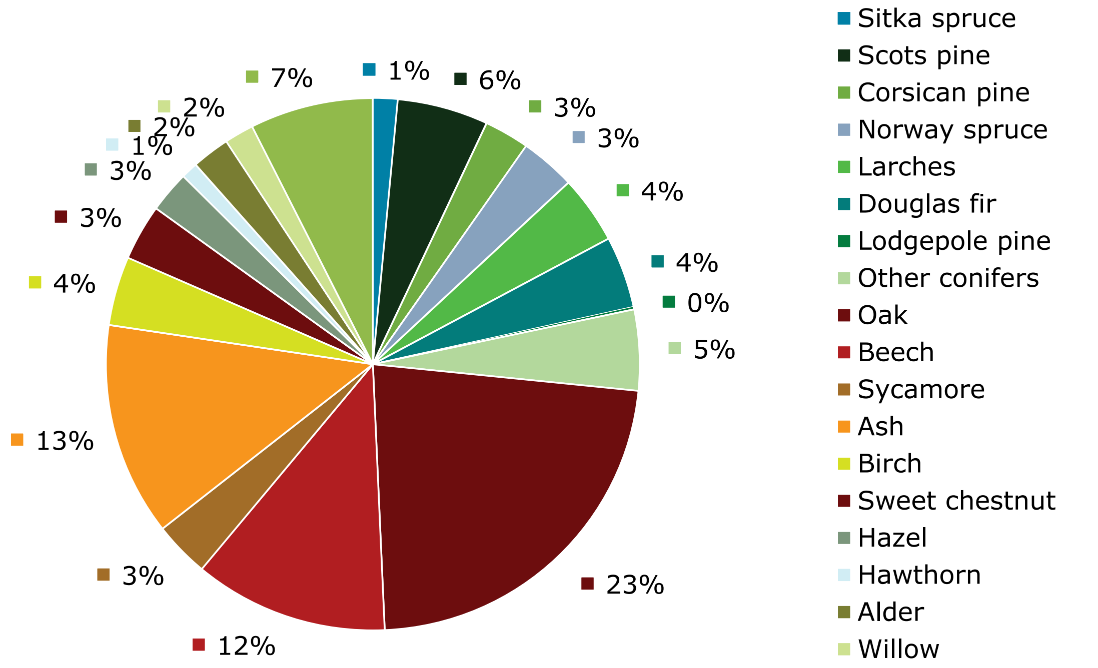


Figure 2a Principal conifer tree species composition by standing volume at 31 March 2012

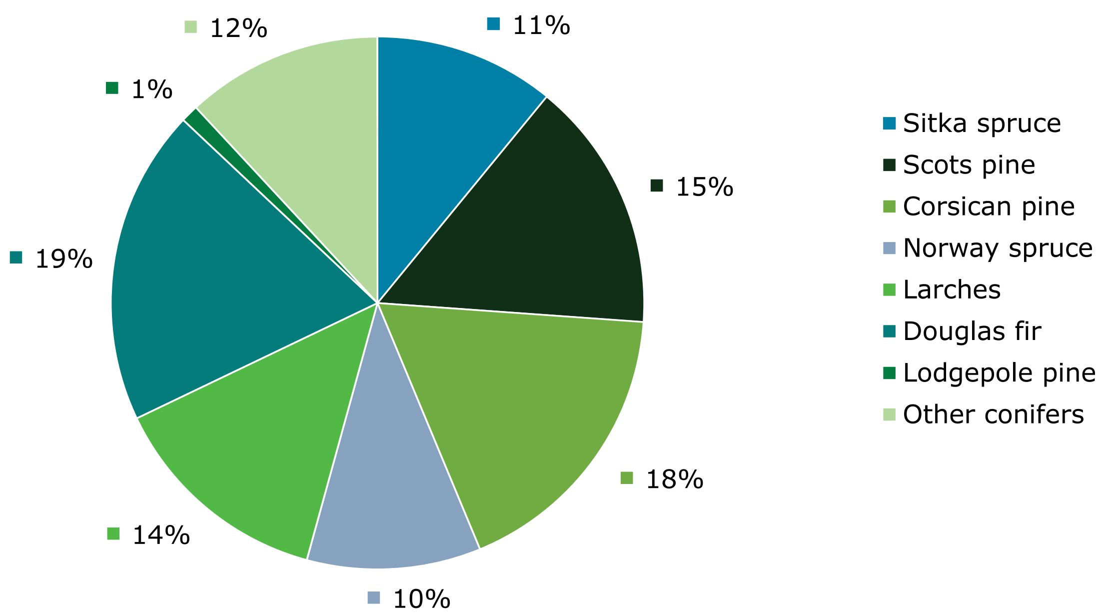


Table 5 Standing volume by principal tree species at 31 March 2012

Principal species	FC/NRW volume (000 m^3 obs)	Private sector volume (000 m^3 obs)	Private sector *SE%*	Total volume (000 m^3 obs)
Conifers				
Sitka spruce	947	1,075	*28*	**2,022**
Scots pine	1,322	6,143	*8*	**7,465**
Corsican pine	1,527	2,156	*14*	**3,683**
Norway spruce	916	3,625	*10*	**4,541**
Larches	1,181	4,418	*8*	**5,599**
Douglas fir	1,664	4,220	*13*	**5,884**
Lodgepole pine	93	113	*48*	**206**
Other conifers	1,032	5,617	*14*	**6,649**
All conifers	**8,682**	**27,379**	***4***	**36,061**
Broadleaves				
Oak	2,746	28,022	*5*	**30,767**
Beech	2,496	13,442	*7*	**15,938**
Sycamore	47	4,513	*9*	**4,560**
Ash	259	17,290	*5*	**17,550**
Birch	214	5,459	*6*	**5,673**
Sweet chestnut	98	4,510	*10*	**4,608**
Hazel	20	3,384	*7*	**3,404**
Hawthorn	0	1,371	*9*	**1,371**
Alder	41	3,073	*11*	**3,114**
Willow	0	2,394	*12*	**2,394**
Other broadleaves	882	9,236	*7*	**10,118**
All broadleaves	**6,803**	**92,735**	***2***	**99,539**
All species				
All species	**15,485**	**120,100**	***2***	**135,585**

Table 6 Standing volume by age class at 31 March 2012

Age class	FC/NRW volume (000 m^3 obs)	Private sector volume (000 m^3 obs)	*SE%*	Total volume (000 m^3 obs)
All conifers				
0–10 years	2	2	*63*	**4**
11–20 years	188	117	*21*	**305**
21–40 years	1,525	5,500	*9*	**7,025**
41–60 years	4,882	14,189	*5*	**19,071**
61–80 years	1,366	5,190	*15*	**6,556**
81–100 years	492	1,416	*31*	**1,908**
100+ years	227	964	*26*	**1,191**
Total	**8,682**	**27,379**	***4***	**36,061**
All broadleaves				
0–10 years	0	105	*19*	**105**
11–20 years	23	2,337	*6*	**2,360**
21–40 years	155	15,559	*4*	**15,714**
41–60 years	1,249	17,427	*4*	**18,676**
61–80 years	1,534	18,444	*5*	**19,978**
81–100 years	581	21,252	*5*	**21,833**
100+ years	3,261	17,612	*8*	**20,872**
Total	**6,803**	**92,735**	***2***	**99,539**
All species				
0–10 years	2	107	*19*	**109**
11–20 years	211	2,459	*6*	**2,671**
21–40 years	1,680	21,054	*4*	**22,733**
41–60 years	6,131	31,656	*3*	**37,787**
61–80 years	2,900	23,651	*5*	**26,551**
81–100 years	1,073	22,677	*5*	**23,750**
100+ years	3,488	18,495	*8*	**21,983**
Total	**15,485**	**120,100**	***2***	**135,585**

Table 7 Standing volume by mean stand DBH class at 31 March 2012

Mean stand DBH	FC/NRW volume (000 m^3 obs)	Private sector volume (000 m^3 obs)	Private sector *SE%*	Total volume (000 m^3 obs)
All conifers				
0–7 cm	1	1	*78*	**2**
7–10 cm	33	83	*17*	**116**
10–15 cm	389	575	*15*	**965**
15–20 cm	710	1,738	*11*	**2,448**
20–30 cm	2,483	6,309	*7*	**8,793**
30–40 cm	2,426	7,912	*7*	**10,339**
40–60 cm	2,180	8,602	*10*	**10,783**
60–80 cm	347	1,030	*18*	**1,377**
80+ cm	112	1,127	*41*	**1,240**
Total	**8,682**	**27,379**	***4***	**36,061**
All broadleaves				
0–7 cm	10	252	*10*	**262**
7–10 cm	119	3,028	*4*	**3,147**
10–15 cm	519	6,973	*4*	**7,492**
15–20 cm	866	7,345	*5*	**8,211**
20–30 cm	2,592	15,935	*4*	**18,528**
30–40 cm	1,720	13,606	*5*	**15,326**
40–60 cm	749	21,566	*5*	**22,315**
60–80 cm	179	13,285	*7*	**13,464**
80+ cm	49	10,744	*11*	**10,793**
Total	**6,803**	**92,735**	**2**	**99,539**
All species				
0–7 cm	11	253	*10*	**264**
7–10 cm	152	3,118	*4*	**3,270**
10–15 cm	908	7,563	*4*	**8,472**
15–20 cm	1,576	9,108	*4*	**10,684**
20–30 cm	5,076	22,249	*3*	**27,325**
30–40 cm	4,146	21,552	*4*	**25,699**
40–60 cm	2,929	30,167	*4*	**33,096**
60–80 cm	526	14,191	*7*	**14,716**
80+ cm	162	11,897	*11*	**12,059**
Total	**15,485**	**120,100**	**2**	**135,585**

Biomass and carbon stocks at 31 March 2012

Table 8 Standing biomass by principal tree species at 31 March 2012

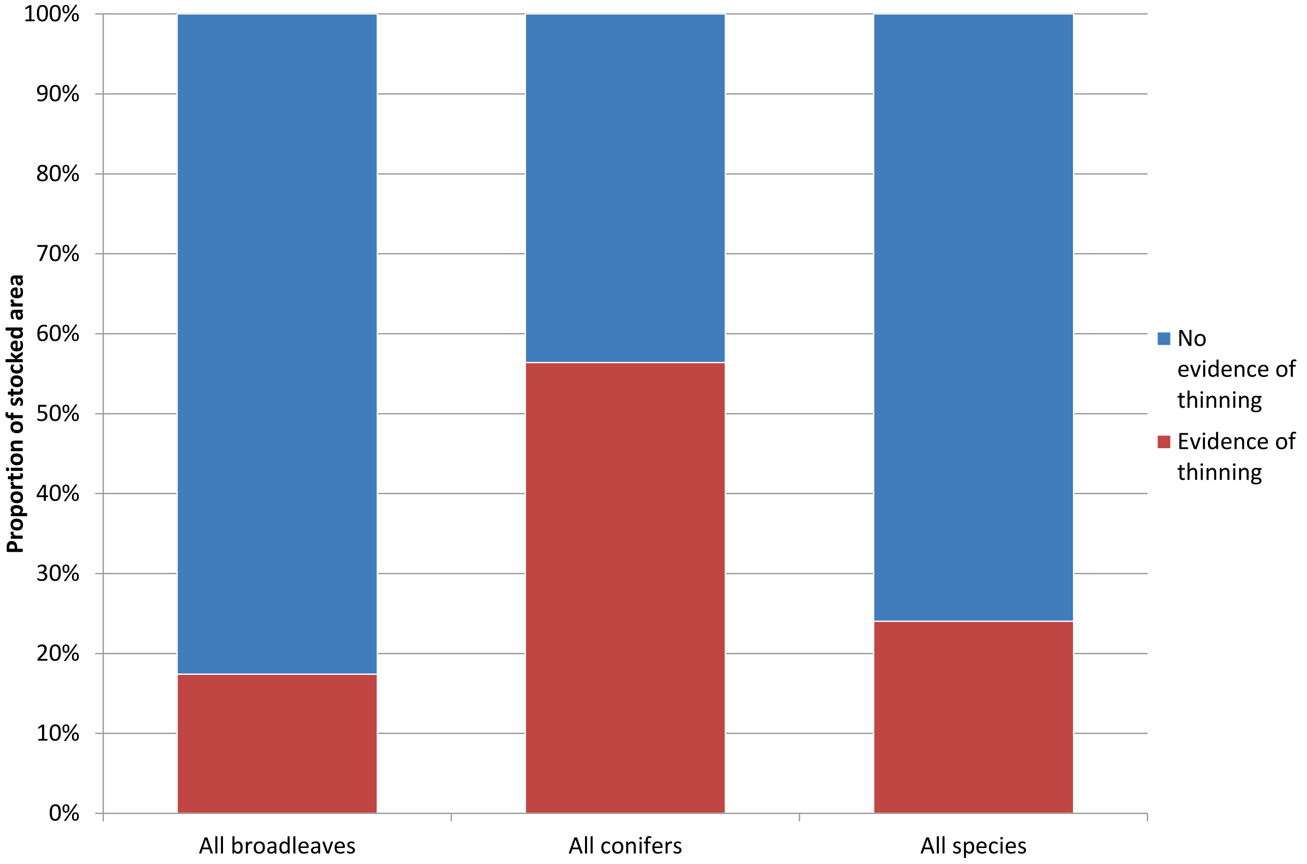
Principal species	FC/NRW	Private sector		Total
	biomass (000 odt)	biomass (000 odt)	*SE%*	biomass (000 odt)
Conifers				
Sitka spruce	609	607	*28*	**1,216**
Scots pine	921	4,116	*8*	**5,037**
Corsican pine	923	1,213	*14*	**2,136**
Norway spruce	501	1,901	*10*	**2,402**
Larches	748	2,597	*8*	**3,345**
Douglas fir	1,120	2,670	*12*	**3,790**
Lodgepole pine	66	77	*48*	**142**
Other conifers	566	3,015	*13*	**3,580**
All conifers	**5,453**	**16,203**	***4***	**21,655**
Broadleaves				
Oak	2,464	23,390	*4*	**25,854**
Beech	2,360	11,465	*7*	**13,825**
Sycamore	43	3,779	*9*	**3,822**
Ash	242	14,173	*5*	**14,415**
Birch	211	5,086	*5*	**5,297**
Sweet chestnut	100	3,627	*10*	**3,727**
Hazel	20	3,323	*6*	**3,342**
Hawthorn	0	1,662	*8*	**1,662**
Alder	34	2,326	*11*	**2,360**
Willow	0	2,435	*11*	**2,435**
Other broadleaves	805	8,246	*6*	**9,050**
All broadleaves	**6,278**	**79,555**	***2***	**85,833**
All species				
All species	**11,731**	**95,783**	***2***	**107,514**

Table 9 Total carbon stocks in principal tree species at 31 March 2012

Principal species	FC/NRW	Private sector		Total
	carbon (000 t)	carbon (000 t)	*SE%*	carbon (000 t)
Conifers				
Sitka spruce	305	304	*28*	**608**
Scots pine	461	2,058	*8*	**2,519**
Corsican pine	461	607	*14*	**1,068**
Norway spruce	250	951	*10*	**1,201**
Larches	374	1,298	*8*	**1,672**
Douglas fir	560	1,335	*12*	**1,895**
Lodgepole pine	33	38	*48*	**71**
Other conifers	283	1,507	*13*	**1,790**
All conifers	**2,726**	**8,101**	***4***	**10,828**
Broadleaves				
Oak	1,232	11,695	*4*	**12,927**
Beech	1,180	5,732	*7*	**6,912**
Sycamore	22	1,889	*9*	**1,911**
Ash	121	7,086	*5*	**7,207**
Birch	106	2,543	*5*	**2,649**
Sweet chestnut	50	1,813	*10*	**1,864**
Hazel	10	1,661	*6*	**1,671**
Hawthorn	0	831	*8*	**831**
Alder	17	1,163	*11*	**1,180**
Willow	0	1,218	*11*	**1,218**
Other broadleaves	402	4,123	*6*	**4,525**
All broadleaves	**3,139**	**39,777**	**2**	**42,916**
All species				
All species	**5,866**	**47,891**	**2**	**53,757**

Evidence of thinning

Figure 3 Evidence of thinning in Private sector sites



50-year forecast of timber availability

Refer to the NFI report *50-year forecast of softwood timber availability* (2014) for a description of the underlying methodology and interpretation of the softwood forecast, and also for the England and GB context.

Refer to the NFI report *50-year forecast of hardwood timber availability* (2014) for a description of the underlying methodology and interpretation of the hardwood forecast, and also for the England and GB context.

In **Figures 4–8 and Tables 10–12** the estimates for the Forestry Commission are based on harvesting regimes derived from Forestry Commission felling and thinning plans as of 31 March 2012.

For the Private sector, information for **Figures 4–8 and Tables 10–12** is based on a scenario which assumes felling at age of maximum mean annual increment with moderate wind risk measures for conifers. For broadleaves, however, only those areas where there is evidence of thinning are assumed to be managed in future. This is a highly conservative assumption but better reflects current practice than assuming all stands will be managed. In turn it is assumed that these broadleaved stands are managed to felling at age of maximum mean annual increment with moderate wind risk measures.

Restocking assumptions for conifer stands clearfelled during the forecast period have been implemented that assume:

- a 10% reduction in the area of conifers on the subsequent rotation
- restocking of currently clearfelled land
- a change in the composition of conifer species on restocking

Restocking assumptions for broadleaved stands clearfelled during the forecast period have been included that assume:

- no reduction in stocked area
- like-for-like species choices are used for broadleaves
- 50% of the land associated with the reduction in conifer stocked area arising from the assumption above is stocked with broadleaves

A full description of the restocking assumptions is to be found in Table D3 of the *50-year forecast of softwood timber availability* (2014). The same restocking assumptions have been applied to both the Forestry Commission and Private sector forecasts.

Woodland that is classed as currently clearfelled will be restocked according to the restock prescription.

In **Figures 9–13** and **Tables 13–15** the management assumptions for the Private sector hardwoods have been changed to assume all hardwoods are thinned and felled rather than only those in areas that have evidence of thinning. In this report, the tables and figures for estimates under this management scenario will be labelled as ‘unrestricted’.

Figures 14–15 and **Table 16** compare the Private sector hardwood timber availability under the two scenarios. Figure 14 shows the Private sector hardwood availability for the two scenarios during the 50-year forecast. Figure 15 and Table 16 compare the hardwood availability in first 15 years of the forecast under the two scenarios.

50-year forecast of timber availability under the ‘headline’ harvesting scenario

Table 10 50-year forecast of timber availability by time period and principal species

Principal species	2013–16				2017–21				2022–26				2027–31			
	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**380**	**1,394**	***7***	**1,773**	**340**	**1,400**	***7***	**1,741**	**275**	**1,203**	***8***	**1,478**	**272**	**1,097**	***7***	**1,369**
Sitka spruce	54	44	*42*	98	55	127	*44*	183	40	37	*42*	77	46	18	*32*	64
Scots pine	38	236	*16*	274	37	213	*13*	251	28	268	*13*	296	27	316	*14*	343
Corsican pine	84	156	*22*	240	73	145	*22*	217	67	141	*26*	209	48	58	*36*	105
Norway spruce	41	131	*10*	172	39	181	*19*	221	30	164	*19*	194	31	259	*17*	291
Larches	36	271	*14*	307	29	241	*11*	270	27	155	*11*	182	24	128	*12*	153
Douglas fir	71	301	*20*	372	59	216	*16*	274	49	155	*18*	204	61	134	*19*	195
Lodgepole pine	5	3	*52*	8	5	2	*46*	7	3	6	*59*	9	3	2	*48*	4
Other conifers	50	252	*17*	302	43	277	*16*	320	31	273	*23*	304	31	180	*15*	211
All broadleaves	**132**	**1,190**	***10***	**1,322**	**21**	**1,087**	***10***	**1,108**	**105**	**597**	***9***	**702**	**23**	**547**	***12***	**571**
Oak	37	168	*18*	205	4	227	*20*	232	29	153	*21*	182	6	178	*19*	184
Beech	70	184	*24*	254	10	296	*26*	306	56	132	*17*	188	8	164	*30*	173
Sycamore	2	106	*27*	108	0	69	*24*	69	2	27	*25*	29	1	11	*19*	12
Ash	7	399	*18*	406	1	221	*11*	222	5	92	*18*	98	2	37	*16*	38
Birch	3	106	*17*	108	1	113	*16*	114	2	69	*17*	71	1	42	*27*	43
Sweet chestnut	3	52	*49*	55	1	14	*16*	15	2	27	*23*	30	1	32	*48*	34
Hazel	0	13	*36*	13	0	15	*30*	15	0	18	*26*	18	0	17	*27*	17
Hawthorn	0	5	*25*	5	0	4	*20*	4	0	5	*12*	5	0	5	*14*	5
Alder	1	17	*50*	17	0	11	*36*	11	0	6	*39*	6	0	7	*61*	7
Willow	0	3	*19*	3	0	4	*15*	4	0	4	*13*	4	0	8	*37*	8
Other broadleaves	10	132	*25*	142	3	118	*25*	121	8	63	*25*	71	4	47	*15*	51
All species	**512**	**2,579**	***6***	**3,091**	**362**	**2,488**	***6***	**2,849**	**380**	**1,792**	***6***	**2,172**	**295**	**1,648**	***6***	**1,944**

Table 10 (cont'd) 50-year forecast of timber availability by time period and principal species

Principal species	2032–36				2037–41				2042–46				2047–51			
	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**263**	**1,088**	***8***	**1,351**	**262**	**961**	***9***	**1,223**	**302**	**810**	***9***	**1,112**	**276**	**645**	***8***	**920**
Sitka spruce	65	25	*22*	90	43	34	*32*	77	36	70	*31*	106	35	34	*15*	70
Scots pine	21	332	*14*	352	27	316	*20*	343	29	179	*22*	208	26	187	*19*	213
Corsican pine	49	63	*51*	112	44	54	*48*	98	78	45	*33*	123	61	3	*26*	64
Norway spruce	22	258	*19*	281	27	201	*19*	229	19	199	*22*	217	23	117	*24*	139
Larches	26	114	*13*	140	41	76	*15*	117	54	54	*12*	108	44	64	*18*	108
Douglas fir	57	108	*18*	166	54	87	*17*	141	59	114	*19*	173	58	79	*10*	137
Lodgepole pine	1	2	*47*	3	2	18	*70*	20	1	2	*55*	2	1	9	*63*	10
Other conifers	22	184	*20*	206	25	171	*21*	196	27	148	*27*	175	27	151	*14*	178
All broadleaves	**94**	**450**	***9***	**545**	**75**	**431**	***8***	**506**	**177**	**598**	***9***	**774**	**61**	**583**	***9***	**644**
Oak	26	89	*14*	114	15	90	*18*	104	73	133	*31*	206	23	138	*26*	161
Beech	50	161	*23*	211	44	116	*21*	159	66	121	*25*	186	20	120	*27*	140
Sycamore	2	13	*17*	15	1	16	*16*	17	2	27	*13*	29	2	29	*16*	31
Ash	5	57	*21*	62	3	56	*9*	59	11	82	*8*	93	5	81	*9*	85
Birch	2	34	*16*	36	2	36	*11*	38	3	58	*13*	62	2	58	*12*	60
Sweet chestnut	2	30	*29*	32	2	14	*17*	15	3	50	*33*	52	1	20	*30*	22
Hazel	0	13	*13*	13	0	23	*17*	23	0	23	*17*	23	0	35	*14*	35
Hawthorn	0	6	*10*	6	0	7	*9*	7	0	8	*8*	8	0	9	*14*	9
Alder	0	3	*21*	3	0	4	*24*	4	1	9	*16*	10	0	6	*23*	6
Willow	0	6	*11*	6	0	8	*15*	8	0	13	*23*	13	0	7	*15*	7
Other broadleaves	8	43	*8*	51	9	60	*11*	69	18	71	*11*	89	8	77	*17*	85
All species	**357**	**1,540**	***6***	**1,897**	**337**	**1,387**	***7***	**1,724**	**479**	**1,398**	***7***	**1,876**	**336**	**1,229**	***6***	**1,565**

Table 10 (cont'd) 50-year forecast of timber availability by time period and principal species

Principal species	2052–56				2057–61			
	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**258**	**575**	***10***	**833**	**297**	**534**	***6***	**830**
Sitka spruce	43	41	*13*	85	43	49	*12*	91
Scots pine	25	120	*17*	144	34	128	*15*	162
Corsican pine	36	3	*25*	39	37	2	*23*	40
Norway spruce	19	158	*32*	177	28	72	*20*	100
Larches	48	51	*12*	99	48	57	*11*	105
Douglas fir	60	90	*10*	150	67	94	*8*	161
Lodgepole pine	3	0	*31*	3	3	0	*31*	3
Other conifers	24	111	*11*	135	38	131	*12*	169
All broadleaves	**106**	**609**	***8***	**716**	**79**	**504**	***9***	**583**
Oak	36	94	*18*	130	26	90	*21*	116
Beech	51	161	*21*	213	34	161	*22*	194
Sycamore	2	27	*16*	29	1	14	*20*	15
Ash	4	93	*10*	97	4	77	*18*	81
Birch	3	52	*15*	54	4	42	*12*	46
Sweet chestnut	2	49	*39*	52	3	21	*33*	24
Hazel	0	19	*21*	19	1	12	*13*	12
Hawthorn	0	8	*8*	8	0	9	*15*	9
Alder	0	6	*25*	6	0	4	*37*	4
Willow	0	13	*23*	13	0	11	*36*	11
Other broadleaves	8	86	*13*	94	7	60	*18*	67
All species	**365**	**1,185**	***6***	**1,550**	**375**	**1,039**	***5***	**1,414**

Table 11 50-year forecast of standing volume; annual average volumes within periods

Forecast period	FC/NRW	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
All conifers				
2013–16	8,591	25,579	*4*	**34,170**
2017–21	8,889	23,452	*4*	**32,341**
2022–26	9,182	20,228	*4*	**29,410**
2027–31	9,523	17,421	*5*	**26,944**
2032–36	9,833	14,608	*5*	**24,441**
2037–41	10,078	12,766	*5*	**22,844**
2042–46	10,261	10,934	*6*	**21,195**
2047–51	10,370	10,654	*5*	**21,024**
2052–56	10,541	11,102	*5*	**21,643**
2057–61	10,572	11,974	*4*	**22,546**
All broadleaves				
2013–16	6,725	94,439	*2*	**101,164**
2017–21	7,085	99,344	*2*	**106,429**
2022–26	7,354	107,000	*2*	**114,354**
2027–31	7,690	116,150	*2*	**123,840**
2032–36	7,996	125,249	*2*	**133,245**
2037–41	8,198	134,278	*2*	**142,476**
2042–46	8,201	141,981	*2*	**150,181**
2047–51	8,153	148,830	*2*	**156,983**
2052–56	8,272	154,942	*1*	**163,214**
2057–61	8,329	160,278	*1*	**168,607**
All species				
2013–16	15,316	120,010	*2*	**135,326**
2017–21	15,974	122,789	*2*	**138,763**
2022–26	16,536	127,260	*2*	**143,797**
2027–31	17,213	133,601	*2*	**150,814**
2032–36	17,830	139,876	*2*	**157,706**
2037–41	18,276	147,067	*1*	**165,343**
2042–46	18,461	152,981	*1*	**171,442**
2047–51	18,523	159,566	*1*	**178,089**
2052–56	18,812	166,123	*1*	**184,935**
2057–61	18,901	172,324	*1*	**191,225**

Table 12 50-year forecast of net increment; annual average volumes within periods

Forecast period	FC/NRW volume (000 m^3 obs)	Private sector volume (000 m^3 obs)	Private sector *SE%*	Total volume (000 m^3 obs)
All conifers				
2013–16	357	876	*3*	**1,233**
2017–21	362	795	*3*	**1,157**
2022–26	338	662	*4*	**1,001**
2027–31	328	586	*4*	**915**
2032–36	314	539	*4*	**852**
2037–41	307	554	*4*	**861**
2042–46	305	573	*4*	**878**
2047–51	303	636	*4*	**940**
2052–56	300	711	*3*	**1,011**
2057–61	294	785	*3*	**1,079**
All broadleaves				
2013–16	122	2,037	*2*	**2,159**
2017–21	124	2,247	*2*	**2,370**
2022–26	123	2,367	*1*	**2,490**
2027–31	124	2,359	*1*	**2,483**
2032–36	125	2,286	*1*	**2,411**
2037–41	122	2,190	*1*	**2,312**
2042–46	118	2,051	*1*	**2,169**
2047–51	112	1,896	*2*	**2,008**
2052–56	108	1,743	*2*	**1,851**
2057–61	101	1,603	*2*	**1,704**
All species				
2013–16	479	2,913	*2*	**3,392**
2017–21	486	3,042	*1*	**3,527**
2022–26	461	3,031	*1*	**3,492**
2027–31	453	2,946	*1*	**3,399**
2032–36	439	2,825	*1*	**3,264**
2037–41	429	2,743	*1*	**3,172**
2042–46	423	2,624	*1*	**3,047**
2047–51	415	2,532	*1*	**2,948**
2052–56	407	2,453	*1*	**2,861**
2057–61	395	2,388	*1*	**2,783**

Figure 4 Overview of 50-year forecast of average annual softwood availability

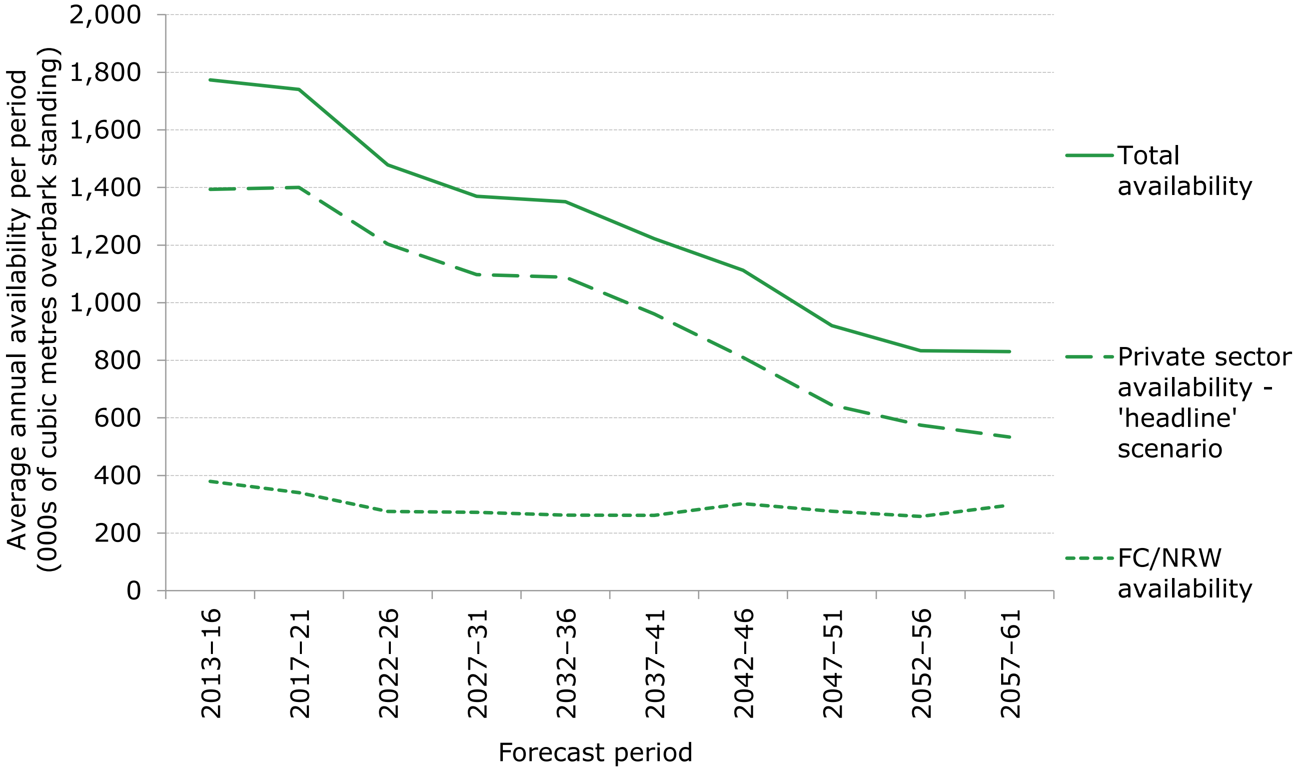


Figure 5 50-year forecast of average annual softwood availability

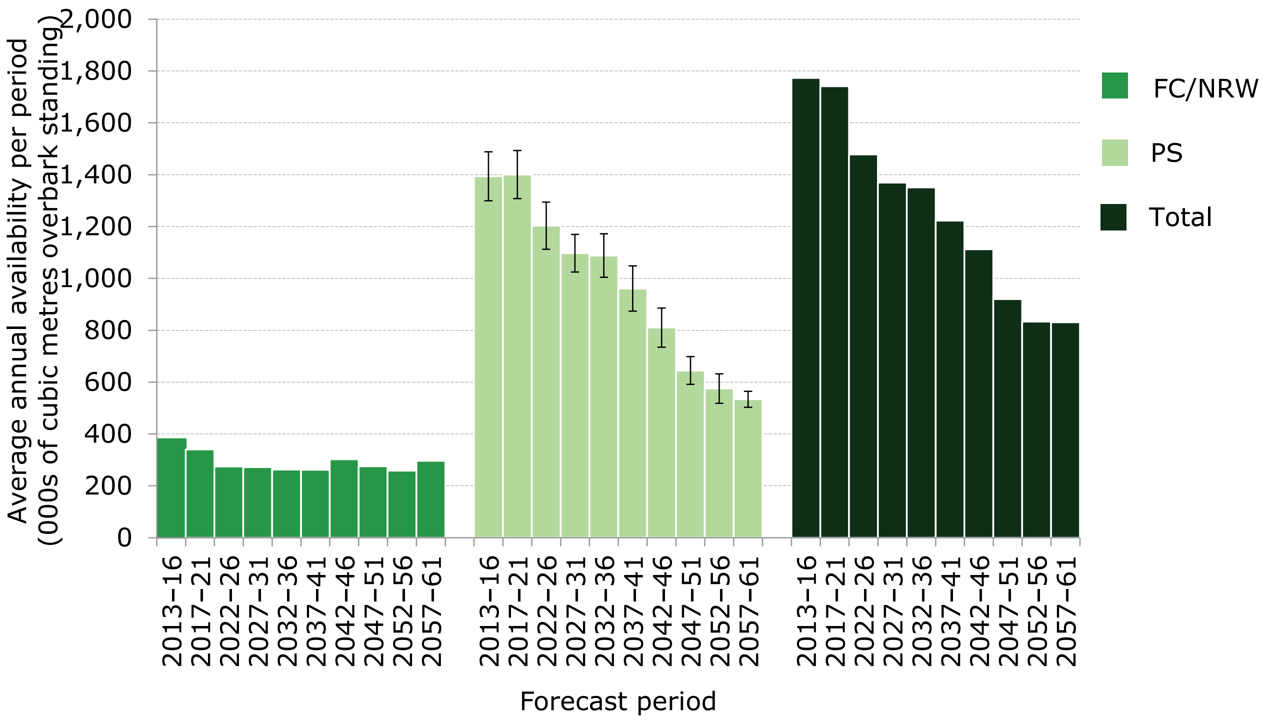


Figure 6 50-year forecast of average annual hardwood availability

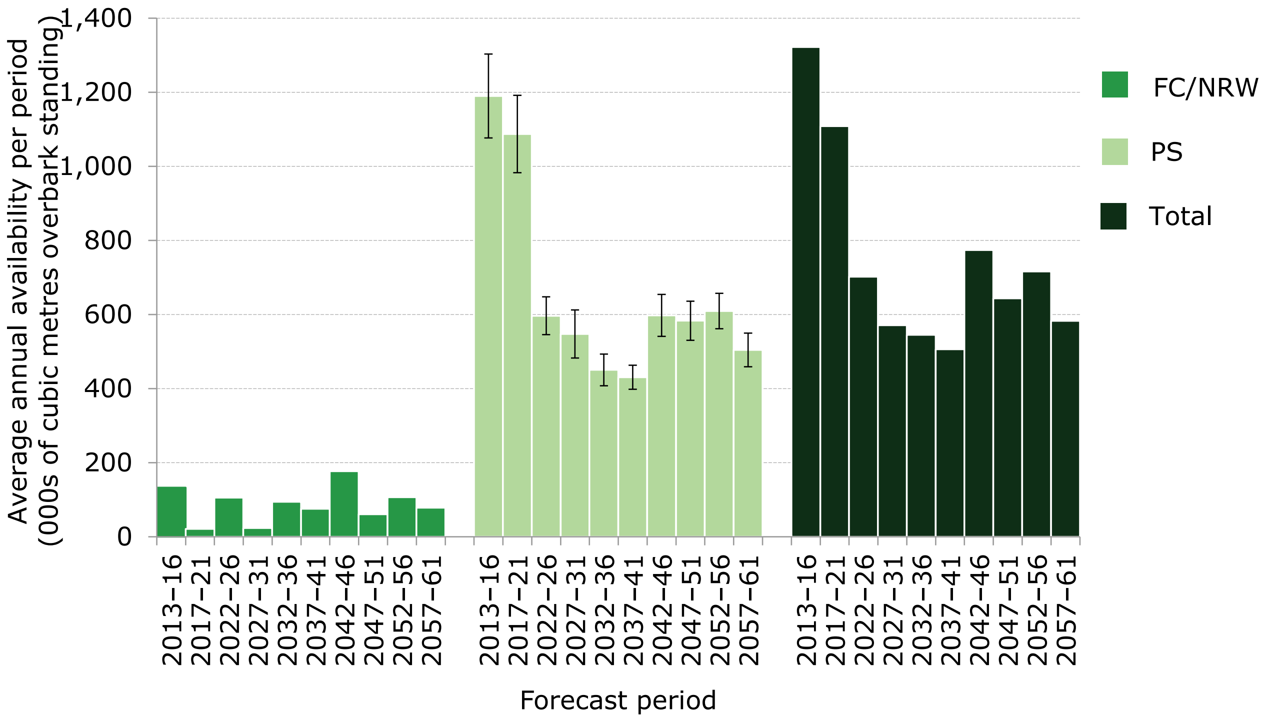


Figure 7 50-year forecast of softwood standing volume, increment and availability

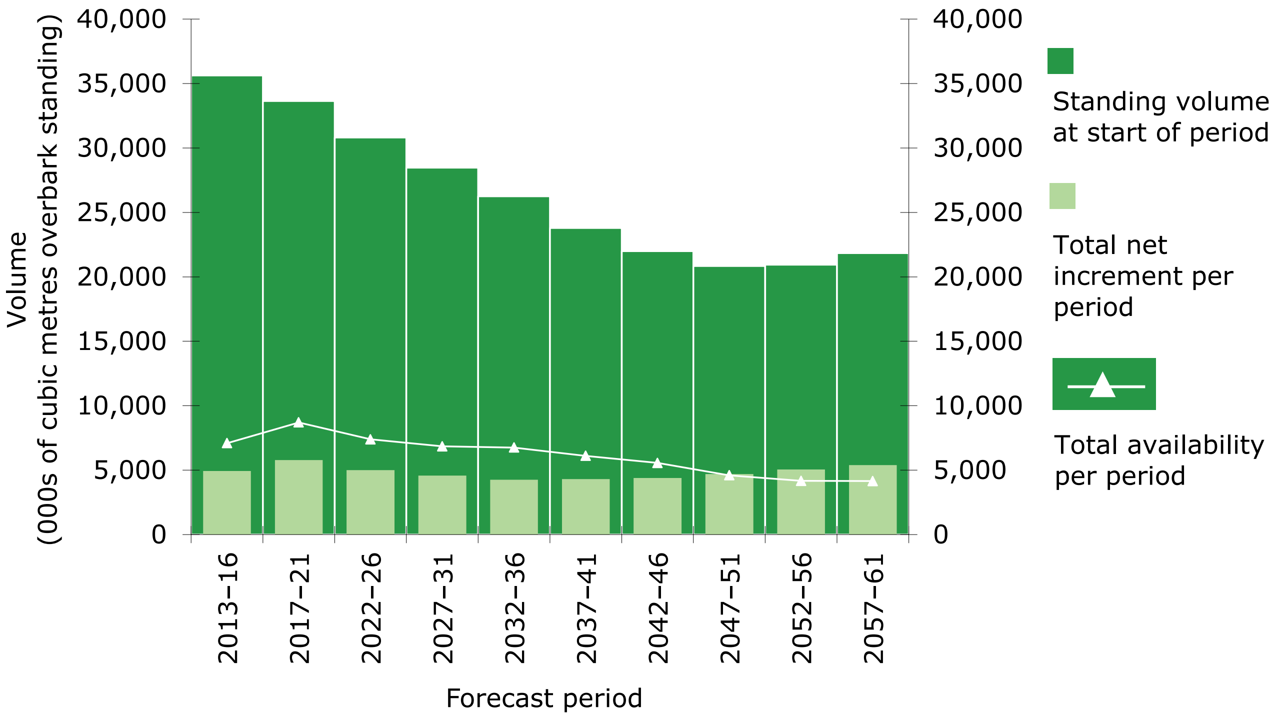
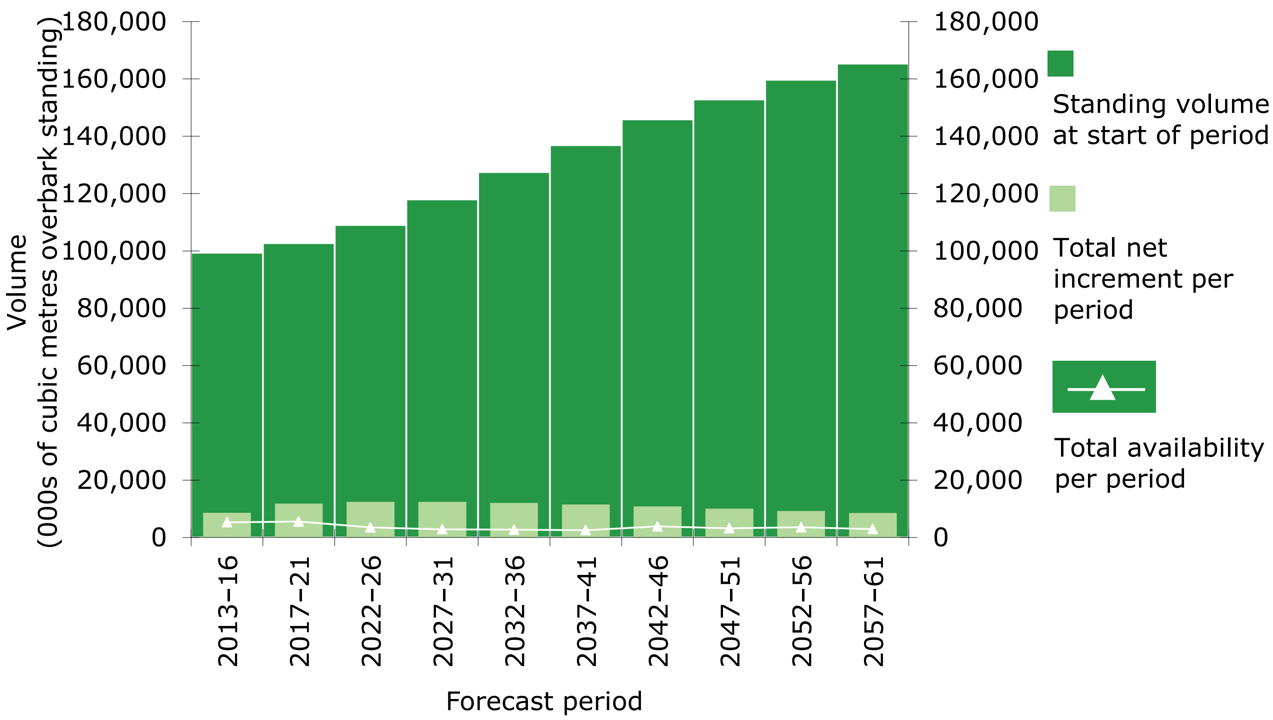


Figure 8 50-year forecast of hardwood standing volume, increment and availability



50-year forecast of timber availability under the 'unrestricted' scenario

Table 13 50-year forecast of timber availability by time period and principal species – unrestricted biological potential for Private sector hardwoods

Principal species	2013–16				2017–21				2022–26				2027–31			
	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total
	volume (000 m^3 obs)		SE%	volume (000 m^3 obs)	volume (000 m^3 obs)		SE%	volume (000 m^3 obs)	volume (000 m^3 obs)		SE%	volume (000 m^3 obs)	volume (000 m^3 obs)		SE%	volume (000 m^3 obs)
All conifers	**380**	**1,394**	***7***	**1,773**	**340**	**1,400**	***7***	**1,741**	**275**	**1,203**	***8***	**1,478**	**272**	**1,097**	***7***	**1,369**
Sitka spruce	54	44	*42*	98	55	127	*44*	183	40	37	*42*	77	46	18	*32*	64
Scots pine	38	236	*16*	274	37	213	*13*	251	28	268	*13*	296	27	316	*14*	343
Corsican pine	84	156	*22*	240	73	145	*22*	217	67	141	*26*	209	48	58	*36*	105
Norway spruce	41	131	*10*	172	39	181	*19*	221	30	164	*19*	194	31	259	*17*	291
Larches	36	271	*14*	307	29	241	*11*	270	27	155	*11*	182	24	128	*12*	153
Douglas fir	71	301	*20*	372	59	216	*16*	274	49	155	*18*	204	61	134	*19*	195
Lodgepole pine	5	3	*52*	8	5	2	*46*	7	3	6	*59*	9	3	2	*48*	4
Other conifers	50	252	*17*	302	43	277	*16*	320	31	273	*23*	304	31	180	*15*	211
All broadleaves	**132**	**6,136**	***4***	**6,268**	**21**	**4,951**	***3***	**4,972**	**105**	**2,862**	***3***	**2,967**	**23**	**2,462**	***4***	**2,485**
Oak	37	711	*10*	748	4	749	*10*	753	29	595	*9*	625	6	787	*8*	793
Beech	70	378	*14*	447	10	485	*17*	494	56	360	*13*	416	8	365	*16*	374
Sycamore	2	515	*11*	517	0	366	*10*	366	2	158	*11*	160	1	97	*16*	98
Ash	7	2139	*8*	2145	1	1448	*5*	1449	5	523	*6*	528	2	272	*8*	273
Birch	3	494	*7*	497	1	538	*6*	539	2	305	*8*	306	1	199	*11*	200
Sweet chestnut	3	271	*23*	274	1	124	*13*	125	2	114	*13*	117	1	135	*20*	137
Hazel	0	265	*8*	265	0	299	*9*	299	0	203	*10*	203	0	108	*11*	108
Hawthorn	0	53	*10*	53	0	56	*9*	56	0	51	*8*	51	0	54	*11*	54
Alder	1	323	*15*	324	0	264	*11*	264	0	127	*15*	127	0	60	*22*	61
Willow	0	106	*19*	106	0	94	*19*	94	0	66	*10*	66	0	109	*26*	109
Other broadleaves	10	868	*12*	879	3	531	*9*	534	8	358	*9*	366	4	280	*7*	284
All species	**512**	**7,518**	***3***	**8,030**	**362**	**6,356**	***3***	**6,718**	**380**	**4,061**	***3***	**4,441**	**295**	**3,566**	***4***	**3,861**

Table 13 (cont'd) 50-year forecast of timber availability by time period and principal species – unrestricted biological potential for Private sector hardwoods

Principal species	2032–36				2037–41				2042–46				2047–51			
	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**263**	**1,088**	***8***	**1,351**	**262**	**961**	***9***	**1,223**	**302**	**810**	***9***	**1,112**	**276**	**645**	***8***	**920**
Sitka spruce	65	25	*22*	90	43	34	*32*	77	36	70	*31*	106	35	34	*15*	70
Scots pine	21	332	*14*	352	27	316	*20*	343	29	179	*22*	208	26	187	*19*	213
Corsican pine	49	63	*51*	112	44	54	*48*	98	78	45	*33*	123	61	3	*26*	64
Norway spruce	22	258	*19*	281	27	201	*19*	229	19	199	*22*	217	23	117	*24*	139
Larches	26	114	*13*	140	41	76	*15*	117	54	54	*12*	108	44	64	*18*	108
Douglas fir	57	108	*18*	166	54	87	*17*	141	59	114	*19*	173	58	79	*10*	137
Lodgepole pine	1	2	*47*	3	2	18	*70*	20	1	2	*55*	2	1	9	*63*	10
Other conifers	22	184	*20*	206	25	171	*21*	196	27	148	*27*	175	27	151	*14*	178
All broadleaves	**94**	**2,084**	***4***	**2,178**	**75**	**2,101**	***3***	**2,176**	**177**	**2,419**	***3***	**2,596**	**61**	**2,270**	***4***	**2,331**
Oak	26	404	*8*	429	15	471	*11*	486	73	418	*12*	490	23	372	*11*	395
Beech	50	348	*16*	398	44	253	*12*	296	66	283	*14*	349	20	273	*16*	293
Sycamore	2	90	*11*	92	1	93	*9*	94	2	137	*9*	139	2	122	*9*	124
Ash	5	329	*8*	334	3	328	*6*	330	11	419	*6*	430	5	369	*7*	374
Birch	2	197	*8*	199	2	170	*7*	172	3	236	*7*	239	2	228	*7*	230
Sweet chestnut	2	135	*15*	137	2	70	*11*	72	3	165	*19*	167	1	133	*19*	135
Hazel	0	114	*13*	115	0	146	*9*	147	0	127	*9*	127	0	186	*7*	186
Hawthorn	0	53	*7*	53	0	92	*15*	92	0	81	*23*	81	0	68	*12*	68
Alder	0	64	*15*	65	0	53	*11*	53	1	79	*10*	80	0	62	*11*	63
Willow	0	68	*14*	68	0	127	*18*	127	0	97	*20*	97	0	78	*12*	78
Other broadleaves	8	278	*7*	285	9	295	*6*	305	18	370	*8*	389	8	371	*9*	378
All species	**357**	**3,176**	***4***	**3,533**	**337**	**3,060**	***4***	**3,397**	**479**	**3,221**	***3***	**3,699**	**336**	**2,918**	***3***	**3,254**

Table 13 (cont'd) 50-year forecast of timber availability by time period and principal species – unrestricted biological potential for Private sector hardwoods

Principal species	2052–56				2057–61			
	FC/NRW	Private sector		Total	FC/NRW	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**258**	**575**	***10***	**833**	**297**	**534**	***6***	**830**
Sitka spruce	43	41	*13*	85	43	49	*12*	91
Scots pine	25	120	*17*	144	34	128	*15*	162
Corsican pine	36	3	*25*	39	37	2	*23*	40
Norway spruce	19	158	*32*	177	28	72	*20*	100
Larches	48	51	*12*	99	48	57	*11*	105
Douglas fir	60	90	*10*	150	67	94	*8*	161
Lodgepole pine	3	0	*31*	3	3	0	*31*	3
Other conifers	24	111	*11*	135	38	131	*12*	169
All broadleaves	**106**	**2,556**	***3***	**2,662**	**79**	**2,263**	***4***	**2,342**
Oak	36	332	*8*	368	26	345	*9*	371
Beech	51	321	*13*	372	34	388	*14*	422
Sycamore	2	128	*11*	130	1	84	*9*	85
Ash	4	447	*5*	451	4	316	*6*	319
Birch	3	226	*7*	229	4	188	*7*	192
Sweet chestnut	2	205	*20*	207	3	190	*21*	193
Hazel	0	131	*8*	132	1	118	*7*	119
Hawthorn	0	86	*14*	86	0	92	*12*	92
Alder	0	64	*12*	65	0	51	*10*	51
Willow	0	152	*14*	152	0	133	*16*	133
Other broadleaves	8	458	*9*	466	7	347	*11*	354
All species	**365**	**3,135**	***3***	**3,500**	**375**	**2,801**	***3***	**3,177**

Table 14 50-year forecast of standing volume; annual average volumes within periods – unrestricted biological potential for Private sector hardwoods

Forecast period	FC/NRW volume (000 m^3 obs)	Private sector volume (000 m^3 obs)	Private sector *SE%*	Total volume (000 m^3 obs)
All conifers				
2013–16	8,591	25,579	*4*	**34,170**
2017–21	8,889	23,452	*4*	**32,341**
2022–26	9,182	20,228	*4*	**29,410**
2027–31	9,523	17,421	*5*	**26,944**
2032–36	9,833	14,608	*5*	**24,441**
2037–41	10,078	12,766	*5*	**22,844**
2042–46	10,261	10,934	*6*	**21,195**
2047–51	10,370	10,654	*5*	**21,024**
2052–56	10,541	11,102	*5*	**21,643**
2057–61	10,572	11,974	*4*	**22,546**
All broadleaves				
2013–16	6,725	79,686	*2*	**86,411**
2017–21	7,085	66,946	*2*	**74,032**
2022–26	7,354	57,472	*2*	**64,826**
2027–31	7,690	55,920	*2*	**63,610**
2032–36	7,996	55,986	*2*	**63,982**
2037–41	8,198	57,767	*2*	**65,965**
2042–46	8,201	59,056	*2*	**67,257**
2047–51	8,153	60,728	*2*	**68,882**
2052–56	8,272	61,408	*2*	**69,679**
2057–61	8,329	61,538	*2*	**69,867**
All species				
2013–16	15,316	105,295	*2*	**120,611**
2017–21	15,974	90,407	*2*	**106,381**
2022–26	16,536	77,722	*2*	**94,259**
2027–31	17,213	73,340	*2*	**90,553**
2032–36	17,830	70,567	*2*	**88,397**
2037–41	18,276	70,488	*2*	**88,764**
2042–46	18,461	69,977	*2*	**88,438**
2047–51	18,523	71,376	*2*	**89,900**
2052–56	18,812	72,486	*2*	**91,298**
2057–61	18,901	73,466	*2*	**92,366**

Table 15 50-year forecast of net increment; annual average volumes within periods – unrestricted biological potential for Private sector hardwoods

Forecast period	FC/NRW	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
All conifers				
2013–16	357	876	*3*	**1,233**
2017–21	362	795	*3*	**1,157**
2022–26	338	662	*4*	**1,001**
2027–31	328	586	*4*	**915**
2032–36	314	539	*4*	**852**
2037–41	307	554	*4*	**861**
2042–46	305	573	*4*	**878**
2047–51	303	636	*4*	**940**
2052–56	300	711	*3*	**1,011**
2057–61	294	785	*3*	**1,079**
All broadleaves				
2013–16	122	1,980	*2*	**2,102**
2017–21	124	2,009	*2*	**2,132**
2022–26	123	2,009	*2*	**2,132**
2027–31	124	2,128	*2*	**2,252**
2032–36	125	2,323	*2*	**2,448**
2037–41	122	2,547	*1*	**2,669**
2042–46	118	2,666	*1*	**2,784**
2047–51	112	2,646	*1*	**2,758**
2052–56	108	2,519	*1*	**2,627**
2057–61	101	2,392	*1*	**2,493**
All species				
2013–16	479	2,856	*2*	**3,335**
2017–21	486	2,804	*1*	**3,289**
2022–26	461	2,672	*2*	**3,133**
2027–31	453	2,714	*1*	**3,167**
2032–36	439	2,860	*1*	**3,299**
2037–41	429	3,099	*1*	**3,528**
2042–46	423	3,239	*1*	**3,662**
2047–51	415	3,283	*1*	**3,698**
2052–56	407	3,230	*1*	**3,638**
2057–61	395	3,177	*1*	**3,572**

Figure 9 Overview of 50-year forecast of average annual softwood availability – unrestricted biological potential for Private sector hardwoods

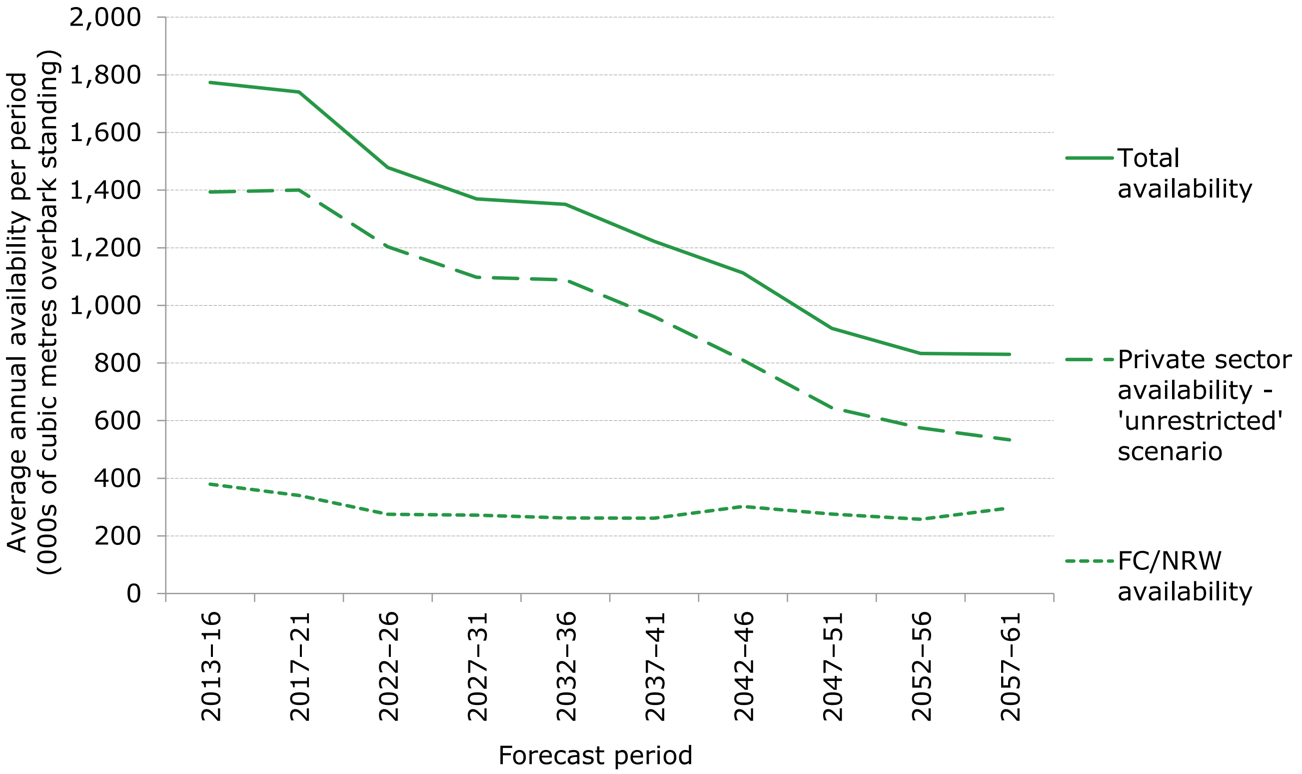


Figure 10 50-year forecast comparison of average annual softwood availability– unrestricted biological potential for Private sector hardwoods

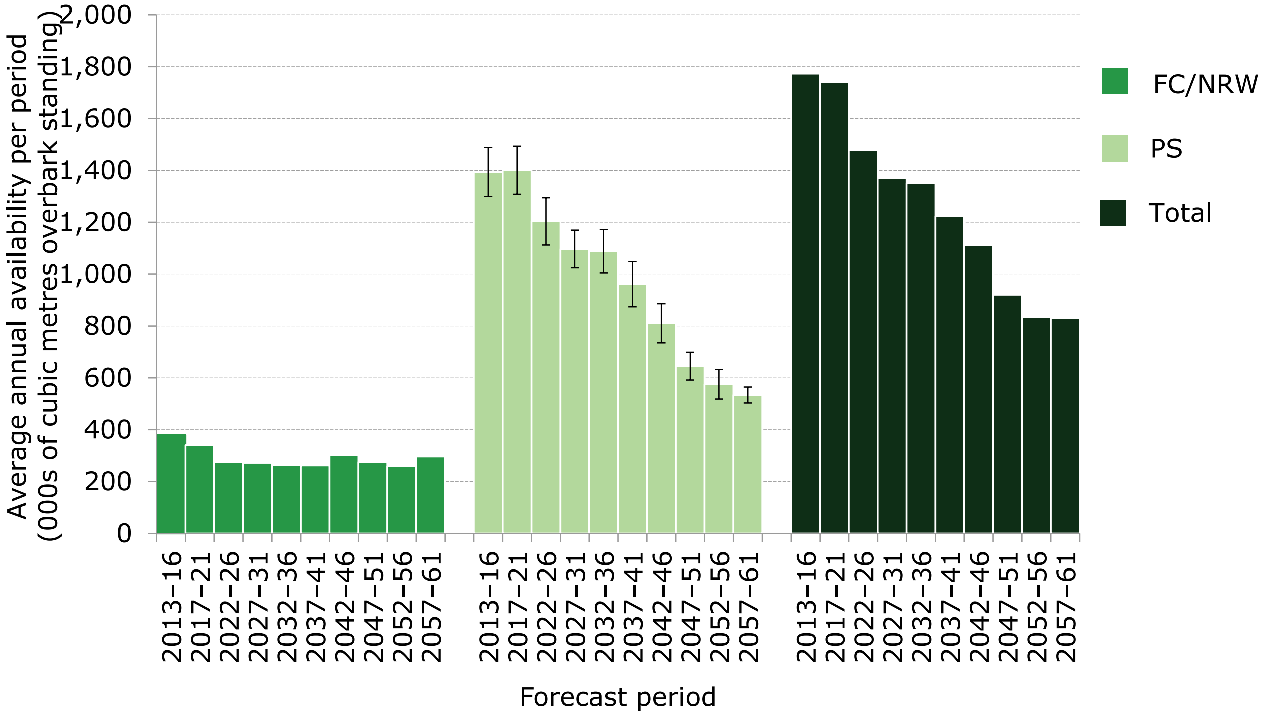


Figure 11 50-year forecast comparison of average annual hardwood availability – unrestricted biological potential for Private sector hardwoods

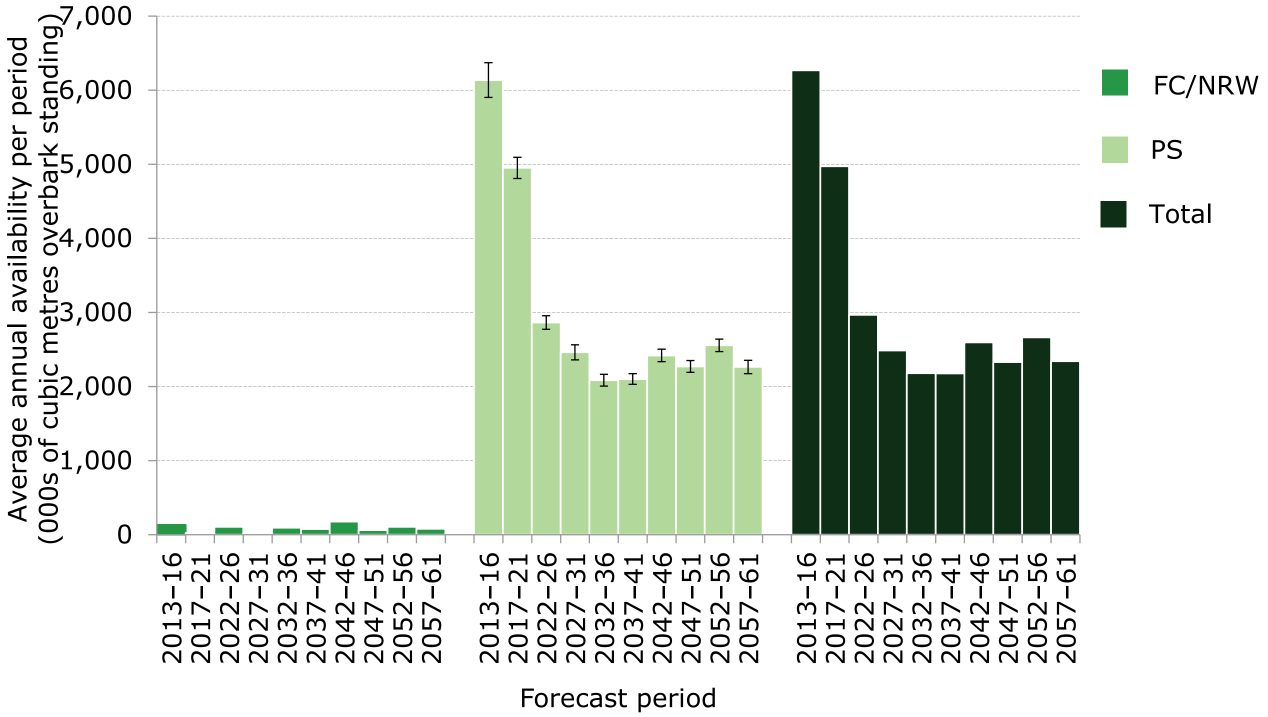


Figure 12 50-year summary of softwood standing volume, increment and availability – unrestricted biological potential for Private sector hardwoods

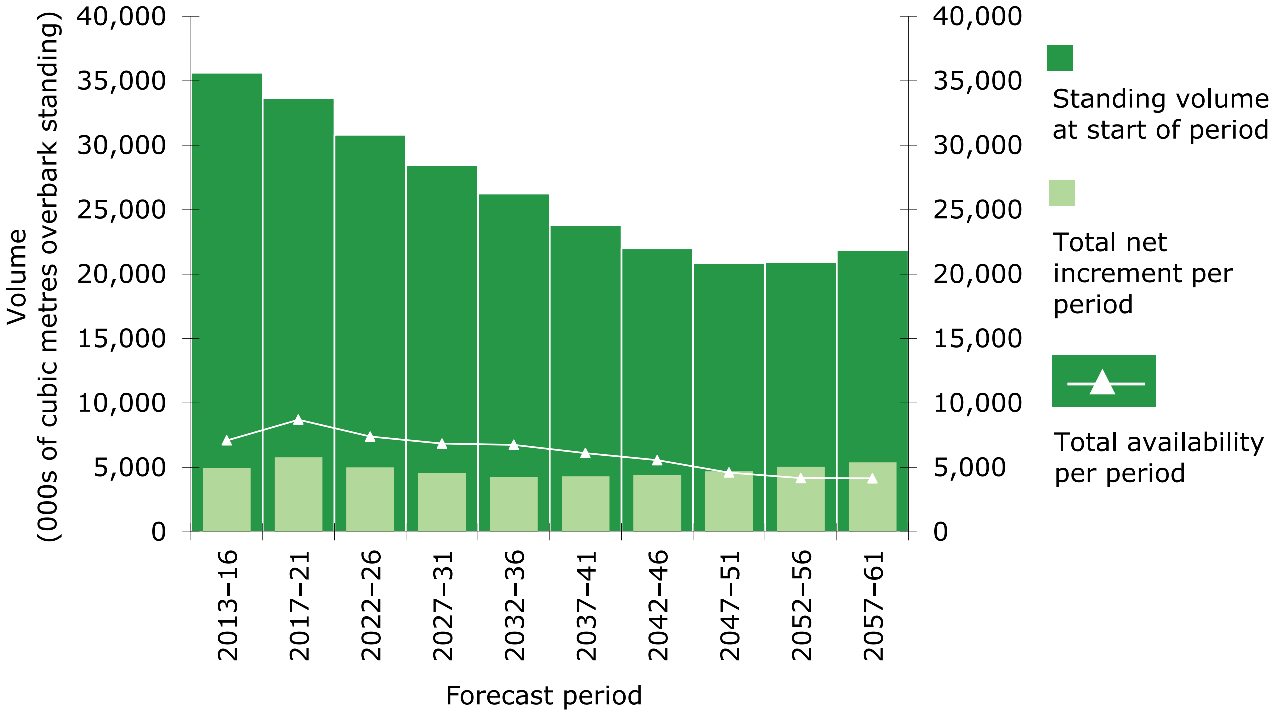
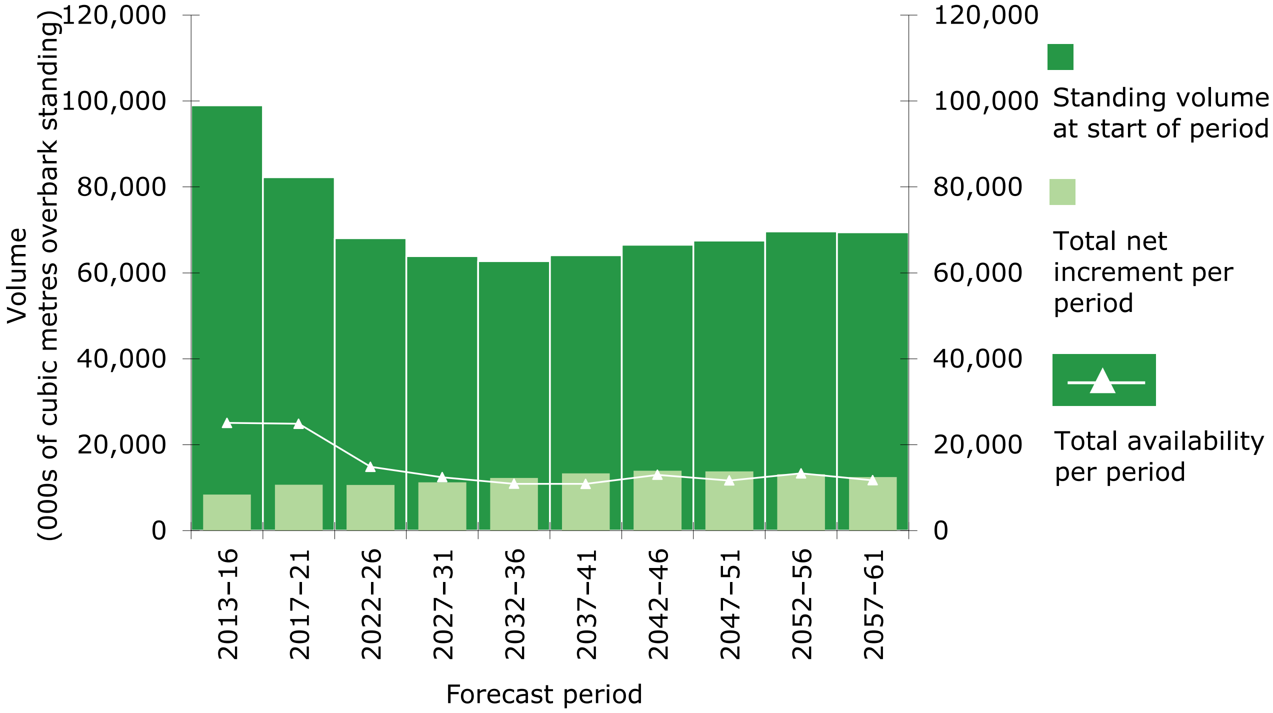


Figure 13 50-year summary of hardwood standing volume, increment and availability – unrestricted biological potential for Private sector hardwoods



Comparison of hardwood production between harvesting scenarios

Figure 14 50-year forecast comparison of average annual hardwood timber availability

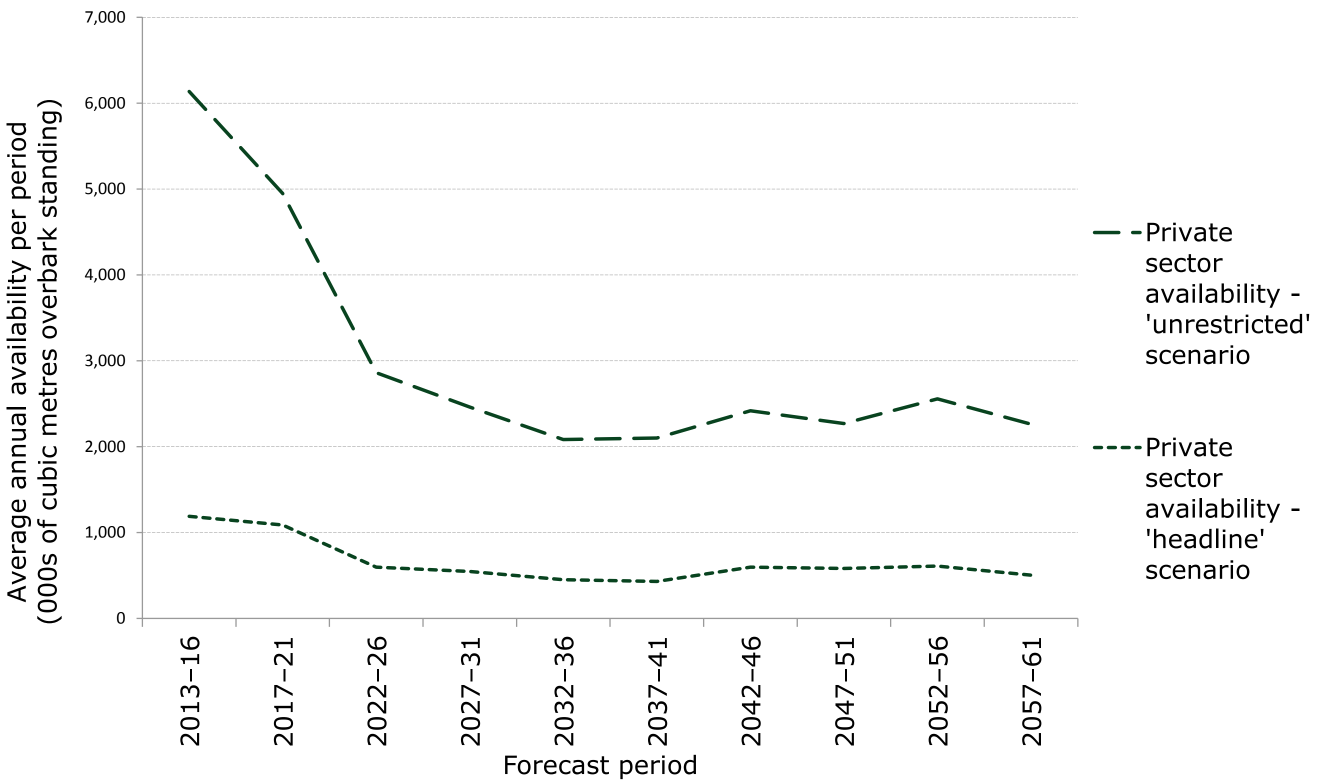


Figure 15 15-year forecast comparison of average annual hardwood timber availability

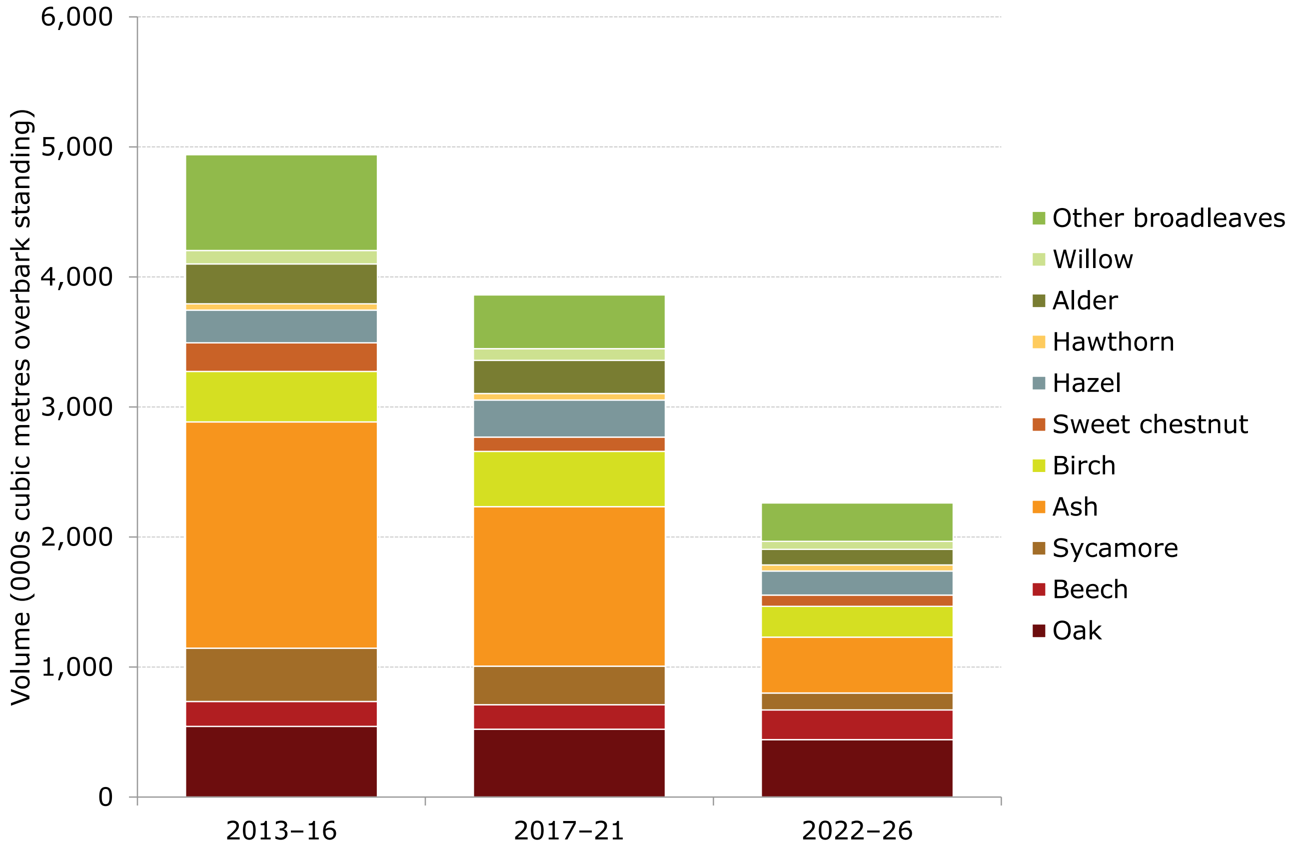


Table 16 15-year forecast comparison of average annual timber availability

Principal species	2013–16 Headline	2013–16 Unrestricted	2013–16 Difference	2017–21 Headline	2017–21 Unrestricted	2017–21 Difference	2022–26 Headline	2022–26 Unrestricted	2022–26 Difference
	volume (000 m^3 obs)			volume (000 m^3 obs)			volume (000 m^3 obs)		
All conifers	**1,773**	**1,773**	**0**	**1,741**	**1,741**	**0**	**1,478**	**1,478**	**0**
Sitka spruce	98	98	0	183	183	0	77	77	0
Scots pine	274	274	0	251	251	0	296	296	0
Corsican pine	240	240	0	217	217	0	209	209	0
Norway spruce	172	172	0	221	221	0	194	194	0
Larches	307	307	0	270	270	0	182	182	0
Douglas fir	372	372	0	274	274	0	204	204	0
Lodgepole pine	8	8	0	7	7	0	9	9	0
Other conifers	302	302	0	320	320	0	304	304	0
All broadleaves	**1,322**	**6,268**	**4,946**	**1,108**	**4,972**	**3,863**	**702**	**2,967**	**2,266**
Oak	205	748	543	232	753	521	182	625	443
Beech	254	447	193	306	494	188	188	416	228
Sycamore	108	517	409	69	366	297	29	160	131
Ash	406	2,145	1,739	222	1,449	1,227	98	528	430
Birch	108	497	389	114	539	425	71	306	236
Sweet chestnut	55	274	219	15	125	110	30	117	87
Hazel	13	265	252	15	299	284	18	203	185
Hawthorn	5	53	48	4	56	52	5	51	46
Alder	17	324	307	11	264	253	6	127	121
Willow	3	106	103	4	94	91	4	66	61
Other broadleaves	142	879	737	121	534	413	71	366	295
All species	**3,091**	**8,030**	**4,939**	**2,849**	**6,718**	**3,869**	**2,172**	**4,441**	**2,270**

NFI national reports and papers

The principal themes reported on for the 2011 woodland profile and future forecasts are:

- 2011 preliminary estimates of broadleaved species in British woodlands
- 2011 standing coniferous timber volume
- 25-year forecast of softwood availability
- 25-year forecast of coniferous standing volume and increment
- 2011 biomass in live woodland trees in Britain
- 2011 carbon in live woodland trees in Britain

The principal themes reported on for the 2012 woodland profile and future forecasts are:

- 50 year forecast of softwood availability
- 50 year forecast of hardwood availability

Each theme has a series of reports, papers and data, tailored for different audiences and uses. All the documents and data can be found on the NFI website www.forestry.gov.uk/inventory.

Glossary

A glossary of terms is presented in the full suite of forecast reports which can be found at www.forestry.gov.uk/forecast.

Official Statistics

This is an Official Statistics publication. More information about Official Statistics and the UK Statistics Authority is available at www.statisticsauthority.gov.uk

National Forest Inventory Statistician: Alan Brewer