NFI provisional estimates for woodland in the Highland & Islands Conservancy

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Summary

This report provides a detailed picture of stocked area of woodland, the standing volume of timber and associated biomass and carbon stock for the Highland & Islands Conservancy. 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 forecasts of softwood timber availability* and *50-year forecast of hardwood timber availability*. 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 forecast 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 in coniferous trees in Britain* and the *NFI preliminary estimates of quantities of broadleaved species in British Woodlands with special focus on ash* reports for a description of the underlying methodologies and interpretation, and also for the Scotland and GB context. Refer to the *NFI forecasts methodology 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 Great Britain and its constituent countries under a range of harvesting scenarios can be found in the *50-year forecast of softwood timber availability* and the *50-year forecast of hardwood timber availability*.

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.

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 for the Highland & Islands Conservancy. The data sources used for the compilation of these estimates are the same as described in the National Forest Inventory 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 are derived from the FC's sub-compartment database, while those for the private sector (i.e. non-FC) 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 attached to the private sector estimates, is provided in the earlier documents.

Results are provided for stocked area at 31 March 2012 (**Figure 1** and **Tables 1-3**), felled area (**Table 4**), standing volume at 31 March 2012 (**Figure 2** 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**). **Figure 14** compares 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 standard errors (SE) attached to Private sector estimates are expressed in relative terms (%) to the right of the relevant estimate.

Stocked area at 31 March 2012

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

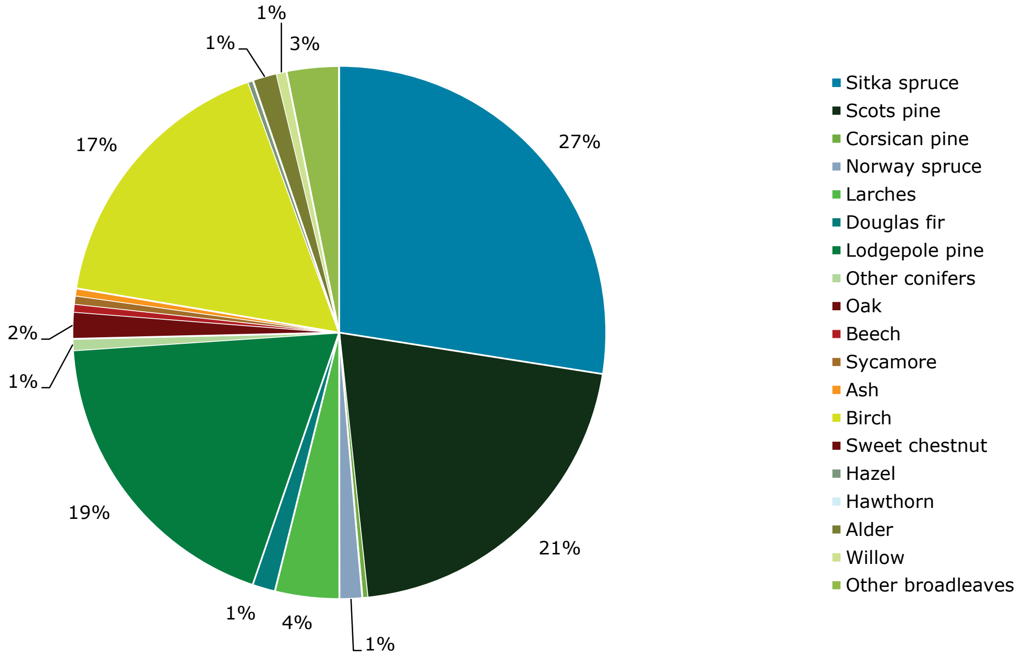


Table 1 Stocked area by principal tree species at 31 March 2012

Principal species	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
Highland & Islands Conservancy				
All conifers	**94.6**	**137.0**	***2***	**231.7**
Sitka spruce	33.3	51.0	*4*	**84.3**
Scots pine	22.7	41.1	*5*	**63.8**
Corsican pine	0.1	0.9	*51*	**0.9**
Norway spruce	1.9	2.3	*26*	**4.2**
Larches	5.9	6.1	*14*	**12.0**
Douglas fir	2.0	2.2	*24*	**4.3**
Lodgepole pine	28.0	29.2	*7*	**57.2**
Other conifers	0.8	1.3	*41*	**2.1**
All broadleaves	**9.4**	**68.4**	***4***	**77.8**
Oak	0.4	4.6	*19*	**5.0**
Beech	0.1	1.4	*38*	**1.5**
Sycamore	0.0	1.5	*46*	**1.5**
Ash	0.1	1.3	*30*	**1.3**
Birch	5.2	46.3	*5*	**51.5**
Sweet chestnut	0.0	0.0	-	**0.0**
Hazel	0.1	0.8	*28*	**0.9**
Hawthorn	0.0	0.1	*70*	**0.1**
Alder	0.2	4.3	*18*	**4.4**
Willow	0.0	1.9	*23*	**1.9**
Other broadleaves	3.4	6.3	*11*	**9.7**
All species	**104.1**	**206.3**	***2***	**310.4**

Table 2 Stocked area by age class at 31 March 2012

Age class	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
All conifers				
0-10 years	5.4	10.9	*12*	**16.2**
11-20 years	6.1	16.8	*11*	**22.8**
21-40 years	37.8	67.0	*5*	**104.7**
41-60 years	33.4	34.8	*7*	**68.2**
61-80 years	7.5	3.1	*25*	**10.5**
81-100 years	2.2	2.5	*26*	**4.7**
100+ years	2.4	2.1	*28*	**4.5**
Total	**94.6**	**137.0**	***2***	**231.7**
All broadleaves				
0-10 years	1.7	14.4	*11*	**16.1**
11-20 years	0.9	9.9	*17*	**10.8**
21-40 years	1.2	14.8	*10*	**16.0**
41-60 years	1.5	18.9	*10*	**20.4**
61-80 years	2.1	6.6	*19*	**8.7**
81-100 years	0.7	2.2	*36*	**2.9**
100+ years	1.3	1.6	*32*	**2.9**
Total	**9.4**	**68.4**	***4***	**77.8**
All species				
0-10 years	7.1	25.6	*9*	**32.7**
11-20 years	6.9	26.9	*9*	**33.8**
21-40 years	39.0	82.1	*5*	**121.0**
41-60 years	34.9	53.7	*6*	**88.6**
61-80 years	9.6	9.7	*15*	**19.2**
81-100 years	2.9	4.7	*22*	**7.6**
100+ years	3.7	3.7	*21*	**7.4**
Total	**104.1**	**206.3**	***2***	**310.4**

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

Mean stand DBH	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
All conifers				
0-7 cm	7.8	13.7	*11*	**21.5**
7-10 cm	4.9	16.4	*10*	**21.4**
10-15 cm	31.6	28.0	*7*	**59.5**
15-20 cm	24.5	32.3	*7*	**56.7**
20-30 cm	17.6	31.5	*7*	**49.1**
30-40 cm	6.0	7.8	*14*	**13.8**
40-60 cm	2.2	6.1	*16*	**8.3**
60-80 cm	0.1	1.2	*35*	**1.3**
80+ cm	0.0	0.0	*93*	**0.0**
Total	**94.6**	**137.0**	***2***	**231.7**
All broadleaves				
0-7 cm	1.9	17.4	*10*	**19.4**
7-10 cm	1.4	12.4	*13*	**13.8**
10-15 cm	3.4	11.2	*12*	**14.6**
15-20 cm	2.3	7.4	*15*	**9.8**
20-30 cm	0.3	10.6	*13*	**10.9**
30-40 cm	0.0	4.1	*20*	**4.2**
40-60 cm	0.0	3.0	*22*	**3.0**
60-80 cm	0.0	1.1	*42*	**1.1**
80+ cm	0.0	1.2	*45*	**1.2**
Total	**9.4**	**68.4**	***4***	**77.8**
All species				
0-7 cm	9.7	31.6	*8*	**41.3**
7-10 cm	6.3	28.9	*8*	**35.3**
10-15 cm	35.0	39.3	*6*	**74.3**
15-20 cm	26.8	39.8	*6*	**66.6**
20-30 cm	17.9	42.1	*6*	**60.0**
30-40 cm	6.0	12.0	*12*	**18.0**
40-60 cm	2.2	9.2	*13*	**11.4**
60-80 cm	0.1	2.3	*27*	**2.4**
80+ cm	0.0	1.2	*45*	**1.2**
Total	**104.1**	**206.3**	***2***	**310.4**

Table 4 Felled area at 31 March 2012

Clearfelled area	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
Highland & Islands Conservancy	10.7	8.7	*17*	**19.4**

Standing volume at 31 March 2012

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

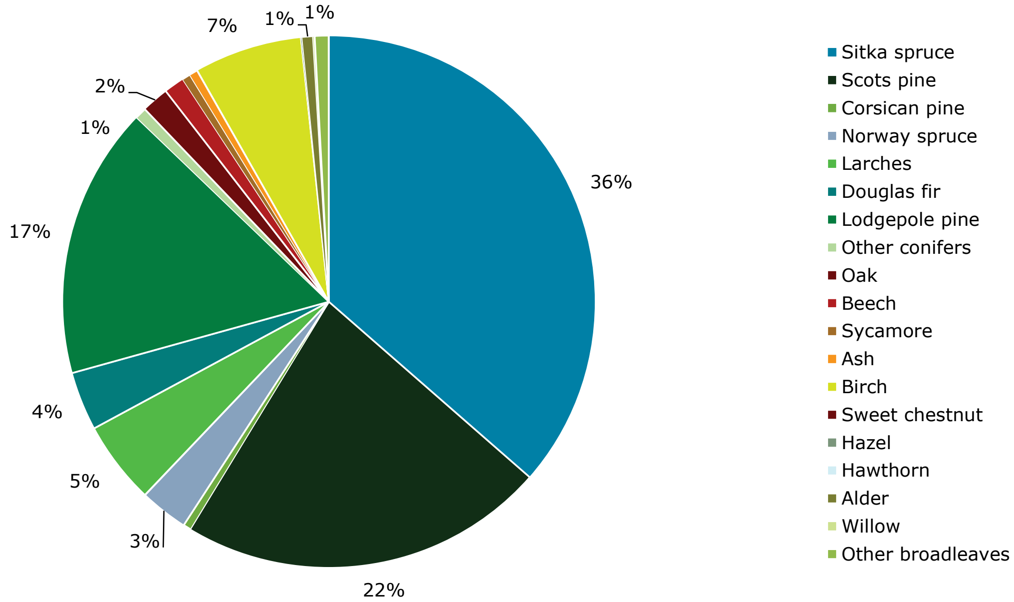


Table 5 Standing volume by principal tree species at 31 March 2012

Principal species	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
Highland & Islands Conservancy				
All conifers	**19,764**	**34,745**	***3***	**54,509**
Sitka spruce	7,793	14,462	*7*	**22,255**
Scots pine	4,783	8,818	*7*	**13,601**
Corsican pine	12	260	*52*	**272**
Norway spruce	706	1,084	*30*	**1,790**
Larches	1,155	1,921	*16*	**3,076**
Douglas fir	638	1,527	*26*	**2,164**
Lodgepole pine	4,432	5,655	*9*	**10,087**
Other conifers	245	176	*46*	**421**
All broadleaves	**1,252**	**6,154**	***8***	**7,406**
Oak	95	913	*23*	**1,008**
Beech	12	744	*48*	**755**
Sycamore	2	306	*55*	**308**
Ash	4	300	*48*	**304**
Birch	839	3,166	*7*	**4,006**
Sweet chestnut	0	0	-	**0**
Hazel	16	36	*33*	**52**
Hawthorn	0	1	*52*	**1**
Alder	28	364	*34*	**392**
Willow	0	57	*25*	**57**
Other broadleaves	257	265	*18*	**522**
All species	**21,016**	**40,922**	***3***	**61,938**

Table 6 Standing volume by age class at 31 March 2012

Age class	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
All conifers				
0-10 years	0	6	*72*	**7**
11-20 years	157	681	*22*	**838**
21-40 years	5,471	15,896	*7*	**21,367**
41-60 years	9,752	14,730	*9*	**24,482**
61-80 years	2,569	1,626	*24*	**4,196**
81-100 years	980	1,165	*29*	**2,144**
100+ years	835	642	*29*	**1,476**
Total	**19,764**	**34,745**	***3***	**54,509**
All broadleaves				
0-10 years	0	8	*96*	**8**
11-20 years	10	80	*23*	**90**
21-40 years	73	1,224	*11*	**1,297**
41-60 years	246	2,569	*15*	**2,815**
61-80 years	415	1,154	*23*	**1,568**
81-100 years	155	629	*45*	**785**
100+ years	353	490	*45*	**844**
Total	**1,252**	**6,154**	***8***	**7,406**
All species				
0-10 years	0	14	*62*	**14**
11-20 years	168	758	*20*	**926**
21-40 years	5,544	17,156	*7*	**22,700**
41-60 years	9,998	17,261	*8*	**27,258**
61-80 years	2,984	2,793	*17*	**5,777**
81-100 years	1,135	1,803	*24*	**2,938**
100+ years	1,188	1,138	*26*	**2,326**
Total	**21,016**	**40,922**	***3***	**61,938**

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

Mean stand DBH	FC 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	17	*46*	**18**
7-10 cm	118	363	*12*	**481**
10-15 cm	3,666	3,827	*8*	**7,494**
15-20 cm	6,598	9,679	*8*	**16,277**
20-30 cm	6,687	12,978	*8*	**19,665**
30-40 cm	1,839	3,853	*19*	**5,692**
40-60 cm	783	3,495	*17*	**4,277**
60-80 cm	54	530	*30*	**584**
80+ cm	18	3	*93*	**20**
Total	**19,764**	**34,745**	***3***	**54,509**
All broadleaves				
0-7 cm	0	1	*56*	**2**
7-10 cm	36	293	*13*	**329**
10-15 cm	565	1,189	*16*	**1,753**
15-20 cm	536	725	*17*	**1,262**
20-30 cm	97	1,279	*14*	**1,377**
30-40 cm	15	867	*23*	**882**
40-60 cm	1	542	*21*	**544**
60-80 cm	0	483	*52*	**483**
80+ cm	1	775	*43*	**775**
Total	**1,252**	**6,154**	***8***	**7,406**
All species				
0-7 cm	1	18	*43*	**19**
7-10 cm	155	655	*9*	**809**
10-15 cm	4,231	5,034	*7*	**9,265**
15-20 cm	7,134	10,422	*8*	**17,556**
20-30 cm	6,784	14,193	*7*	**20,977**
30-40 cm	1,854	4,745	*16*	**6,599**
40-60 cm	784	4,063	*15*	**4,847**
60-80 cm	55	1,015	*29*	**1,070**
80+ cm	18	778	*43*	**796**
Total	**21,016**	**40,922**	***3***	**61,938**

Biomass and carbon stocks at 31 March 2012

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

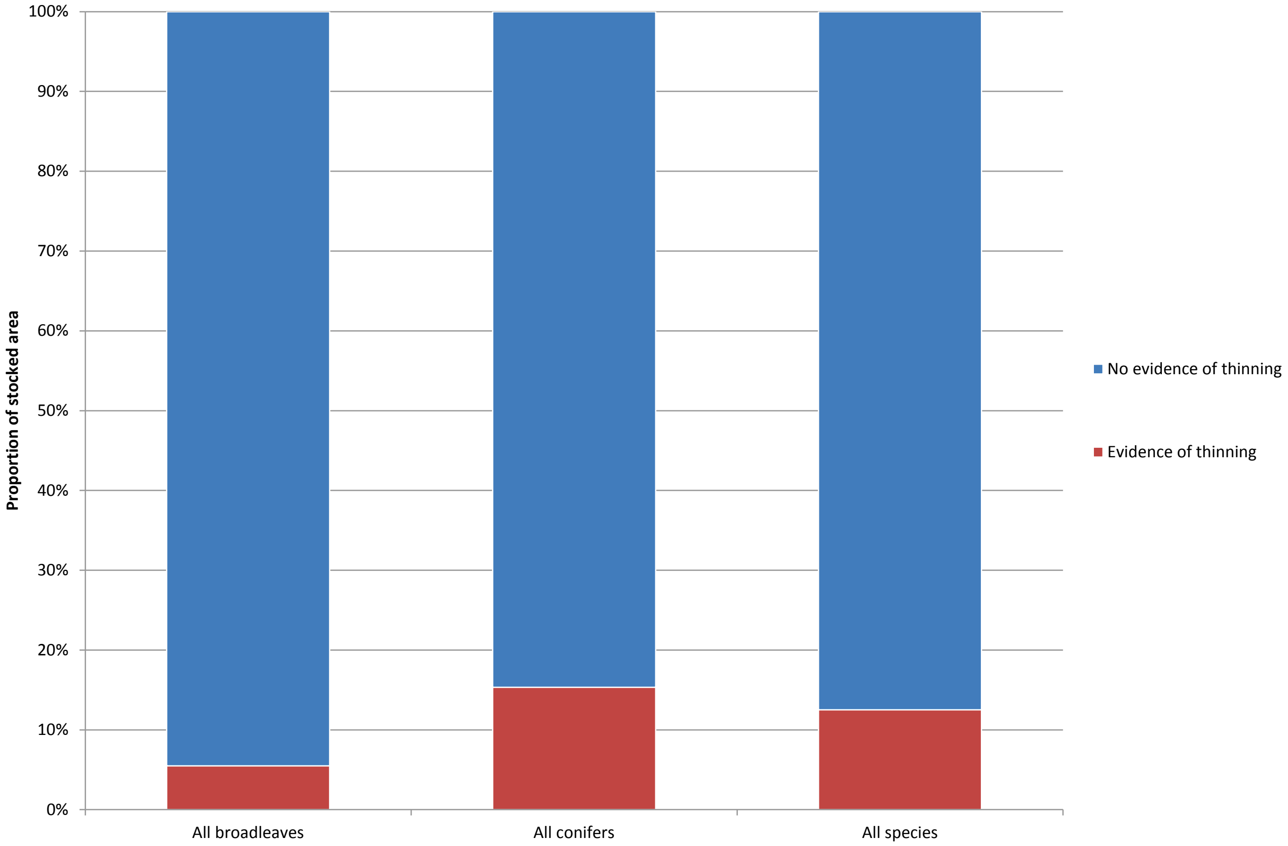
Principal species	FC	Private sector		Total
	biomass (000 odt)	biomass (000 odt)	*SE%*	biomass (000 odt)
Highland & Islands Conservancy				
All conifers	**13,971**	**22,490**	***3***	**36,460**
Sitka spruce	5,231	8,746	*7*	**13,977**
Scots pine	3,526	6,154	*7*	**9,680**
Corsican pine	8	161	*51*	**168**
Norway spruce	384	565	*30*	**949**
Larches	780	1,199	*16*	**1,979**
Douglas fir	443	955	*26*	**1,399**
Lodgepole pine	3,460	4,068	*9*	**7,528**
Other conifers	139	112	*49*	**251**
All broadleaves	**1,186**	**5,991**	***7***	**7,177**
Oak	86	852	*23*	**938**
Beech	11	574	*48*	**585**
Sycamore	2	270	*54*	**272**
Ash	4	245	*44*	**249**
Birch	803	3,318	*7*	**4,122**
Sweet chestnut	0	0	-	**0**
Hazel	14	39	*31*	**53**
Hawthorn	0	1	*53*	**1**
Alder	23	332	*32*	**355**
Willow	0	70	*24*	**70**
Other broadleaves	242	288	*17*	**531**
All species	**15,157**	**28,506**	***3***	**43,663**

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

Principal species	FC	Private sector		Total
	carbon (000 t)	carbon (000 t)	*SE%*	carbon (000 t)
Highland & Islands Conservancy				
All conifers	**6,985**	**11,245**	***3***	**18,230**
Sitka spruce	2,615	4,373	*7*	**6,988**
Scots pine	1,763	3,077	*7*	**4,840**
Corsican pine	4	80	*51*	**84**
Norway spruce	192	282	*30*	**474**
Larches	390	600	*16*	**990**
Douglas fir	222	478	*26*	**699**
Lodgepole pine	1,730	2,034	*9*	**3,764**
Other conifers	70	56	*49*	**126**
All broadleaves	**593**	**2,995**	***7***	**3,588**
Oak	43	426	*23*	**469**
Beech	6	287	*48*	**293**
Sycamore	1	135	*54*	**136**
Ash	2	123	*44*	**124**
Birch	402	1,659	*7*	**2,061**
Sweet chestnut	0	0	-	**0**
Hazel	7	20	*31*	**27**
Hawthorn	0	1	*53*	**1**
Alder	12	166	*32*	**178**
Willow	0	35	*24*	**35**
Other broadleaves	121	144	*17*	**265**
All species	**7,578**	**14,253**	***3***	**21,831**

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 Scotland 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 Scotland and GB context.

In **Tables 10-12** and **Figures 4-8** the figures 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 **Tables 10-12** and **Figures 4-8** 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 provide for:

- a 10% reduction in the area of conifers on the subsequent rotation
- restocking of currently clearfelled land
- predicted species choices are used for the restocking

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

- No reduction in stocked area.
- Like for like species choices are used for broadleaves.
- That 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 D4** of the *50-year forecast of softwood timber availability* (2014). The same restocking assumptions have been applied to both the FC and Private sector forecasts.

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

In **Tables 13-15** and **Figures 9-13** 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 are labelled as “unrestricted”.

Figure 14 compares Private sector hardwood timber availability under the two scenarios.

50-year forecast of timber availability under the “headline” harvesting scenario

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

Principal species	2013-16				2017-21				2022-26				2027-31			
	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total
	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)
All conifers	**859**	**1,233**	***10***	***2,092***	**651**	**1,350**	***10***	***2,001***	**634**	**1,699**	***10***	***2,333***	**655**	**1,887**	***9***	***2,542***
Sitka spruce	331	582	*17*	913	311	644	*17*	955	294	1,010	*16*	1,304	295	1,052	*14*	1,347
Scots pine	123	230	*10*	354	114	291	*15*	406	129	353	*12*	482	131	423	*13*	553
Corsican pine	1	2	*101*	3	0	2	*101*	2	0	2	*101*	2	0	25	*101*	25
Norway spruce	38	30	*29*	67	29	61	*59*	90	16	23	*32*	38	8	35	*43*	43
Larches	46	130	*31*	175	41	73	*19*	114	33	101	*36*	134	35	57	*22*	92
Douglas fir	23	65	*43*	88	19	122	*43*	141	13	31	*26*	44	19	38	*34*	57
Lodgepole pine	292	162	*19*	454	129	125	*20*	254	145	138	*19*	283	162	245	*26*	407
Other conifers	7	7	*49*	14	8	6	*49*	14	5	6	*47*	11	5	5	*48*	10
All broadleaves	**2**	**25**	***29***	**28**	**3**	**42**	***21***	**45**	**4**	**42**	***14***	**45**	**2**	**50**	***11***	**53**
Oak	0	0	*51*	0	0	2	*65*	2	0	2	*66*	2	0	2	*66*	2
Beech	0	0	*65*	0	0	0	*81*	0	0	0	*72*	0	0	0	*67*	0
Sycamore	0	3	*67*	3	0	3	*69*	3	0	1	*60*	1	0	0	*73*	0
Ash	0	1	*97*	1	0	1	*93*	1	0	0	*79*	0	0	0	*57*	0
Birch	1	18	*33*	20	2	28	*25*	30	2	30	*17*	32	1	35	*12*	37
Sweet chestnut	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0
Hazel	0	0	-	0	0	0	*69*	0	0	0	*69*	0	0	1	*88*	1
Hawthorn	0	0	-	0	0	0	*77*	0	0	0	*52*	0	0	0	*53*	0
Alder	0	0	*86*	0	0	1	*36*	1	0	2	*23*	2	0	4	*28*	4
Willow	0	0	*63*	0	0	0	*61*	0	0	1	*38*	1	0	1	*35*	1
Other broadleaves	0	2	*41*	2	1	6	*36*	7	1	6	*25*	7	1	7	*24*	8
All species	**861**	**1,239**	***9***	**2,100**	**654**	**1,395**	***10***	**2,050**	**638**	**1,744**	***10***	**2,381**	**657**	**1,942**	***9***	**2,599**

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

Principal species	2032-36				2037-41				2042-46				2047-51			
	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total
	volume (000m^3 obs)		*SE%*	volume (000m^3 obs)	volume (000m^3 obs)		*SE%*	volume (000m^3 obs)	volume (000m^3 obs)		*SE%*	volume (000m^3 obs)	volume (000m^3 obs)		*SE%*	volume (000m^3 obs)
All conifers	**715**	**2,391**	***8***	***3,106***	**718**	**2,524**	***8***	***3,242***	**556**	**1,470**	***8***	***2,025***	**733**	**1,204**	***9***	***1,936***
Sitka spruce	394	1,153	*12*	1,547	436	973	*13*	1,409	348	592	*14*	940	415	396	*13*	811
Scots pine	121	565	*14*	686	79	730	*16*	810	78	406	*16*	483	125	396	*19*	522
Corsican pine	0	41	*67*	41	0	19	*98*	19	0	0	-	0	0	0	-	0
Norway spruce	11	58	*40*	70	22	101	*54*	123	14	61	*56*	76	27	22	*26*	50
Larches	35	93	*26*	128	33	22	*20*	55	37	28	*27*	65	34	18	*20*	52
Douglas fir	19	36	*29*	55	32	18	*24*	50	23	21	*22*	44	35	22	*21*	58
Lodgepole pine	129	389	*21*	518	110	579	*16*	689	46	335	*18*	381	83	318	*19*	401
Other conifers	5	12	*42*	17	5	44	*62*	49	9	13	*34*	22	12	13	*27*	26
All broadleaves	**5**	**60**	***10***	**65**	**11**	**70**	***10***	**81**	**7**	**102**	***13***	**110**	**11**	**222**	***16***	**234**
Oak	0	2	*60*	2	0	2	*49*	3	1	3	*39*	4	1	3	*35*	4
Beech	0	1	*56*	1	0	1	*50*	1	0	1	*50*	1	0	1	*50*	1
Sycamore	0	0	*55*	0	0	1	*55*	1	0	3	*55*	3	0	2	*72*	2
Ash	0	0	*56*	0	0	0	*50*	0	0	1	*56*	1	0	1	*65*	1
Birch	2	41	*12*	44	5	46	*11*	51	2	58	*14*	60	5	179	*19*	184
Sweet chestnut	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0
Hazel	0	1	*77*	1	0	1	*77*	1	0	1	*77*	1	0	1	*55*	1
Hawthorn	0	0	*53*	0	0	0	*53*	0	0	0	*53*	0	0	0	*53*	0
Alder	1	5	*25*	5	2	6	*29*	8	1	6	*22*	8	2	13	*22*	15
Willow	0	2	*37*	2	0	2	*31*	2	0	3	*28*	3	0	3	*28*	3
Other broadleaves	2	8	*21*	10	4	10	*19*	14	3	27	*31*	29	4	19	*29*	23
All species	**720**	**2,456**	***7***	**3,176**	**729**	**2,598**	***7***	**3,327**	**563**	**1,573**	***8***	**2,136**	**744**	**1,425**	***8***	**2,169**

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

Principal species	2052-56 FC volume ($000m^3$ obs)	2052-56 Private sector volume ($000m^3$ obs)	2052-56 Private sector *SE%*	2052-56 Total volume ($000m^3$ obs)	2057-61 FC volume ($000m^3$ obs)	2057-61 Private sector volume ($000m^3$ obs)	2057-61 Private sector *SE%*	2057-61 Total volume ($000m^3$ obs)
All conifers	**648**	**1,147**	***9***	***1,795***	**597**	**1,168**	***8***	***1,764***
Sitka spruce	396	472	*14*	867	373	711	*12*	1,084
Scots pine	101	331	*18*	432	110	268	*14*	378
Corsican pine	0	1	*98*	1	0	0	-	0
Norway spruce	20	62	*45*	82	17	20	*21*	36
Larches	38	31	*15*	70	40	29	*19*	69
Douglas fir	18	27	*18*	46	24	32	*18*	56
Lodgepole pine	61	189	*24*	250	21	94	*34*	115
Other conifers	14	23	*19*	37	11	22	*17*	33
All broadleaves	**10**	**187**	***14***	**198**	**17**	**110**	***18***	**127**
Oak	2	4	*30*	5	2	4	*25*	6
Beech	0	1	*51*	1	0	1	*51*	1
Sycamore	0	2	*72*	2	0	2	*70*	2
Ash	0	1	*65*	1	0	3	*63*	3
Birch	3	129	*15*	132	5	77	*23*	82
Sweet chestnut	0	0	-	0	0	0	-	0
Hazel	0	4	*101*	4	0	1	*91*	1
Hawthorn	0	0	*53*	0	0	0	*53*	0
Alder	4	33	*30*	37	7	8	*10*	15
Willow	0	3	*28*	3	0	3	*27*	3
Other broadleaves	2	11	*22*	13	3	12	*27*	15
All species	**659**	**1,334**	***8***	**1,993**	**614**	**1,278**	***8***	**1,892**

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

Forecast period	FC	Private sector		Total
	volume (000m^3 obs)	volume (000m^3 obs)	*SE%*	volume (000m^3 obs)
All conifers				
2013-16	18,260	35,006	*3*	**53,267**
2017-21	18,225	35,670	*3*	**53,895**
2022-26	18,149	35,677	*3*	**53,826**
2027-31	18,113	34,565	*3*	**52,678**
2032-36	17,825	30,136	*3*	**47,962**
2037-41	17,525	23,756	*4*	**41,281**
2042-46	17,643	19,589	*4*	**37,231**
2047-51	18,228	19,000	*4*	**37,229**
2052-56	18,843	19,798	*4*	**38,640**
2057-61	20,027	21,443	*4*	**41,470**
All broadleaves				
2013-16	1,286	6,578	*8*	**7,864**
2017-21	1,365	7,363	*8*	**8,727**
2022-26	1,461	8,414	*7*	**9,875**
2027-31	1,572	9,619	*7*	**11,190**
2032-36	1,698	10,794	*6*	**12,493**
2037-41	1,810	11,846	*6*	**13,656**
2042-46	1,905	12,701	*6*	**14,606**
2047-51	2,002	13,059	*6*	**15,061**
2052-56	2,087	12,956	*6*	**15,043**
2057-61	2,153	13,000	*6*	**15,153**
All species				
2013-16	19,547	41,603	*3*	**61,150**
2017-21	19,590	43,121	*3*	**62,711**
2022-26	19,610	44,174	*3*	**63,784**
2027-31	19,685	44,262	*3*	**63,947**
2032-36	19,524	40,988	*3*	**60,512**
2037-41	19,335	35,634	*3*	**54,969**
2042-46	19,548	32,298	*3*	**51,846**
2047-51	20,230	32,069	*3*	**52,299**
2052-56	20,930	32,751	*3*	**53,681**
2057-61	22,180	34,433	*3*	**56,613**

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

Forecast period	FC	Private sector		Total
	volume (000m^3 obs)	volume (000m^3 obs)	*SE%*	volume (000m^3 obs)
All conifers				
2013-16	679	1,551	*3*	**2,230**
2017-21	669	1,596	*3*	**2,264**
2022-26	627	1,555	*3*	**2,183**
2027-31	662	1,468	*3*	**2,130**
2032-36	664	1,306	*3*	**1,969**
3037-41	698	1,167	*3*	**1,866**
2042-46	748	1,087	*4*	**1,836**
2047-51	807	1,170	*4*	**1,977**
2052-56	843	1,329	*3*	**2,172**
2057-61	868	1,495	*3*	**2,362**
All broadleaves				
2013-16	17	200	*6*	**217**
2017-21	20	225	*6*	**245**
2022-26	22	269	*6*	**291**
2027-31	27	292	*6*	**318**
2032-36	29	286	*6*	**315**
3037-41	29	269	*6*	**298**
2042-46	29	249	*5*	**278**
2047-51	28	219	*5*	**247**
2052-56	28	179	*5*	**207**
2057-61	27	152	*5*	**180**
All species				
2013-16	696	1,753	*3*	**2,449**
2017-21	689	1,824	*3*	**2,513**
2022-26	649	1,827	*3*	**2,477**
2027-31	688	1,761	*2*	**2,450**
2032-36	692	1,592	*3*	**2,284**
3037-41	727	1,435	*3*	**2,163**
2042-46	777	1,335	*3*	**2,112**
2047-51	835	1,387	*3*	**2,222**
2052-56	871	1,506	*3*	**2,377**
2057-61	895	1,646	*3*	**2,541**

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

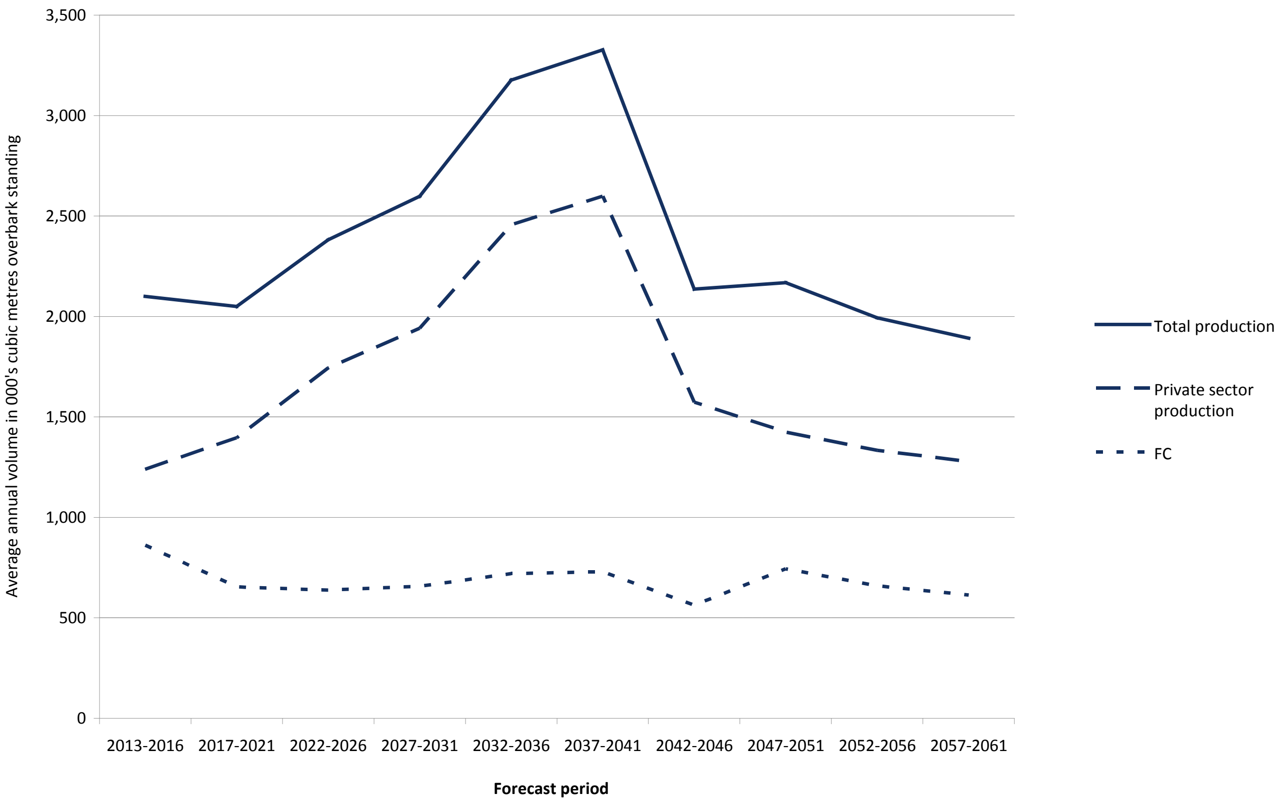


Figure 5 50-year forecast of average annual softwood availabilty

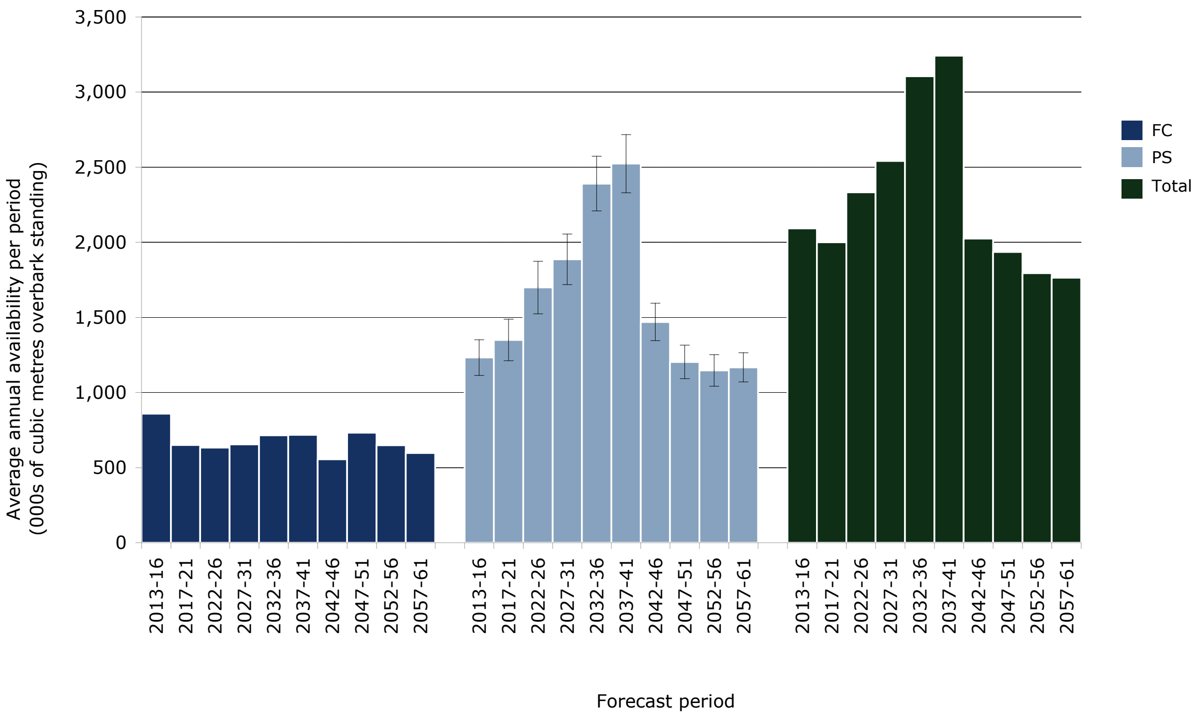


Figure 6 50-year forecast of average annual hardwood availability

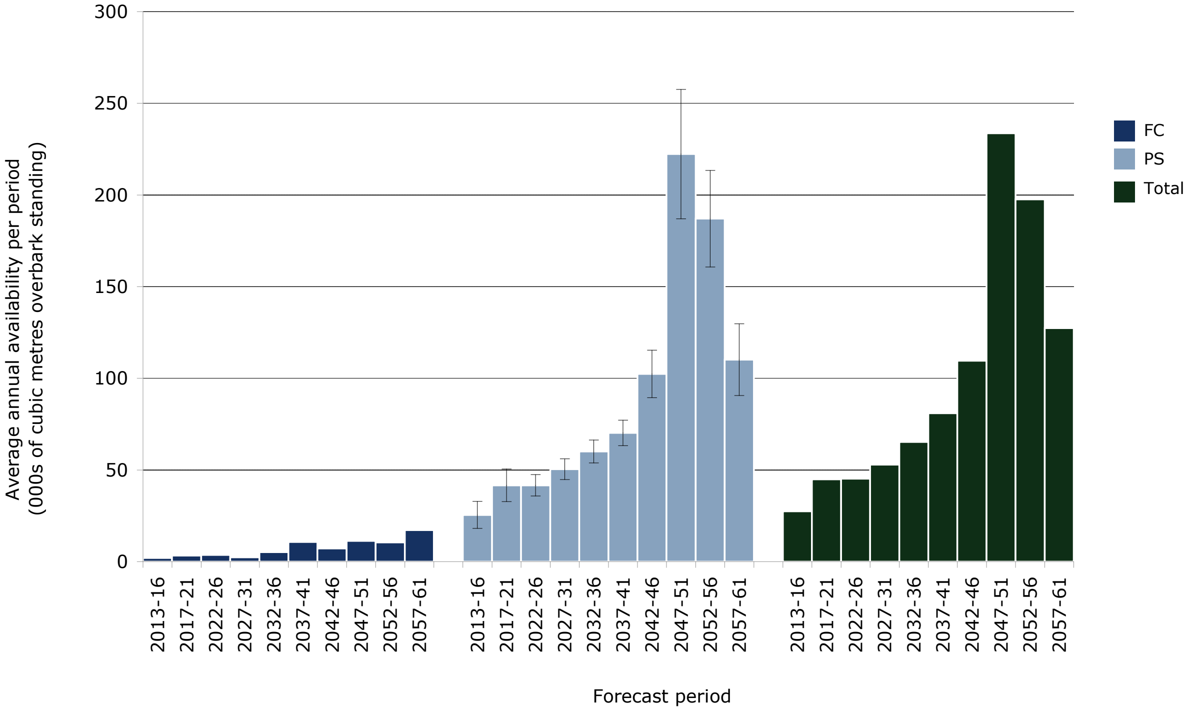


Figure 7 50-year forecast of softwood standing volume, increment and availability

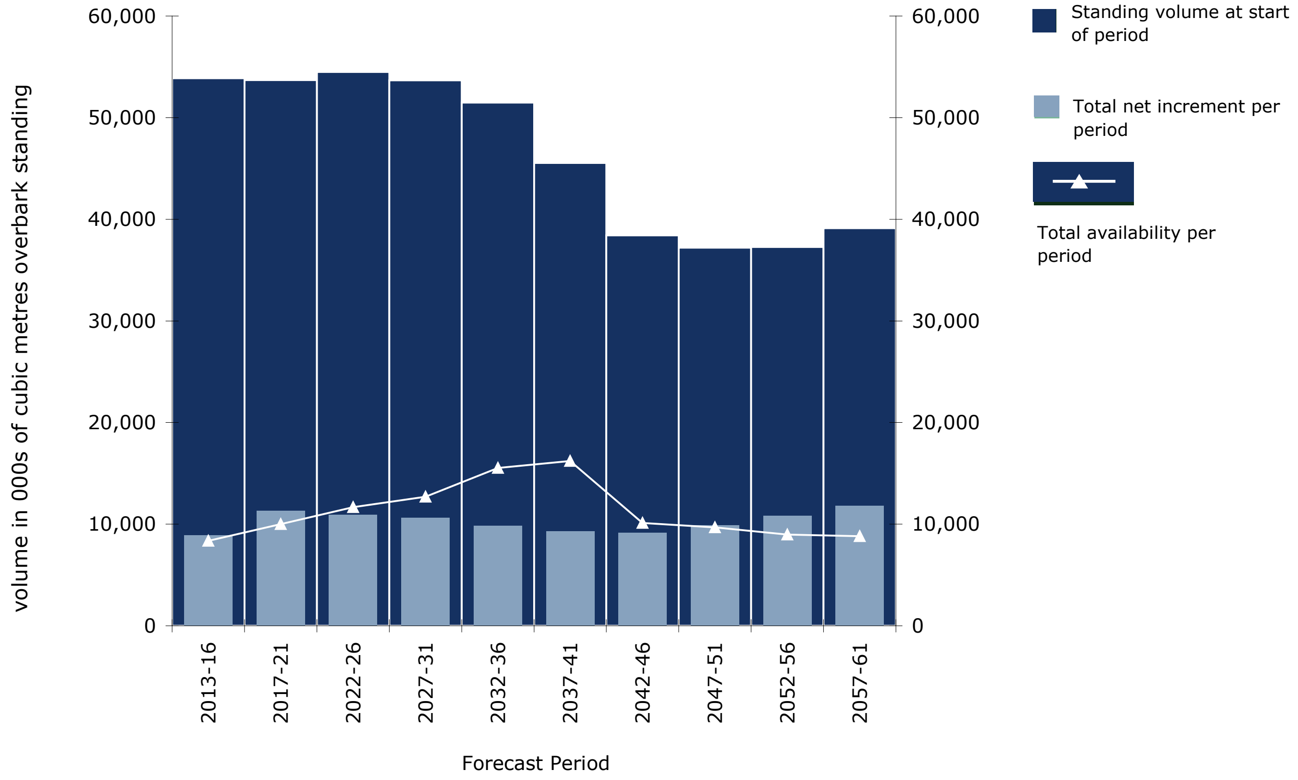
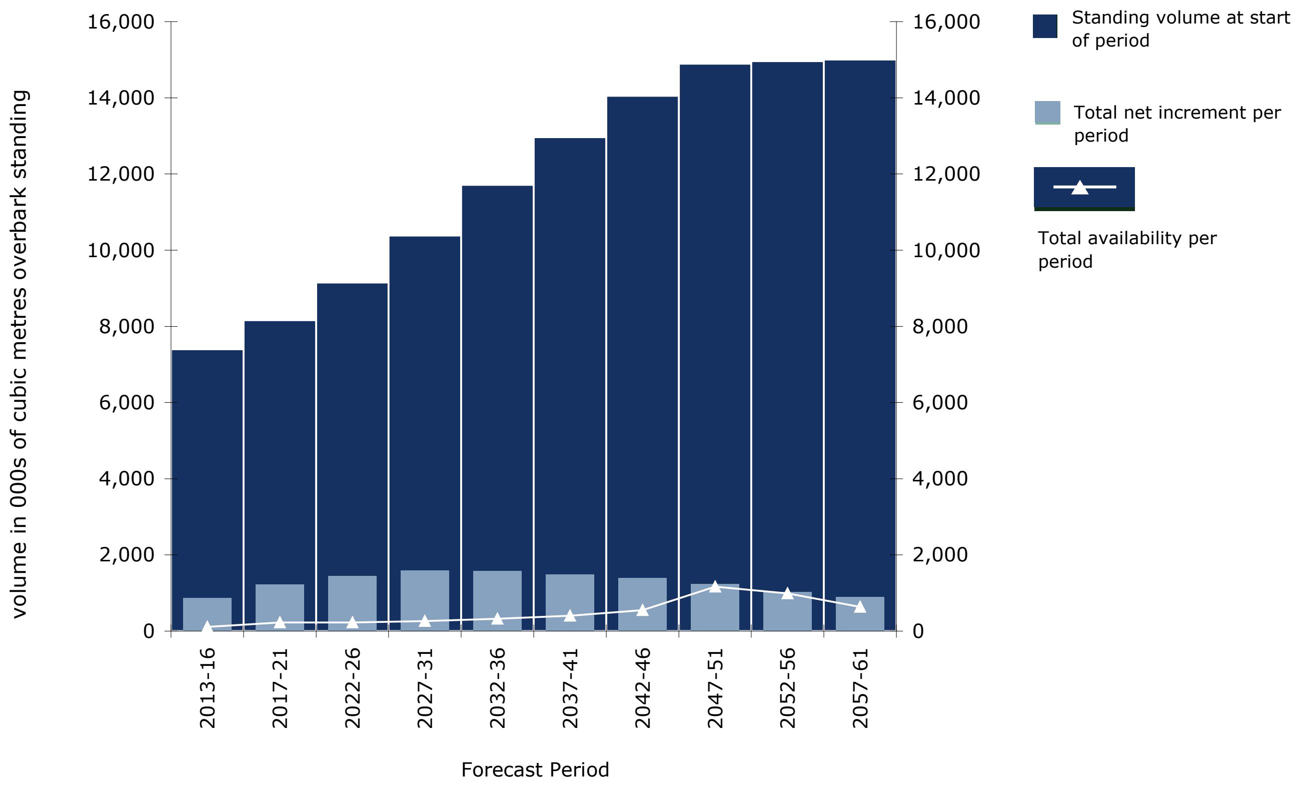


Figure 8 50-year forecast of hardwood standing volume, increment and availability



50-year forecast of timber availability under the “unrestricted” scenario

Table 13 50-year forecast of average annual 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	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total
	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)
All conifers	**859**	**1,233**	***10***	***2,092***	**651**	**1,350**	***10***	***2,001***	**634**	**1,699**	***10***	***2,333***	**655**	**1,887**	***9***	***2,542***
Sitka spruce	331	582	*17*	913	311	644	*17*	955	294	1,010	*16*	1,304	295	1,052	*14*	1,347
Scots pine	123	230	*10*	354	114	291	*15*	406	129	353	*12*	482	131	423	*13*	553
Corsican pine	1	2	*101*	3	0	2	*101*	2	0	2	*101*	2	0	25	*101*	25
Norway spruce	38	30	*29*	67	29	61	*59*	90	16	23	*32*	38	8	35	*43*	43
Larches	46	130	*31*	175	41	73	*19*	114	33	101	*36*	134	35	57	*22*	92
Douglas fir	23	65	*43*	88	19	122	*43*	141	13	31	*26*	44	19	38	*34*	57
Lodgepole pine	292	162	*19*	454	129	125	*20*	254	145	138	*19*	283	162	245	*26*	407
Other conifers	7	7	*49*	14	8	6	*49*	14	5	6	*47*	11	5	5	*48*	10
All broadleaves	**2**	**344**	***8***	**346**	**3**	**421**	***7***	**425**	**4**	**219**	***9***	**223**	**2**	**218**	***13***	**220**
Oak	0	8	*27*	8	0	9	*24*	9	0	35	*40*	35	0	18	*52*	19
Beech	0	3	*79*	3	0	3	*70*	3	0	3	*69*	3	0	3	*68*	3
Sycamore	0	18	*62*	18	0	19	*64*	19	0	5	*66*	5	0	9	*95*	9
Ash	0	5	*40*	5	0	5	*38*	5	0	2	*34*	2	0	0	*54*	0
Birch	1	252	*9*	253	2	319	*9*	321	2	141	*9*	144	1	160	*15*	162
Sweet chestnut	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0
Hazel	0	3	*38*	3	0	3	*36*	3	0	1	*30*	1	0	2	*36*	2
Hawthorn	0	0	-	0	0	0	*77*	0	0	0	*52*	0	0	0	*53*	0
Alder	0	34	*37*	34	0	35	*35*	35	0	16	*34*	16	0	7	*22*	7
Willow	0	1	*31*	1	0	3	*41*	3	0	2	*28*	2	0	3	*33*	3
Other broadleaves	0	20	*23*	20	1	25	*21*	26	1	14	*17*	15	1	14	*17*	15
All species	**861**	**1,557**	***8***	**2,419**	**654**	**1,776**	***8***	**2,430**	**638**	**1,922**	***9***	**2,559**	**657**	**2,109**	***8***	**2,767**

Table 13 (cont'd) 50-year forecast of average annual 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	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total
	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)	volume ($000m^3$ obs)		*SE%*	volume ($000m^3$ obs)
All conifers	**715**	**2,391**	***8***	***3,106***	**718**	**2,524**	***8***	***3,242***	**556**	**1,470**	***8***	***2,025***	**733**	**1,204**	***9***	***1,936***
Sitka spruce	394	1,153	*12*	1,547	436	973	*13*	1,409	348	592	*14*	940	415	396	*13*	811
Scots pine	121	565	*14*	686	79	730	*16*	810	78	406	*16*	483	125	396	*19*	522
Corsican pine	0	41	*67*	41	0	19	*98*	19	0	0	-	0	0	0	-	0
Norway spruce	11	58	*40*	70	22	101	*54*	123	14	61	*56*	76	27	22	*26*	50
Larches	35	93	*26*	128	33	22	*20*	55	37	28	*27*	65	34	18	*20*	52
Douglas fir	19	36	*29*	55	32	18	*24*	50	23	21	*22*	44	35	22	*21*	58
Lodgepole pine	129	389	*21*	518	110	579	*16*	689	46	335	*18*	381	83	318	*19*	401
Other conifers	5	12	*42*	17	5	44	*62*	49	9	13	*34*	22	12	13	*27*	26
All broadleaves	**5**	**204**	***11***	**210**	**11**	**163**	***8***	**173**	**7**	**217**	***10***	**224**	**11**	**343**	***11***	**355**
Oak	0	19	*64*	19	0	19	*38*	19	1	30	*57*	31	1	9	*41*	10
Beech	0	3	*64*	3	0	3	*59*	3	0	4	*53*	5	0	3	*58*	3
Sycamore	0	1	*58*	1	0	3	*54*	3	0	6	*45*	6	0	5	*57*	5
Ash	0	2	*53*	2	0	1	*31*	1	0	2	*37*	2	0	2	*35*	2
Birch	2	132	*13*	135	5	103	*9*	108	2	115	*8*	117	5	262	*13*	267
Sweet chestnut	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0
Hazel	0	2	*44*	2	0	2	*40*	2	0	2	*40*	2	0	3	*33*	3
Hawthorn	0	0	*53*	0	0	0	*69*	0	0	0	*70*	0	0	0	*70*	0
Alder	1	17	*38*	17	2	11	*21*	13	1	14	*18*	15	2	26	*19*	28
Willow	0	3	*24*	3	0	4	*22*	4	0	7	*32*	7	0	5	*25*	5
Other broadleaves	2	26	*33*	28	4	17	*14*	21	3	38	*23*	40	4	29	*21*	33
All species	**720**	**2,601**	***7***	**3,321**	**729**	**2,691**	***7***	**3,420**	**563**	**1,688**	***7***	**2,251**	**744**	**1,546**	***8***	**2,290**

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

Principal species	2052-56				2057-61			
	FC	Private sector		Total	FC	Private sector		Total
	volume (000m^3 obs)		*SE%*	volume (000m^3 obs)	volume (000m^3 obs)		*SE%*	volume (000m^3 obs)
All conifers	**648**	**1,147**	***9***	***1,795***	**597**	**1,168**	***8***	***1,764***
Sitka spruce	396	472	*14*	867	373	711	*12*	1,084
Scots pine	101	331	*18*	432	110	268	*14*	378
Corsican pine	0	1	*98*	1	0	0	-	0
Norway spruce	20	62	*45*	82	17	20	*21*	36
Larches	38	31	*15*	70	40	29	*19*	69
Douglas fir	18	27	*18*	46	24	32	*18*	56
Lodgepole pine	61	189	*24*	250	21	94	*34*	115
Other conifers	14	23	*19*	37	11	22	*17*	33
All broadleaves	**10**	**395**	***15***	**405**	**17**	**309**	***10***	**327**
Oak	2	11	*44*	12	2	35	*51*	36
Beech	0	56	*95*	56	0	1	*39*	1
Sycamore	0	4	*55*	4	0	8	*70*	8
Ash	0	2	*34*	2	0	4	*44*	4
Birch	3	239	*10*	242	5	198	*10*	203
Sweet chestnut	0	0	-	0	0	0	-	0
Hazel	0	5	*76*	5	0	6	*54*	6
Hawthorn	0	0	*70*	0	0	0	*70*	0
Alder	4	42	*24*	47	7	15	*14*	22
Willow	0	7	*45*	7	0	8	*24*	8
Other broadleaves	2	28	*18*	30	3	35	*32*	38
All species	**659**	**1,542**	***8***	**2,201**	**614**	**1,478**	***7***	**2,092**

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

Forecast period	FC volume (000m^3 obs)	Private sector volume (000m^3 obs)	Private sector *SE%*	Total volume (000m^3 obs)
All conifers				
2013-16	18,260	35,006	*3*	**53,267**
2017-21	18,225	35,670	*3*	**53,895**
2022-26	18,149	35,677	*3*	**53,826**
2027-31	18,113	34,565	*3*	**52,678**
2032-36	17,825	30,136	*3*	**47,962**
2037-41	17,525	23,756	*4*	**41,281**
2042-46	17,643	19,589	*4*	**37,231**
2047-51	18,228	19,000	*4*	**37,229**
2052-56	18,843	19,798	*4*	**38,640**
2057-61	20,027	21,443	*4*	**41,470**
All broadleaves				
2013-16	1,286	5,751	*9*	**7,037**
2017-21	1,365	4,861	*10*	**6,226**
2022-26	1,461	4,230	*12*	**5,691**
2027-31	1,572	4,476	*12*	**6,047**
2032-36	1,698	4,688	*12*	**6,386**
2037-41	1,810	5,291	*11*	**7,101**
2042-46	1,905	6,104	*10*	**8,009**
2047-51	2,002	6,548	*9*	**8,550**
2052-56	2,087	6,322	*9*	**8,409**
2057-61	2,153	6,188	*9*	**8,341**
All species				
2013-16	19,547	40,776	*3*	**60,322**
2017-21	19,590	40,614	*3*	**60,204**
2022-26	19,610	39,980	*3*	**59,590**
2027-31	19,685	39,105	*3*	**58,790**
2032-36	19,524	34,863	*3*	**54,386**
2037-41	19,335	29,056	*4*	**48,391**
2042-46	19,548	25,677	*4*	**45,225**
2047-51	20,230	25,533	*4*	**45,763**
2052-56	20,930	26,092	*4*	**47,022**
2057-61	22,180	27,595	*4*	**49,775**

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

Forecast period	FC	Private sector		Total
	volume (000m^3 obs)	volume (000m^3 obs)	*SE%*	volume (000m^3 obs)
All conifers				
2013-16	679	1,551	*3*	**2,230**
2017-21	669	1,596	*3*	**2,264**
2022-26	627	1,555	*3*	**2,183**
2027-31	662	1,468	*3*	**2,130**
2032-36	664	1,306	*3*	**1,969**
3037-41	698	1,167	*3*	**1,866**
2042-46	748	1,087	*4*	**1,836**
2047-51	807	1,170	*4*	**1,977**
2052-56	843	1,329	*3*	**2,172**
2057-61	868	1,495	*3*	**2,362**
All broadleaves				
2013-16	17	191	*6*	**208**
2017-21	20	193	*7*	**213**
2022-26	22	215	*7*	**237**
2027-31	27	248	*7*	**275**
2032-36	29	269	*6*	**298**
3037-41	29	314	*5*	**343**
2042-46	29	366	*4*	**395**
2047-51	28	373	*4*	**401**
2052-56	28	343	*4*	**371**
2057-61	27	315	*4*	**343**
All species				
2013-16	696	1,744	*3*	**2,440**
2017-21	689	1,792	*3*	**2,481**
2022-26	649	1,773	*3*	**2,422**
2027-31	688	1,718	*3*	**2,406**
2032-36	692	1,574	*3*	**2,267**
3037-41	727	1,480	*3*	**2,208**
2042-46	777	1,452	*3*	**2,228**
2047-51	835	1,542	*3*	**2,377**
2052-56	871	1,671	*3*	**2,542**
2057-61	895	1,809	*2*	**2,704**

Figure 9 Overview of 50-year forecast of average annual softwood and hardwood timber availability – unrestricted biological potential

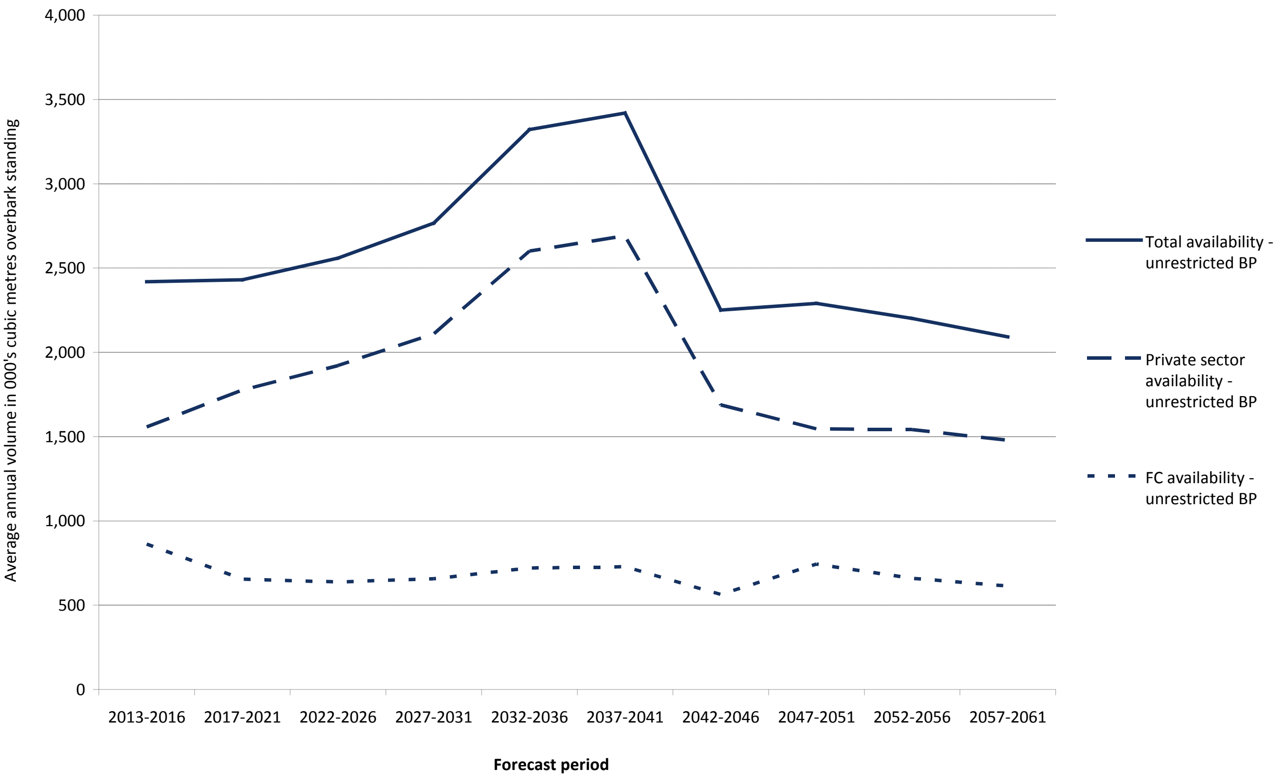


Figure 10 50-year forecast comparison of average annual softwood availability– unrestricted biological potential

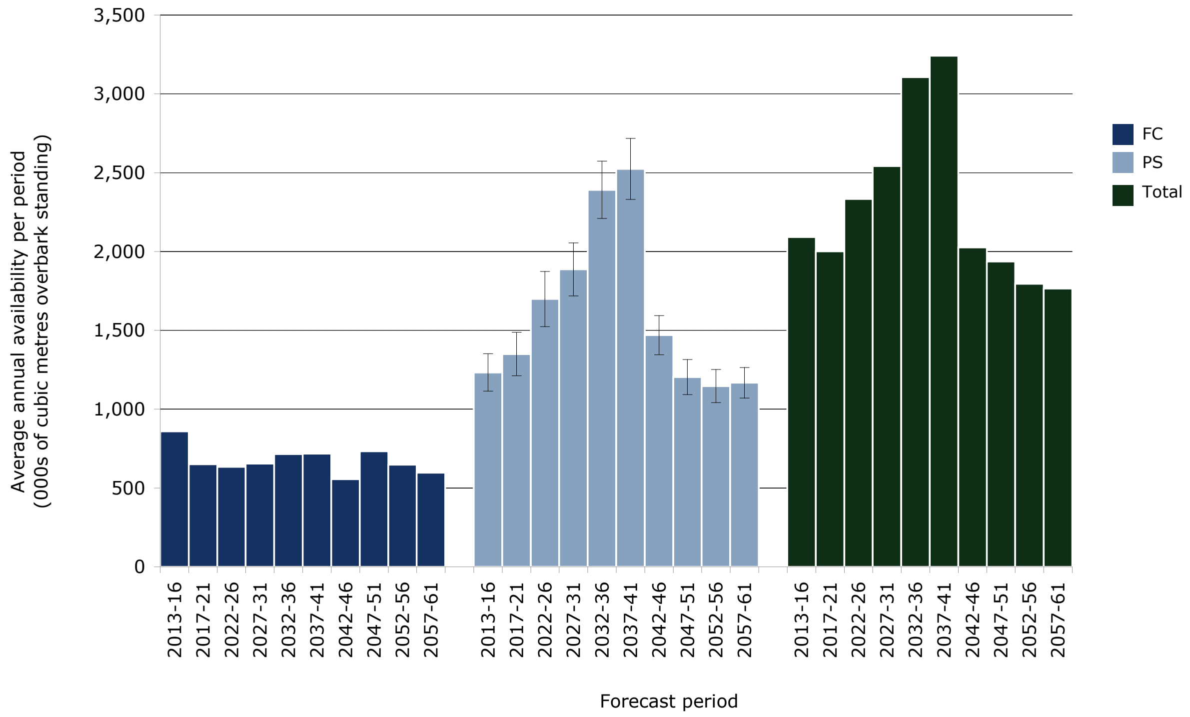


Figure 11 50-year forecast comparison of average annual hardwood availability – unrestricted biological potential

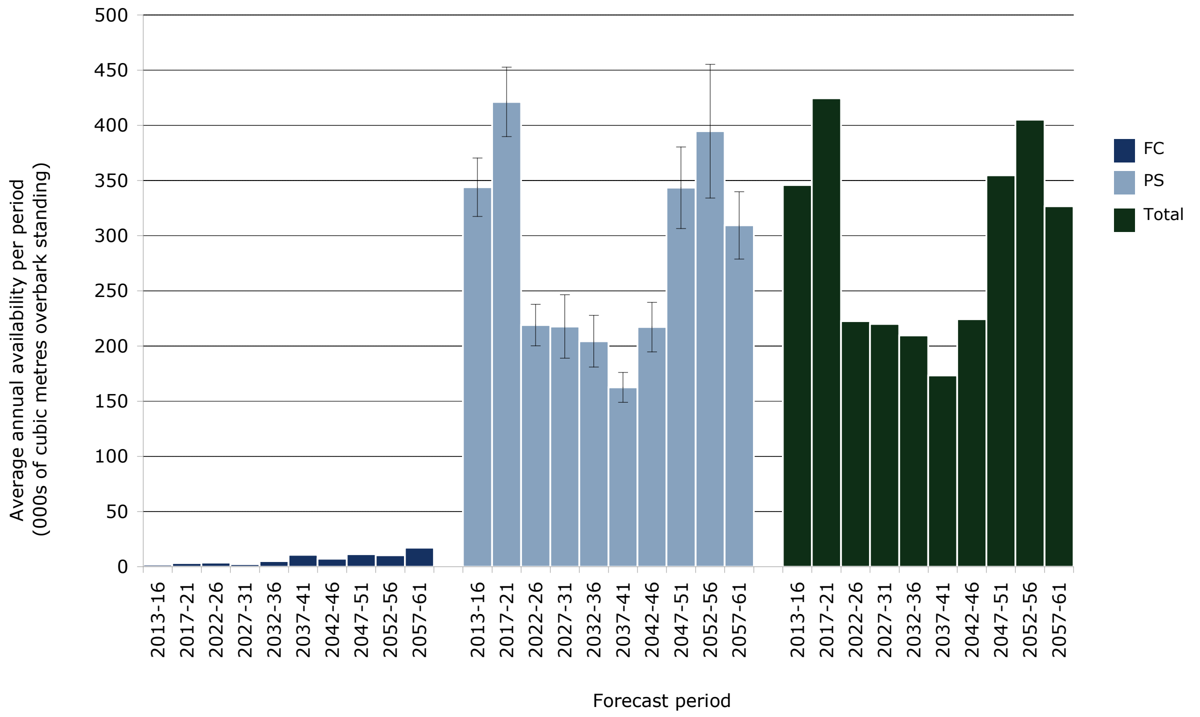


Figure 12 50-year summary of softwood standing volume, increment and availability – unrestricted biological potential

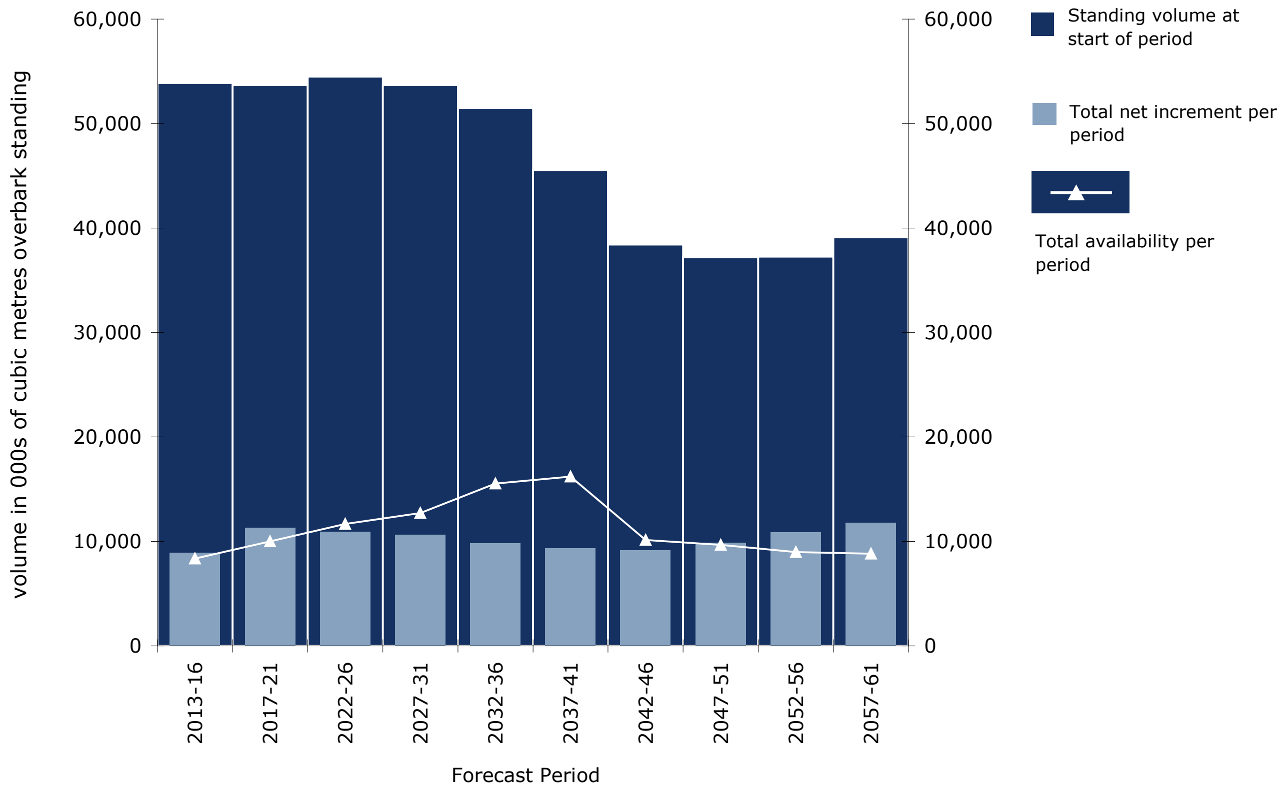
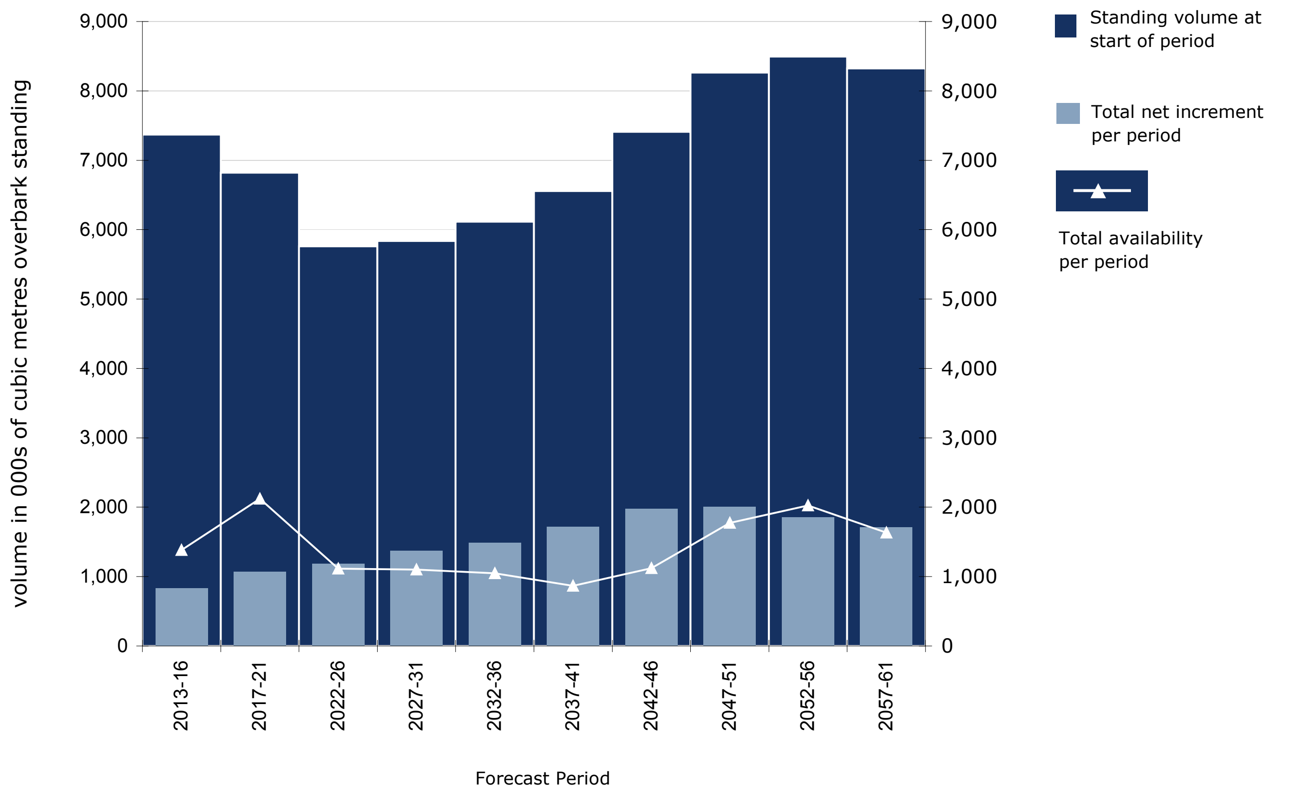
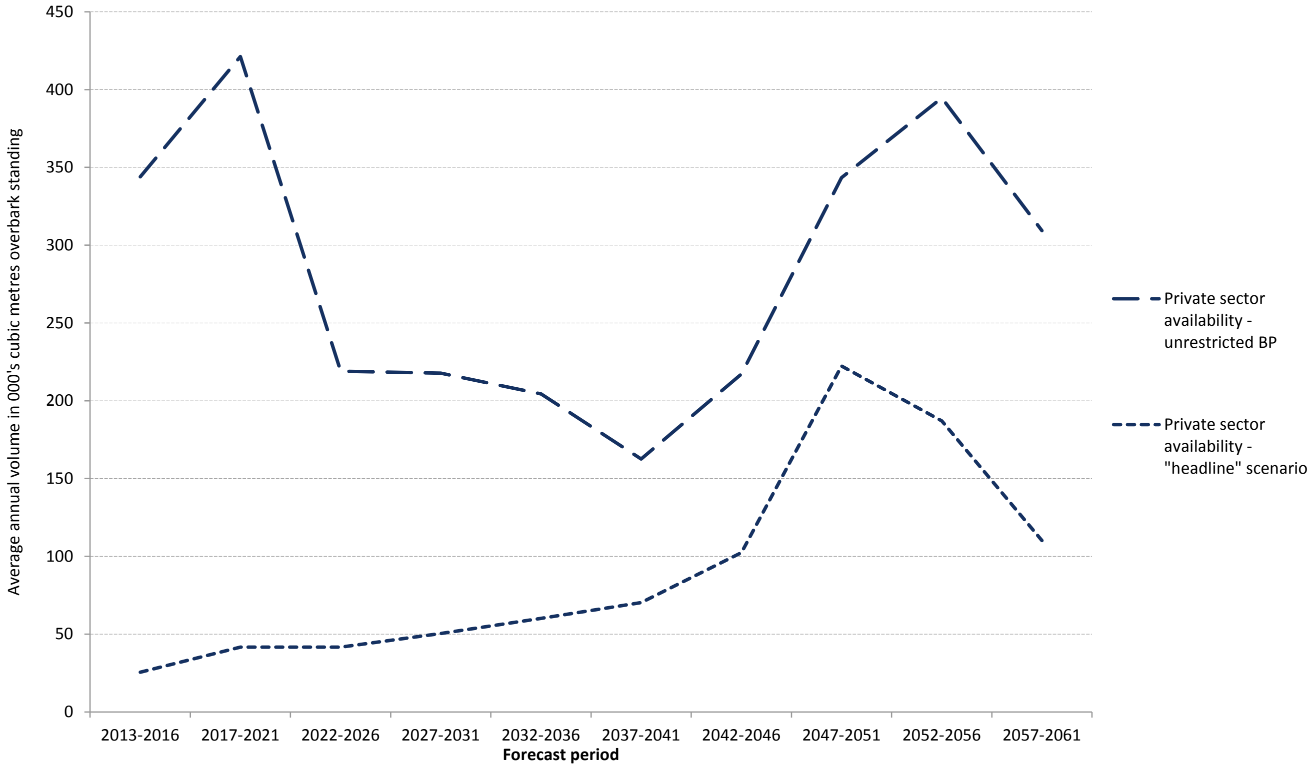


Figure 13 50-year summary of hardwood standing volume, increment and availability – unrestricted biological potential



Comparison of hardwood availability between harvesting scenarios

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



NFI national reports and papers

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

- GB 2011 preliminary estimates of broadleaved species
- GB 2011 standing coniferous timber volume
- UK 25-year forecast of softwood availability
- GB 25-year forecast of coniferous standing volume and increment
- Biomass in live woodland trees in Britain
- Carbon in live woodland trees in Britain

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

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