

# National Forest Inventory statistics for Greater Manchester Merseyside and Cheshire

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Forest Research, 231 Corstorphine Road, Edinburgh, EH12 7AT

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**NFI enquiries:** Ben Ditchburn; Tel: 0300 067 5064  
[NFI@forestry.gsi.gov.uk](mailto:NFI@forestry.gsi.gov.uk)

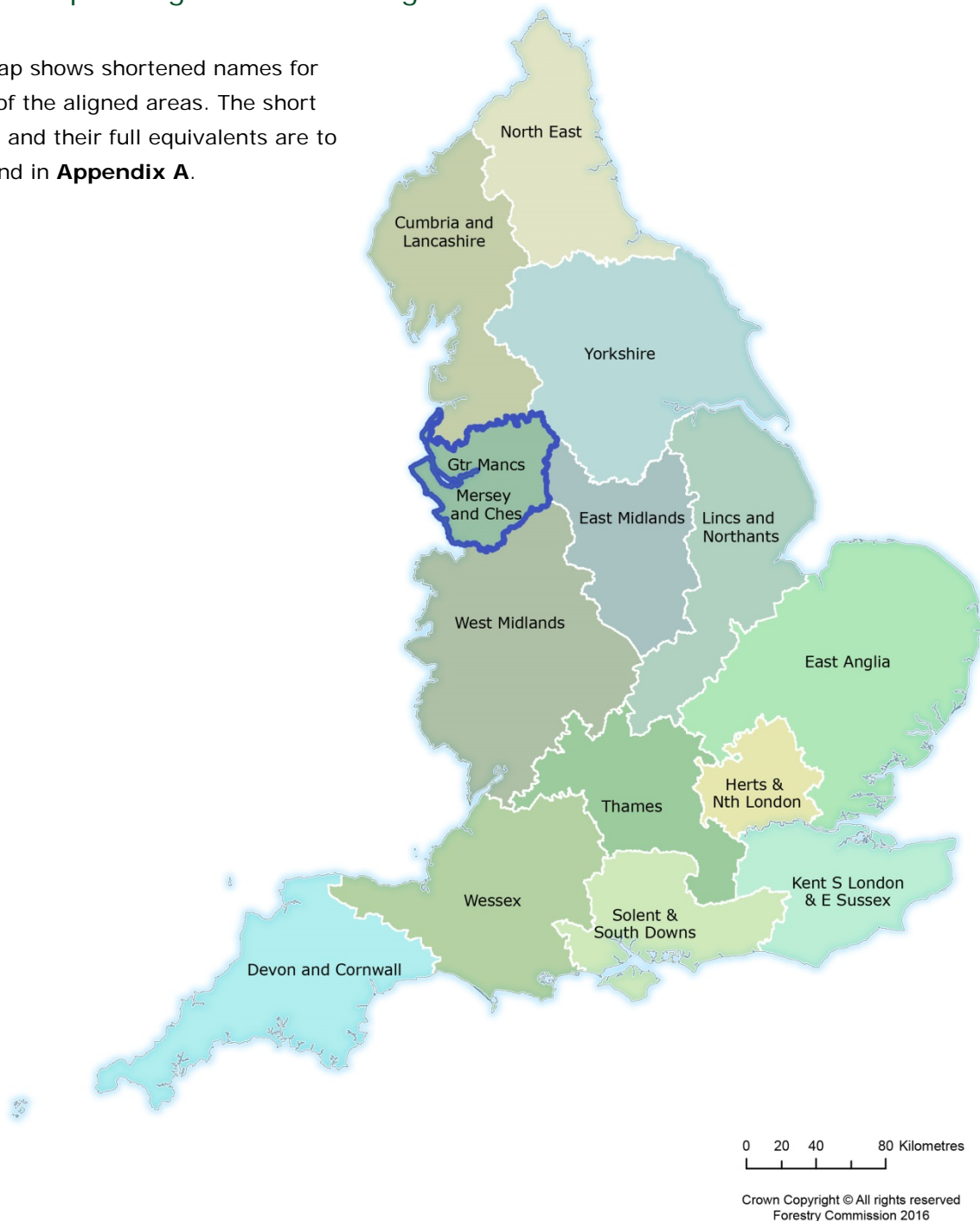
**NFI Statistician:** Alan Brewer  
[alan.brewer@forestry.gsi.gov.uk](mailto:alan.brewer@forestry.gsi.gov.uk)

**Website:** [www.forestry.gov.uk/inventory](http://www.forestry.gov.uk/inventory)  
[www.forestry.gov.uk/forecast](http://www.forestry.gov.uk/forecast)

## Greater Manchester Merseyside and Cheshire

**Map 1** Map of England and the aligned areas

The map shows shortened names for some of the aligned areas. The short names and their full equivalents are to be found in **Appendix A**.



## Key findings for Greater Manchester Merseyside and Cheshire

Greater Manchester, Merseyside and Cheshire (GMC) has a land area of 426,200 hectares making it 11th out of the 14 aligned areas by land area. With 29,450 ha of woodland, GMC ranks 12th out of 14 in terms of woodland area (7% woodland cover). Some 5% of the woodland is under Forestry Commission ownership or management.

Larch is the most commonly occurring of the conifer species whether assessed by stocked area (30%) or standing volume (26%). Scots pine is the most commonly occurring when assessed by number of trees (27%).

Oak is the most commonly occurring of the broadleaved species when assessed by stocked area (16%). Sycamore is the most commonly occurring when assessed by standing volume (33%). Willow is the most commonly occurring when assessed by number of trees (15%).

Some 25% of standing coniferous volume is beyond the age of maximum mean annual increment (or above terminal height of 25m in higher windthrow risk areas). The harvesting assumptions applied in the forecast assume that a proportion of this volume will be felled over a period of time from the start of the forecast. Some 13% of conifer and mixed broadleaf/conifer sections (PS only) show evidence of thinning.

Overall 58% of standing broadleaved volume is beyond the age of maximum mean annual increment (or above terminal height of 25m in higher windthrow risk areas). Some 12% of broadleaved sections (PS only) show evidence of thinning.

Across GMC:

- Ash is estimated as 9% of total stocked area (10% of broadleaved stocked area), 4% of standing volume (5% of broadleaved standing volume) and 6% of the number of trees (7% of the number of broadleaved trees).
- Oak is estimated as 15% of total stocked area (16% of broadleaved stocked area), 15% of standing volume (18% of broadleaved standing volume) and 13% of the number of trees (14% of the number of broadleaved trees).
- Sweet chestnut is estimated as <1% of total stocked area (<1% of broadleaved stocked area), 2% of standing volume (2% of broadleaved standing volume) and <1% of the number of trees (<1% of the number of broadleaved trees).
- Larch is estimated as 3% of total stocked area (30% of conifer stocked area), 4% of standing volume (26% of conifer standing volume) and 2% of the number of trees (25% of the number of conifer trees).

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## Introduction

National forest inventories are carried out by the Forestry Commission to provide accurate, up-to-date information about the size, distribution, composition and condition of the forests and woodlands in Great Britain (GB). This information is essential for developing and monitoring policies and guidance to support sustainable forest management.

The current National Forest Inventory (NFI), which began in 2010, is a multipurpose operation that has involved the production of a forest and woodland map for Britain and a continuing programme of field surveys (the first cycle of field surveys completed in late 2015) of the mapped forest and woodland areas.

Information and data collected by the National Forest Inventory is being used for a number of purposes, including estimates and 25-year forecasts of forest metrics such as:

- standing volume
- timber availability
- tree growth and increment
- carbon stocks
- biomass

Estimates of aspects of the biodiversity and social value of forests and woodlands will also be provided by the NFI.

This report brings together key woodland information for England previously published across the range of NFI thematic reports. Within the NFI programme, results are presented by the NUTS 1 boundaries<sup>\*</sup>. This report heads a series of reports where the woodland statistics are broken down by aligned area. The data sources and methodology covering the suite of reports is to found in the report for England and the aligned areas.

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<sup>\*</sup> See <http://ec.europa.eu/eurostat/web/nuts/overview> for a description of the Nomenclature of territorial units for statistics (NUTS) classification system.

## How the estimates are prepared

The methodology, data sources and assumptions are described in the England report. It is important that the estimates presented in this report are interpreted in the light of the information provided in the England report.

The methodology introduces the sub-compartment database and the National Forest Inventory. It describes the metrics presented in this report and how they are derived. The methodology covers how the FC and private sector (PS) forecasts are prepared and includes commentary on the assumptions made in order to calculate the forecast estimates. Finally the methodology covers the tree health metrics.

## Note on the estimates

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 attached to Private sector estimates are expressed in relative terms (%) to the right of the relevant estimate and as  $\pm$  error bars in the figures. Percentages in the pie charts may also not sum to 100 due to rounding.

Due to biological and sampling constraints, for example where there is a very small population of a species within a particular region, the estimates may have a high associated standard error. Since this indicates a high level of uncertainty around those estimates then caution should be used when drawing any conclusions from these values as the estimate may not be representative of the real population. Such estimates have been 'lowlighted' in the tables.

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# Part 2 - what our woodlands are like today

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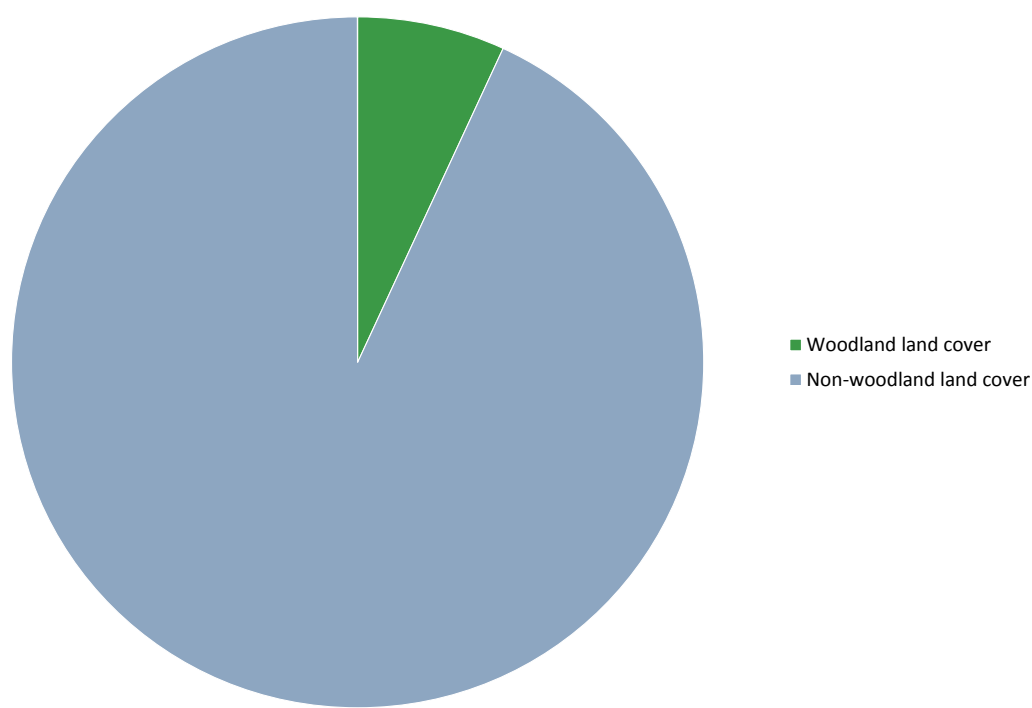
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# Woodland area statistics

## Woodland area by woodland type

**Figure 1** Woodland area by woodland type



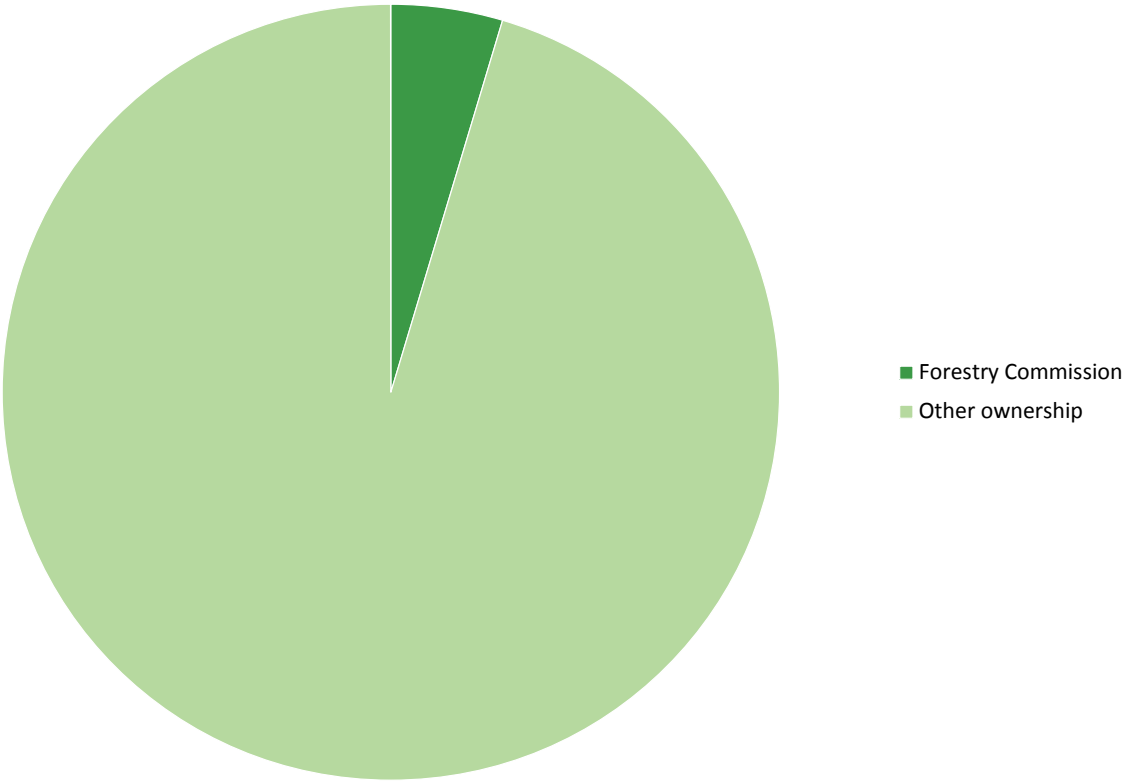
**Table 1** Woodland area by woodland type

Woodland Type	Area (ha)	%
Greater Manchester Merseyside and Cheshire		
Woodland	28,392	96%
Assumed woodland	973	3%
Low density	85	0%
Total mapped woodland	29,450	100%
Non-woodland area	396,750	
Land area	426,200	
Woodland land cover		7%
Non-woodland land cover		93%

# Part 2 - what our woodlands are like today

## Woodland area by ownership

**Figure 2** Woodland area by ownership



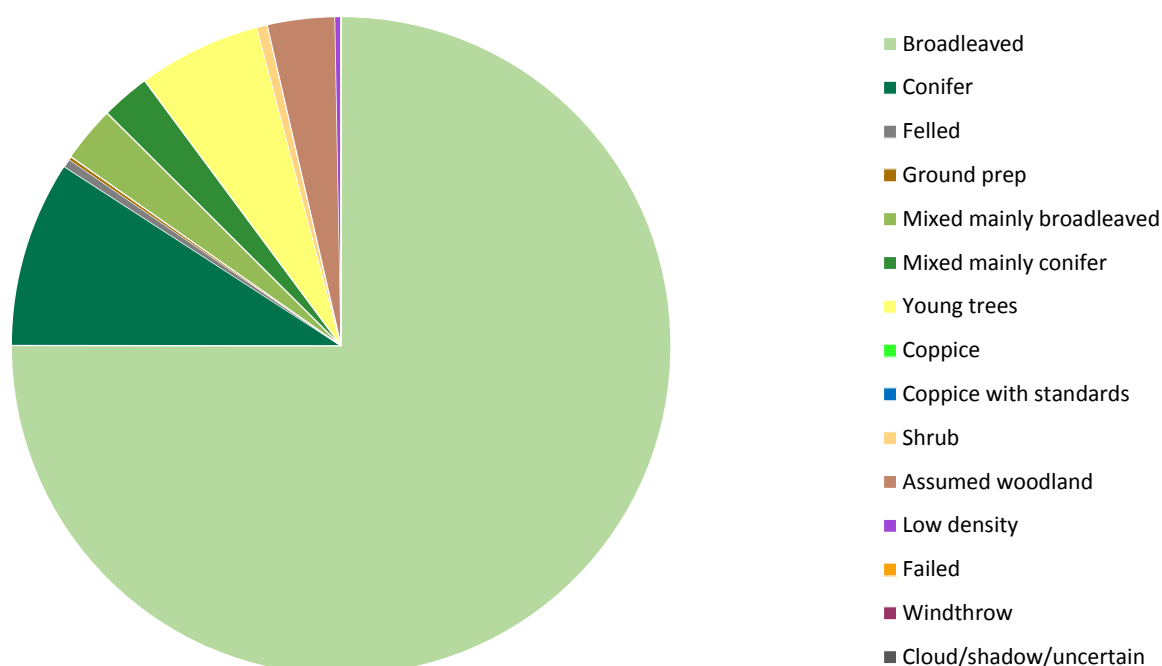
**Table 2** Woodland area by ownership

Ownership	Area (ha)	% Woodland
Greater Manchester Merseyside and Cheshire		
Forestry Commission	1,369	5%
Other ownership	28,080	95%
Total area of woodland	29,450	100%

## Part 2 - what our woodlands are like today

### Woodland area by interpreted forest type

**Figure 3** Woodland area by interpreted forest type



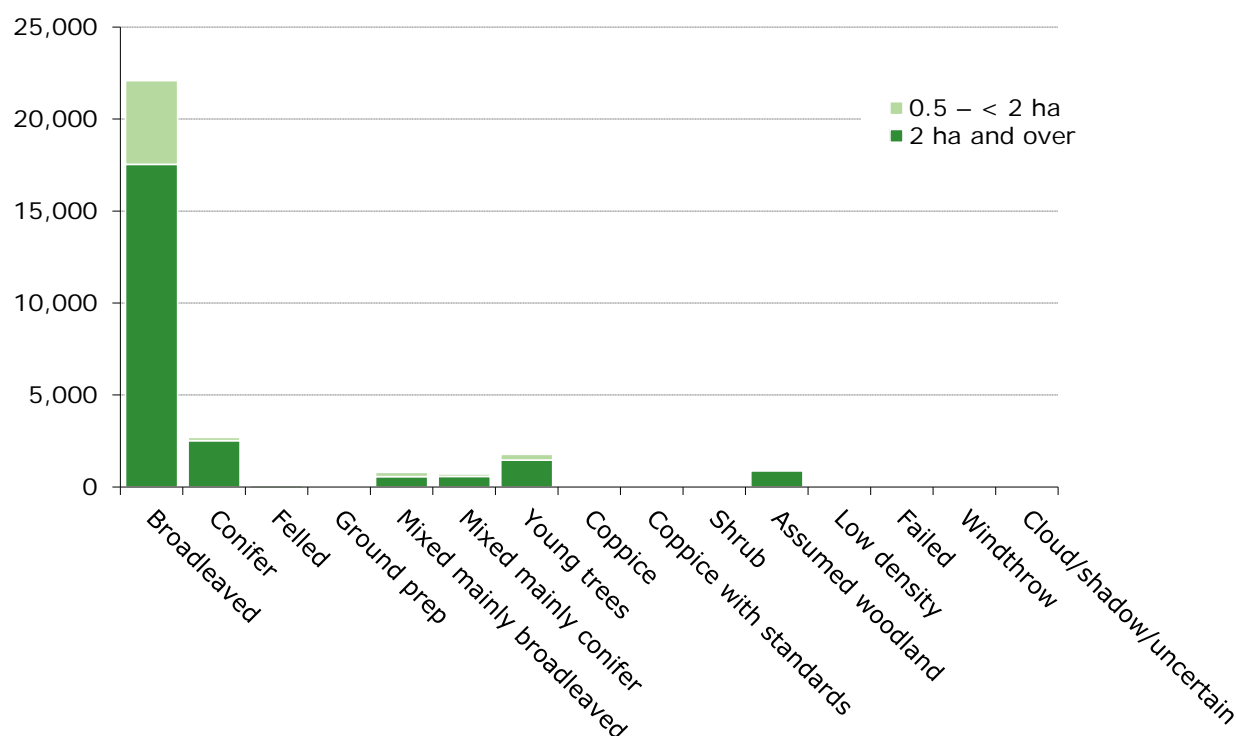
**Table 3** Woodland area by interpreted forest type

Forest type	Total area (ha)	% of total area
Greater Manchester Merseyside and Cheshire		
Broadleaved	22,093	75%
Conifer	2,694	9%
Felled	120	0%
Ground prep	47	0%
Mixed mainly broadleaved	808	3%
Mixed mainly conifer	701	2%
Young trees	1,779	6%
Coppice	2	0%
Coppice with standards	0	0%
Shrub	148	1%
Assumed woodland	973	3%
Low density	85	0%
Failed	0	0%
Windthrow	0	0%
Cloud/shadow/uncertain	0	0%
TOTALS	29,450	100%

## Part 2 - what our woodlands are like today

### Woodland area by interpreted forest type and woodland size

**Figure 4** Woodland area by interpreted forest type and woodland size



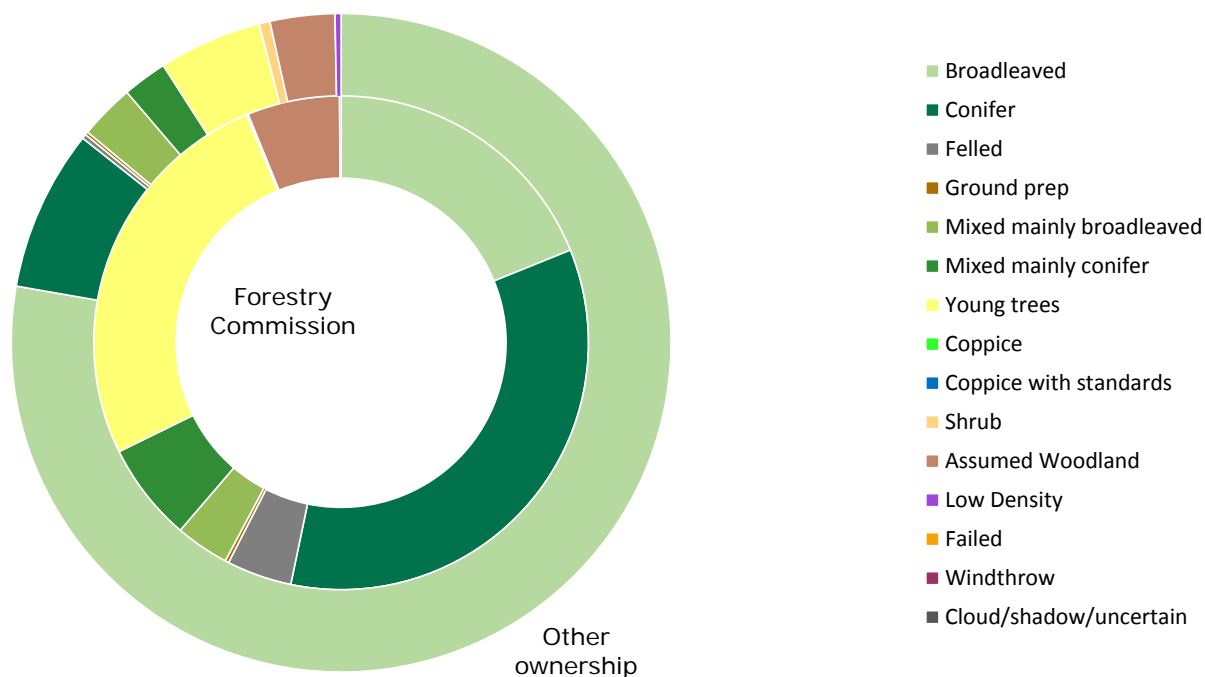
**Table 4** Woodland area by interpreted woodland type and woodland size

Forest type	Woodland size		Total area (ha)
	2 ha and over	0.5 – < 2 ha	
Greater Manchester Merseyside and Cheshire			
Broadleaved	17,543	4,550	22,093
Conifer	2,521	173	2,694
Felled	109	11	120
Ground prep	43	13	56
Mixed mainly broadleaved	566	234	800
Mixed mainly conifer	573	130	703
Young trees	1,463	313	1,776
Coppice	2	0	2
Coppice with standards	0	0	0
Shrub	84	65	148
Assumed woodland	881	92	973
Low density	69	15	85
Failed	0	0	0
Windthrow	0	0	0
Cloud/shadow/uncertain	0	0	0
TOTALS	23,855	5,595	29,450

## Part 2 - what our woodlands are like today

### Woodland area by interpreted forest type and ownership

**Figure 5** Woodland area by interpreted forest type and ownership



**Table 5** Woodland area by interpreted forest type and ownership

Forest type	Forestry Commission		Other ownership	
	Area (ha)	% of total area	Area (ha)	% of total area
Greater Manchester Merseyside and Cheshire				
Broadleaved	258	19%	21,834	78%
Conifer	471	34%	2,223	8%
Felled	58	4%	62	0%
Ground prep	3	0%	44	0%
Mixed mainly broadleaved	48	4%	760	3%
Mixed mainly conifer	88	6%	613	2%
Young trees	356	26%	1,423	5%
Coppice	0	0%	2	0%
Coppice with standards	0	0%	0	0%
Shrub	2	0%	147	1%
Assumed Woodland	83	6%	890	3%
Low Density	1	0%	83	0%
Failed	0	0%	0	0%
Windthrow	0	0%	0	0%
Cloud/shadow/uncertain	0	0%	0	0%
TOTALS	1,369	100%	28,080	100%

## Part 2 - what our woodlands are like today

### Woodland area by interpreted forest type, woodland size and ownership

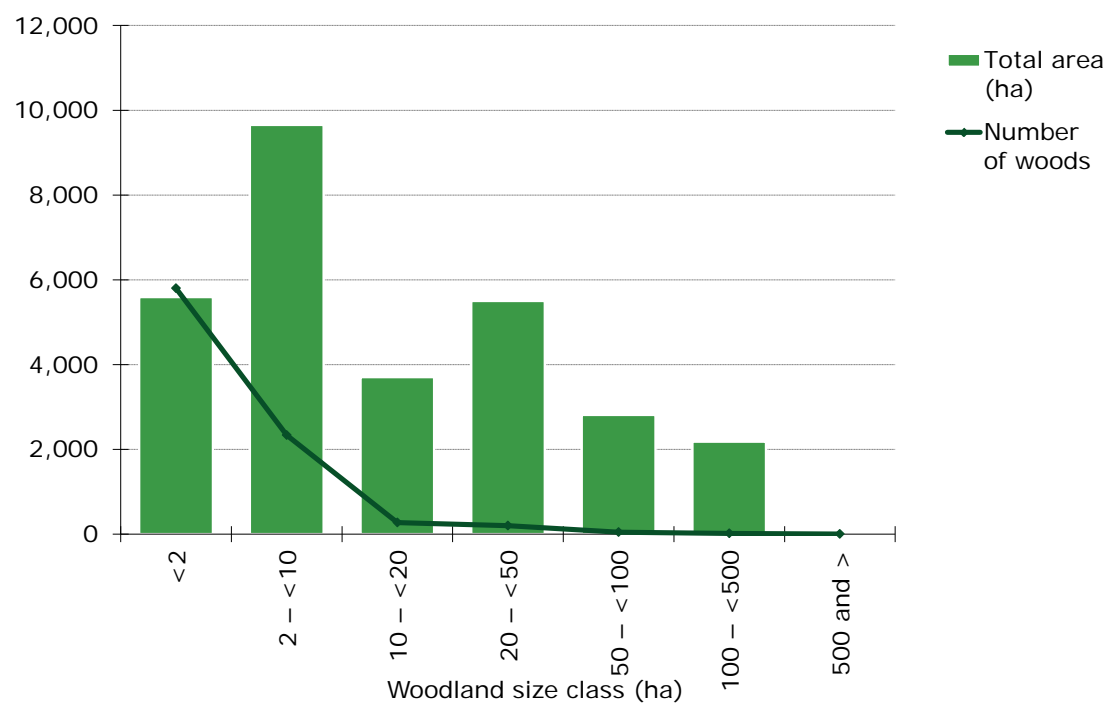
**Table 6** Woodland area by interpreted forest type, woodland size and ownership

Forest type	2 ha and over		0.5 – < 2 ha		Total area (ha)
	Forestry Commission	Other	Forestry Commission	Other	
Greater Manchester Merseyside and Cheshire					
Broadleaved	247	17,298	11	4,535	22,092
Conifer	470	2,051	1	172	2,694
Felled	58	51	< 1	10	120
Ground prep	3	40	0	4	47
Mixed mainly broadleaved	48	518	0	242	808
Mixed mainly conifer	88	486	< 1	127	701
Young trees	320	1,143	36	279	1,779
Coppice	0	2	0	0	2
Coppice with standards	0	0	0	0	0
Shrub	< 1	83	1	63	148
Assumed woodland	81	802	2	88	973
Low Density	1	68	0	15	85
Failed	0	0	0	0	0
Windthrow	0	0	0	0	0
Cloud/shadow/uncertain	0	0	0	0	0
Totals	1,317	22,542	52	5,537	29,448

# Part 2 - what our woodlands are like today

## Woodland area by size class distribution

**Figure 6** Woodland area by size class distribution



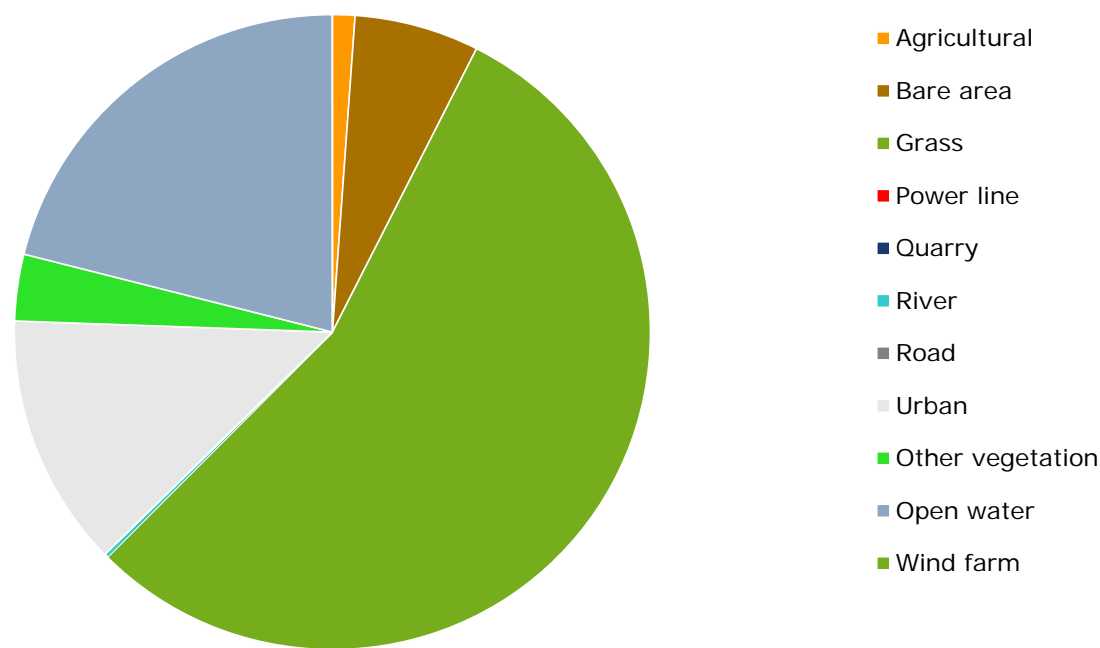
**Table 7** Woodland area by size class distribution

Size class (ha)	Total area (ha)	Number of woods	% of total area	Mean wood area (ha)
Greater Manchester Merseyside and Cheshire				
<2	5,595	5,800	19%	< 1
2 – <10	9,654	2,333	33%	4
10 – <20	3,704	271	13%	14
20 – <50	5,502	197	19%	28
50 – <100	2,813	45	10%	63
100 – <500	2,182	14	7%	156
500 and >	0	0	0%	0
All woods	29,450	8,660	100%	3

# Part 2 - what our woodlands are like today

## Open areas in woodland by land use type

**Figure 7** Open areas in woodland by land use type



**Table 8** Open areas in woodland by land use type

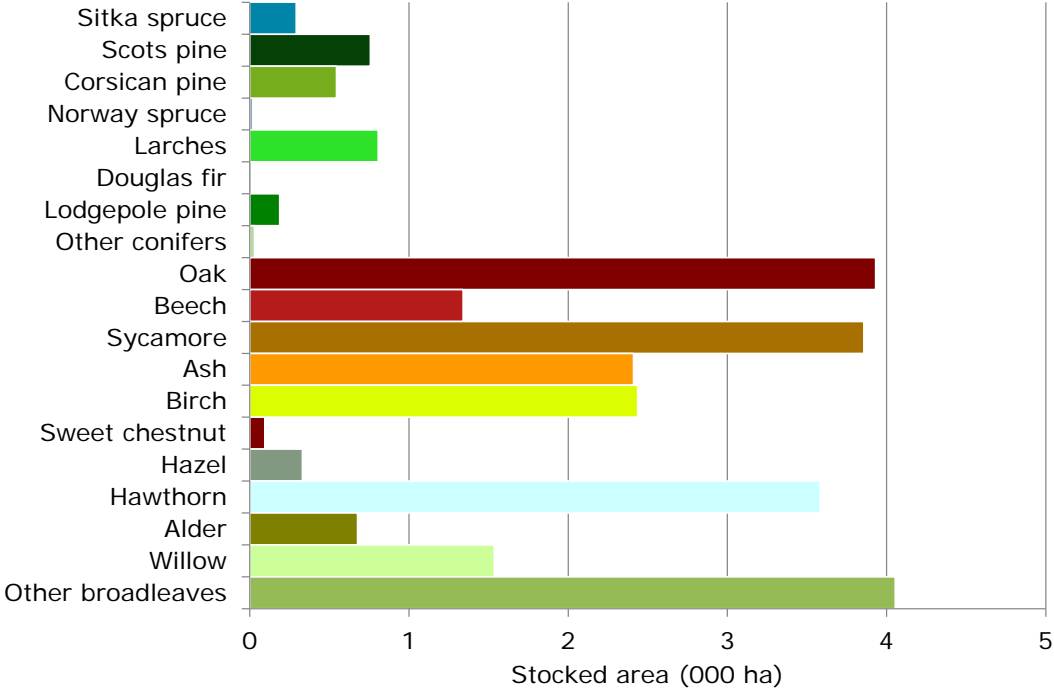
Interpreted open area	Total area (ha)	% of total area
Greater Manchester Merseyside and Cheshire		
Agricultural	7	1%
Bare area	38	6%
Grass	333	55%
Power line	0	0%
Quarry	0	0%
River	1	0%
Road	0	0%
Urban	78	13%
Other vegetation	20	3%
Open water	128	21%
Wind farm	0	0%
TOTALS	605	100%



## Net area under canopy

### Stocked area by species

**Figure 8** Stocked area by principal tree species



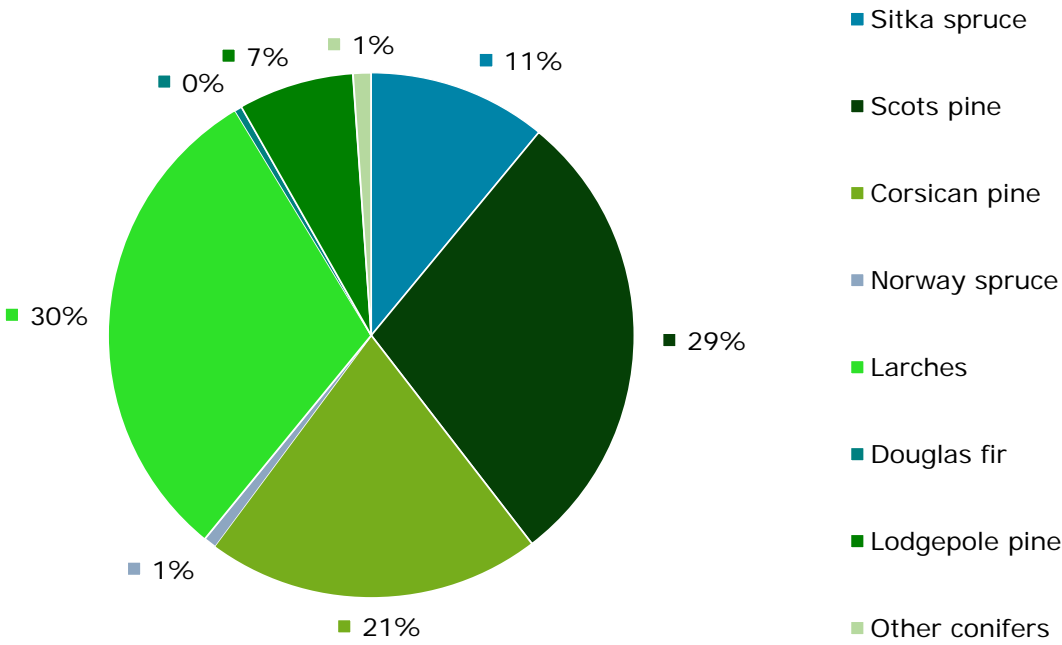
## Part 2 - what our woodlands are like today

**Table 9** Stocked area by principal tree species

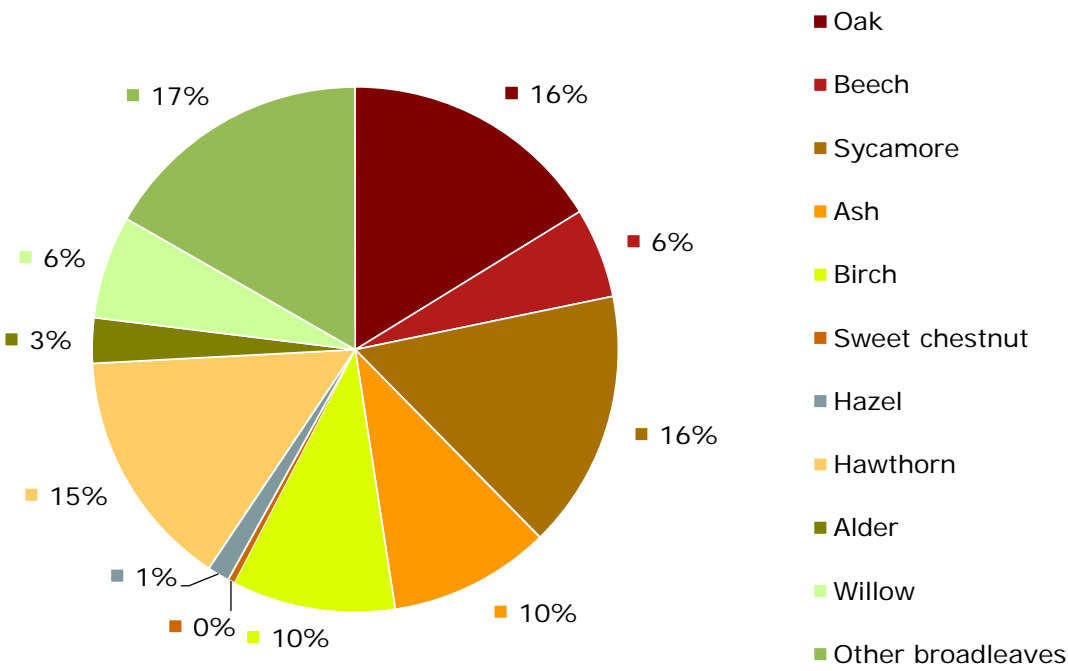
Principal species	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
<b>Conifers</b>				
Sitka spruce	< 0.1	0.3	58	<b>0.3</b>
Scots pine	0.2	0.6	30	<b>0.8</b>
Corsican pine	0.3	0.2	57	<b>0.5</b>
Norway spruce	< 0.1	< 0.1	85	< 0.1
Larches	< 0.1	0.7	36	<b>0.8</b>
Douglas fir	< 0.1	0.0	-	< 0.1
Lodgepole pine	< 0.1	0.2	81	<b>0.2</b>
Other conifers	< 0.1	< 0.1	99	< 0.1
<b>All conifers</b>	<b>0.6</b>	<b>2.1</b>	<b>20</b>	<b>2.6</b>
<b>Broadleaves</b>				
Oak	< 0.1	3.9	23	<b>3.9</b>
Beech	< 0.1	1.3	38	<b>1.3</b>
Sycamore	< 0.1	3.9	22	<b>3.9</b>
Ash	< 0.1	2.4	27	<b>2.4</b>
Birch	0.1	2.3	30	<b>2.4</b>
Sweet chestnut	< 0.1	< 0.1	75	< 0.1
Hazel	< 0.1	0.3	67	<b>0.3</b>
Hawthorn	0.0	3.6	100	<b>3.6</b>
Alder	< 0.1	0.7	37	<b>0.7</b>
Willow	< 0.1	1.5	30	<b>1.5</b>
Other broadleaves	0.4	3.6	25	<b>4.1</b>
<b>All broadleaves</b>	<b>0.6</b>	<b>23.6</b>	<b>17</b>	<b>24.2</b>
<b>All species</b>				
<b>All species</b>	<b>1.2</b>	<b>25.7</b>	<b>16</b>	<b>26.9</b>

# Part 2 - what our woodlands are like today

**Figure 9** Stocked area by principal conifer species



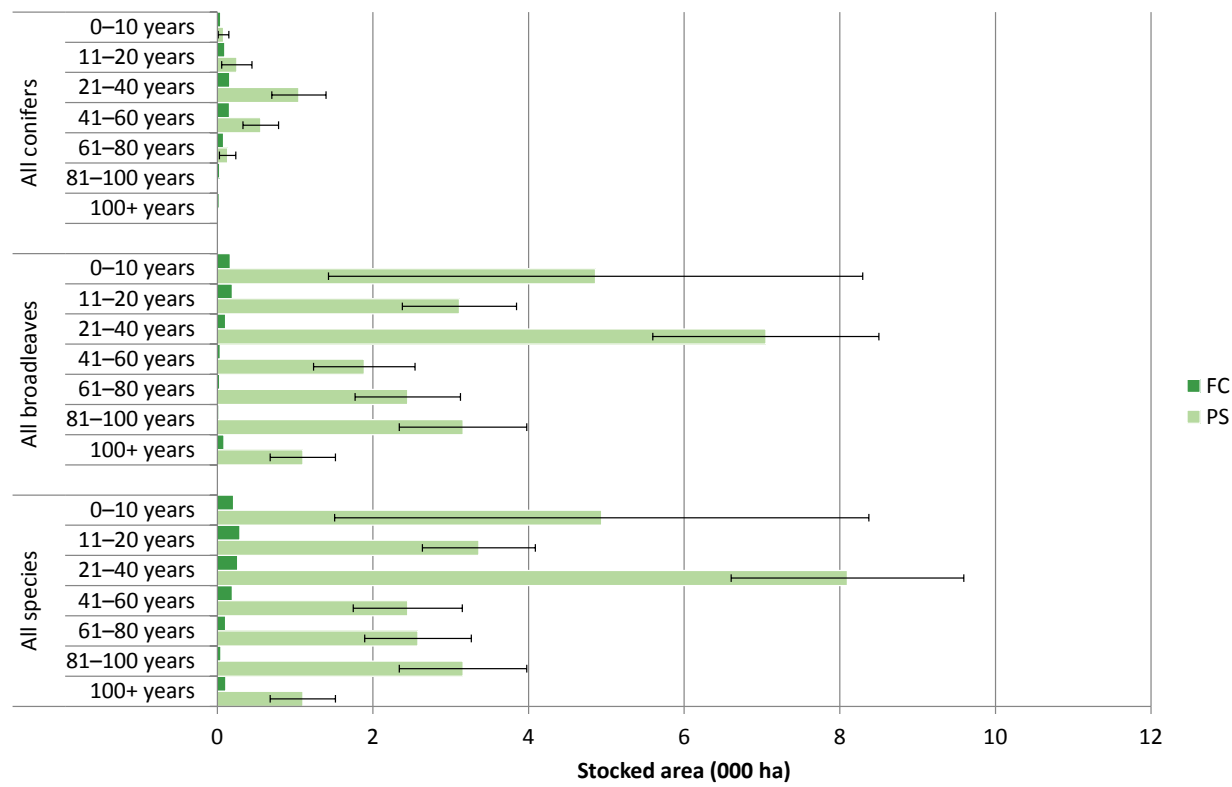
**Figure 10** Stocked area by principal broadleaved species



# Part 2 - what our woodlands are like today

## Stocked area by age class

**Figure 11** Stocked area by age class



## Part 2 - what our woodlands are like today

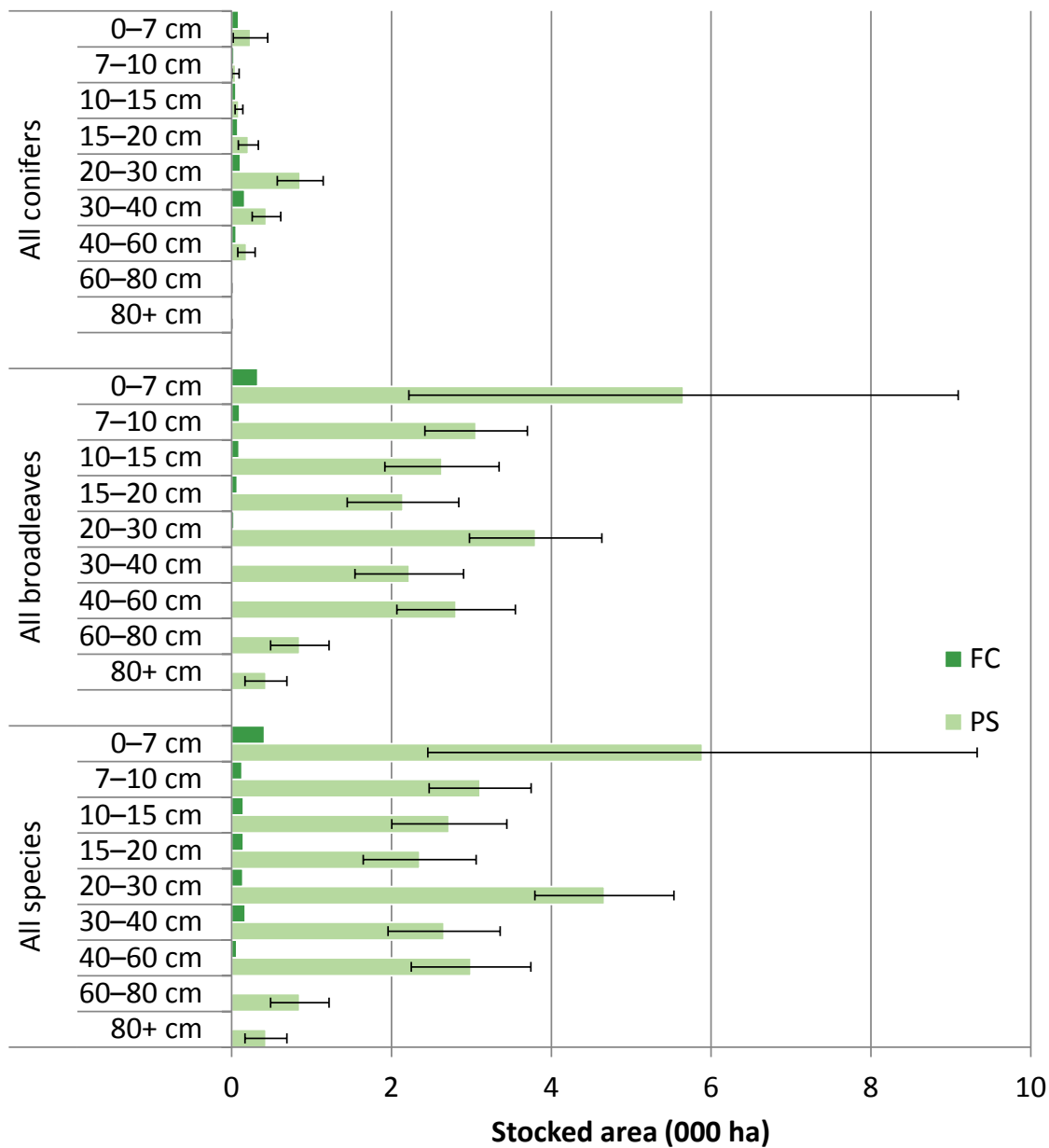
**Table 10** Stocked area by age class

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
<b>All conifers</b>				
0–10	< 0.1	< 0.1	87	<b>0.1</b>
11–20	< 0.1	0.2	78	<b>0.3</b>
21–40	0.2	1.0	33	<b>1.2</b>
41–60	0.2	0.6	41	<b>0.7</b>
61–80	< 0.1	0.1	80	<b>0.2</b>
81–100	< 0.1	0.0	-	<b>&lt; 0.1</b>
100+	< 0.1	0.0	-	<b>&lt; 0.1</b>
<b>Total</b>	<b>0.6</b>	<b>2.1</b>	<b>20</b>	<b>2.6</b>
<b>All broadleaves</b>				
0–10	0.2	4.9	71	<b>5.0</b>
11–20	0.2	3.1	24	<b>3.3</b>
21–40	0.1	7.0	21	<b>7.2</b>
41–60	< 0.1	1.9	35	<b>1.9</b>
61–80	< 0.1	2.4	28	<b>2.5</b>
81–100	< 0.1	3.2	26	<b>3.2</b>
100+	< 0.1	1.1	38	<b>1.2</b>
<b>Total</b>	<b>0.6</b>	<b>23.6</b>	<b>17</b>	<b>24.2</b>
<b>All species</b>				
0–10	0.2	4.9	70	<b>5.1</b>
11–20	0.3	3.4	22	<b>3.7</b>
21–40	0.3	8.1	18	<b>8.4</b>
41–60	0.2	2.4	29	<b>2.6</b>
61–80	0.1	2.6	27	<b>2.7</b>
81–100	< 0.1	3.2	26	<b>3.2</b>
100+	0.1	1.1	38	<b>1.2</b>
<b>Total</b>	<b>1.2</b>	<b>25.7</b>	<b>16</b>	<b>26.9</b>

# Part 2 - what our woodlands are like today

## Stocked area by mean stand dbh class

**Figure 12** Stocked area by mean stand dbh class



## Part 2 - what our woodlands are like today

**Table 11** Stocked area by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
<b>All conifers</b>				
0–7	< 0.1	0.2	92	<b>0.3</b>
7–10	< 0.1	< 0.1	95	<b>&lt; 0.1</b>
10–15	< 0.1	< 0.1	54	<b>0.1</b>
15–20	< 0.1	0.2	60	<b>0.3</b>
20–30	0.1	0.9	33	<b>1.0</b>
30–40	0.2	0.4	41	<b>0.6</b>
40–60	< 0.1	0.2	59	<b>0.2</b>
60–80	< 0.1	0.0	-	<b>&lt; 0.1</b>
80+	0.0	0.0	-	<b>0.0</b>
<b>Total</b>	<b>0.6</b>	<b>2.1</b>	<b>20</b>	<b>2.6</b>
<b>All broadleaves</b>				
0–7	0.3	5.7	61	<b>6.0</b>
7–10	0.1	3.1	21	<b>3.2</b>
10–15	< 0.1	2.6	27	<b>2.7</b>
15–20	< 0.1	2.1	33	<b>2.2</b>
20–30	< 0.1	3.8	22	<b>3.8</b>
30–40	< 0.1	2.2	31	<b>2.2</b>
40–60	< 0.1	2.8	26	<b>2.8</b>
60–80	< 0.1	0.9	43	<b>0.9</b>
80+	0.0	0.4	61	<b>0.4</b>
<b>Total</b>	<b>0.6</b>	<b>23.6</b>	<b>17</b>	<b>24.2</b>
<b>All species</b>				
0–7	0.4	5.9	58	<b>6.3</b>
7–10	0.1	3.1	20	<b>3.2</b>
10–15	0.1	2.7	26	<b>2.9</b>
15–20	0.1	2.4	30	<b>2.5</b>
20–30	0.1	4.7	19	<b>4.8</b>
30–40	0.2	2.7	26	<b>2.8</b>
40–60	< 0.1	3.0	25	<b>3.1</b>
60–80	< 0.1	0.9	43	<b>0.9</b>
80+	0.0	0.4	61	<b>0.4</b>
<b>Total</b>	<b>1.2</b>	<b>25.7</b>	<b>16</b>	<b>26.9</b>

# Part 2 - what our woodlands are like today

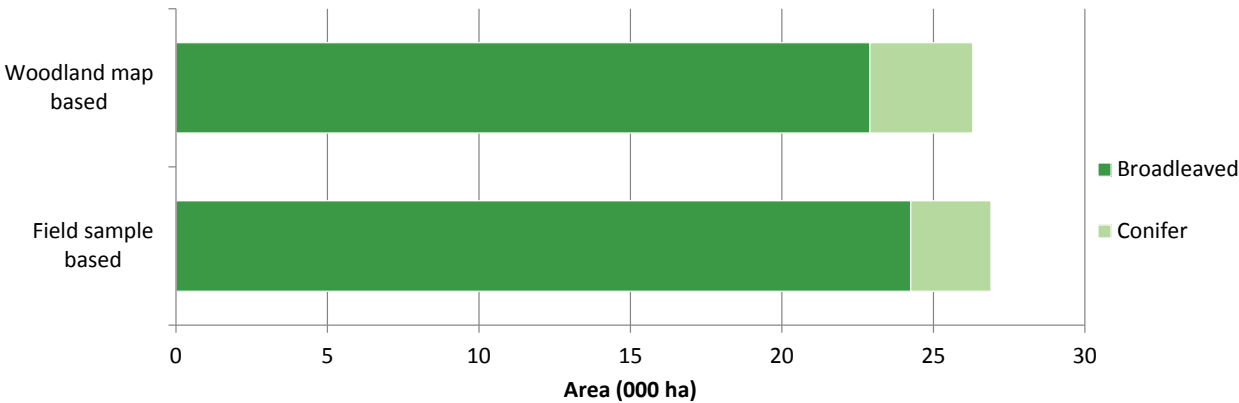
## Clearfelled area

**Table 12** Clearfelled area

Clearfelled area	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire	< 0.1	< 0.1	93	< 0.1

## Comparison of mapped area estimates and stocked area estimates

**Figure 13** Simplified comparison of mapped area and stocked area



**Table 13** Simplified comparison of mapped area and stocked area

	Woodland map based	Field sample based
	area (000 ha)	
Greater Manchester Merseyside and Cheshire		
Broadleaved	22.9	24.2
Conifer	3.4	2.6

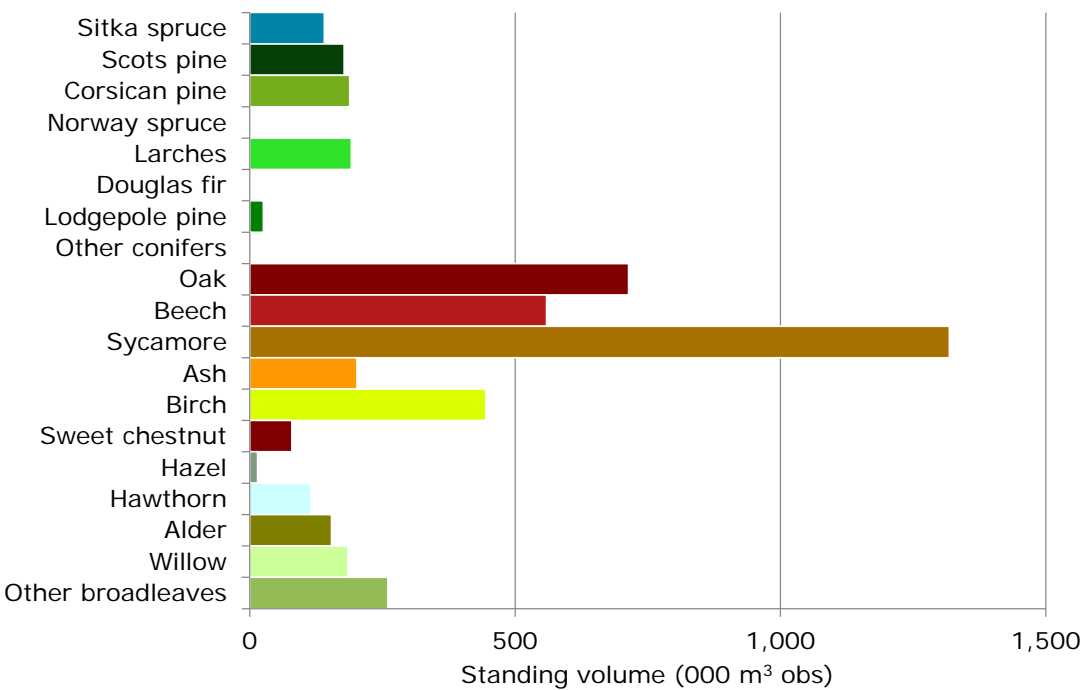
The broadleaved class includes broadleaved, mixed mainly broadleaved, coppice and coppice with standards. The conifer class includes conifer and mixed mainly conifer. The transition class is excluded from this table as it is not possible to differentiate between conifer and broadleaves with aerial photography interpretation. The area of young trees is included in the field sample based estimates.



## Standing volume

### Standing volume by species

**Figure 14** Standing volume by principal tree species



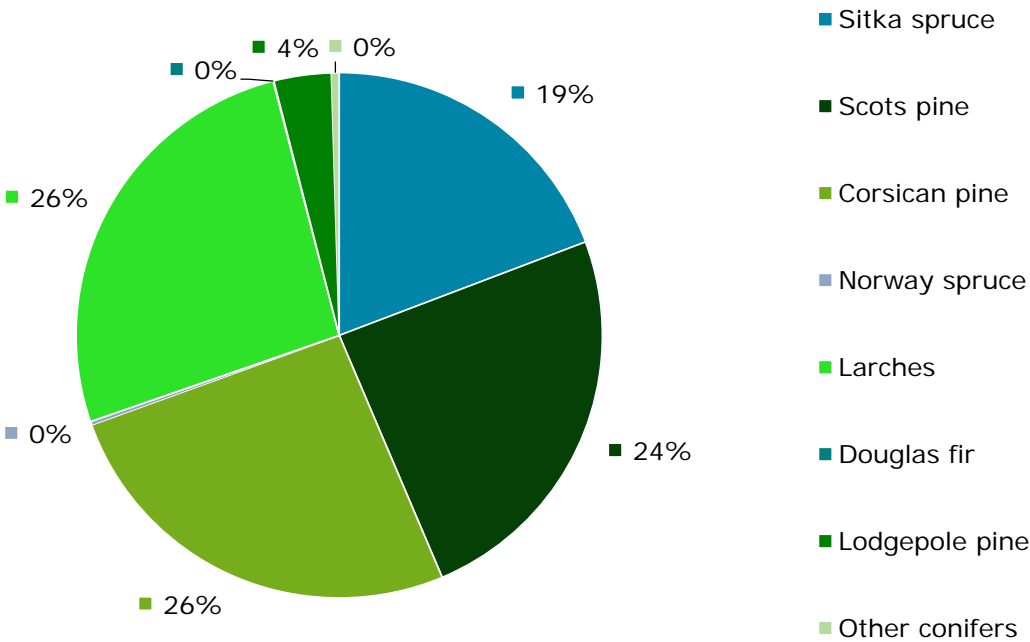
## Part 2 - what our woodlands are like today

**Table 14** Standing volume by principal tree species

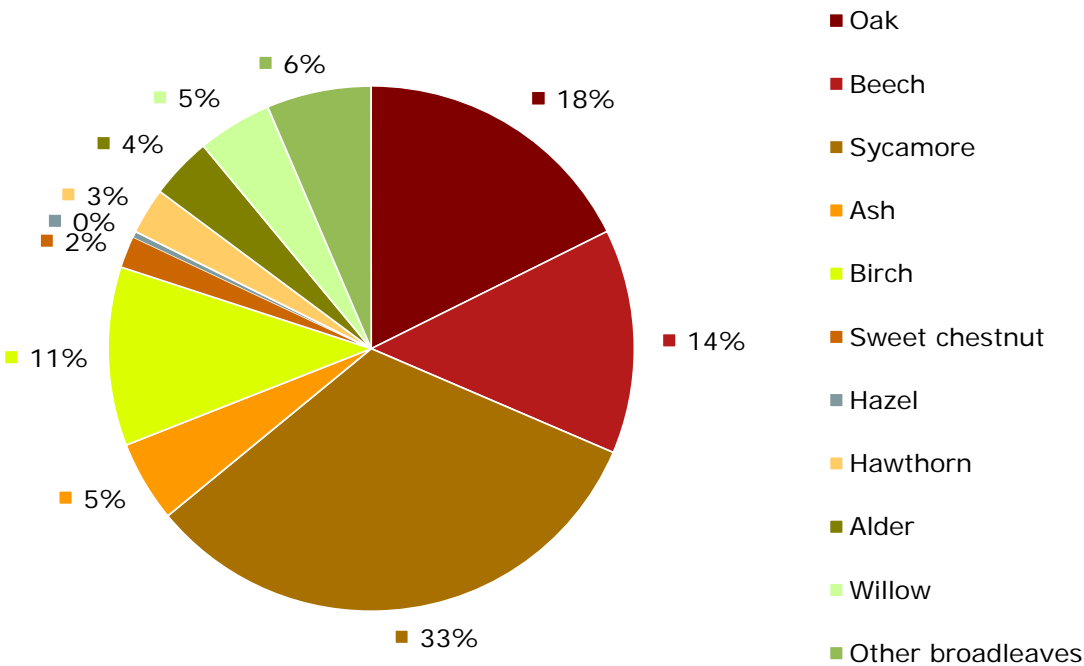
Principal species	FC	Private sector		Total
	volume (000 m <sup>3</sup> obs)	volume (000 m <sup>3</sup> obs)	SE%	volume (000 m <sup>3</sup> obs)
<b>Conifers</b>				
Sitka spruce	< 1	140	57	140
Scots pine	36	142	30	178
Corsican pine	78	111	63	189
Norway spruce	< 1	1	92	2
Larches	11	181	34	192
Douglas fir	< 1	0	-	< 1
Lodgepole pine	< 1	25	54	26
Other conifers	3	< 1	100	3
<b>All conifers</b>	<b>128</b>	<b>601</b>	<b>19</b>	<b>729</b>
<b>Broadleaves</b>				
Oak	11	703	25	714
Beech	4	555	46	559
Sycamore	< 1	1,317	35	1,318
Ash	< 1	201	42	202
Birch	7	438	47	445
Sweet chestnut	5	74	92	79
Hazel	0	15	64	15
Hawthorn	0	115	33	115
Alder	< 1	154	37	154
Willow	< 1	185	46	185
Other broadleaves	22	238	37	260
<b>All broadleaves</b>	<b>52</b>	<b>3,995</b>	<b>14</b>	<b>4,046</b>
<b>All species</b>				
<b>All species</b>	<b>180</b>	<b>4,596</b>	<b>12</b>	<b>4,775</b>

# Part 2 - what our woodlands are like today

**Figure 15** Standing volume by principal conifer species



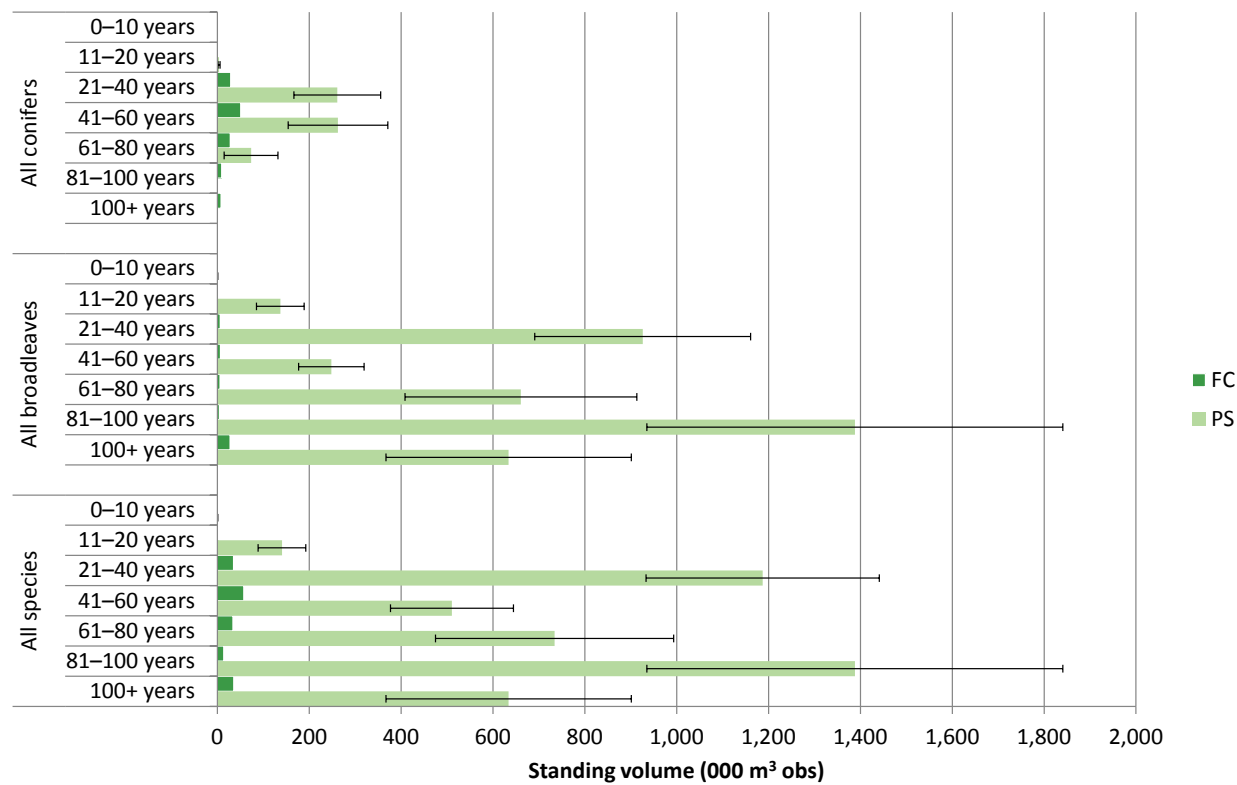
**Figure 16** Standing volume by principal broadleaved species



# Part 2 - what our woodlands are like today

## Standing volume by age class

**Figure 17** Standing volume by age class



## Part 2 - what our woodlands are like today

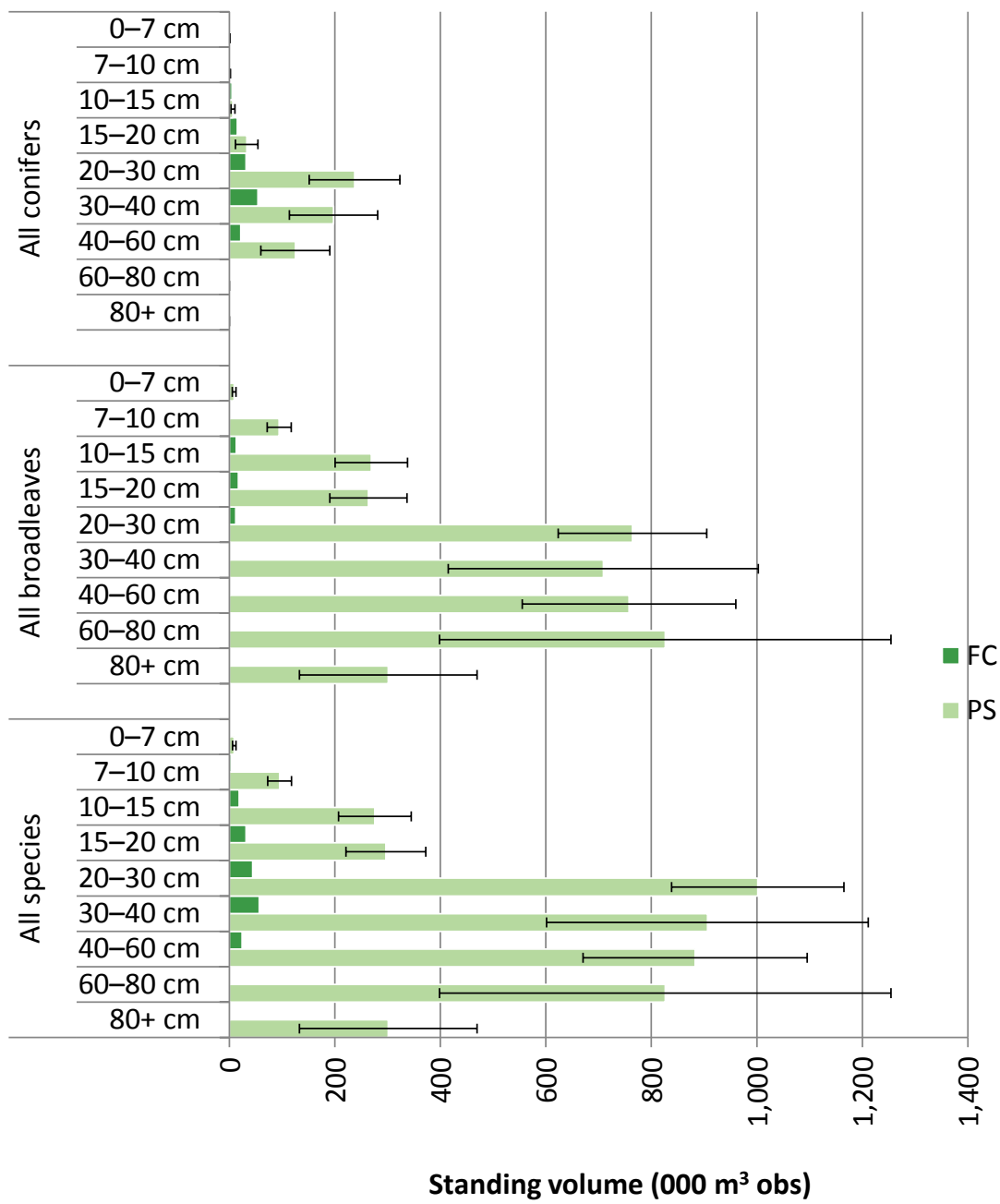
**Table 15** Standing volume by age class

Age class (years)	FC	Private sector		Total
	volume (000 m <sup>3</sup> obs)	volume (000 m <sup>3</sup> obs)	SE%	volume (000 m <sup>3</sup> obs)
All conifers				
0–10	< 1	0	-	< 1
11–20	2	4	60	6
21–40	29	261	36	290
41–60	51	263	41	314
61–80	28	74	80	102
81–100	10	0	-	10
100+	8	0	-	8
<b>Total</b>	<b>128</b>	<b>601</b>	<b>19</b>	<b>729</b>
All broadleaves				
0–10	0	< 1	74	< 1
11–20	< 1	137	38	138
21–40	6	926	25	932
41–60	7	248	29	255
61–80	6	661	38	667
81–100	4	1,388	33	1,392
100+	28	634	42	662
<b>Total</b>	<b>52</b>	<b>3,995</b>	<b>14</b>	<b>4,046</b>
All species				
0–10	< 1	< 1	74	< 1
11–20	3	141	37	143
21–40	35	1,187	21	1,223
41–60	58	511	26	568
61–80	34	734	35	769
81–100	14	1,388	33	1,402
100+	36	634	42	670
<b>Total</b>	<b>180</b>	<b>4,596</b>	<b>12</b>	<b>4,775</b>

# Part 2 - what our woodlands are like today

## Standing volume by mean stand dbh class

**Figure 18** Standing volume by stand mean dbh class



## Part 2 - what our woodlands are like today

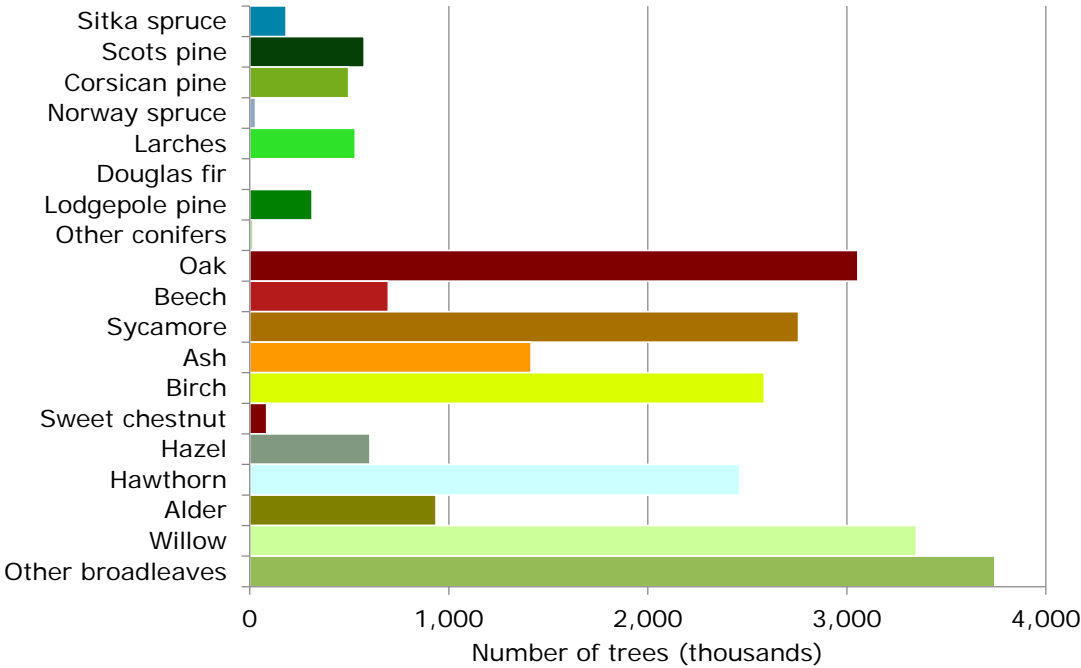
**Table 16** Standing volume by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m <sup>3</sup> obs)	volume (000 m <sup>3</sup> obs)	SE%	volume (000 m <sup>3</sup> obs)
<b>All conifers</b>				
0–7	< 1	< 1	102	< 1
7–10	< 1	< 1	94	2
10–15	5	7	54	12
15–20	15	33	65	48
20–30	32	237	36	269
30–40	54	197	42	252
40–60	21	125	52	147
60–80	< 1	0	-	< 1
80+	0	0	-	0
<b>Total</b>	<b>128</b>	<b>601</b>	<b>19</b>	<b>729</b>
<b>All broadleaves</b>				
0–7	< 1	9	40	9
7–10	3	94	24	98
10–15	13	269	26	282
15–20	17	264	28	281
20–30	12	764	18	777
30–40	2	709	41	711
40–60	3	758	27	760
60–80	< 1	826	52	827
80+	0	301	56	301
<b>Total</b>	<b>52</b>	<b>3,995</b>	<b>14</b>	<b>4,046</b>
<b>All species</b>				
0–7	< 1	9	37	10
7–10	4	95	24	99
10–15	18	276	25	294
15–20	32	297	26	328
20–30	44	1,002	16	1,046
30–40	57	906	34	963
40–60	24	883	24	907
60–80	1	826	52	827
80+	0	301	56	301
<b>Total</b>	<b>180</b>	<b>4,596</b>	<b>12</b>	<b>4,775</b>

# Number of measureable trees

## Number of measureable trees by species

**Figure 19** Number of measureable trees by principal tree species





## Part 2 - what our woodlands are like today

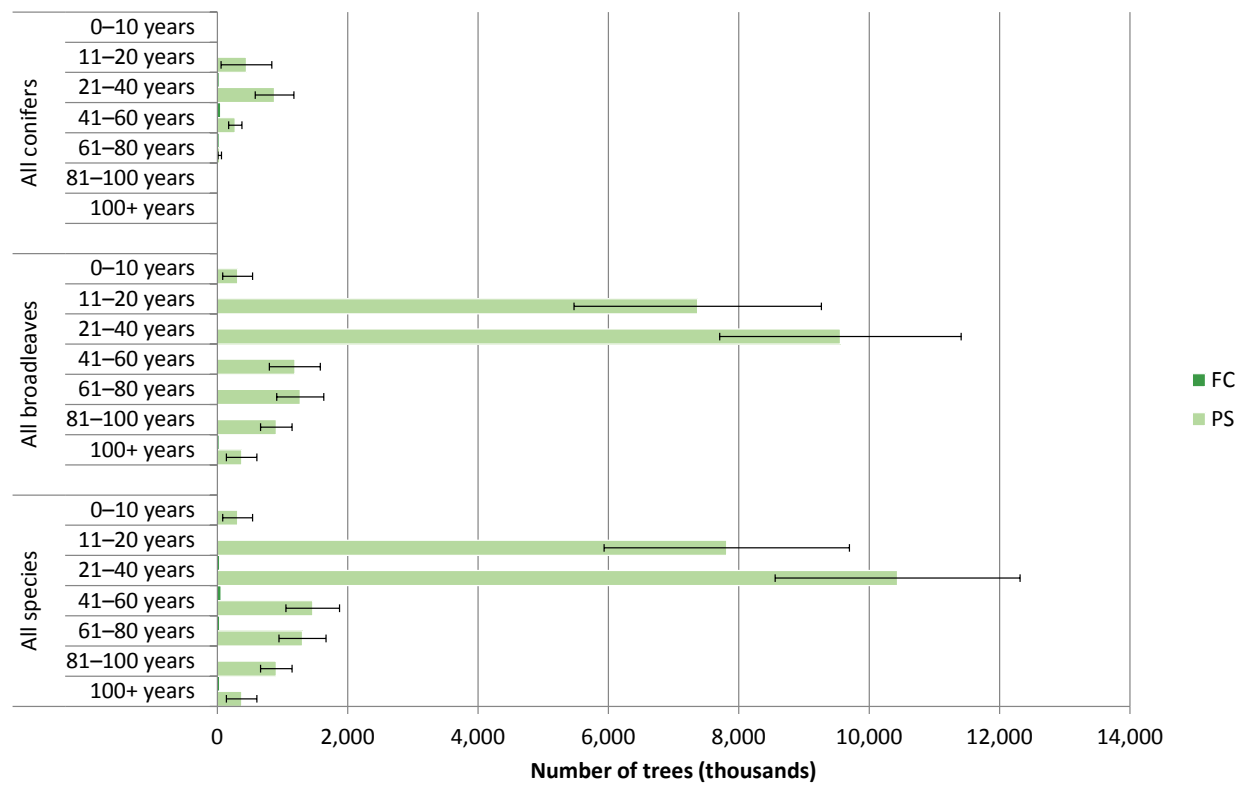
**Table 17** Number of measureable trees by principal tree species

Principal species	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
<b>Conifers</b>				
Sitka spruce	< 1	182	61	182
Scots pine	90	485	33	575
Corsican pine	321	176	66	497
Norway spruce	6	23	82	29
Larches	73	457	38	530
Douglas fir	< 1	0	-	< 1
Lodgepole pine	4	309	92	313
Other conifers	14	3	97	17
<b>All conifers</b>	<b>509</b>	<b>1,635</b>	<b>29</b>	<b>2,144</b>
<b>Broadleaves</b>				
Oak	50	3,005	22	3,055
Beech	21	676	48	697
Sycamore	7	2,751	24	2,758
Ash	25	1,389	31	1,414
Birch	166	2,419	30	2,585
Sweet chestnut	10	76	109	85
Hazel	< 1	604	59	604
Hawthorn	0	2,461	46	2,461
Alder	11	925	35	936
Willow	< 1	3,348	40	3,349
Other broadleaves	423	3,321	31	3,744
<b>All broadleaves</b>	<b>713</b>	<b>20,975</b>	<b>12</b>	<b>21,688</b>
<b>All species</b>				
<b>All species</b>	<b>1,222</b>	<b>22,610</b>	<b>11</b>	<b>23,832</b>

# Part 2 - what our woodlands are like today

## Number of measureable trees by age class

**Figure 20** Number of measureable trees by age class



## Part 2 - what our woodlands are like today

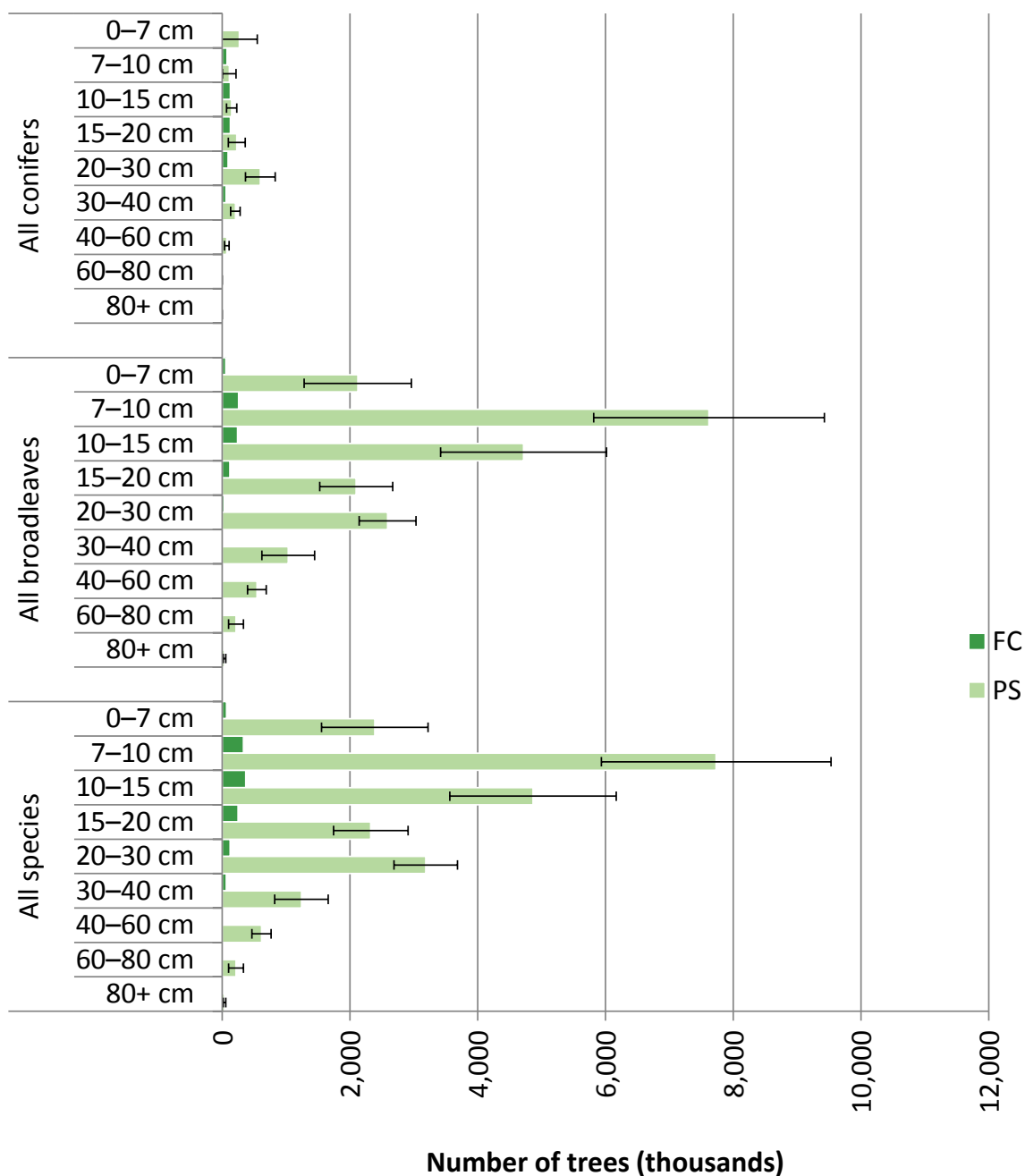
**Table 18** Number of measureable trees by age class

Age class (years)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
<b>All conifers</b>				
0–10	< 1	0	-	< 1
11–20	2	446	87	449
21–40	29	877	34	906
41–60	51	275	37	326
61–80	28	36	75	64
81–100	10	0	-	10
100+	8	0	-	8
<b>Total</b>	<b>509</b>	<b>1,635</b>	<b>29</b>	<b>2,144</b>
<b>All broadleaves</b>				
0–10	0	311	74	311
11–20	< 1	7,369	26	7,369
21–40	6	9,558	19	9,564
41–60	7	1,189	33	1,196
61–80	6	1,271	28	1,277
81–100	4	904	27	908
100+	28	373	63	401
<b>Total</b>	<b>713</b>	<b>20,975</b>	<b>12</b>	<b>21,688</b>
<b>All species</b>				
0–10	< 1	311	74	311
11–20	3	7,815	24	7,818
21–40	35	10,435	18	10,471
41–60	58	1,464	28	1,522
61–80	34	1,308	28	1,342
81–100	14	904	27	918
100+	36	373	63	409
<b>Total</b>	<b>1,222</b>	<b>22,610</b>	<b>11</b>	<b>23,832</b>

# Part 2 - what our woodlands are like today

## Number of measureable trees by mean stand dbh class

**Figure 21** Number of measureable trees by mean stand dbh class



## Part 2 - what our woodlands are like today

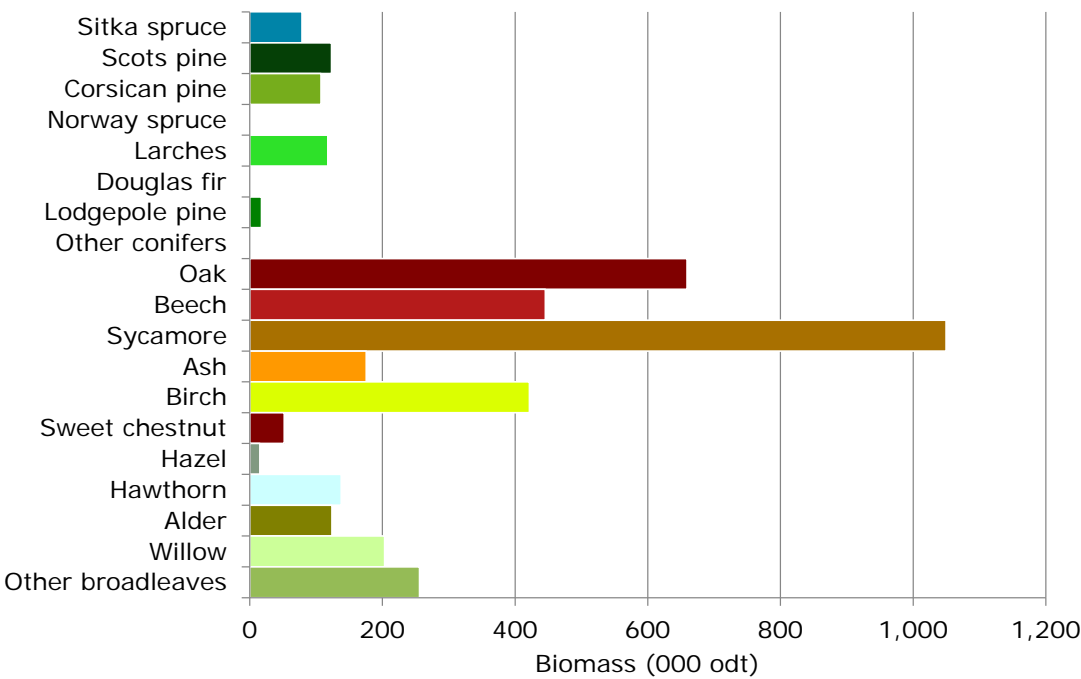
**Table 19** Number of measureable trees by mean stand dbh class

Mean stand DBH	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
<b>All conifers</b>				
0–7 cm	12	267	106	279
7–10 cm	78	111	96	188
10–15 cm	127	149	55	276
15–20 cm	127	229	57	357
20–30 cm	91	599	39	690
30–40 cm	61	207	35	268
40–60 cm	14	73	50	87
60–80 cm	< 1	0	-	< 1
80+ cm	0	0	-	0
<b>Total</b>	<b>509</b>	<b>1,635</b>	<b>29</b>	<b>2,144</b>
<b>All broadleaves</b>				
0–7 cm	55	2,123	40	2,179
7–10 cm	257	7,622	24	7,879
10–15 cm	241	4,717	28	4,958
15–20 cm	121	2,097	27	2,218
20–30 cm	33	2,588	17	2,622
30–40 cm	3	1,034	40	1,037
40–60 cm	1	544	27	546
60–80 cm	< 1	215	54	215
80+ cm	0	36	53	36
<b>Total</b>	<b>713</b>	<b>20,975</b>	<b>12</b>	<b>21,688</b>
<b>All species</b>				
0–7 cm	67	2,390	35	2,458
7–10 cm	335	7,732	23	8,067
10–15 cm	368	4,865	27	5,234
15–20 cm	248	2,327	25	2,575
20–30 cm	124	3,187	16	3,311
30–40 cm	64	1,241	34	1,305
40–60 cm	15	617	24	632
60–80 cm	< 1	215	54	215
80+ cm	0	36	53	36
<b>Total</b>	<b>1,222</b>	<b>22,610</b>	<b>11</b>	<b>23,832</b>

# Biomass stocks in live woodland trees

## Biomass stocks by species

**Figure 22** Biomass stocks by principal tree species



## Part 2 - what our woodlands are like today

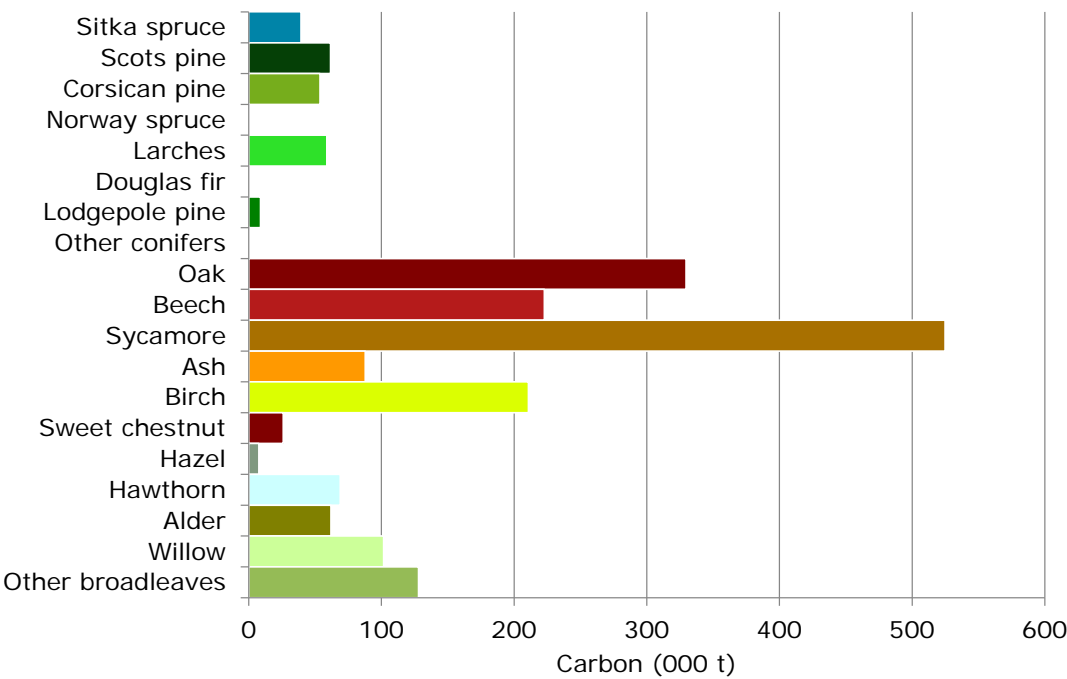
**Table 20** Biomass stocks by principal tree species

Principal species	FC	Private sector		Total
	biomass (000 odt)	biomass (000 odt)	SE%	biomass (000 odt)
<b>Conifers</b>				
Sitka spruce	< 1	78	56	78
Scots pine	25	99	30	123
Corsican pine	46	62	62	107
Norway spruce	< 1	< 1	90	< 1
Larches	7	111	34	118
Douglas fir	< 1	0	-	< 1
Lodgepole pine	< 1	17	50	18
Other conifers	2	< 1	99	2
<b>All conifers</b>	<b>80</b>	<b>367</b>	<b>18</b>	<b>447</b>
<b>Broadleaves</b>				
Oak	10	649	25	659
Beech	4	442	45	446
Sycamore	< 1	1,049	34	1,050
Ash	< 1	175	39	176
Birch	7	415	45	422
Sweet chestnut	4	48	92	52
Hazel	0	15	56	15
Hawthorn	0	138	33	138
Alder	< 1	124	36	124
Willow	< 1	203	45	203
Other broadleaves	21	235	37	256
<b>All broadleaves</b>	<b>48</b>	<b>3,492</b>	<b>13</b>	<b>3,540</b>
<b>All species</b>				
<b>All species</b>	<b>128</b>	<b>3,859</b>	<b>12</b>	<b>3,987</b>

# Carbon stocks in live woodland trees

## Carbon stocks by species

**Figure 23** Carbon stocks by principal tree species





## Part 2 - what our woodlands are like today

**Table 21** Carbon stocks by principal tree species

Principal species	FC	Private sector		Total
	carbon (000 t)	carbon (000 t)	SE%	carbon (000 t)
<b>Conifers</b>				
Sitka spruce	< 1	39	56	39
Scots pine	12	49	30	62
Corsican pine	23	31	62	54
Norway spruce	< 1	< 1	90	< 1
Larches	3	55	34	59
Douglas fir	< 1	0	-	< 1
Lodgepole pine	< 1	9	50	9
Other conifers	< 1	< 1	99	< 1
<b>All conifers</b>	<b>40</b>	<b>184</b>	<b>18</b>	<b>224</b>
<b>Broadleaves</b>				
Oak	5	325	25	330
Beech	2	221	45	223
Sycamore	< 1	524	34	525
Ash	< 1	87	39	88
Birch	4	207	45	211
Sweet chestnut	2	24	92	26
Hazel	0	8	56	8
Hawthorn	0	69	33	69
Alder	< 1	62	36	62
Willow	< 1	102	45	102
Other broadleaves	11	117	37	128
<b>All broadleaves</b>	<b>24</b>	<b>1,746</b>	<b>13</b>	<b>1,770</b>
<b>All species</b>				
<b>All species</b>	<b>64</b>	<b>1,930</b>	<b>12</b>	<b>1,994</b>

# Part 2 - what our woodlands are like today

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## Existing woodland management information and economic viability data (PS only)

### Sample square distribution

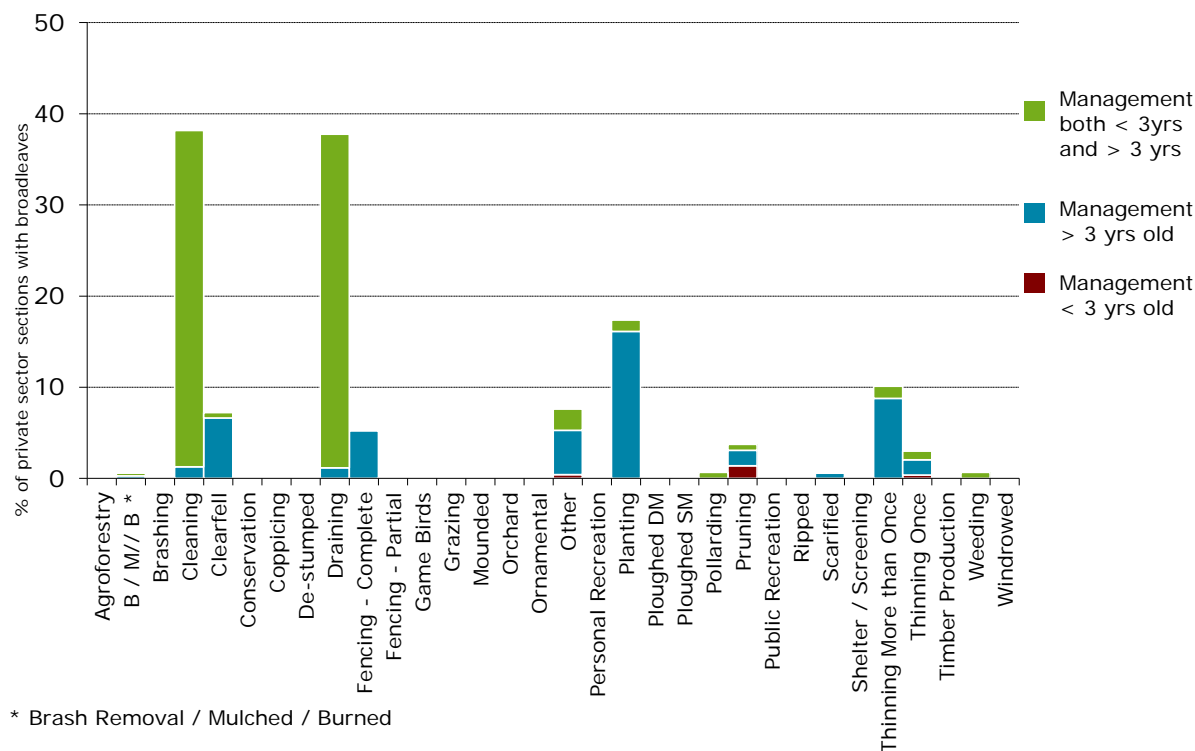
**Table 22** Sample square distribution

Number of squares surveyed	Number of squares surveyed	Number of Private sector squares surveyed	Number of Private sector squares containing coniferous species	Number of Private sector squares containing broadleaved species
Greater Manchester Merseyside and Cheshire	68	67	28	61

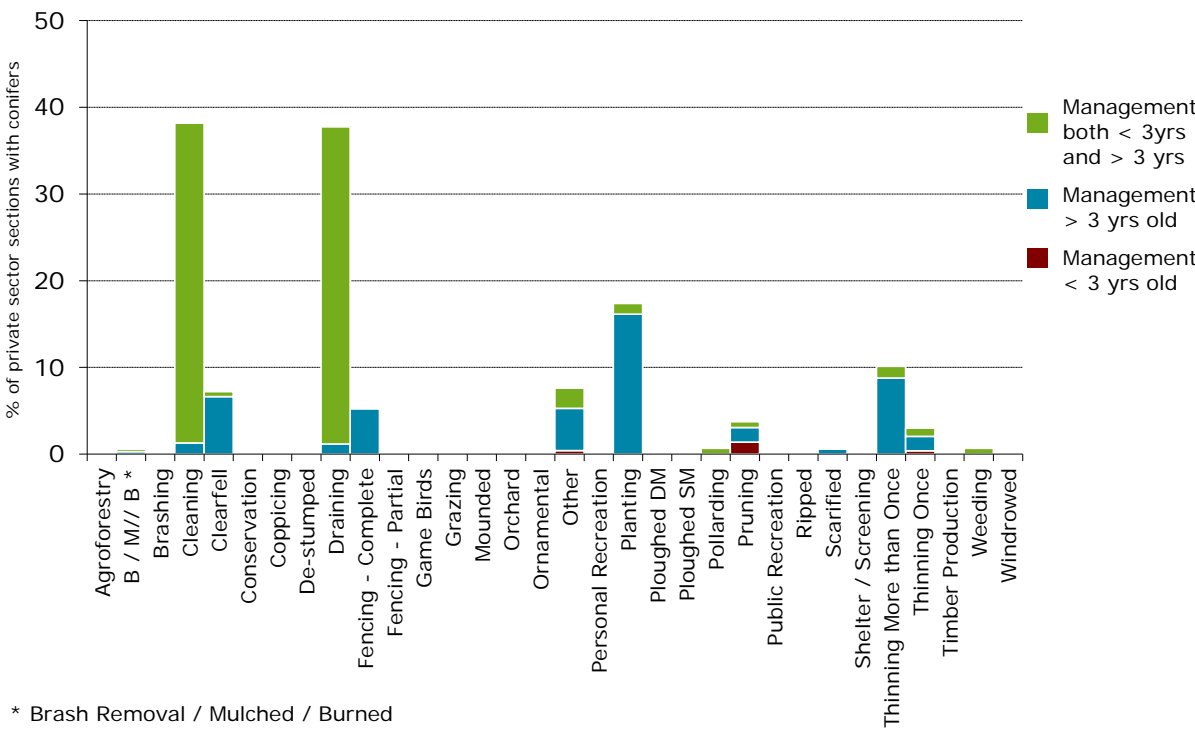
# Part 2 - what our woodlands are like today

## Evidence of management

**Figure 24** Evidence of management in PS broadleaf sections

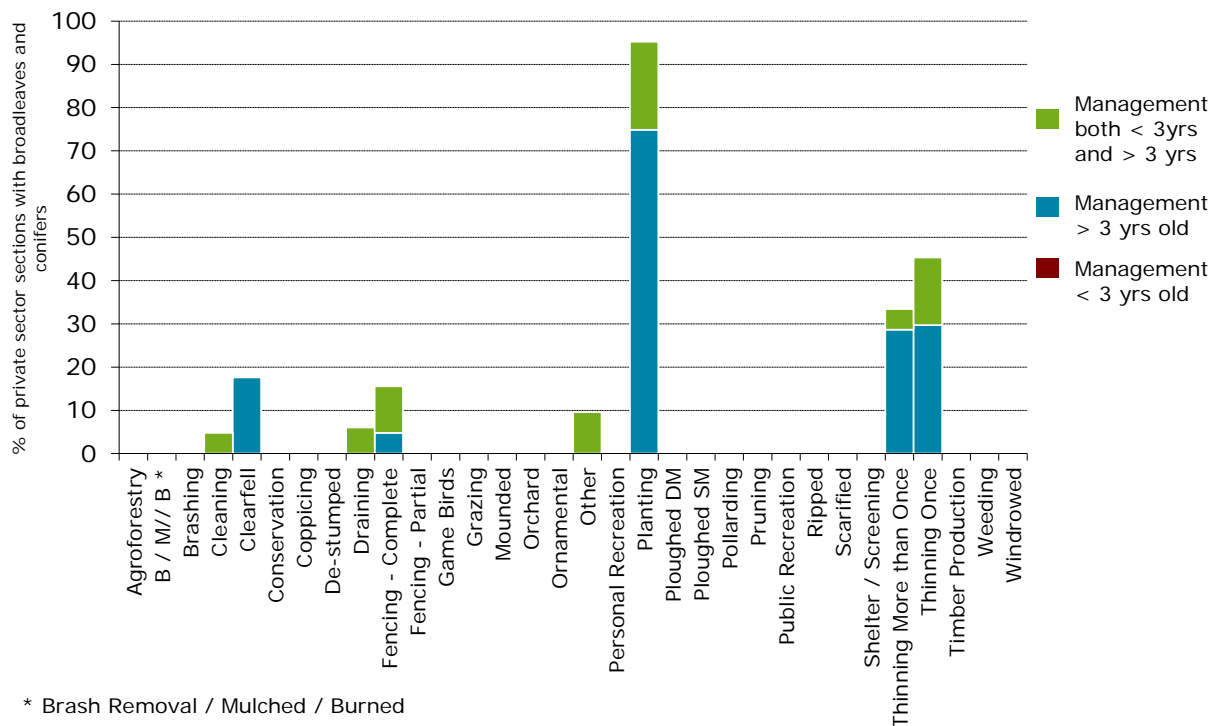


**Figure 25** Evidence of management in PS conifer sections

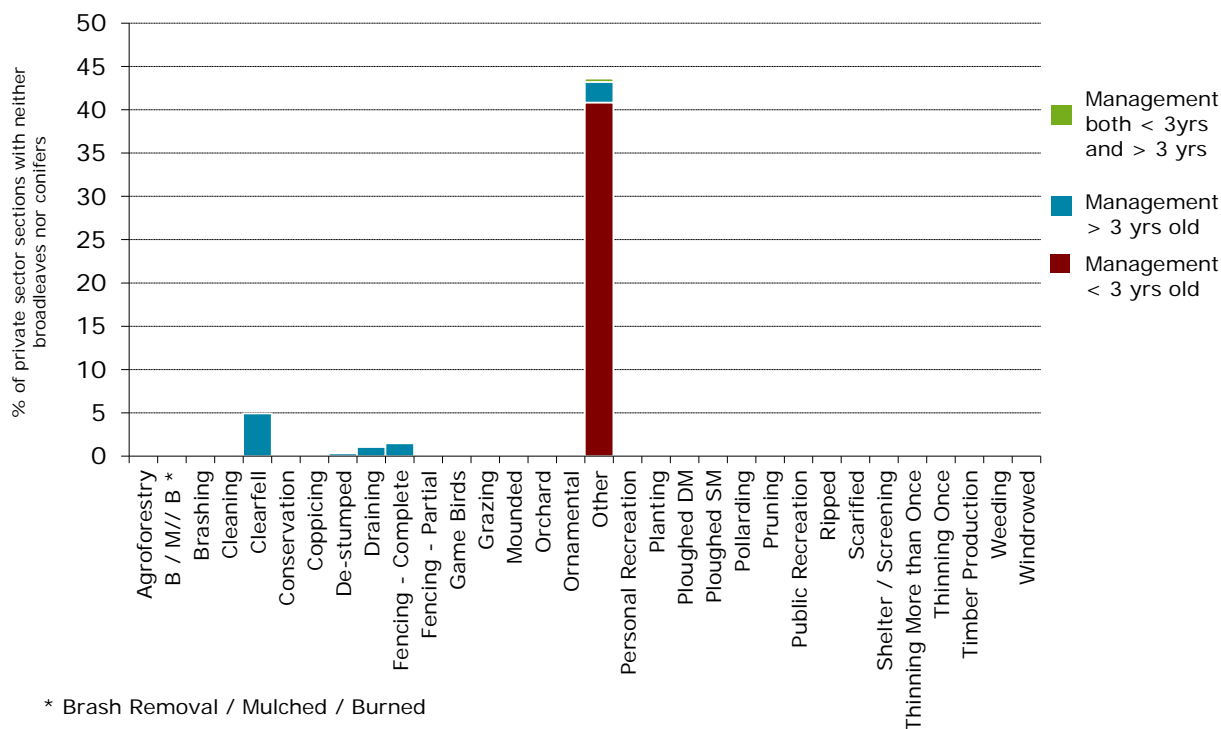


# Part 2 - what our woodlands are like today

**Figure 26** Evidence of management in PS mixed broadleaf/conifer sections



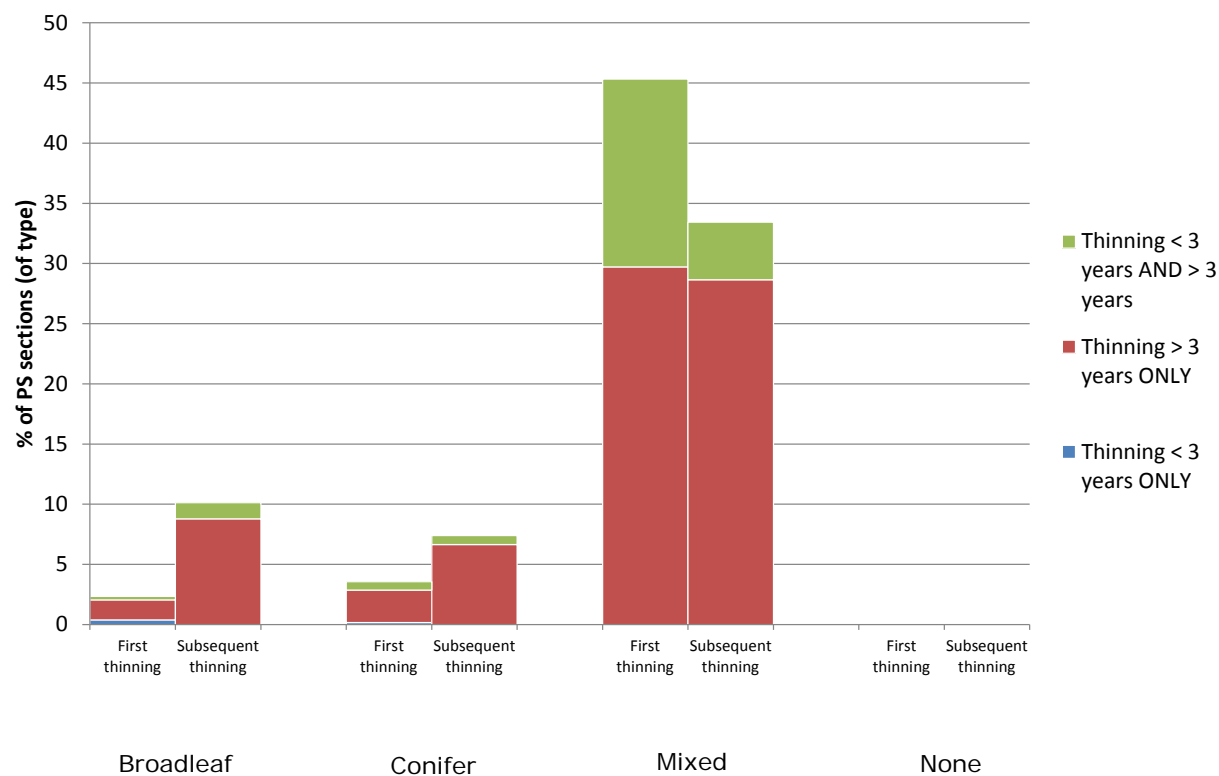
**Figure 27** Evidence of management in PS sections with no broadleaf or conifer



# Part 2 - what our woodlands are like today

## Evidence of thinning

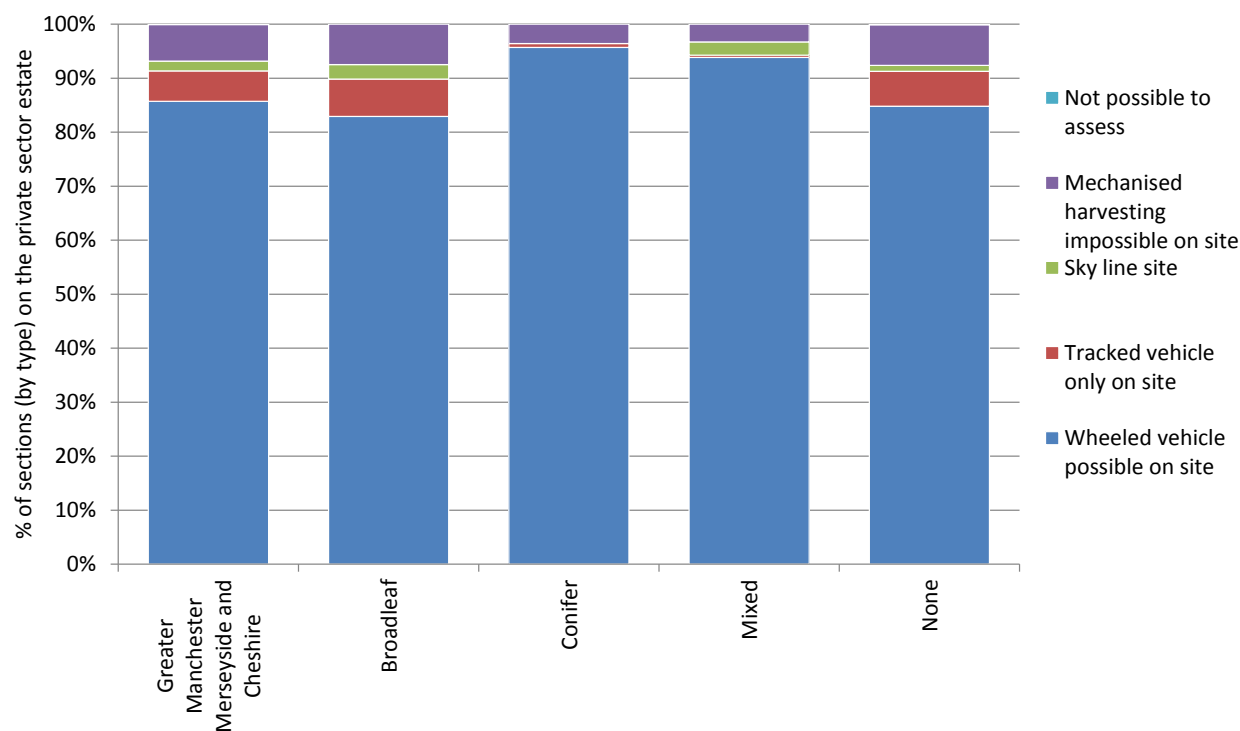
**Figure 28** Evidence of thinning



# Part 2 - what our woodlands are like today

## Suitability for harvesting

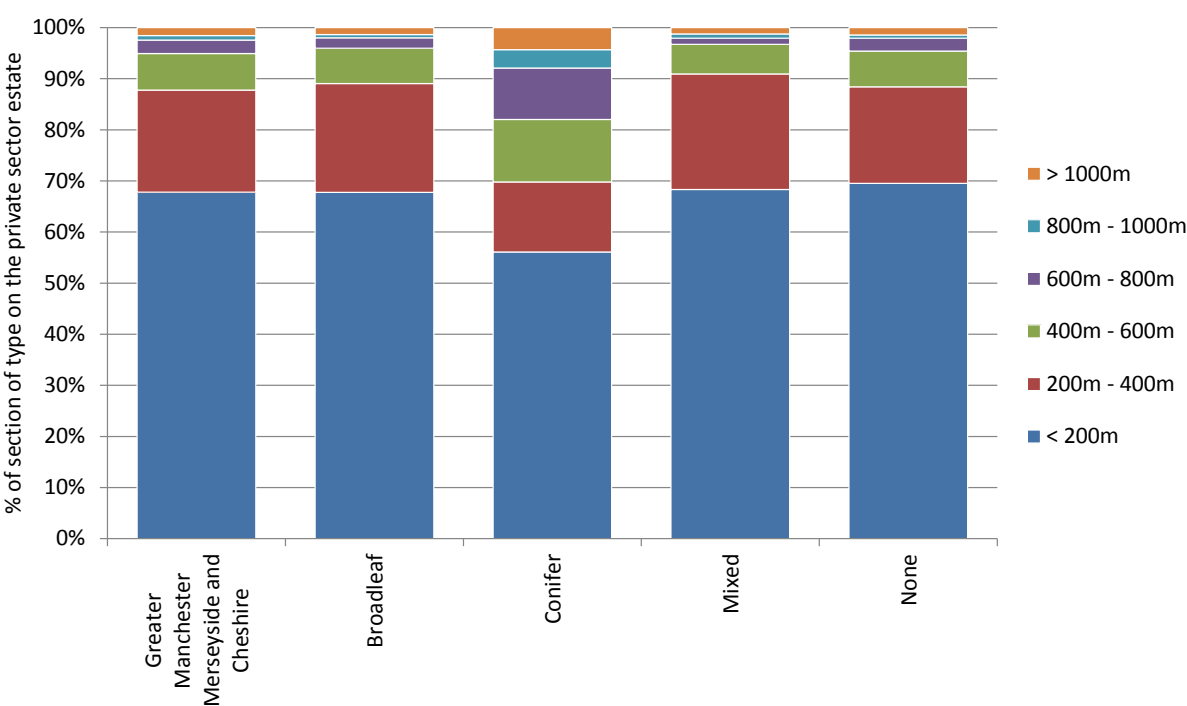
Figure 29 Suitability for harvesting



# Part 2 - what our woodlands are like today

## Distance to road

Figure 30 Distance to road



# Part 2 - what our woodlands are like today

## Type of road or ride

Figure 31 Road or ride in survey square

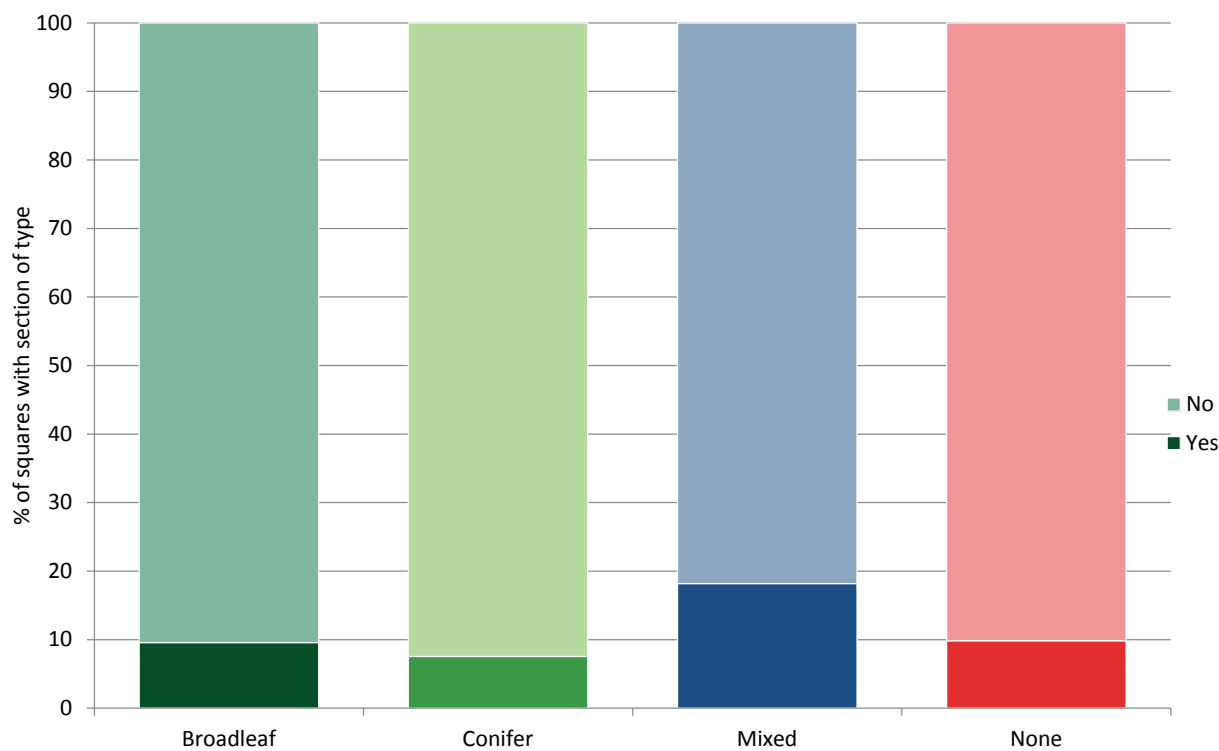
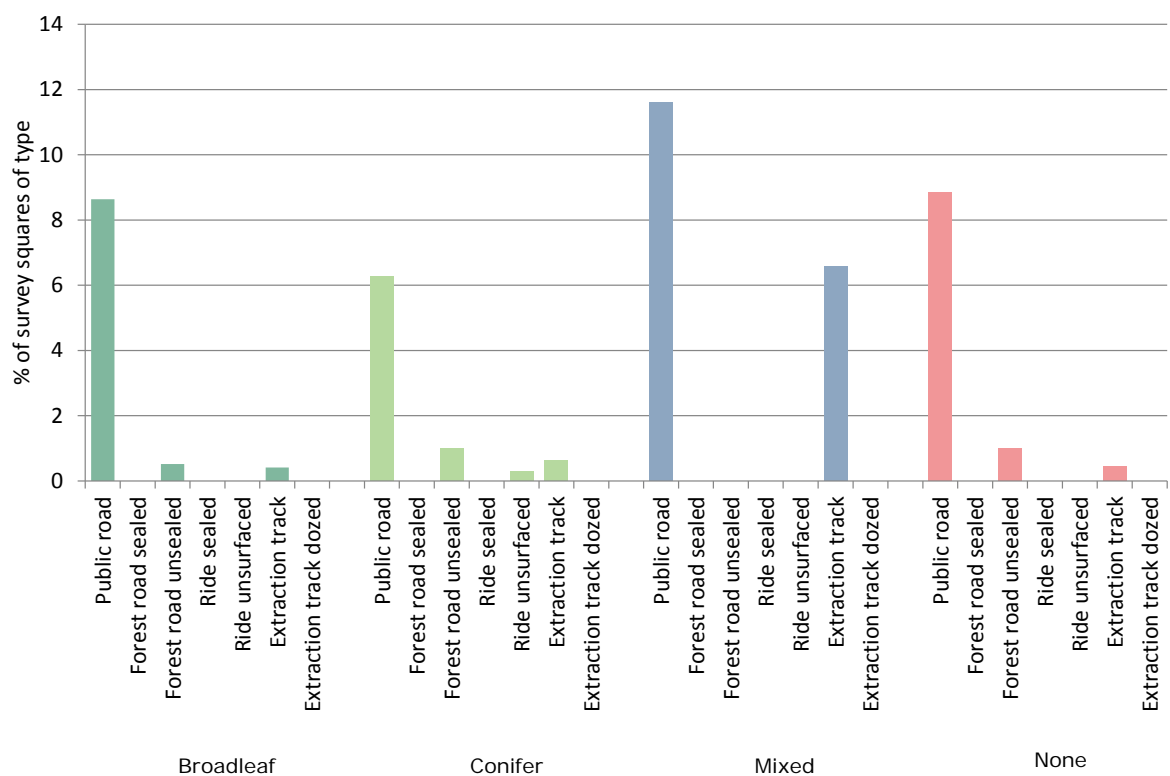


Figure 32 Type of road or ride in survey square

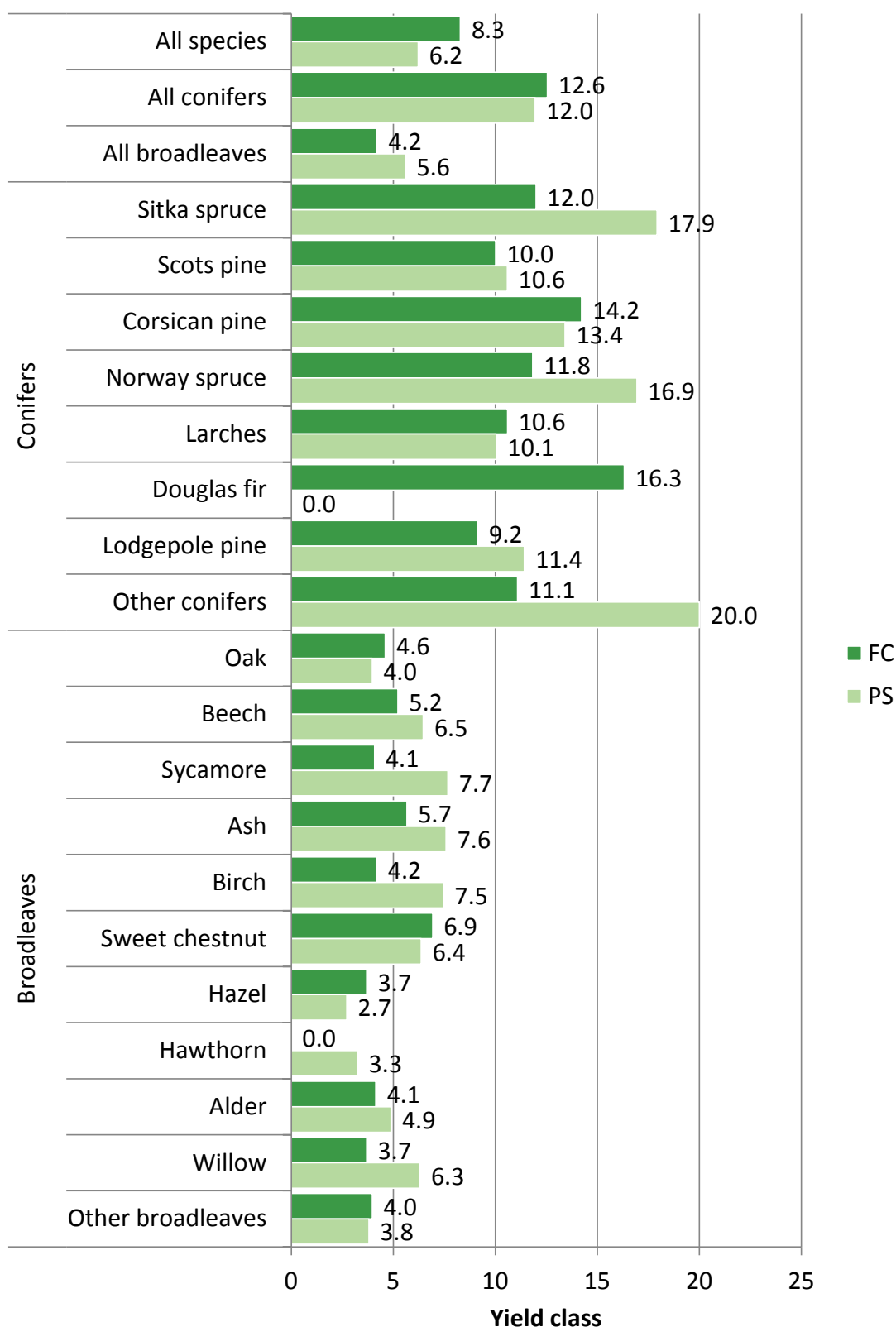




## Part 2 - what our woodlands are like today

### Mean yield class

**Figure 33** Mean yield class by principal tree species (FC and PS)



## Part 2 - what our woodlands are like today

**Table 23** Mean yield class by principal tree species (FC and PS)

Principal species	FC	Private sector
	mean yield class weighted by area	
Conifers		
Sitka spruce	12.0	17.9
Scots pine	10.0	10.6
Corsican pine	14.2	13.4
Norway spruce	11.8	16.9
Larches	10.6	10.1
Douglas fir	16.3	0.0
Lodgepole pine	9.2	11.4
Other conifers	11.1	20.0
<b>All conifers</b>	<b>12.6</b>	<b>12.0</b>
Broadleaves		
Oak	4.6	4.0
Beech	5.2	6.5
Sycamore	4.1	7.7
Ash	5.7	7.6
Birch	4.2	7.5
Sweet chestnut	6.9	6.4
Hazel	3.7	2.7
Hawthorn	0.0	3.3
Alder	4.1	4.9
Willow	3.7	6.3
Other broadleaves	4.0	3.8
<b>All broadleaves</b>	<b>4.2</b>	<b>5.6</b>
All species		
<b>All species</b>	<b>8.3</b>	<b>6.2</b>

## Part 2 - what our woodlands are like today

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### Overdue timber stocks

#### Overdue volume and area

**Table 24** Standing volume in overdue timber stocks

	FC	Private sector	
	volume (000 m <sup>3</sup> obs)	volume (000 m <sup>3</sup> obs)	SE %
Greater Manchester Merseyside and Cheshire			
All conifers	4	182	52
All broadleaves	7	2,354	23
<b>All species</b>	<b>10</b>	<b>2,536</b>	<b>22</b>

**Table 25** Stocked area of overdue timber stocks

	FC	Private sector	
	area (000 ha)	area (000 ha)	SE %
Greater Manchester Merseyside and Cheshire			
All conifers	< 0.1	0.4	49
All broadleaves	< 0.1	5.3	17
<b>All species</b>	<b>&lt; 0.1</b>	<b>5.7</b>	<b>16</b>

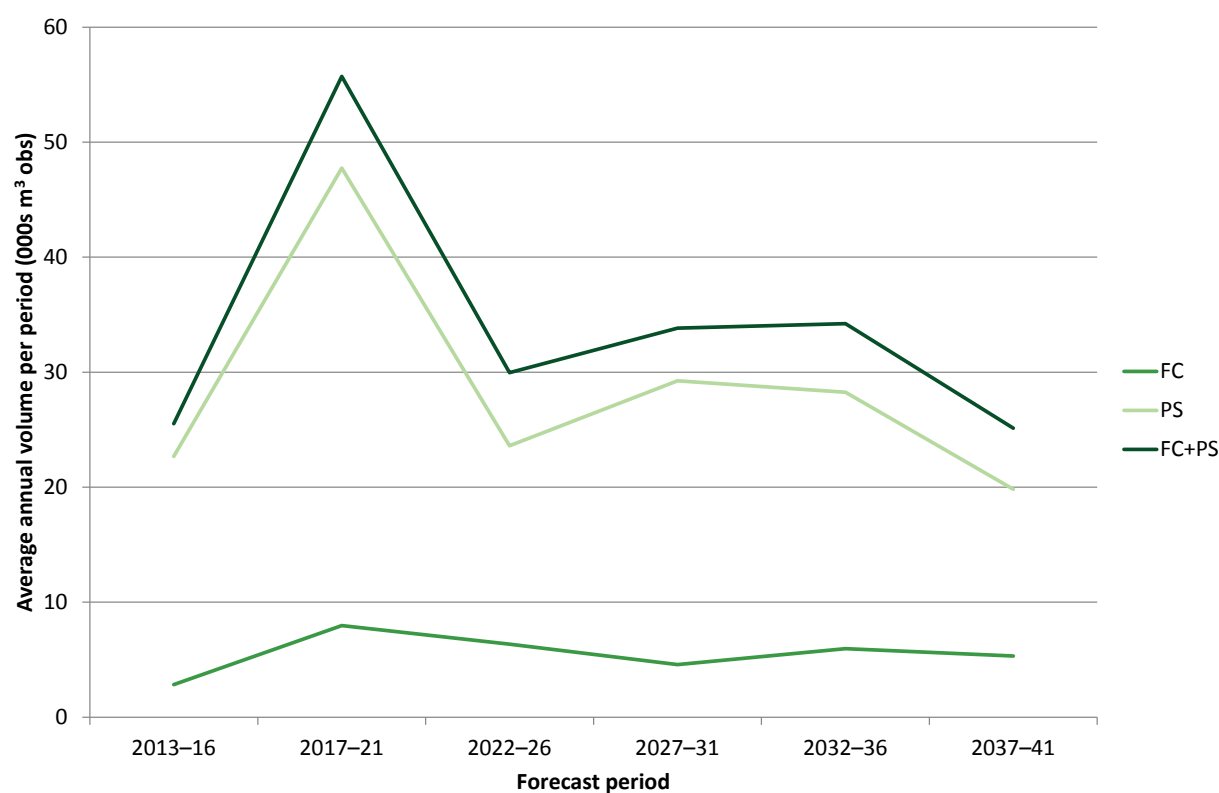
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50-year forecast of net increment in broadleaves .....	91
Combined standing volume, net increment and availability .....	95

## 25-year softwood forecast

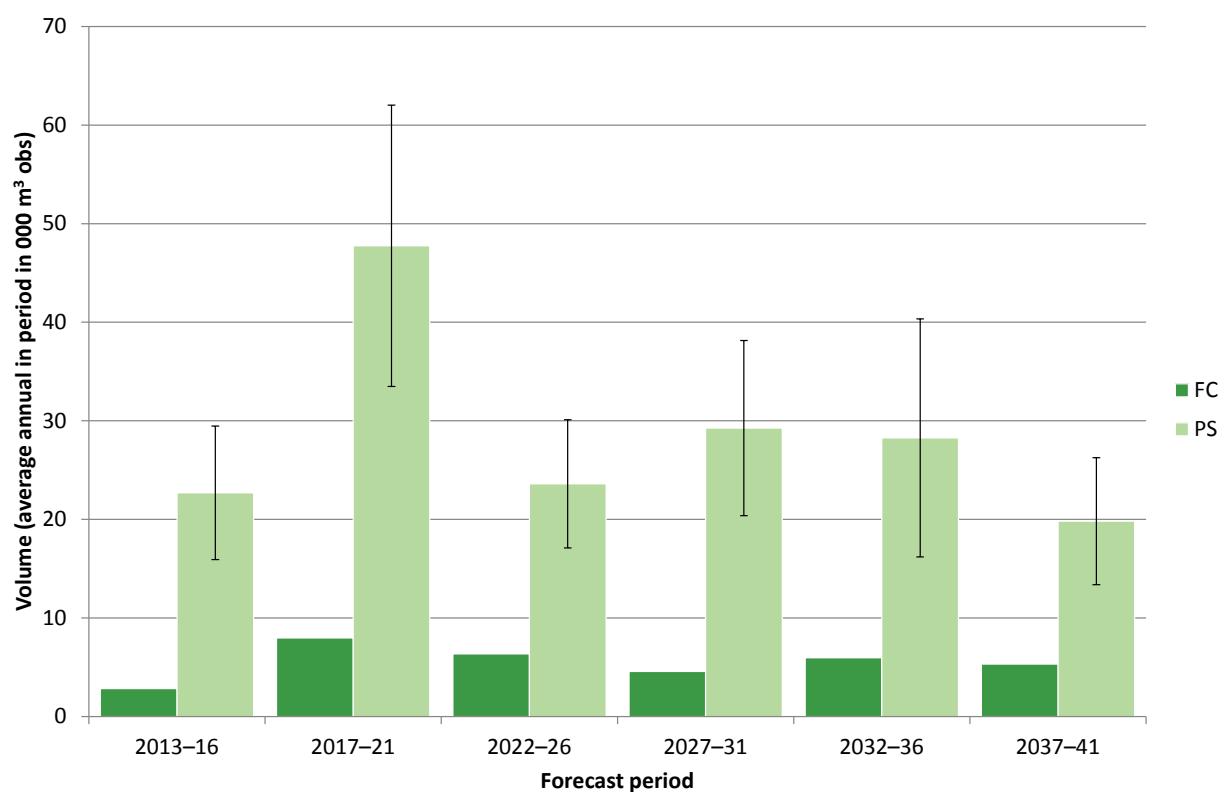
### 25-year forecast of softwood timber availability

**Figure 34** Summary of 25-year forecast of softwood timber availability; average annual volume within period



## Part 3 - how our woodlands might change

**Figure 35** 25-year forecast of softwood timber availability; average annual volume within period



**Table 26** 25-year forecast of softwood availability; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
2013-16	3	23	30	26
2017-21	8	48	30	56
2022-26	6	24	28	30
2027-31	5	29	30	34
2032-36	6	28	43	34
2037-41	5	20	33	25

## Part 3 - how our woodlands might change

### 25-year forecast of softwood timber availability by principal species

**Table 27** 25-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All conifers	3	23	30	8	48	30
Sitka spruce	0	5	64	< 1	8	49
Scots pine	< 1	4	36	2	4	31
Corsican pine	2	7	66	5	11	62
Norway spruce	< 1	< 1	93	< 1	< 1	90
Larches	< 1	3	34	< 1	25	54
Douglas fir	0	0	–	< 1	0	–
Lodgepole pine	< 1	3	84	< 1	< 1	61
Other conifers	< 1	< 1	100	< 1	< 1	100

**Table 27 (cont'd)** 25-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All conifers	6	24	28	5	29	30
Sitka spruce	0	3	68	0	3	70
Scots pine	1	7	49	< 1	12	46
Corsican pine	5	3	77	3	3	75
Norway spruce	< 1	< 1	92	< 1	< 1	93
Larches	< 1	9	63	< 1	9	70
Douglas fir	0	0	–	< 1	0	–
Lodgepole pine	< 1	1	82	< 1	3	65
Other conifers	< 1	< 1	100	< 1	< 1	100

## Part 3 - how our woodlands might change

**Table 27 (cont'd)** 25-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All conifers	6	28	43	5	20	33
Sitka spruce	< 1	15	79	< 1	3	93
Scots pine	< 1	7	52	1	14	43
Corsican pine	5	3	71	3	1	63
Norway spruce	< 1	< 1	93	< 1	< 1	80
Larches	< 1	3	60	< 1	1	41
Douglas fir	< 1	< 1	93	< 1	< 1	43
Lodgepole pine	< 1	< 1	93	< 1	< 1	68
Other conifers	< 1	< 1	100	< 1	< 1	44

## 25-year forecast of softwood timber availability % spruce

**Table 28** 25-year forecast of softwood timber availability % spruce

Greater Manchester Merseyside and Cheshire		Top diameter class (cm)								Total
		7–14	14–16	16–18	18–24	24–34	34–44	44–54	54+	
2013–16	FC (%)	< 1	0	0	0	0	0	0	0	< 1
	PS (%)	26	22	25	24	25	24	18	< 1	24
2017–21	FC (%)	1	< 1	< 1	< 1	< 1	< 1	< 1	0	< 1
	PS (%)	9	9	12	12	19	27	31	5	17
2022–26	FC (%)	2	2	1	< 1	0	0	0	0	< 1
	PS (%)	7	12	15	16	16	18	31	7	16
2027–31	FC (%)	< 1	< 1	< 1	< 1	0	0	0	0	< 1
	PS (%)	6	8	9	13	13	12	14	5	12
2032–36	FC (%)	6	3	2	< 1	< 1	0	0	0	< 1
	PS (%)	36	37	46	63	66	55	31	17	55
2037–41	FC (%)	13	9	6	3	< 1	< 1	0	0	3
	PS (%)	20	9	8	9	13	15	16	17	14



## Part 3 - how our woodlands might change

### 25-year forecast of softwood timber availability by top diameter class

**Table 29** 25-year forecast of softwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
7–14	< 1	2	25	< 1	3	38
14–16	< 1	1	28	< 1	2	43
16–18	< 1	1	28	< 1	3	42
18–24	< 1	6	29	2	12	40
24–34	< 1	8	36	2	17	30
34–44	< 1	3	44	1	7	32
44–54	< 1	1	57	< 1	3	42
54+	< 1	< 1	84	< 1	2	52
Total	3	23	30	8	48	30

**Table 29 (cont'd)** 25-year forecast of softwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
7–14	< 1	2	46	< 1	2	44
14–16	< 1	< 1	27	< 1	< 1	31
16–18	< 1	1	29	< 1	1	32
18–24	1	5	30	1	5	34
24–34	2	9	33	2	11	35
34–44	1	3	32	< 1	6	33
44–54	< 1	1	45	< 1	3	39
54+	< 1	< 1	72	< 1	2	51
Total	6	24	28	5	29	30

## Part 3 - how our woodlands might change

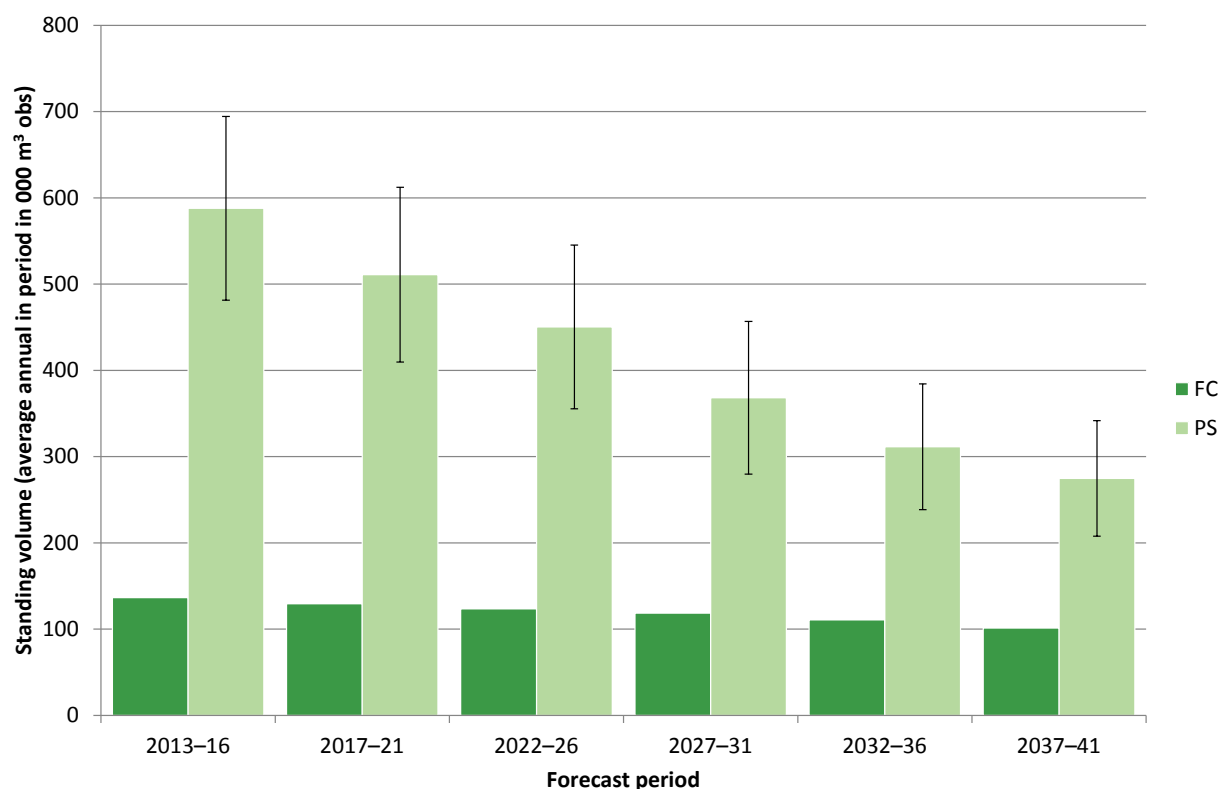
**Table 29 (cont'd)** 25-year forecast of softwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
7–14	< 1	2	40	< 1	2	32
14–16	< 1	< 1	38	< 1	< 1	39
16–18	< 1	< 1	42	< 1	< 1	35
18–24	1	5	53	1	2	27
24–34	2	11	53	2	6	35
34–44	< 1	5	41	< 1	4	40
44–54	< 1	2	33	< 1	3	41
54+	< 1	1	49	< 1	2	38
Total	6	28	43	5	20	33

## Part 3 - how our woodlands might change

### 25-year forecast of standing volume in conifers

**Figure 36** 25-year forecast of standing volume in conifers



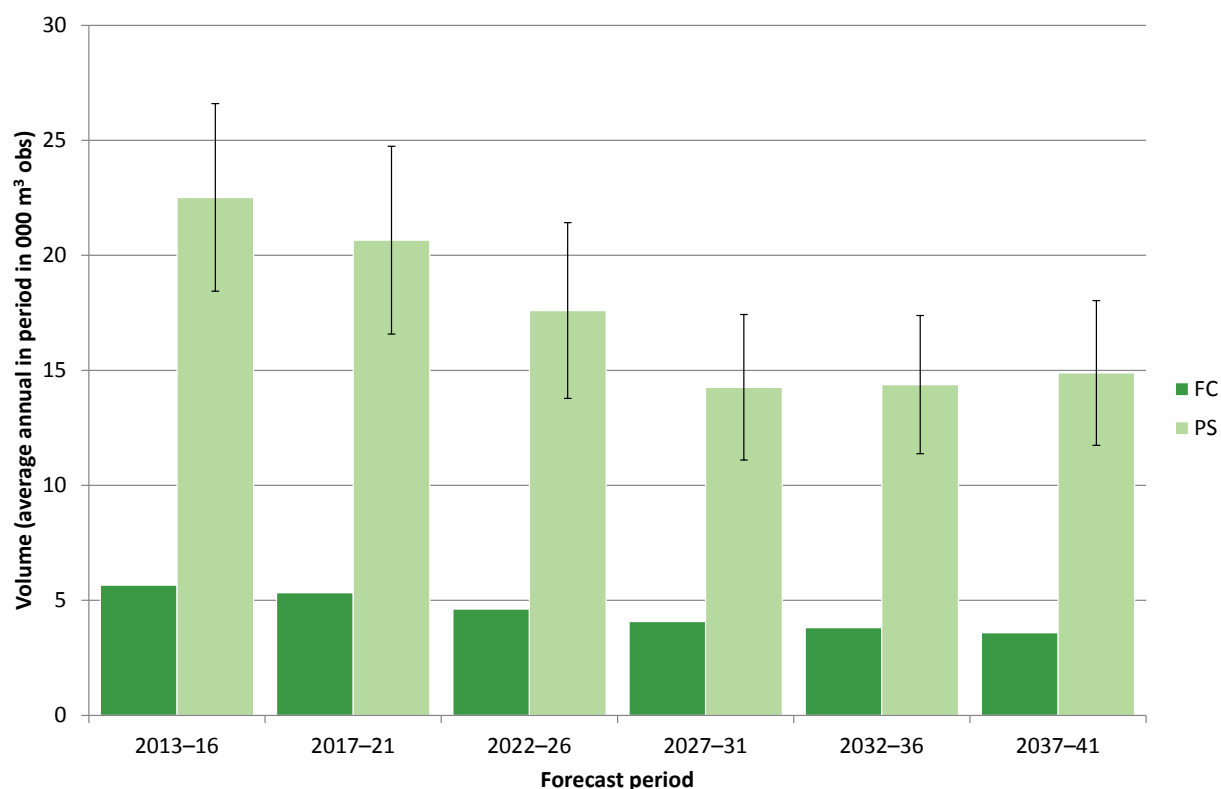
**Table 30** 25-year forecast of standing volume in conifers; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
2013-16	136	588	18	724
2017-21	129	511	20	640
2022-26	124	450	21	574
2027-31	119	368	24	487
2032-36	111	311	23	422
2037-41	101	275	24	376

## Part 3 - how our woodlands might change

### 25-year forecast of net increment in conifers

**Figure 37** 25-year forecast of net increment in conifers



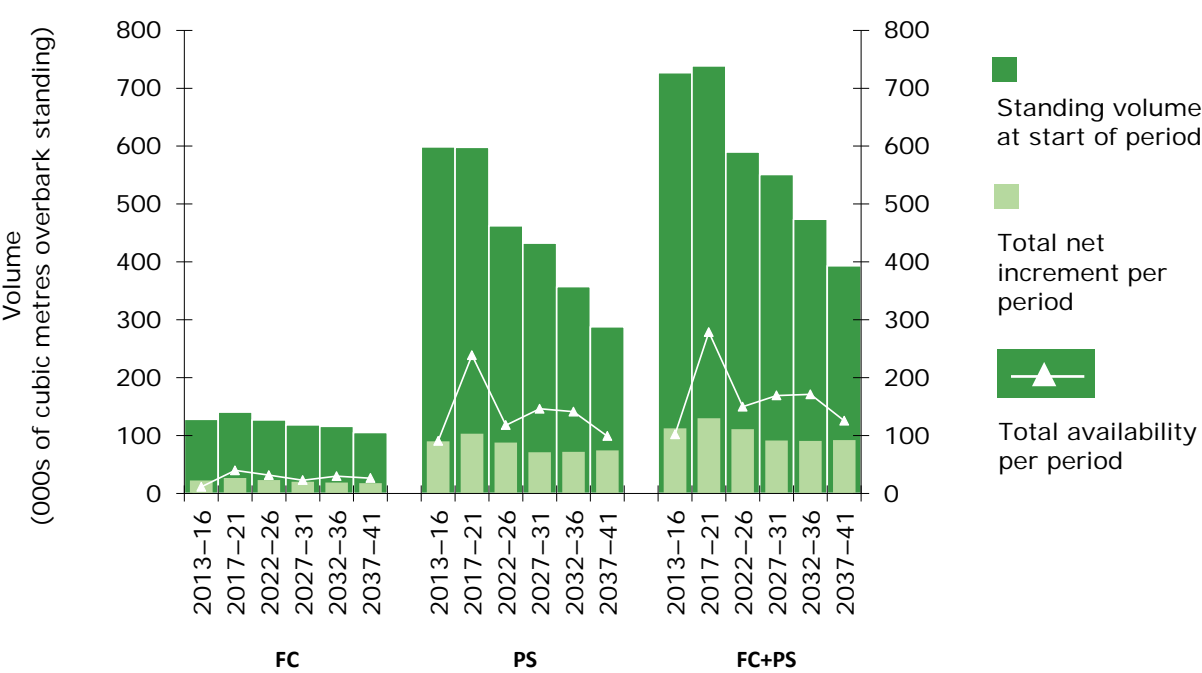
**Table 31** 25-year forecast of net increment in conifers; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
2013-16	6	23	18	28
2017-21	5	21	20	26
2022-26	5	18	22	22
2027-31	4	14	22	18
2032-36	4	14	21	18
2037-41	4	15	21	18

# Part 3 - how our woodlands might change

## Combined standing volume, net increment and availability

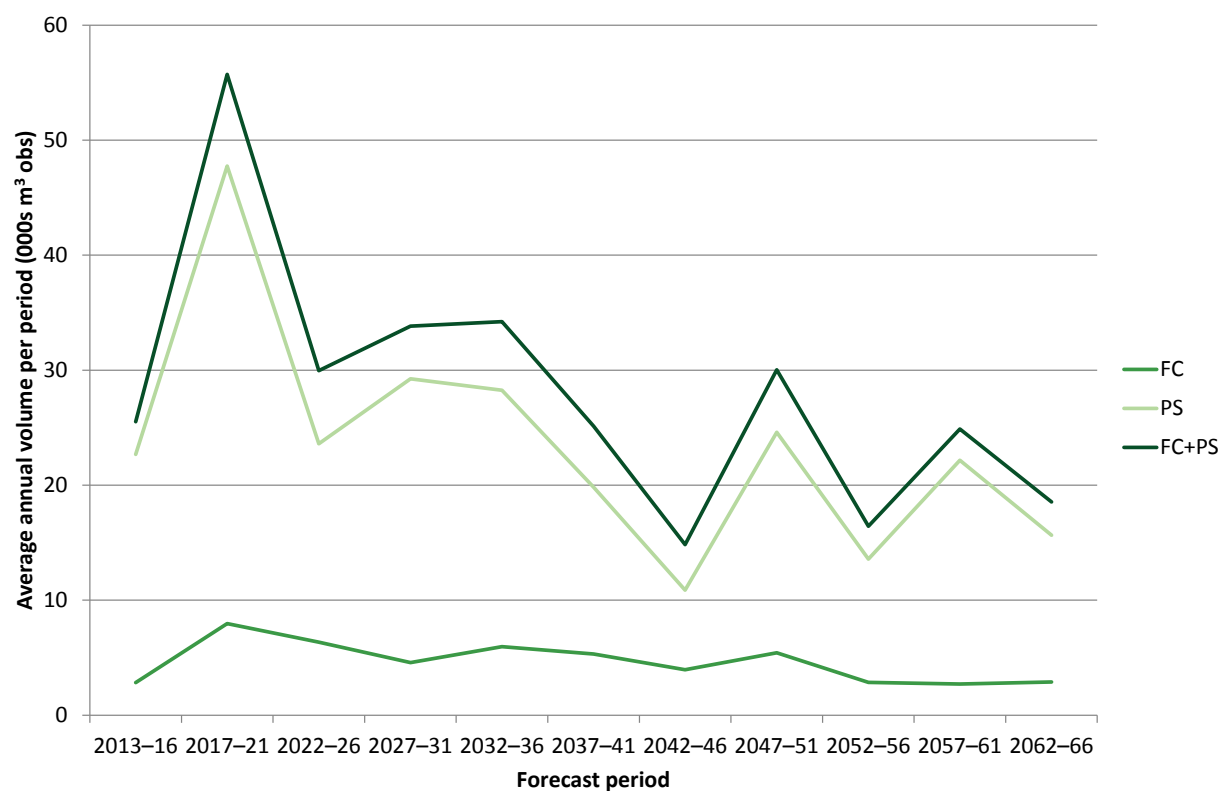
**Figure 38** 25-year forecast of standing volume, net increment and softwood availability



## 50-year softwood forecast

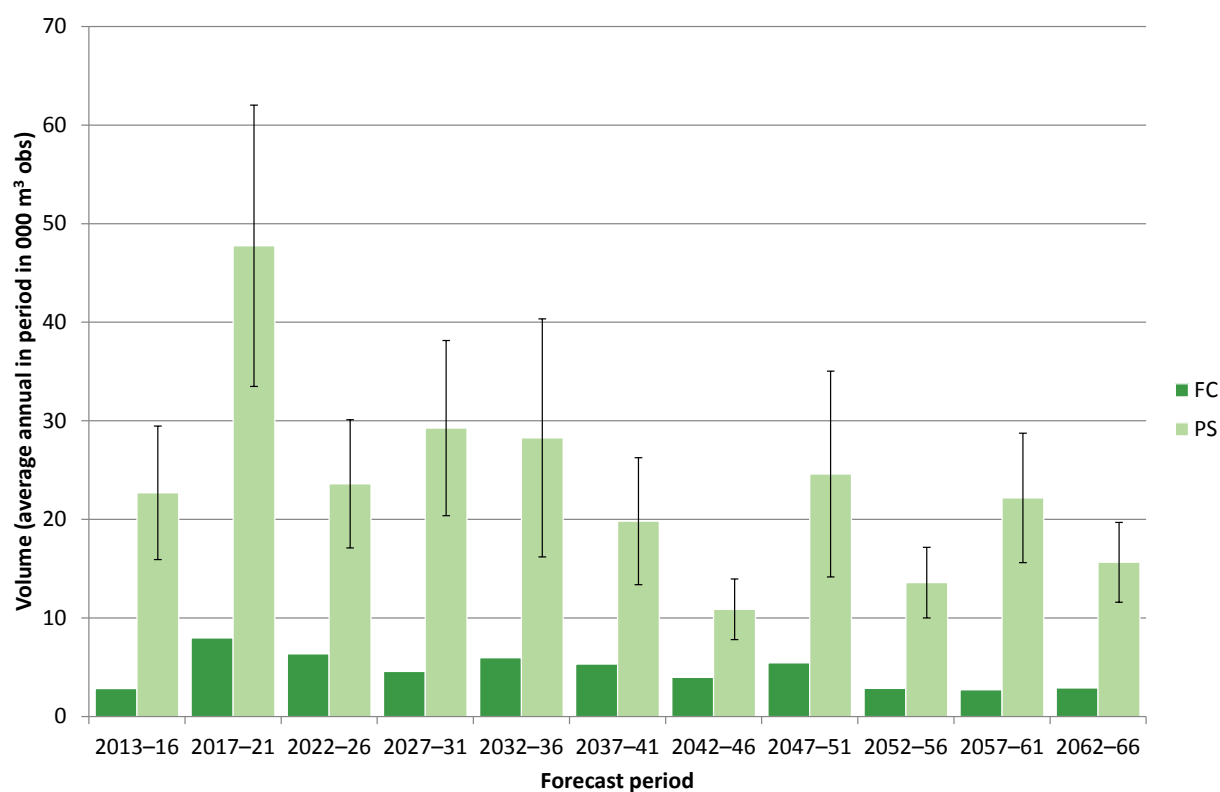
### 50-year forecast of softwood timber availability

**Figure 39** Summary of 50-year forecast of softwood timber availability; average annual volume within period



## Part 3 - how our woodlands might change

**Figure 40** 50-year forecast of softwood timber availability; average annual volume within period



**Table 32** Summary of 50-year forecast of softwood timber availability; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
2013-16	3	23	30	26
2017-21	8	48	30	56
2022-26	6	24	28	30
2027-31	5	29	30	34
2032-36	6	28	43	34
2037-41	5	20	33	25
2042-46	4	11	28	15
2047-51	5	25	42	30
2052-56	3	14	26	16
2057-61	3	22	30	25
2062-66	3	16	26	19

## Part 3 - how our woodlands might change

### 50-year forecast of softwood timber availability by principal species

**Table 33** 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All conifers	3	23	30	8	48	30
Sitka spruce	0	5	64	< 1	8	49
Scots pine	< 1	4	36	2	4	31
Corsican pine	2	7	66	5	11	62
Norway spruce	< 1	< 1	93	< 1	< 1	90
Larches	< 1	3	34	< 1	25	54
Douglas fir	0	0	-	< 1	0	-
Lodgepole pine	< 1	3	84	< 1	< 1	61
Other conifers	< 1	< 1	100	< 1	< 1	100

**Table 33 (cont'd)** 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All conifers	6	24	28	5	29	30
Sitka spruce	0	3	68	0	3	70
Scots pine	1	7	49	< 1	12	46
Corsican pine	5	3	77	3	3	75
Norway spruce	< 1	< 1	92	< 1	< 1	93
Larches	< 1	9	63	< 1	9	70
Douglas fir	0	0	-	< 1	0	-
Lodgepole pine	< 1	1	82	< 1	3	65
Other conifers	< 1	< 1	100	< 1	< 1	100



## Part 3 - how our woodlands might change

**Table 33 (cont'd)** 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All conifers	6	28	43	5	20	33
Sitka spruce	< 1	15	79	< 1	3	93
Scots pine	< 1	7	52	1	14	43
Corsican pine	5	3	71	3	1	63
Norway spruce	< 1	< 1	93	< 1	< 1	80
Larches	< 1	3	60	< 1	1	41
Douglas fir	< 1	< 1	93	< 1	< 1	43
Lodgepole pine	< 1	< 1	93	< 1	< 1	68
Other conifers	< 1	< 1	100	< 1	< 1	44

**Table 33 (cont'd)** 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All conifers	4	11	28	5	25	42
Sitka spruce	< 1	3	83	< 1	3	82
Scots pine	< 1	4	35	1	16	65
Corsican pine	2	< 1	72	3	< 1	72
Norway spruce	< 1	< 1	60	< 1	< 1	51
Larches	< 1	1	37	< 1	1	34
Douglas fir	< 1	1	56	< 1	1	43
Lodgepole pine	< 1	< 1	67	< 1	< 1	66
Other conifers	< 1	< 1	56	< 1	1	40

## Part 3 - how our woodlands might change

**Table 33 (cont'd)** 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All conifers	3	14	26	3	22	30
Sitka spruce	< 1	4	76	< 1	4	62
Scots pine	1	3	28	1	7	53
Corsican pine	< 1	< 1	70	< 1	5	79
Norway spruce	< 1	1	69	< 1	< 1	32
Larches	< 1	1	34	< 1	1	34
Douglas fir	< 1	2	37	< 1	2	34
Lodgepole pine	< 1	< 1	89	< 1	< 1	55
Other conifers	< 1	2	31	< 1	2	30

**Table 33 (cont'd)** 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2062–66		
	FC	Private sector	
	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire			
All conifers	3	16	26
Sitka spruce	< 1	3	48
Scots pine	1	5	48
Corsican pine	< 1	< 1	75
Norway spruce	< 1	< 1	31
Larches	< 1	2	53
Douglas fir	< 1	2	34
Lodgepole pine	< 1	< 1	55
Other conifers	< 1	2	28

## Part 3 - how our woodlands might change

### 50-year forecast of softwood timber availability % spruce

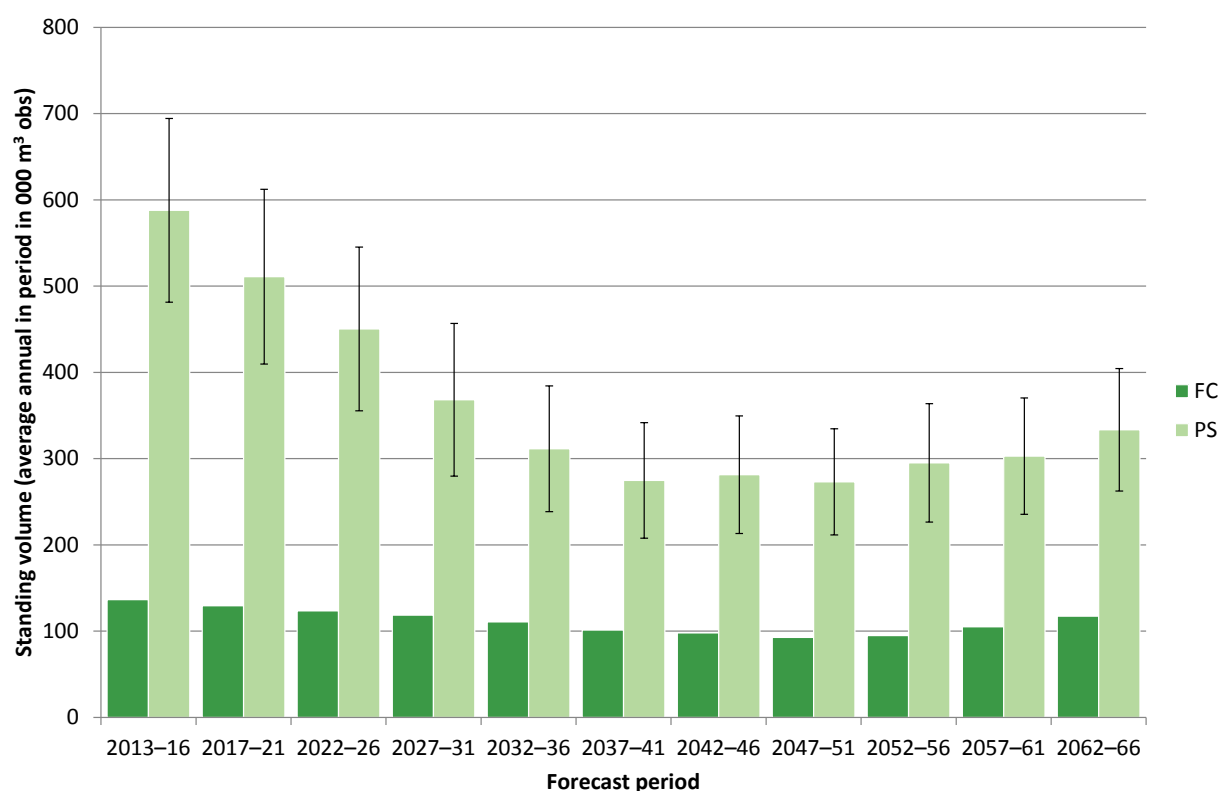
**Table 34** 50-year forecast of softwood timber availability % spruce

Greater Manchester Merseyside and Cheshire		Top diameter class (cm)								Total
		7-14	14-16	16-18	18-24	24-34	34-44	44-54	54+	
2013-16	FC (%)	< 1	0	0	0	0	0	0	0	< 1
	PS (%)	26	22	25	24	25	24	18	< 1	24
2017-21	FC (%)	1	< 1	< 1	< 1	< 1	< 1	< 1	0	< 1
	PS (%)	9	9	12	12	19	27	31	5	17
2022-26	FC (%)	2	2	1	< 1	0	0	0	0	< 1
	PS (%)	7	12	15	16	16	18	31	7	16
2027-31	FC (%)	< 1	< 1	< 1	< 1	0	0	0	0	< 1
	PS (%)	6	8	9	13	13	12	14	5	12
2032-36	FC (%)	6	3	2	< 1	< 1	0	0	0	< 1
	PS (%)	36	37	46	63	66	55	31	17	55
2037-41	FC (%)	13	9	6	3	< 1	< 1	0	0	3
	PS (%)	20	9	8	9	13	15	16	17	14
2042-46	FC (%)	9	10	7	2	< 1	0	0	0	3
	PS (%)	22	20	17	15	32	49	59	74	30
2047-51	FC (%)	4	5	4	2	< 1	0	0	0	2
	PS (%)	19	19	14	9	10	14	18	21	14
2052-56	FC (%)	4	8	10	11	4	0	0	0	4
	PS (%)	21	24	23	21	37	67	79	90	35
2057-61	FC (%)	3	5	6	10	10	1	0	0	5
	PS (%)	29	28	22	14	12	22	38	75	22
2062-66	FC (%)	4	4	5	7	10	4	0	0	5
	PS (%)	33	31	27	19	12	11	13	25	22

## Part 3 - how our woodlands might change

### 50-year forecast of standing volume in conifers

**Figure 41** 50-year forecast of standing volume in conifers; average annual volume within period



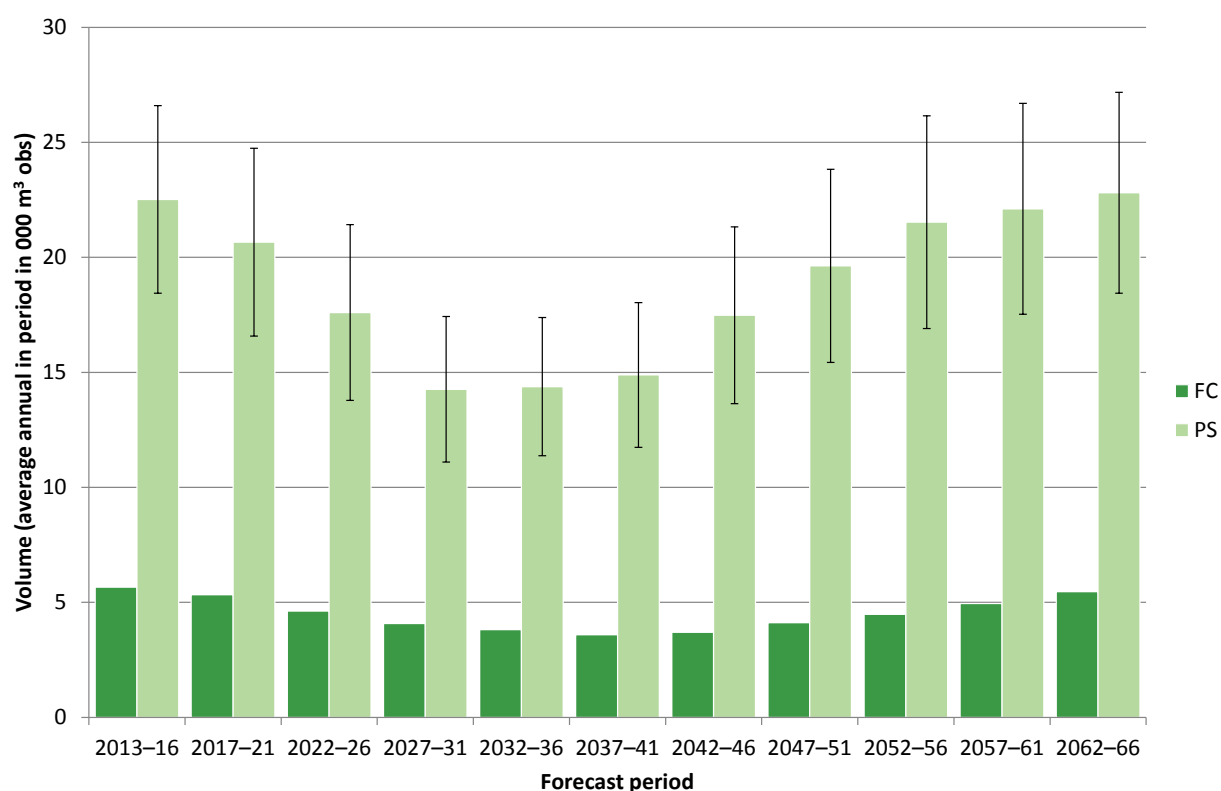
**Table 35** 50-year forecast of standing volume in conifers; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
2013-16	136	588	18	724
2017-21	129	511	20	640
2022-26	124	450	21	574
2027-31	119	368	24	487
2032-36	111	311	23	422
2037-41	101	275	24	376
2042-46	98	281	24	379
2047-51	93	273	23	366
2052-56	95	295	23	390
2057-61	105	303	22	408
2062-66	117	333	21	451

## Part 3 - how our woodlands might change

### 50-year forecast of net increment in conifers

**Figure 42** 50-year forecast of net increment in conifers; average annual volume within period



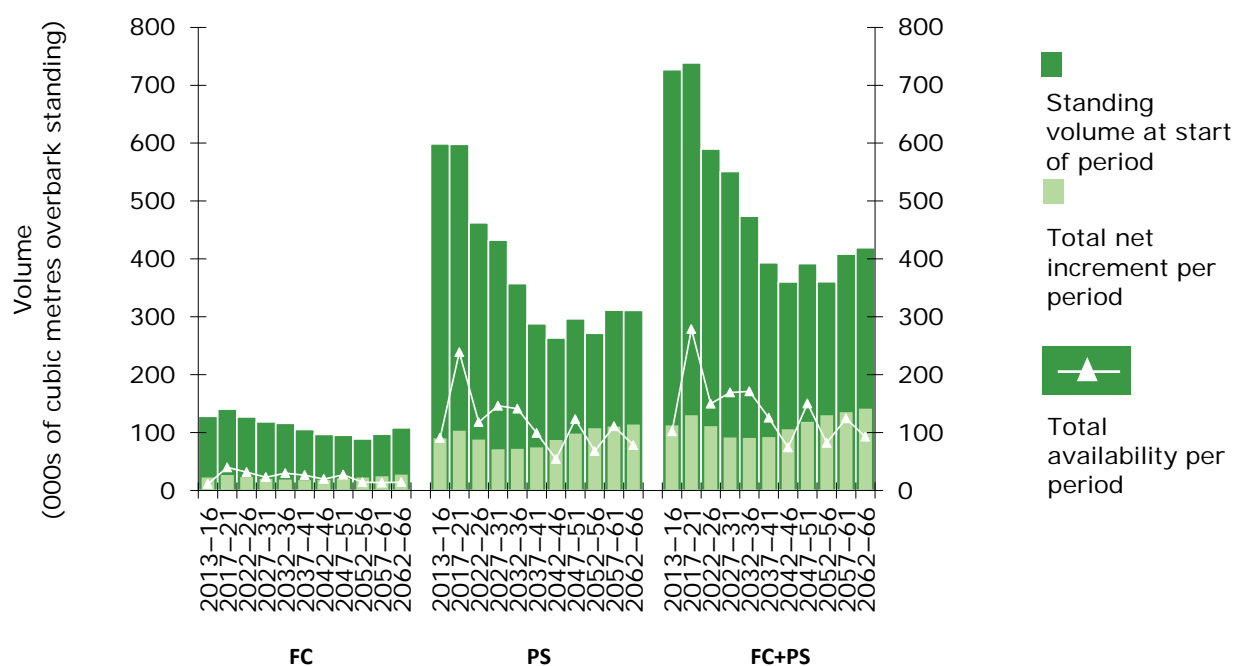
**Table 36** 50-year forecast of net increment in conifers; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000m³ obs)
Greater Manchester Merseyside and Cheshire				
2013-16	6	23	18	28
2017-21	5	21	20	26
2022-26	5	18	22	22
2027-31	4	14	22	18
2032-36	4	14	21	18
2037-41	4	15	21	18
2042-46	4	17	22	21
2047-51	4	20	21	24
2052-56	4	22	21	26
2057-61	5	22	21	27
2062-66	5	23	19	28

# Part 3 - how our woodlands might change

## Combined standing volume, net increment and availability

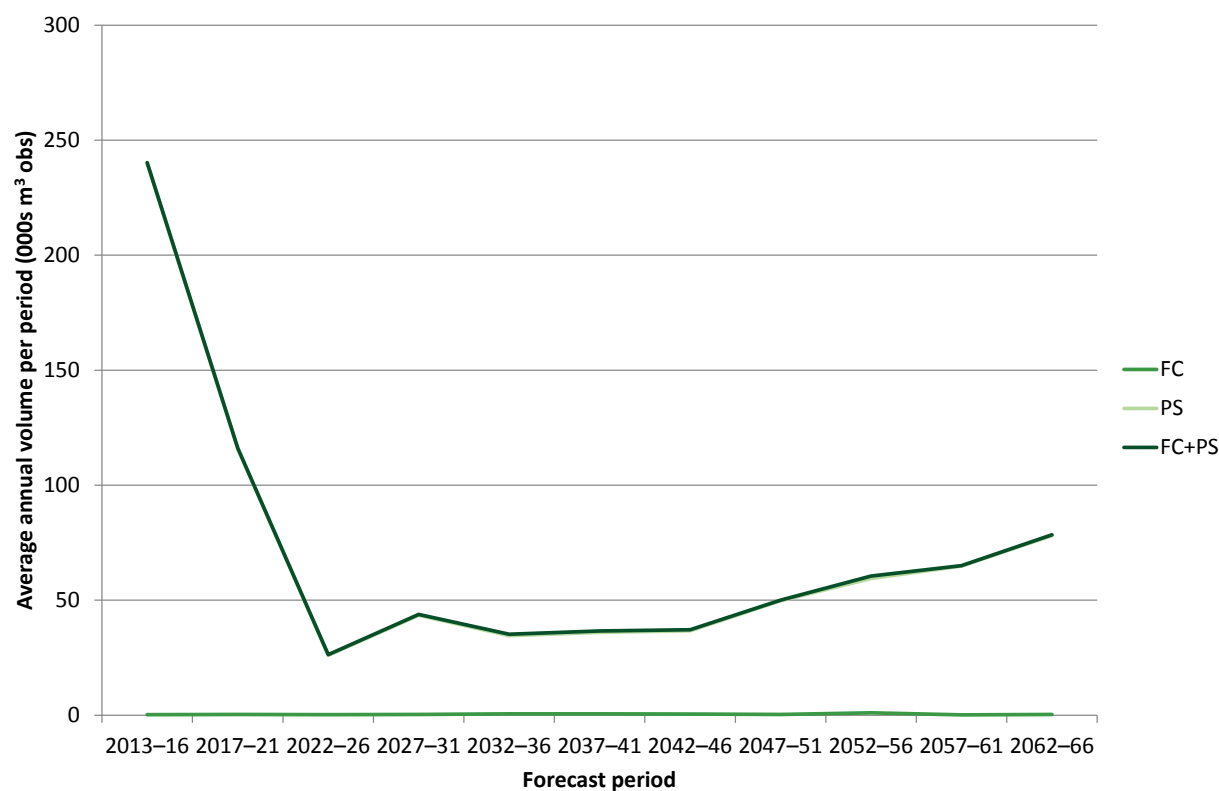
**Figure 43** 50-year forecast of standing volume, net increment and softwood availability



## 50-year hardwood forecast

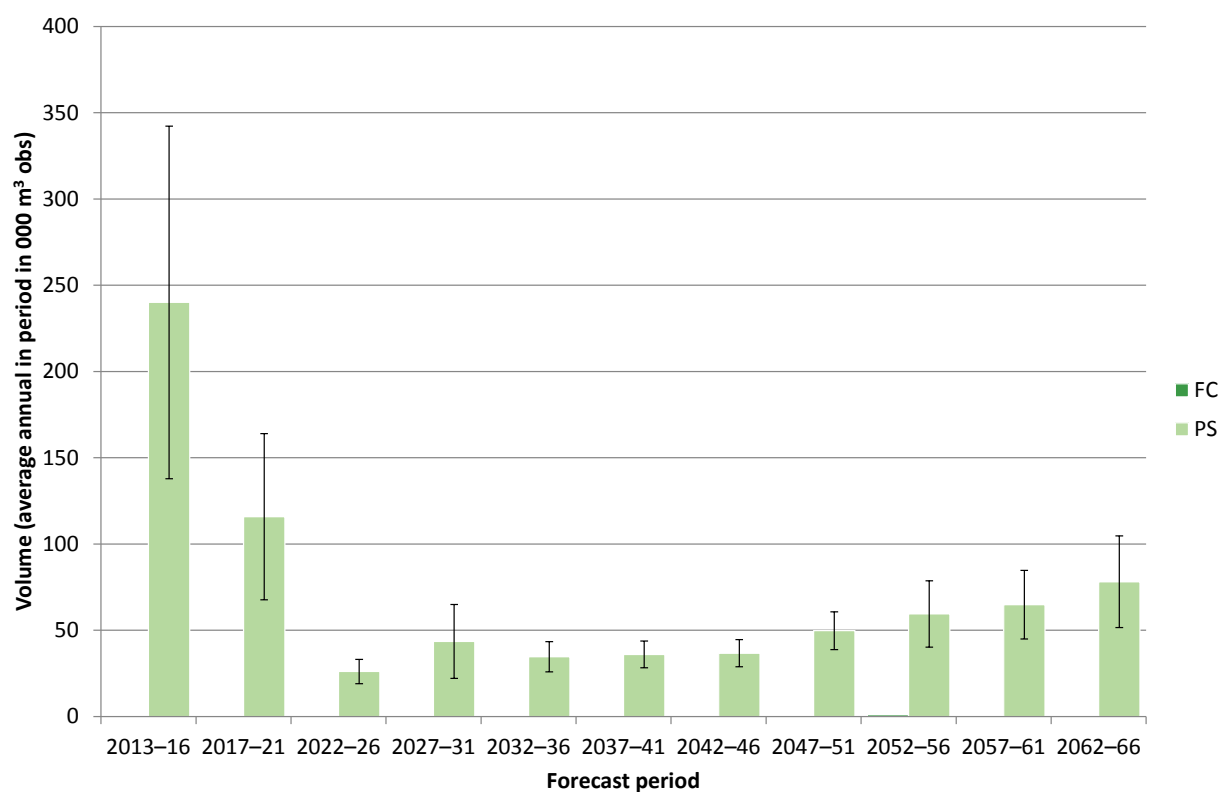
### 50-year forecast of hardwood timber availability

**Figure 44** Summary of 50-year forecast of hardwood timber availability; average annual volume within period



## Part 3 - how our woodlands might change

**Figure 45** 50-year forecast of hardwood timber availability; average annual volume within period



**Table 37** 50-year forecast of hardwood timber availability; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
2013-16	< 1	240	43	240
2017-21	< 1	116	42	116
2022-26	< 1	26	27	26
2027-31	< 1	44	49	44
2032-36	< 1	35	25	35
2037-41	< 1	36	21	37
2042-46	< 1	37	21	37
2047-51	< 1	50	22	50
2052-56	1	59	32	61
2057-61	< 1	65	31	65
2062-66	< 1	78	34	78



## Part 3 - how our woodlands might change

### 50-year forecast of hardwood timber availability by principal species

**Table 38** 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	< 1	240	43	< 1	116	42
Oak	< 1	31	68	< 1	2	45
Beech	< 1	1	56	< 1	< 1	48
Sycamore	0	151	63	0	54	52
Ash	0	13	89	0	5	81
Birch	< 1	20	56	< 1	49	83
Sweet chestnut	< 1	19	93	< 1	< 1	125
Hazel	0	< 1	93	0	< 1	76
Hawthorn	0	2	79	0	2	75
Alder	0	< 1	65	< 1	< 1	56
Willow	0	< 1	68	0	1	77
Other broadleaves	< 1	3	83	< 1	3	64

**Table 38 (cont'd)** 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	< 1	26	27	< 1	44	49
Oak	< 1	2	38	< 1	2	39
Beech	< 1	< 1	44	< 1	2	74
Sycamore	0	12	47	0	10	51
Ash	0	2	74	0	5	78
Birch	< 1	2	47	< 1	2	45
Sweet chestnut	< 1	< 1	125	< 1	< 1	109
Hazel	0	< 1	74	0	< 1	74
Hawthorn	0	2	75	0	2	76
Alder	0	< 1	57	0	< 1	57
Willow	0	1	70	0	2	63
Other broadleaves	< 1	3	59	< 1	19	97

## Part 3 - how our woodlands might change

**Table 38 (cont'd)** 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	< 1	35	25	< 1	36	21
Oak	< 1	11	65	< 1	3	42
Beech	0	< 1	39	< 1	< 1	39
Sycamore	0	9	47	< 1	13	41
Ash	0	2	63	0	3	58
Birch	< 1	5	50	< 1	9	47
Sweet chestnut	< 1	< 1	127	< 1	< 1	127
Hazel	0	< 1	83	0	< 1	109
Hawthorn	0	2	78	0	2	73
Alder	0	< 1	57	0	< 1	60
Willow	0	2	62	0	2	61
Other broadleaves	< 1	2	38	< 1	3	40

**Table 38 (cont'd)** 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	< 1	37	21	< 1	50	22
Oak	< 1	2	44	< 1	9	82
Beech	< 1	< 1	38	< 1	< 1	36
Sycamore	0	13	41	0	15	35
Ash	0	3	57	0	5	64
Birch	< 1	7	49	< 1	9	48
Sweet chestnut	< 1	< 1	82	< 1	< 1	86
Hazel	0	< 1	109	0	< 1	109
Hawthorn	0	3	83	0	3	84
Alder	0	< 1	59	0	< 1	107
Willow	0	2	61	0	2	61
Other broadleaves	< 1	6	50	< 1	4	41

## Part 3 - how our woodlands might change

**Table 38 (cont'd)** 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	1	59	32	< 1	65	31
Oak	< 1	2	39	< 1	6	63
Beech	< 1	3	70	< 1	2	60
Sycamore	0	31	56	< 1	25	61
Ash	0	8	57	0	4	91
Birch	< 1	7	55	< 1	18	62
Sweet chestnut	< 1	< 1	86	< 1	< 1	86
Hazel	0	0	-	0	< 1	93
Hawthorn	0	3	84	0	3	84
Alder	0	0	-	0	< 1	73
Willow	0	2	61	0	3	58
Other broadleaves	< 1	4	57	< 1	3	62

**Table 38 (cont'd)** 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2062–66		
	FC	Private sector	
	volume (000 m <sup>3</sup> obs)		SE%
Greater Manchester Merseyside and Cheshire			
All broadleaves	< 1	78	34
Oak	< 1	2	37
Beech	< 1	< 1	32
Sycamore	< 1	24	51
Ash	0	3	83
Birch	< 1	27	77
Sweet chestnut	< 1	< 1	86
Hazel	0	< 1	93
Hawthorn	0	4	68
Alder	0	< 1	65
Willow	0	13	88
Other broadleaves	< 1	4	46

## Part 3 - how our woodlands might change

### 50-year forecast of hardwood timber availability by top diameter class

**Table 39** 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
7–14	< 1	10	29	< 1	9	28
14–16	< 1	3	34	< 1	2	33
16–18	< 1	4	32	< 1	4	41
18–24	< 1	22	32	< 1	18	43
24–34	< 1	58	37	< 1	45	48
34–44	0	48	47	< 1	25	47
44–54	0	29	50	0	9	43
54+	0	66	59	0	5	55
Total	< 1	240	43	< 1	116	42

**Table 39 (cont'd)** 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
7–14	< 1	8	23	< 1	14	25
14–16	< 1	1	40	< 1	2	44
16–18	< 1	1	40	< 1	2	60
18–24	< 1	3	38	< 1	8	69
24–34	< 1	6	41	< 1	12	80
34–44	< 1	3	43	< 1	3	64
44–54	< 1	1	41	< 1	< 1	54
54+	< 1	1	47	0	< 1	58
Total	< 1	26	27	< 1	44	49

## Part 3 - how our woodlands might change

**Table 39 (cont'd)** 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
7–14	< 1	17	23	< 1	19	26
14–16	< 1	2	28	< 1	3	23
16–18	< 1	2	32	< 1	3	27
18–24	< 1	3	31	< 1	6	31
24–34	< 1	3	44	< 1	4	38
34–44	0	2	74	< 1	< 1	37
44–54	0	1	78	< 1	< 1	40
54+	0	4	87	< 1	< 1	51
Total	< 1	35	25	< 1	36	21

**Table 39 (cont'd)** 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
7–14	< 1	15	26	< 1	11	24
14–16	< 1	3	23	< 1	4	20
16–18	< 1	3	22	< 1	5	20
18–24	< 1	8	26	< 1	15	21
24–34	< 1	5	35	< 1	11	36
34–44	< 1	1	59	< 1	4	58
44–54	0	< 1	72	< 1	1	64
54+	0	< 1	64	0	< 1	50
Total	< 1	37	21	< 1	50	22

## Part 3 - how our woodlands might change

**Table 39 (cont'd)** 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
7–14	< 1	10	30	< 1	9	32
14–16	< 1	2	21	< 1	2	23
16–18	< 1	3	22	< 1	2	25
18–24	< 1	10	25	< 1	10	30
24–34	< 1	15	38	< 1	19	37
34–44	< 1	9	52	< 1	11	40
44–54	0	5	56	0	5	49
54+	0	7	50	0	7	47
Total	1	59	32	< 1	65	31

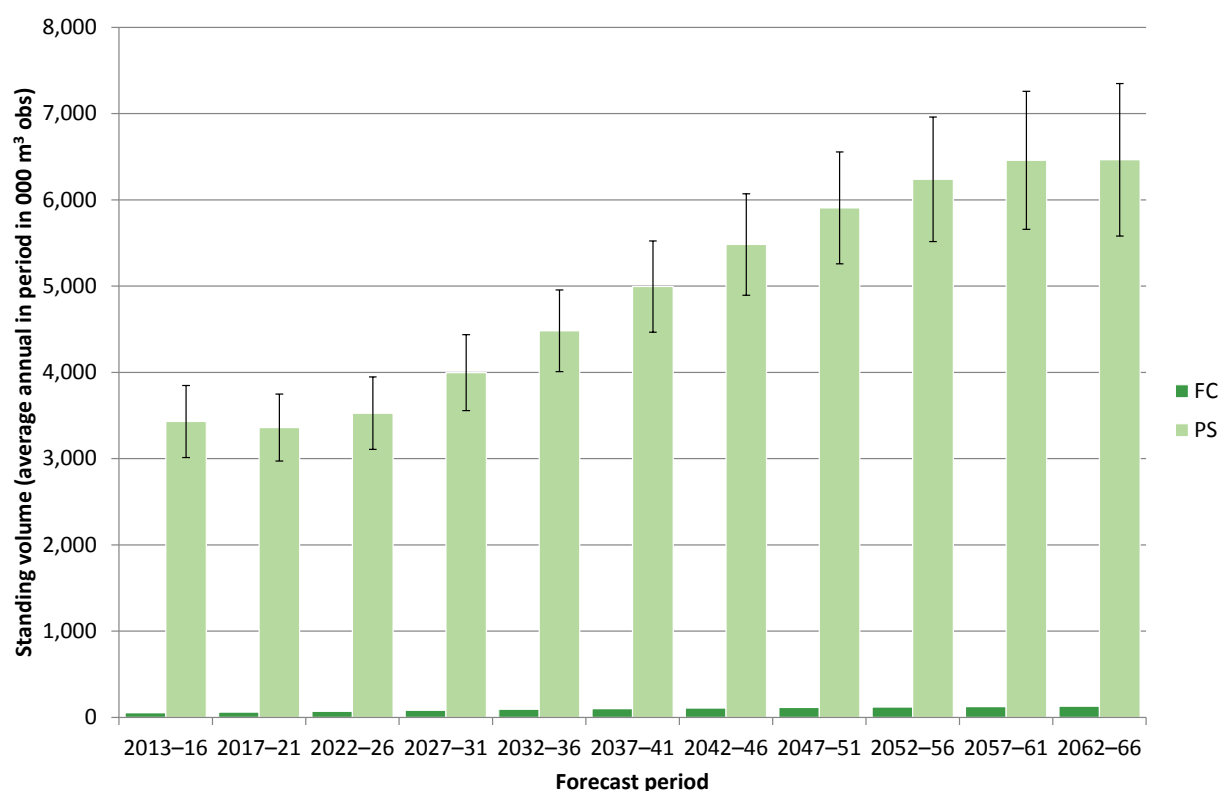
**Table 39 (cont'd)** 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2062–66		
	FC	Private sector	
	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire			
7–14	< 1	9	30
14–16	< 1	3	26
16–18	< 1	3	26
18–24	< 1	12	29
24–34	< 1	24	39
34–44	< 1	14	45
44–54	0	7	56
54+	< 1	7	61
Total	< 1	78	34

## Part 3 - how our woodlands might change

### 50-year forecast of standing volume in broadleaves

**Figure 46** 50-year forecast of standing volume in broadleaves; average annual volume within period



**Table 40** 50-year forecast of standing volume in broadleaves; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
2013–16	54	3,431	12	3,485
2017–21	60	3,360	12	3,421
2022–26	70	3,527	12	3,597
2027–31	82	3,996	11	4,078
2032–36	93	4,482	11	4,575
2037–41	101	4,995	11	5,097
2042–46	109	5,483	11	5,592
2047–51	116	5,908	11	6,024
2052–56	120	6,239	12	6,359
2057–61	124	6,459	12	6,583
2062–66	130	6,465	14	6,594

## Part 3 - how our woodlands might change

**Table 41** 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	54	3,431	12	60	3,360	12
Oak	11	703	23	11	704	22
Beech	4	568	46	4	596	46
Sycamore	< 1	807	29	< 1	620	25
Ash	1	182	35	2	216	36
Birch	8	418	47	9	357	38
Sweet Chestnut	5	< 1	125	5	1	115
Hazel	< 1	18	59	< 1	24	53
Hawthorn	0	119	34	0	134	37
Alder	< 1	158	37	< 1	168	37
Willow	< 1	191	41	< 1	213	36
Other broadleaves	24	266	35	28	328	32

**Table 41 (cont'd)** 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	70	3,527	12	82	3,996	11
Oak	12	787	22	12	872	21
Beech	4	630	45	4	660	45
Sycamore	1	519	28	1	579	26
Ash	2	276	35	3	355	33
Birch	10	271	30	13	327	29
Sweet Chestnut	5	2	111	6	3	101
Hazel	< 1	34	54	< 1	44	57
Hawthorn	0	167	39	0	218	50
Alder	< 1	182	37	< 1	196	36
Willow	< 1	251	34	< 1	295	32
Other broadleaves	34	408	29	43	447	23



## Part 3 - how our woodlands might change

**Table 41 (cont'd)** 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	93	4,482	11	101	4,946	11
Oak	13	927	22	13	985	22
Beech	4	691	45	4	717	45
Sycamore	1	660	24	1	737	23
Ash	4	438	31	4	512	30
Birch	14	390	28	16	433	28
Sweet Chestnut	6	6	89	5	8	85
Hazel	< 1	51	60	< 1	55	64
Hawthorn	0	276	61	0	339	73
Alder	1	208	36	1	215	36
Willow	< 1	341	32	< 1	383	31
Other broadleaves	50	494	22	56	562	22

**Table 41 (cont'd)** 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	109	5,375	11	116	5,736	11
Oak	13	1,055	22	14	1,093	22
Beech	4	741	45	5	762	44
Sycamore	1	810	23	1	873	23
Ash	5	569	30	5	612	30
Birch	18	480	28	19	525	29
Sweet Chestnut	5	10	81	5	12	80
Hazel	< 1	60	65	< 1	61	65
Hawthorn	0	400	81	0	456	87
Alder	1	219	37	1	223	37
Willow	< 1	423	31	< 1	460	31
Other broadleaves	61	609	22	65	658	22

## Part 3 - how our woodlands might change

**Table 41 (cont'd)** 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	120	5,999	12	124	6,151	12
Oak	15	1,145	22	15	1,188	21
Beech	5	774	45	5	787	45
Sycamore	1	890	23	1	822	23
Ash	5	622	30	6	629	31
Birch	20	559	29	21	580	29
Sweet Chestnut	5	14	80	5	16	79
Hazel	< 1	63	65	< 1	65	65
Hawthorn	0	510	92	0	561	96
Alder	2	225	37	2	229	37
Willow	< 1	493	31	< 1	519	31
Other broadleaves	67	704	22	69	755	22

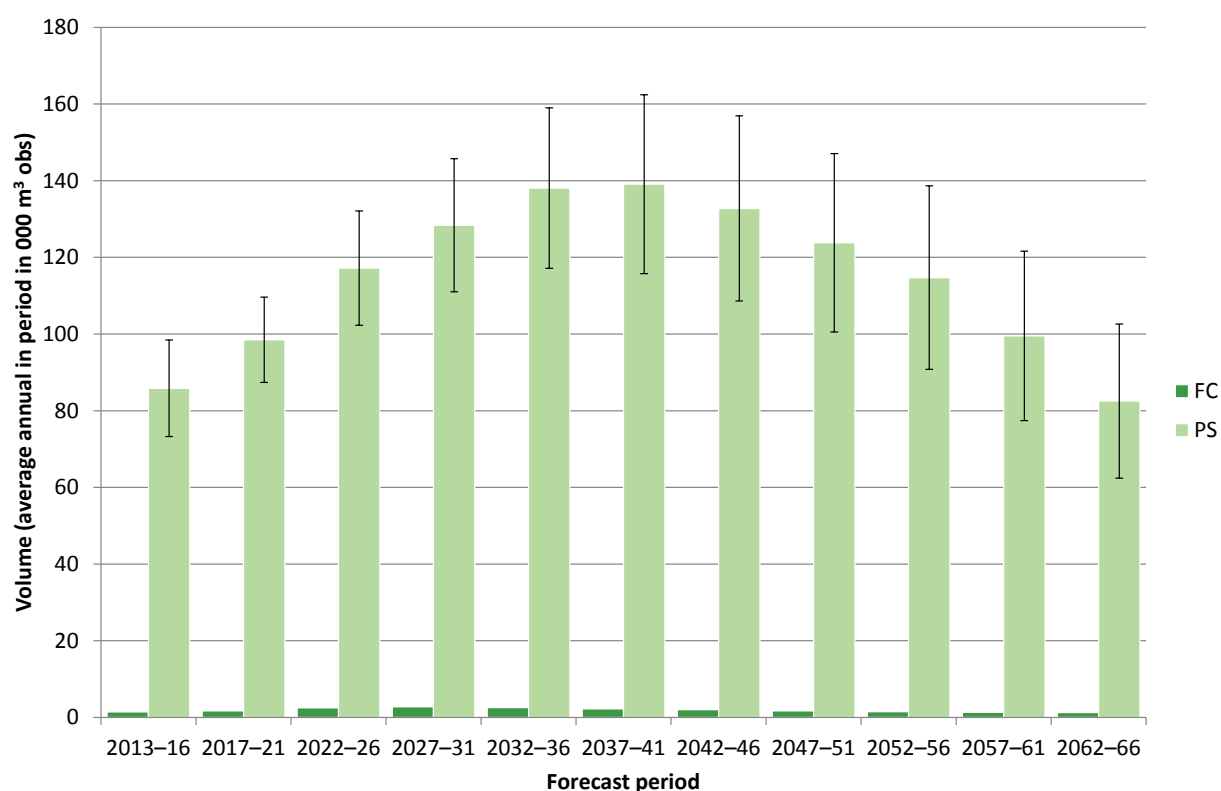
**Table 41 (cont'd)** 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2062–66		
	FC	Private sector	
	volume (000 m <sup>3</sup> obs)		SE%
Greater Manchester Merseyside and Cheshire			
All broadleaves	130	6,157	14
Oak	16	1,244	21
Beech	5	808	45
Sycamore	1	754	25
Ash	6	646	31
Birch	22	459	30
Sweet Chestnut	5	18	79
Hazel	< 1	68	65
Hawthorn	0	611	100
Alder	2	233	37
Willow	< 1	511	32
Other broadleaves	72	805	22

## Part 3 - how our woodlands might change

### 50-year forecast of net increment in broadleaves

**Figure 47** 50-year forecast of net increment in broadleaves; average annual volume within period



**Table 42** 50-year forecast of net increment in broadleaves; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
2013-16	1	86	15	87
2017-21	2	99	11	100
2022-26	2	117	13	120
2027-31	3	128	14	131
2032-36	3	138	15	141
2037-41	2	139	17	141
2042-46	2	133	18	135
2047-51	2	124	19	125
2052-56	1	115	21	116
2057-61	1	100	22	101
2062-66	1	83	24	84

## Part 3 - how our woodlands might change

**Table 43** 50–year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	1	86	15	2	99	11
Oak	< 1	20	22	< 1	19	21
Beech	< 1	7	39	< 1	7	39
Sycamore	< 1	8	45	< 1	11	20
Ash	< 1	11	42	< 1	13	36
Birch	< 1	14	32	< 1	15	33
Sweet Chestnut	< 1	< 1	80	< 1	< 1	109
Hazel	0	1	48	< 1	2	66
Hawthorn	0	4	73	0	6	56
Alder	< 1	2	97	< 1	3	57
Willow	< 1	3	128	< 1	7	42
Other broadleaves	< 1	15	32	1	16	29

**Table 43 (cont'd)** 50–year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	2	117	13	3	128	14
Oak	< 1	19	21	< 1	19	21
Beech	< 1	8	39	< 1	8	40
Sycamore	< 1	15	21	< 1	21	29
Ash	< 1	17	30	< 1	20	30
Birch	< 1	12	28	< 1	13	26
Sweet Chestnut	< 1	< 1	109	< 1	< 1	89
Hazel	< 1	2	75	< 1	2	76
Hawthorn	0	11	85	0	12	95
Alder	< 1	3	44	< 1	3	43
Willow	< 1	10	34	< 1	11	33
Other broadleaves	2	20	26	2	20	26

## Part 3 - how our woodlands might change

**Table 43 (cont'd)** 50-year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	3	138	15	2	138	17
Oak	< 1	19	21	< 1	19	21
Beech	< 1	8	41	< 1	7	41
Sycamore	< 1	26	33	< 1	29	35
Ash	< 1	19	31	< 1	17	32
Birch	< 1	18	35	< 1	19	39
Sweet Chestnut	< 1	< 1	82	< 1	< 1	80
Hazel	< 1	2	78	< 1	1	84
Hawthorn	0	15	107	0	15	114
Alder	< 1	2	42	< 1	2	42
Willow	< 1	11	33	< 1	11	33
Other broadleaves	2	18	26	1	16	26

**Table 43 (cont'd)** 50-year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	2	130	18	2	120	19
Oak	< 1	18	21	< 1	17	21
Beech	< 1	7	42	< 1	6	41
Sycamore	< 1	29	36	< 1	27	36
Ash	< 1	14	32	< 1	12	35
Birch	< 1	18	42	< 1	17	43
Sweet Chestnut	< 1	< 1	76	< 1	< 1	76
Hazel	< 1	1	82	< 1	< 1	78
Hawthorn	0	15	119	0	15	119
Alder	< 1	2	42	< 1	1	43
Willow	< 1	10	33	< 1	9	33
Other broadleaves	1	15	25	1	14	26

## Part 3 - how our woodlands might change

**Table 43 (cont'd)** 50-year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
Greater Manchester Merseyside and Cheshire						
All broadleaves	1	110	21	1	95	22
Oak	< 1	16	21	< 1	15	21
Beech	< 1	6	41	< 1	6	42
Sycamore	< 1	23	37	< 1	15	36
Ash	< 1	10	34	< 1	7	31
Birch	< 1	15	45	< 1	13	44
Sweet Chestnut	< 1	< 1	76	< 1	< 1	76
Hazel	< 1	< 1	73	< 1	< 1	66
Hawthorn	0	14	122	0	14	123
Alder	< 1	1	44	< 1	1	43
Willow	< 1	9	33	< 1	8	33
Other broadleaves	< 1	15	36	< 1	14	36

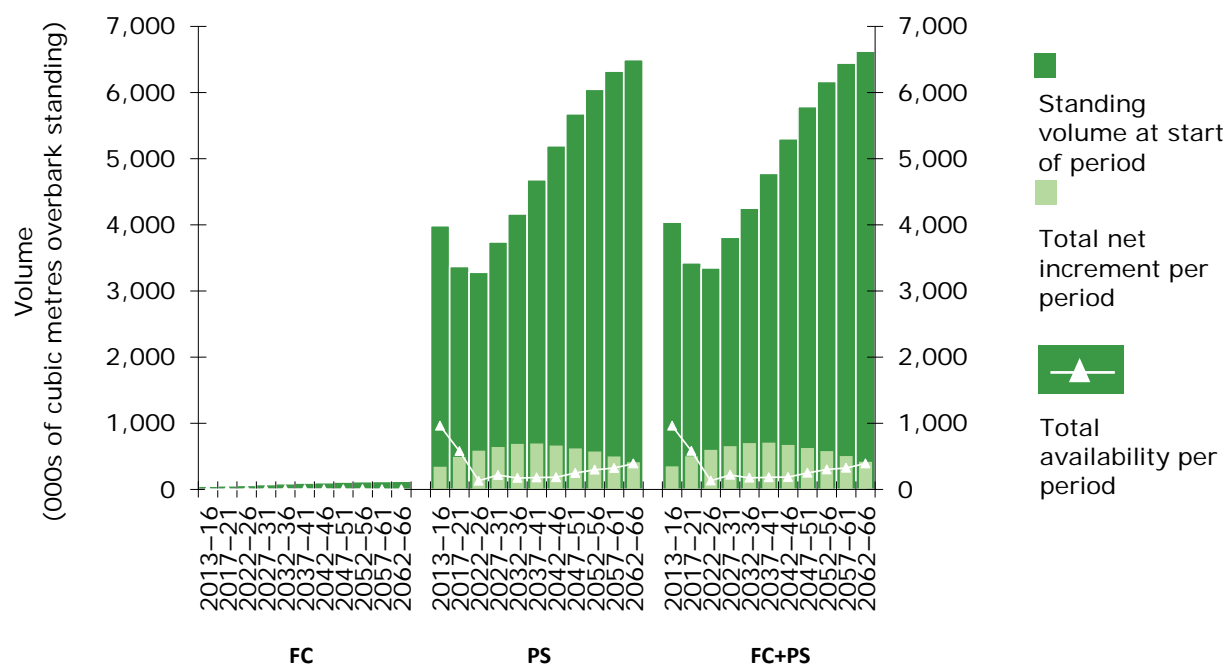
**Table 43 (cont'd)** 50-year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2062–66		
	FC	Private sector	
	volume (000 m <sup>3</sup> obs)		SE%
Greater Manchester Merseyside and Cheshire			
All broadleaves	1	78	24
Oak	< 1	15	22
Beech	< 1	5	42
Sycamore	< 1	11	26
Ash	< 1	6	30
Birch	< 1	6	35
Sweet Chestnut	< 1	< 1	76
Hazel	< 1	< 1	64
Hawthorn	0	13	125
Alder	< 1	1	42
Willow	< 1	7	33
Other broadleaves	< 1	13	35

# Part 3 - how our woodlands might change

## Combined standing volume, net increment and availability

**Figure 48** combined hardwood standing volume, net increment and availability



Part 4 – Tree health

Ash..... 97

Oak..... 106

Sweet chestnut ..... 115

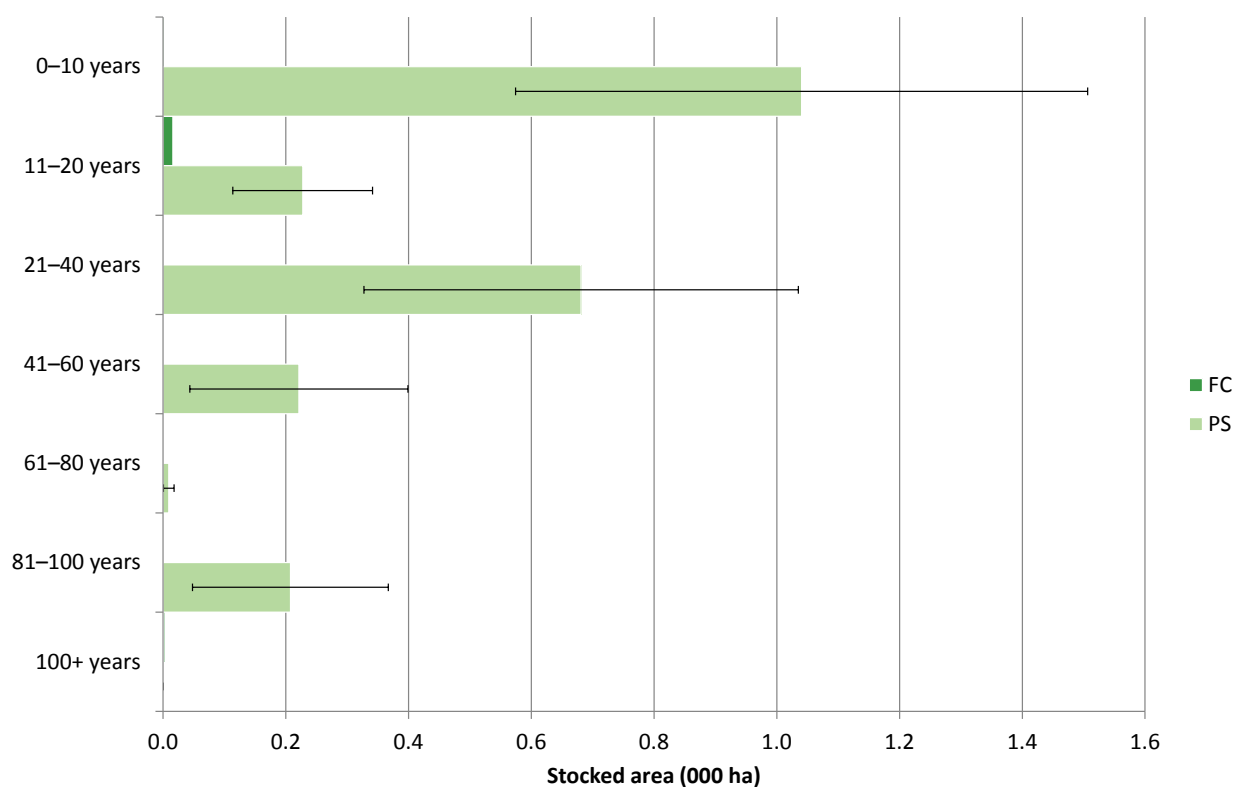
Larch ..... 124



## Part 4 – Tree health

### Ash

**Figure 49** Stocked area of ash by age class

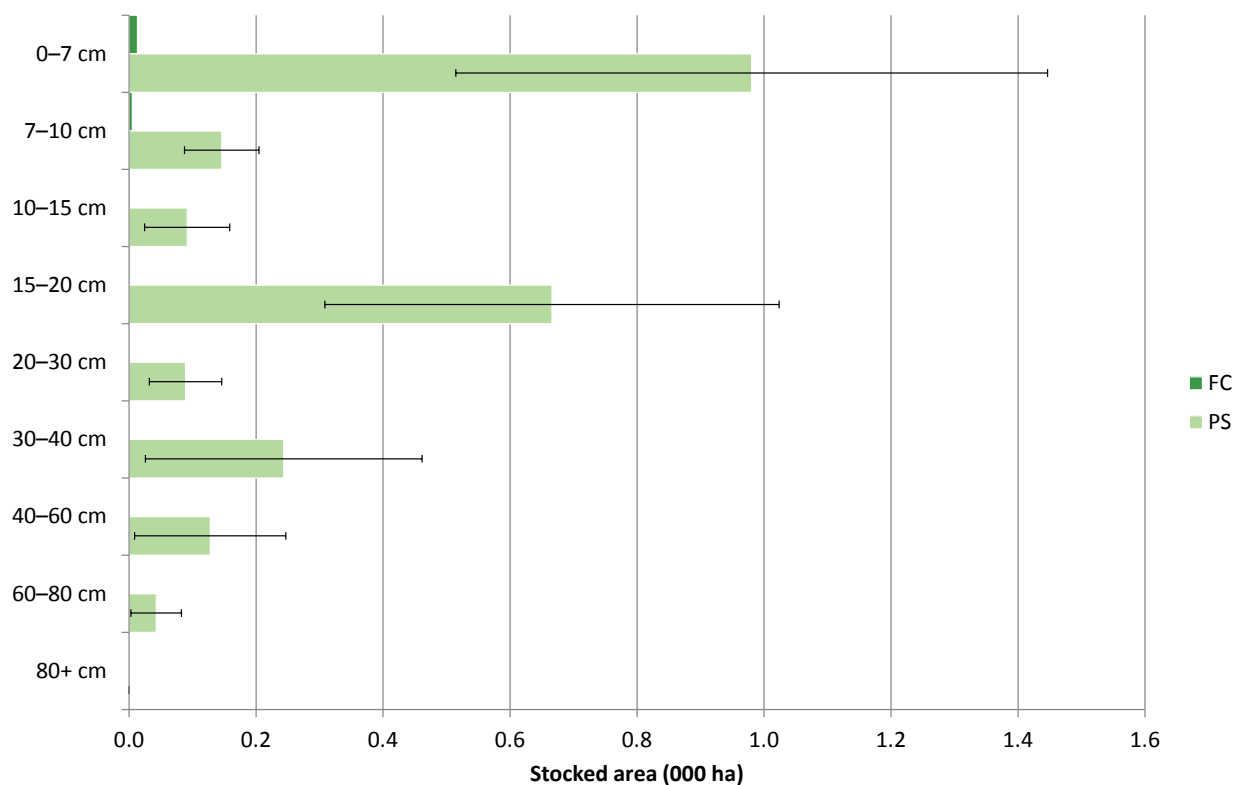


**Table 44** Stocked area of ash by age class

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire				
0–10	< 0.1	1.0	45	1.0
11–20	< 0.1	0.2	50	0.2
21–40	< 0.1	0.7	52	0.7
41–60	< 0.1	0.2	80	0.2
61–80	< 0.1	< 0.1	93	< 0.1
81–100	0.0	0.2	77	0.2
100+	< 0.1	0.0	-	< 0.1
<b>Total</b>	<b>&lt; 0.1</b>	<b>2.4</b>	<b>27</b>	<b>2.4</b>

## Part 4 – Tree health

**Figure 50** Stocked area of ash by mean stand dbh class

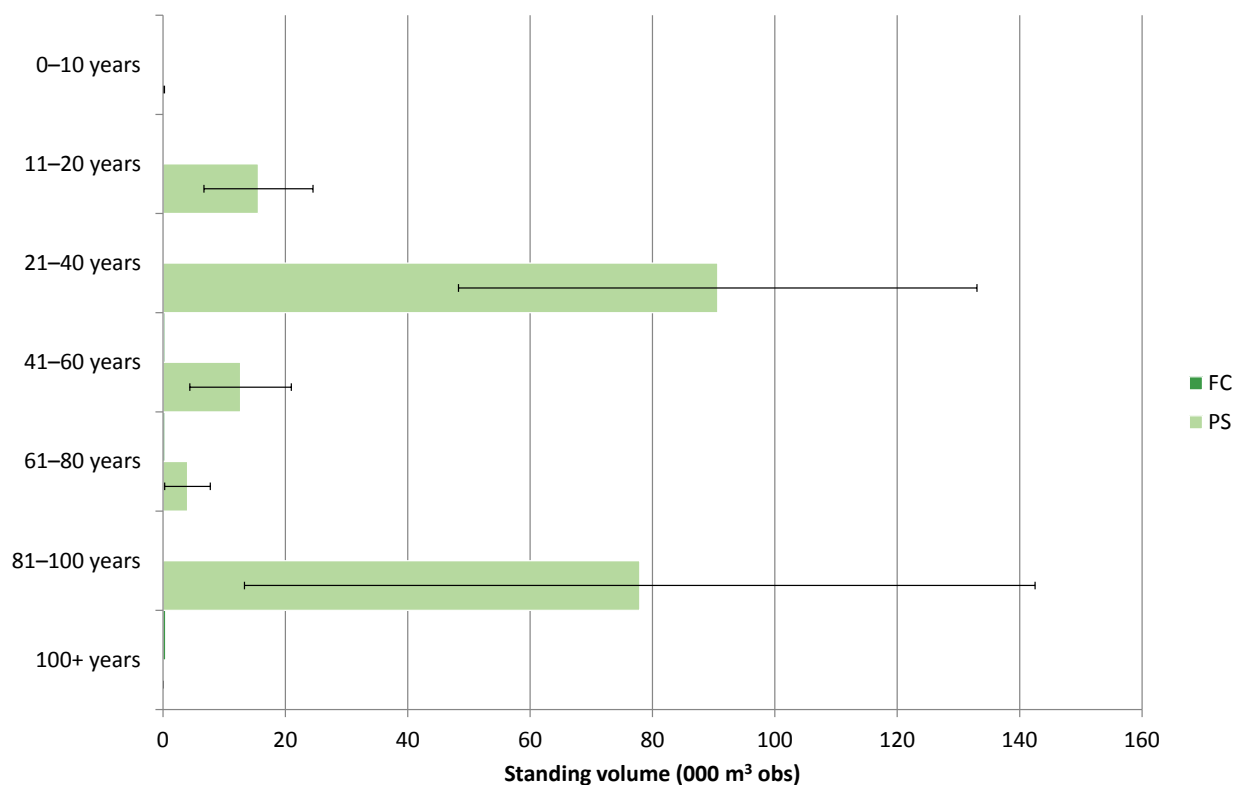


**Table 45** Stocked area of ash by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire				
0-7	< 0.1	1.0	48	1.0
7-10	< 0.1	0.1	40	0.2
10-15	< 0.1	< 0.1	73	< 0.1
15-20	< 0.1	0.7	54	0.7
20-30	0.0	< 0.1	64	< 0.1
30-40	0.0	0.2	89	0.2
40-60	0.0	0.1	93	0.1
60-80	0.0	< 0.1	93	< 0.1
80+	0.0	0.0	-	0.0
<b>Total</b>	<b>&lt; 0.1</b>	<b>2.4</b>	<b>27</b>	<b>2.4</b>

## Part 4 – Tree health

**Figure 51** Standing volume of ash by age class

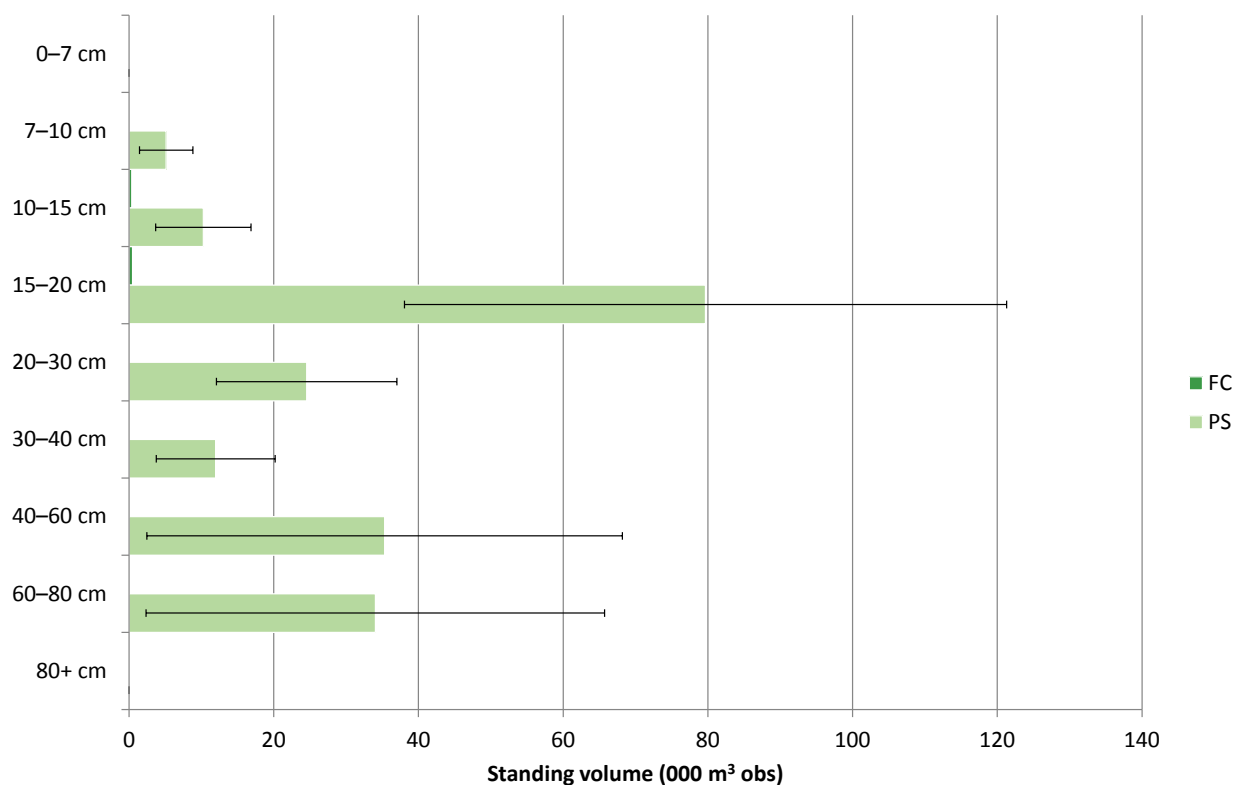


**Table 46** Standing volume of ash by age class

Age class (years)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
0–10	0	< 1	78	< 1
11–20	< 1	16	57	16
21–40	< 1	91	47	91
41–60	< 1	13	66	13
61–80	< 1	4	93	4
81–100	0	78	83	78
100+	< 1	0	-	< 1
<b>Total</b>	<b>&lt; 1</b>	<b>201</b>	<b>42</b>	<b>202</b>

## Part 4 – Tree health

**Figure 52** Standing volume of ash by mean stand dbh class

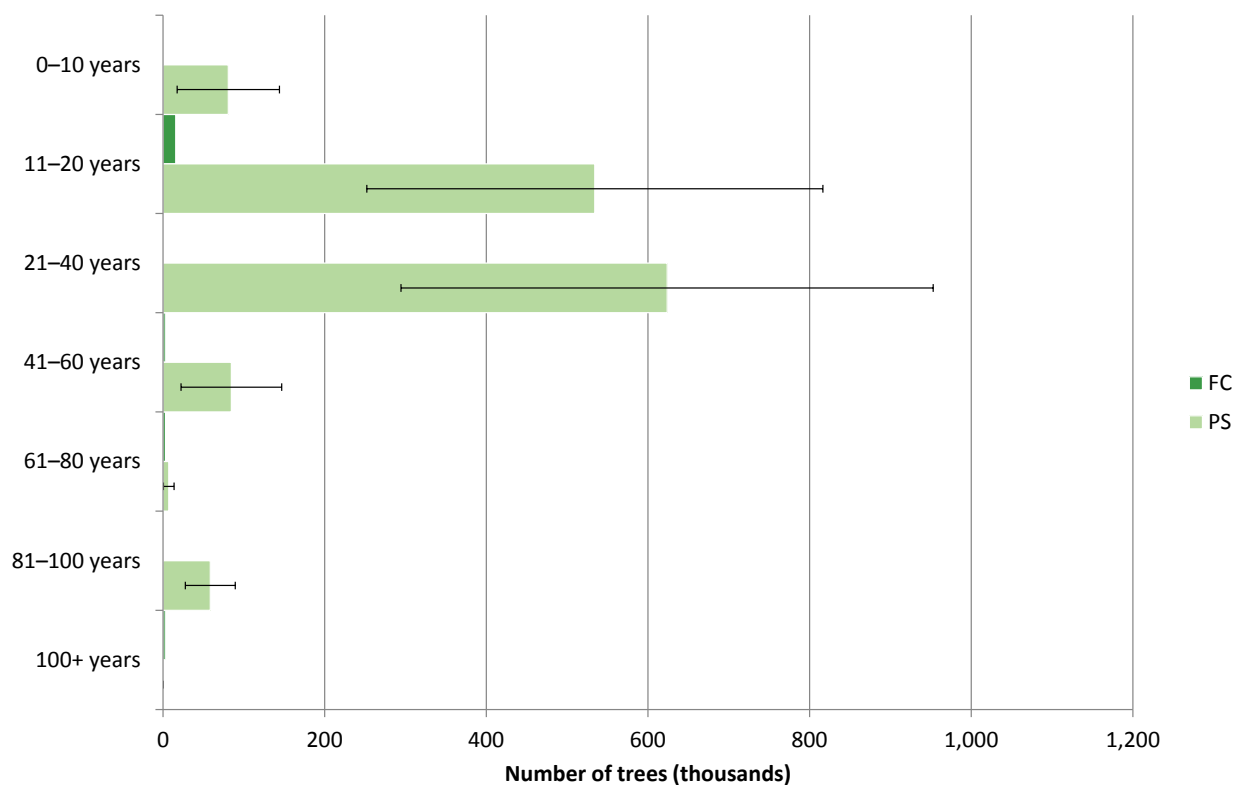


**Table 47** Standing volume of ash by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
0-7	< 1	0	-	< 1
7-10	< 1	5	72	5
10-15	< 1	10	64	11
15-20	< 1	80	52	80
20-30	0	25	51	25
30-40	0	12	69	12
40-60	0	35	93	35
60-80	0	34	93	34
80+	0	0	-	0
<b>Total</b>	<b>&lt; 1</b>	<b>201</b>	<b>42</b>	<b>202</b>

## Part 4 – Tree health

**Figure 53** Number of ash trees by age class

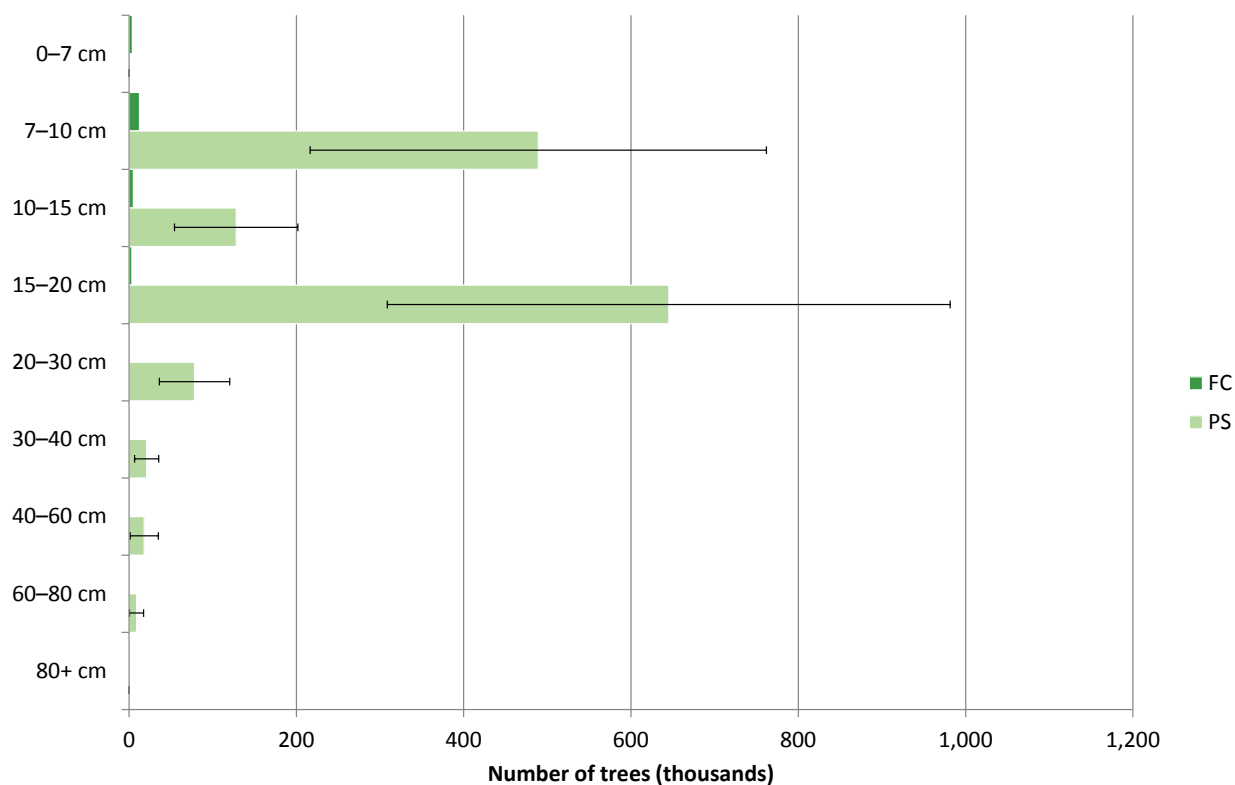


**Table 48** Number of ash trees by age class

Age class (years)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire				
0-10	0	81	78	81
11-20	16	534	53	550
21-40	< 1	624	53	624
41-60	3	85	74	87
61-80	3	7	93	10
81-100	0	59	53	59
100+	3	0	-	3
<b>Total</b>	<b>25</b>	<b>1,389</b>	<b>31</b>	<b>1,414</b>

## Part 4 – Tree health

**Figure 54** Number of ash trees by mean stand dbh class

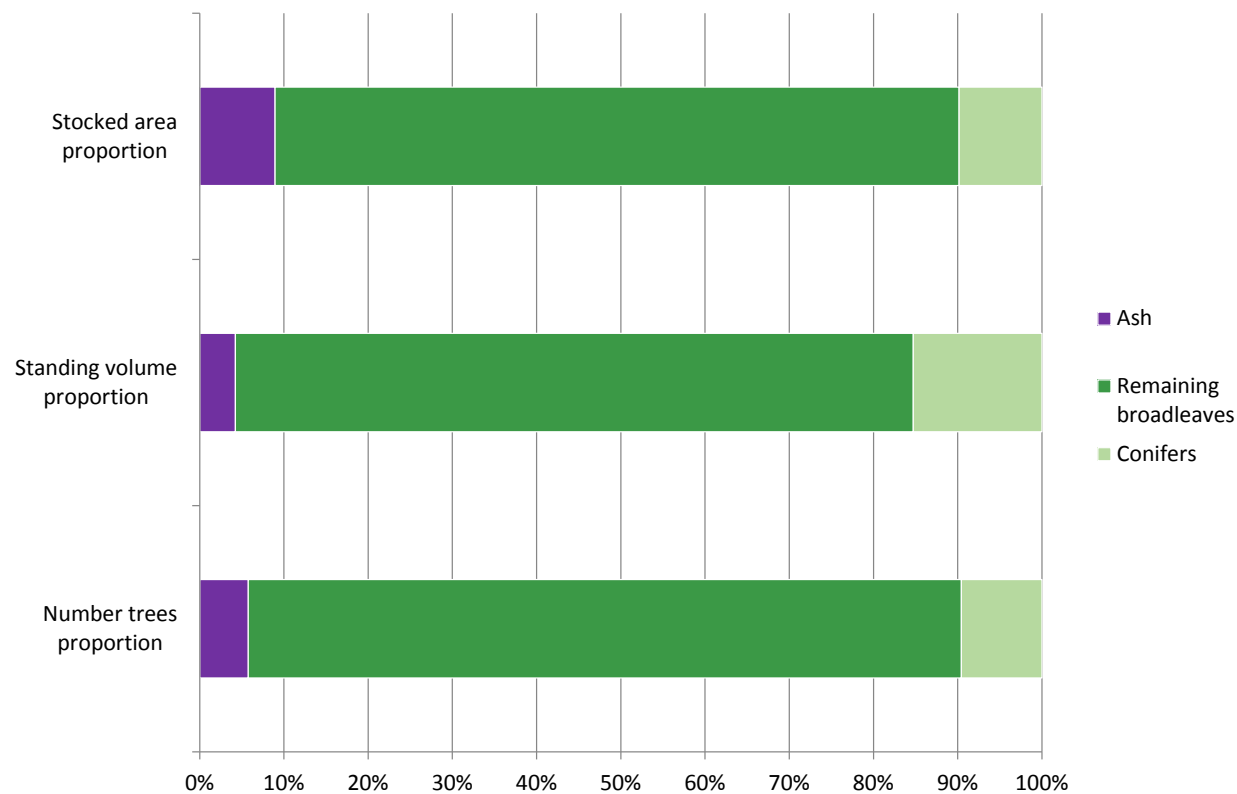


**Table 49** Number of ash trees by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire				
0-7	4	0	-	<b>4</b>
7-10	12	489	56	<b>502</b>
10-15	5	128	58	<b>133</b>
15-20	4	645	52	<b>649</b>
20-30	0	78	54	<b>78</b>
30-40	0	21	69	<b>21</b>
40-60	0	18	93	<b>18</b>
60-80	0	9	93	<b>9</b>
80+	0	0	-	<b>0</b>
<b>Total</b>	<b>25</b>	<b>1,389</b>	<b>31</b>	<b>1,414</b>

# Part 4 – Tree health

**Figure 55** Ash as a proportion of woodland



## Part 4 – Tree health

**Table 50** Stocked area of ash as a proportion of woodland

Aligned area	Stocked area of ash			
	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire	< 0.1	2.4	27	<b>2.4</b>

**Table 50 (cont'd)** Stocked area of ash as a proportion of woodland

Aligned area	Stocked area of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of ash in all broadleaves	Percentage of ash in all species
	area (000 ha)	area (000 ha)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	24.2	26.9	10	9

**Table 51** Standing volume of ash as a proportion of woodland

Aligned area	Standing volume of ash			
	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire	< 1	201	42	<b>202</b>

**Table 51 (cont'd)** Standing volume of ash as a proportion of woodland

Aligned area	Standing volume of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of ash in all broadleaves	Percentage of ash in all species
	volume (000 m³ obs)	volume (000 m³ obs)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	4,046	4,775	5	4



## Part 4 – Tree health

**Table 52** Number of ash trees as a proportion of woodland

Aligned Area	Numbers of trees of ash			
	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire	25	1,389	31	<b>1,414</b>

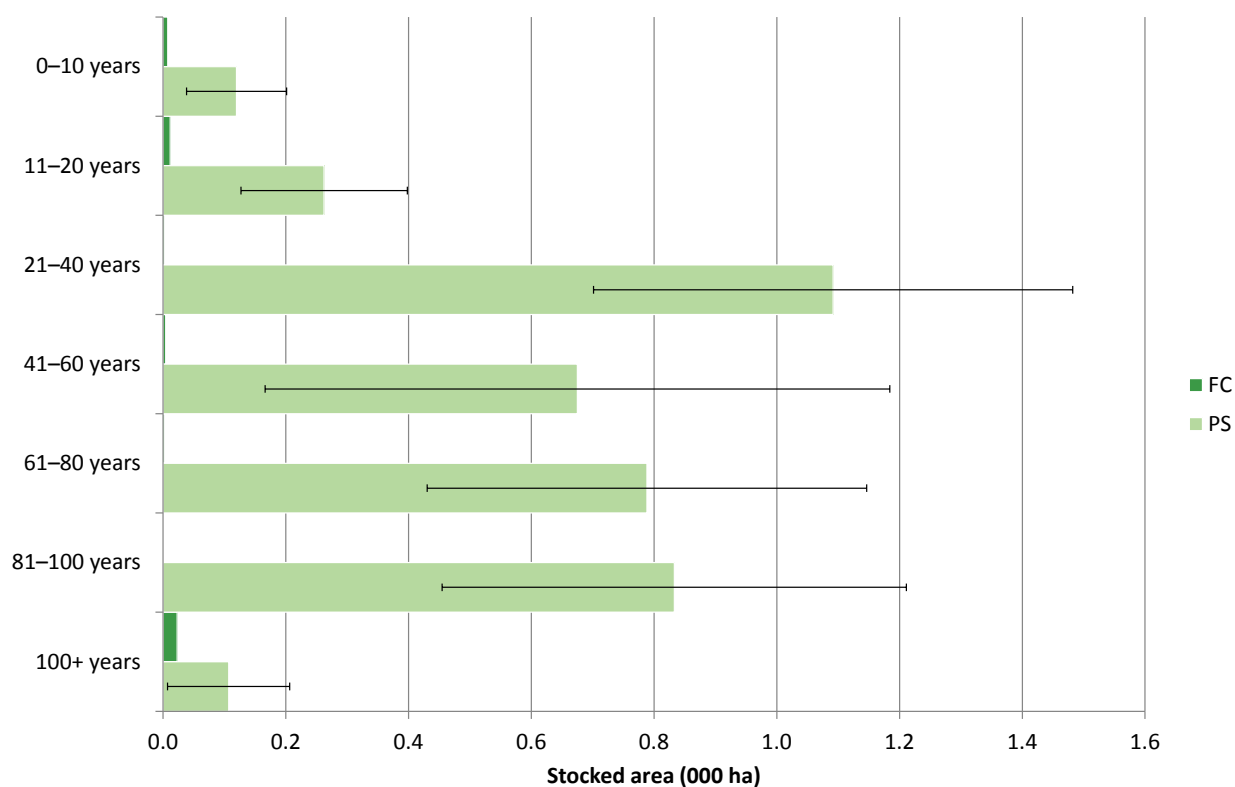
**Table 52 (cont'd)** Number of ash trees as a proportion of woodland

Aligned Area	Number of trees of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of ash in all broadleaves	Percentage of ash in all species
	number of trees (thousands)	number of trees (thousands)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	22,197	23,119	6	6

## Part 4 – Tree health

### Oak

**Figure 56** Stocked area of oak by age class

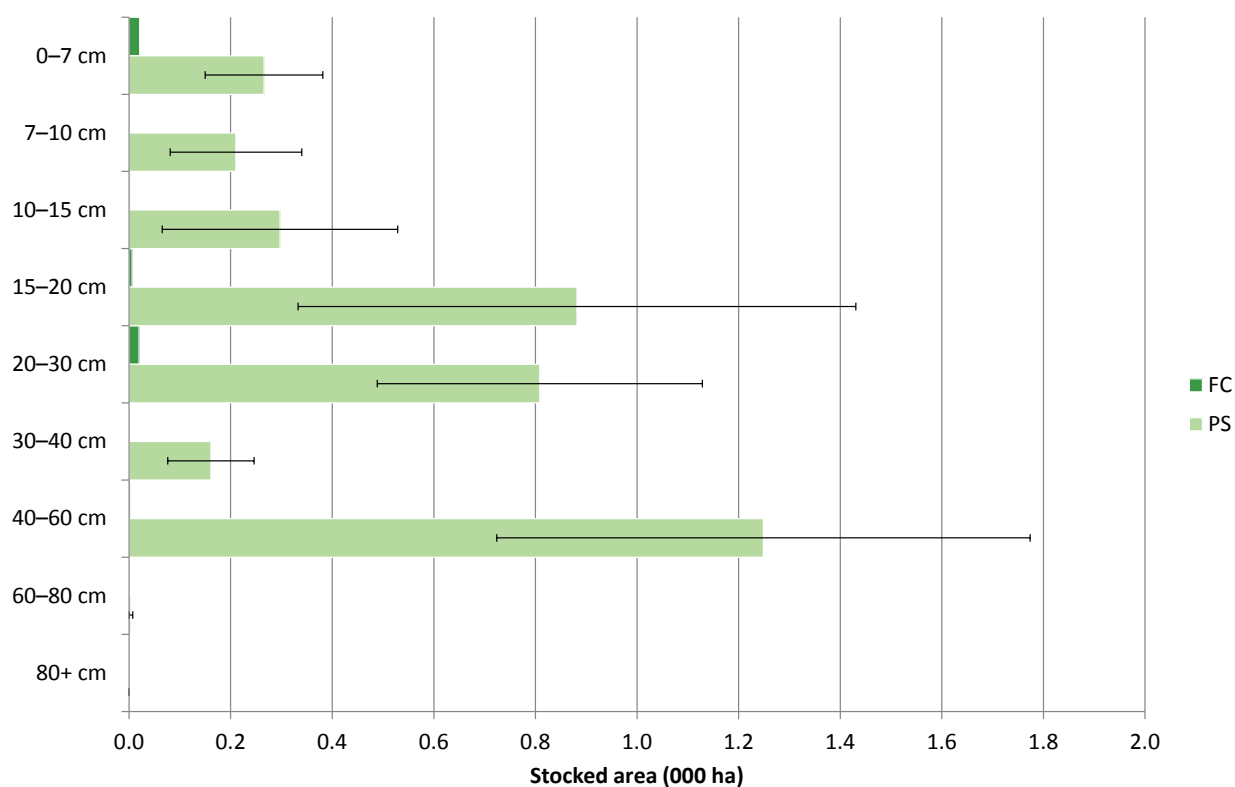


**Table 53** Stocked area of oak by age class

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire				
0-10	< 0.1	0.1	68	0.1
11-20	< 0.1	0.3	52	0.3
21-40	< 0.1	1.1	36	1.1
41-60	< 0.1	0.7	75	0.7
61-80	< 0.1	0.8	45	0.8
81-100	< 0.1	0.8	45	0.8
100+	< 0.1	0.1	93	0.1
Total	< 0.1	3.9	23	3.9

## Part 4 – Tree health

**Figure 57** Stocked area of oak by mean stand dbh class

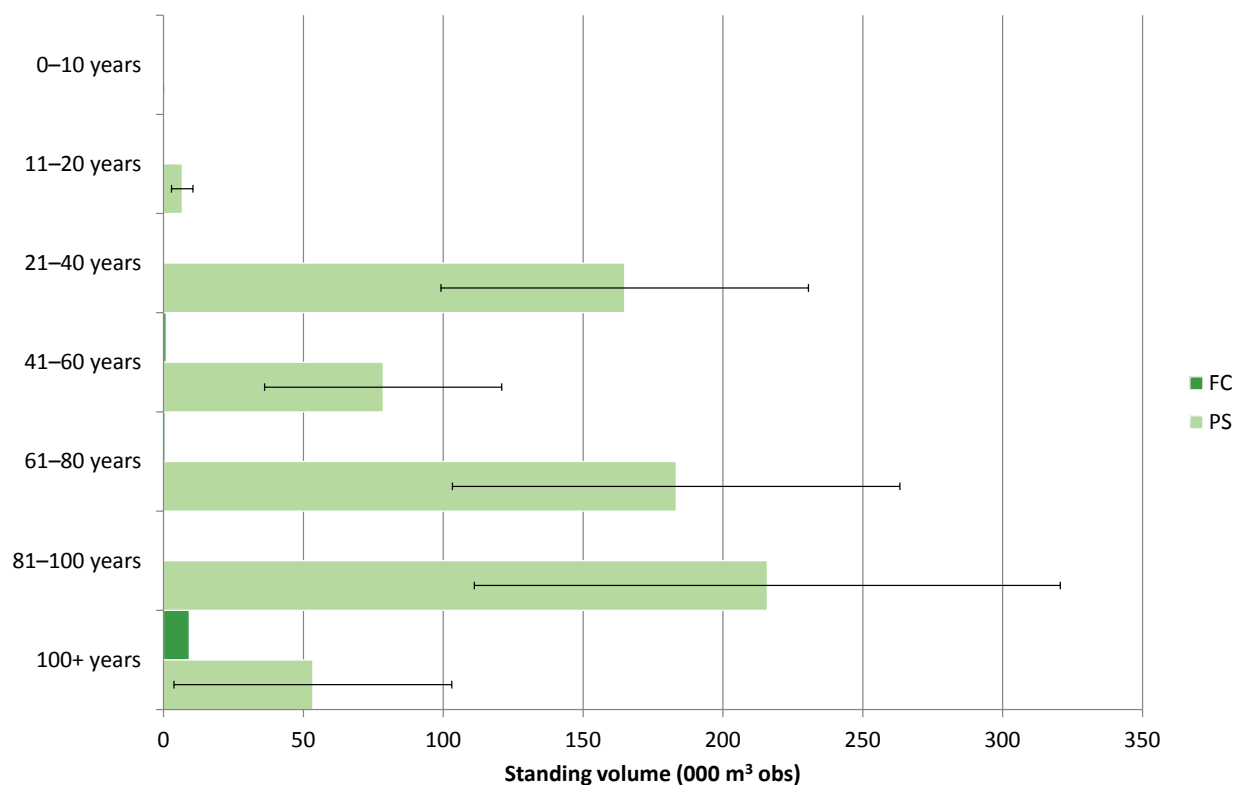


**Table 54** Stocked area of oak by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire				
0-7	< 0.1	0.3	44	0.3
7-10	< 0.1	0.2	62	0.2
10-15	< 0.1	0.3	78	0.3
15-20	< 0.1	0.9	62	0.9
20-30	< 0.1	0.8	40	0.8
30-40	0.0	0.2	53	0.2
40-60	< 0.1	1.2	42	1.3
60-80	0.0	< 0.1	93	< 0.1
80+	0.0	0.0	-	0.0
<b>Total</b>	<b>&lt; 0.1</b>	<b>3.9</b>	<b>23</b>	<b>3.9</b>

## Part 4 – Tree health

**Figure 58** Standing volume of oak by age class

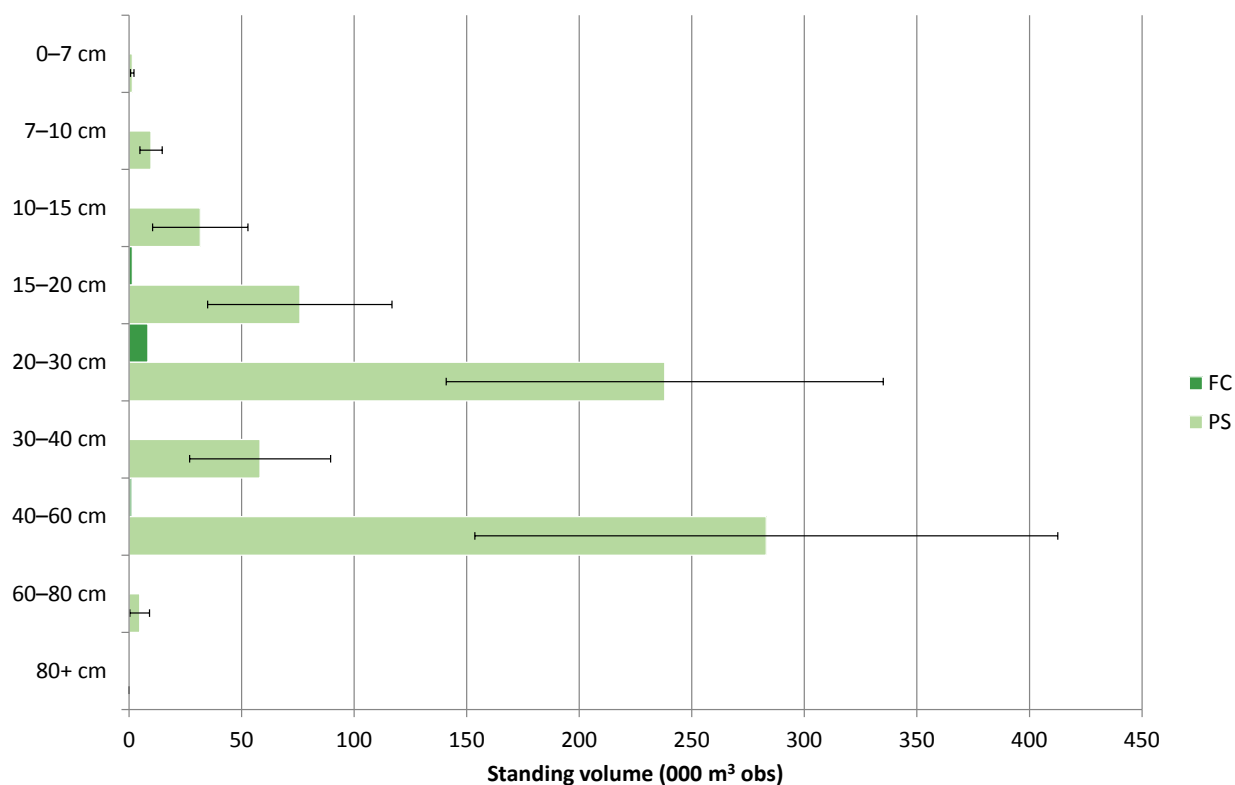


**Table 55** Standing volume of oak by age class

Age class (years)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
0–10	0	0	-	0
11–20	< 1	7	57	7
21–40	< 1	165	40	165
41–60	< 1	79	54	79
61–80	< 1	183	44	184
81–100	< 1	216	49	216
100+	9	53	93	63
<b>Total</b>	<b>11</b>	<b>703</b>	<b>25</b>	<b>714</b>

## Part 4 – Tree health

**Figure 59** Standing volume of oak by mean stand dbh class

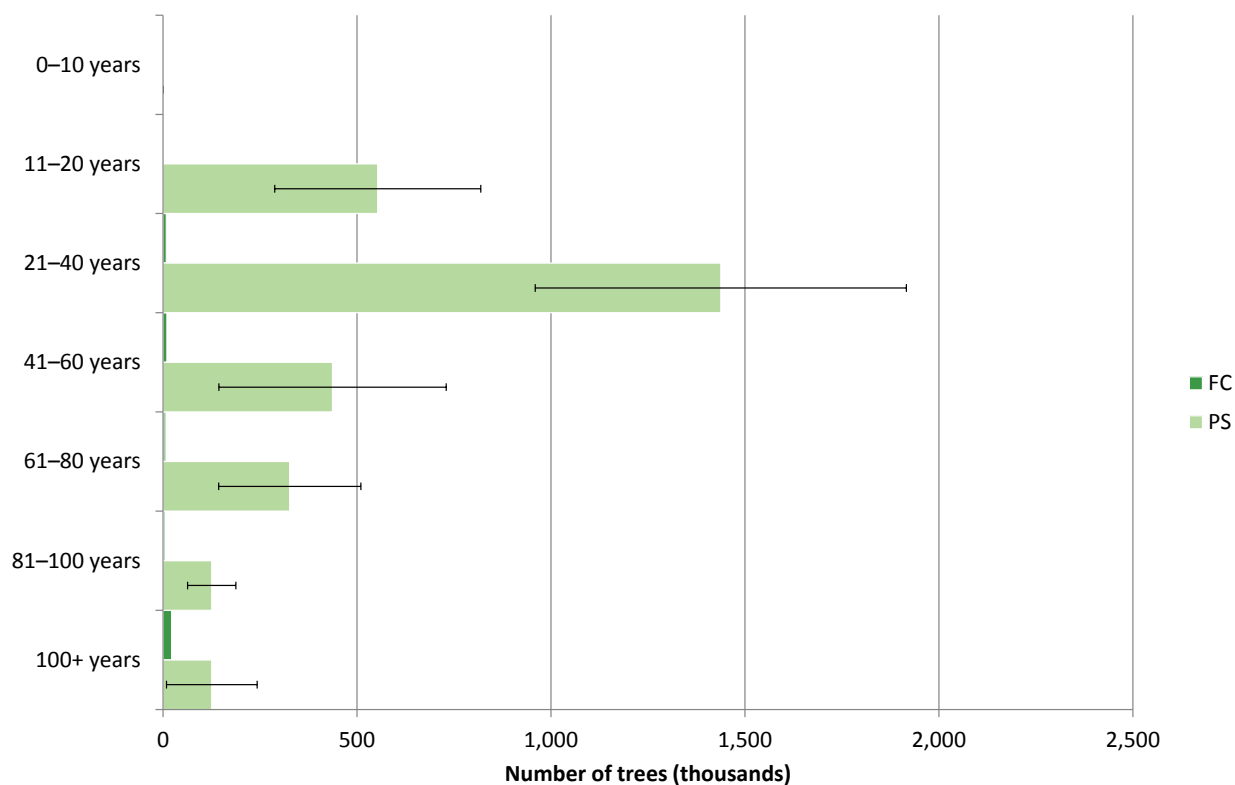


**Table 56** Standing volume of oak by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
0-7	< 1	1	56	1
7-10	< 1	10	50	10
10-15	< 1	32	67	32
15-20	1	76	54	77
20-30	8	238	41	246
30-40	0	58	54	58
40-60	< 1	283	46	284
60-80	0	5	93	5
80+	0	0	-	0
<b>Total</b>	<b>11</b>	<b>703</b>	<b>25</b>	<b>714</b>

## Part 4 – Tree health

**Figure 60** Number of oak trees by age class

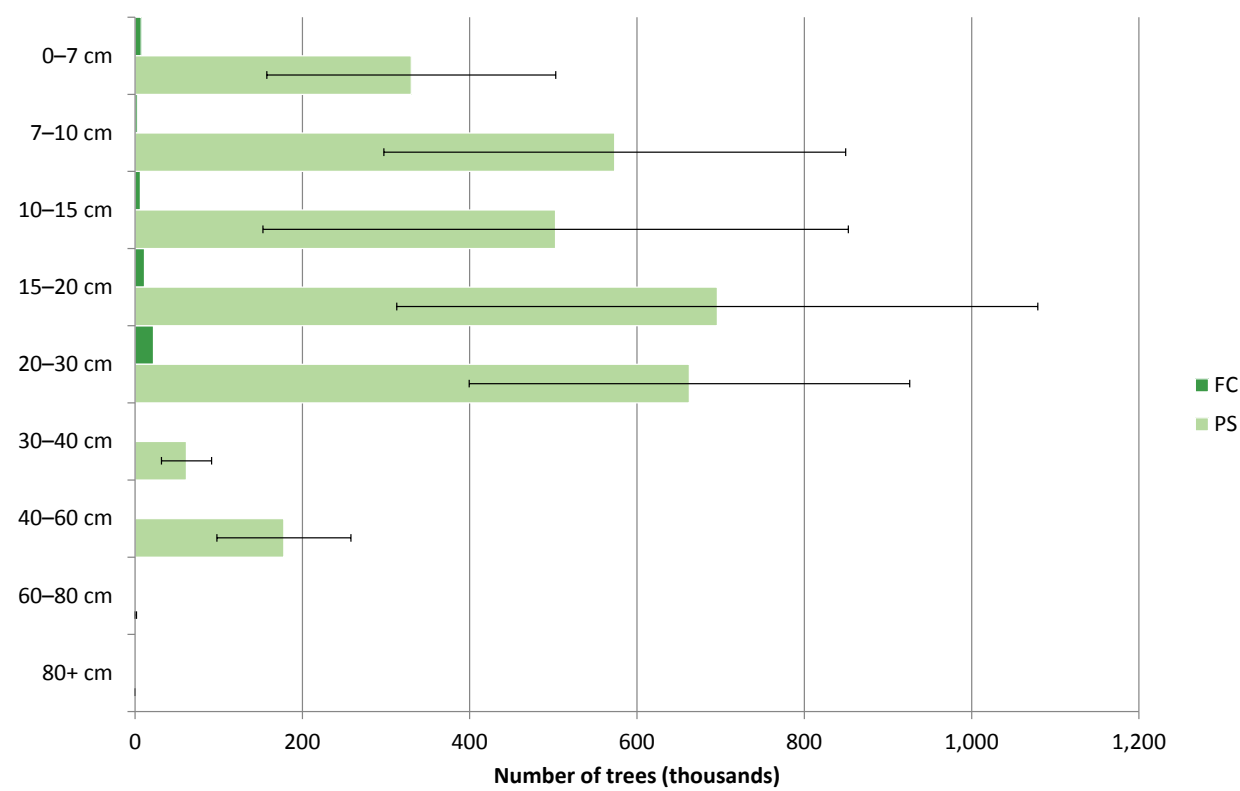


**Table 57** Number of oak trees by age class

Age class (years)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire				
0-10	0	0	-	0
11-20	2	553	48	555
21-40	9	1,437	33	1,446
41-60	10	437	67	447
61-80	5	327	56	332
81-100	2	126	50	128
100+	22	126	93	148
<b>Total</b>	<b>50</b>	<b>3,005</b>	<b>22</b>	<b>3,055</b>

# Part 4 – Tree health

**Figure 61** Number of oak trees by mean stand dbh class

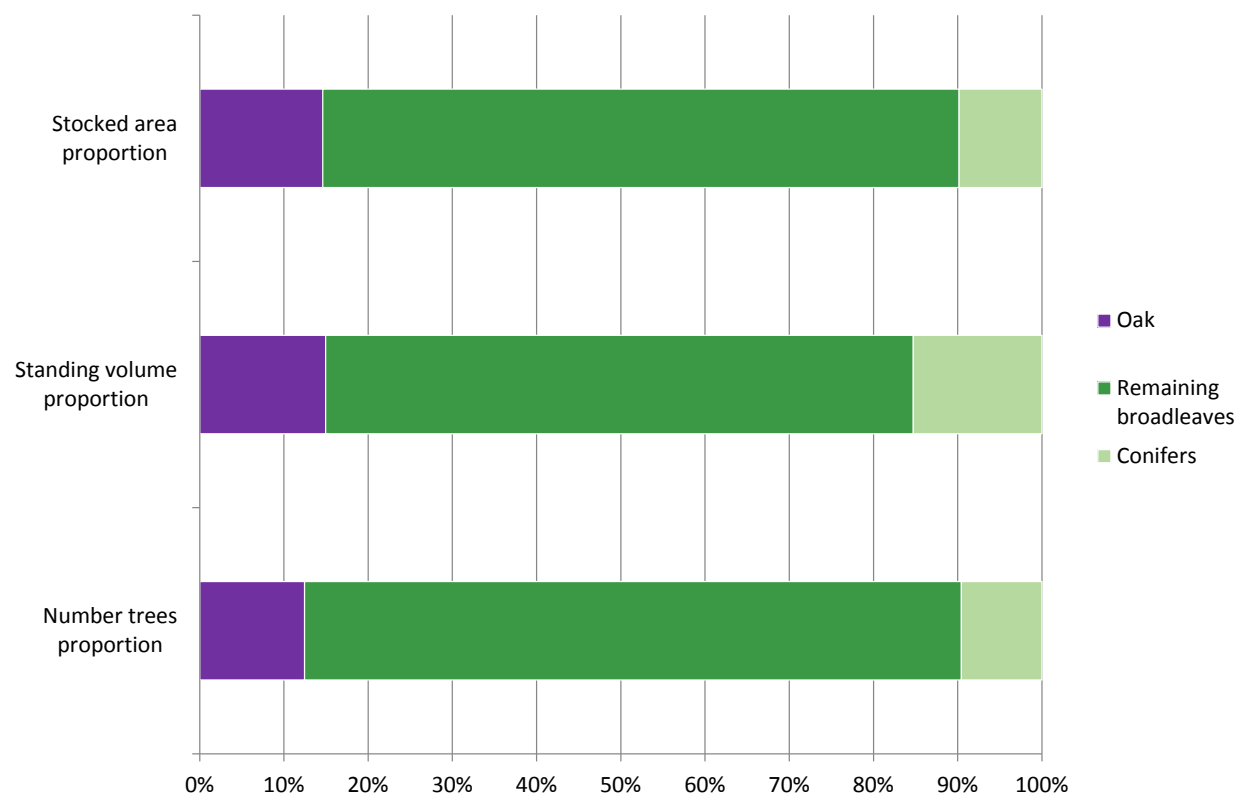


**Table 58** Number of oak trees by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire				
0-7	7	330	52	338
7-10	3	573	48	576
10-15	6	503	70	509
15-20	11	696	55	707
20-30	22	663	40	685
30-40	0	62	49	62
40-60	< 1	178	45	178
60-80	0	< 1	93	< 1
80+	0	0	-	0
Total	50	3,005	22	3,055

# Part 4 – Tree health

**Figure 62** Oak as a proportion of woodland





## Part 4 – Tree health

**Table 59** Stocked area of oak as a proportion of woodland

Aligned area	Stocked area of oak			
	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire	< 0.1	3.9	23	<b>3.9</b>

**Table 59 (cont'd)** Stocked area of oak as a proportion of woodland

Aligned area	Stocked area of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of oak in all broadleaves	Percentage of oak in all species
	area (000 ha)	area (000 ha)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	24.2	26.9	16	15

**Table 60** Standing volume of oak as a proportion of woodland

Aligned area	Standing volume of oak			
	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire	11	703	25	<b>714</b>

**Table 60 (cont'd)** Standing volume of oak as a proportion of woodland

Aligned area	Standing volume of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of oak in all broadleaves	Percentage of oak in all species
	volume (000 m³ obs)	volume (000 m³ obs)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	4,046	4,775	18	15

## Part 4 – Tree health

**Table 61** Number of oak trees as a proportion of woodland

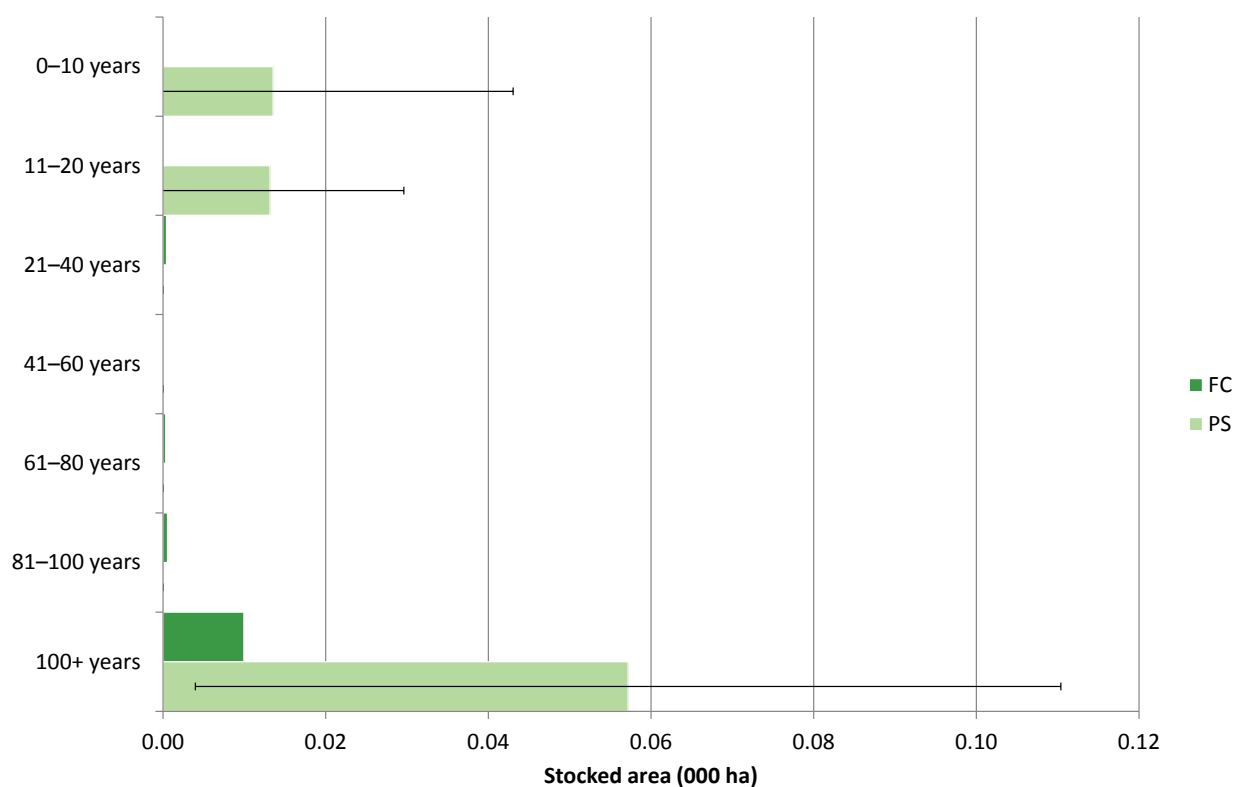
Aligned Area	Numbers of trees of oak			
	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire	50	3,005	22	<b>3,055</b>

**Table 61 (cont'd)** Number of oak trees as a proportion of woodland

Aligned Area	Number of trees of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of oak in all broadleaves	Percentage of oak in all species
	number of trees (thousands)	number of trees (thousands)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	22,197	23,119	14	13

## Sweet chestnut

**Figure 63** Stocked area of sweet chestnut by age class

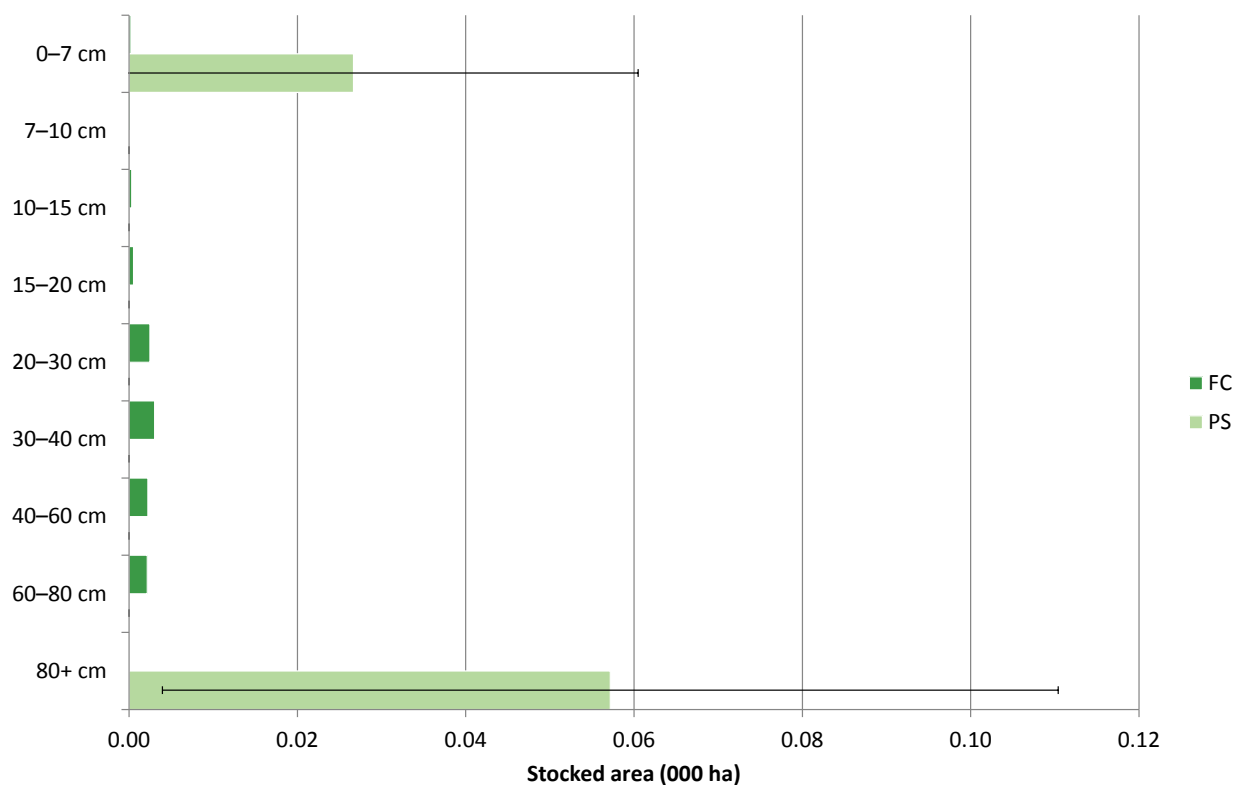


**Table 62** Stocked area of sweet chestnut by age class

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire				
0–10	0.0	< 0.1	218	< 0.1
11–20	0.0	< 0.1	125	< 0.1
21–40	< 0.1	0.0	-	< 0.1
41–60	0.0	0.0	-	0.0
61–80	< 0.1	0.0	-	< 0.1
81–100	< 0.1	0.0	-	< 0.1
100+	< 0.1	< 0.1	93	< 0.1
<b>Total</b>	<b>&lt; 0.1</b>	<b>&lt; 0.1</b>	<b>75</b>	<b>&lt; 0.1</b>

## Part 4 – Tree health

**Figure 64** Stocked area of sweet chestnut by mean stand dbh class

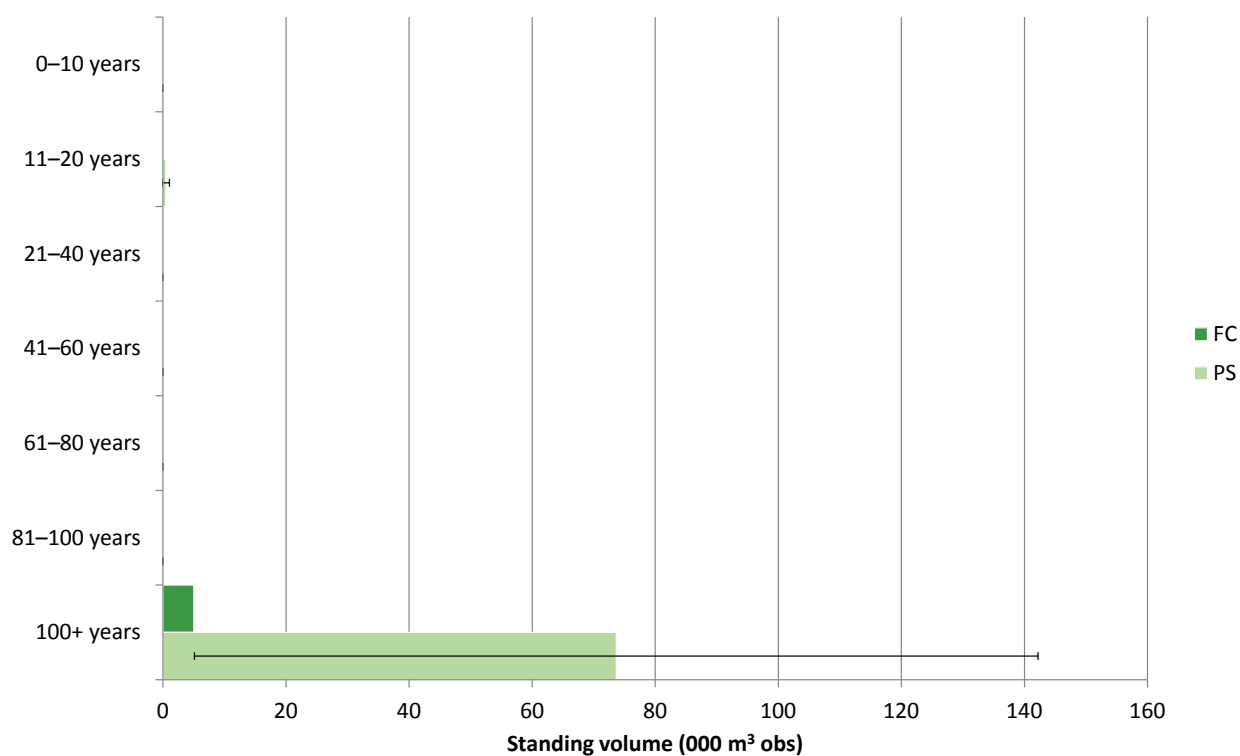


**Table 63** Stocked area of sweet chestnut by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire				
0-7	< 0.1	< 0.1	127	< 0.1
7-10	< 0.1	0.0	-	< 0.1
10-15	< 0.1	0.0	-	< 0.1
15-20	< 0.1	0.0	-	< 0.1
20-30	< 0.1	0.0	-	< 0.1
30-40	< 0.1	0.0	-	< 0.1
40-60	< 0.1	0.0	-	< 0.1
60-80	< 0.1	0.0	-	< 0.1
80+	0.0	< 0.1	93	< 0.1
<b>Total</b>	<b>&lt; 0.1</b>	<b>&lt; 0.1</b>	<b>75</b>	<b>&lt; 0.1</b>

## Part 4 – Tree health

**Figure 65** Standing volume of sweet chestnut by age class

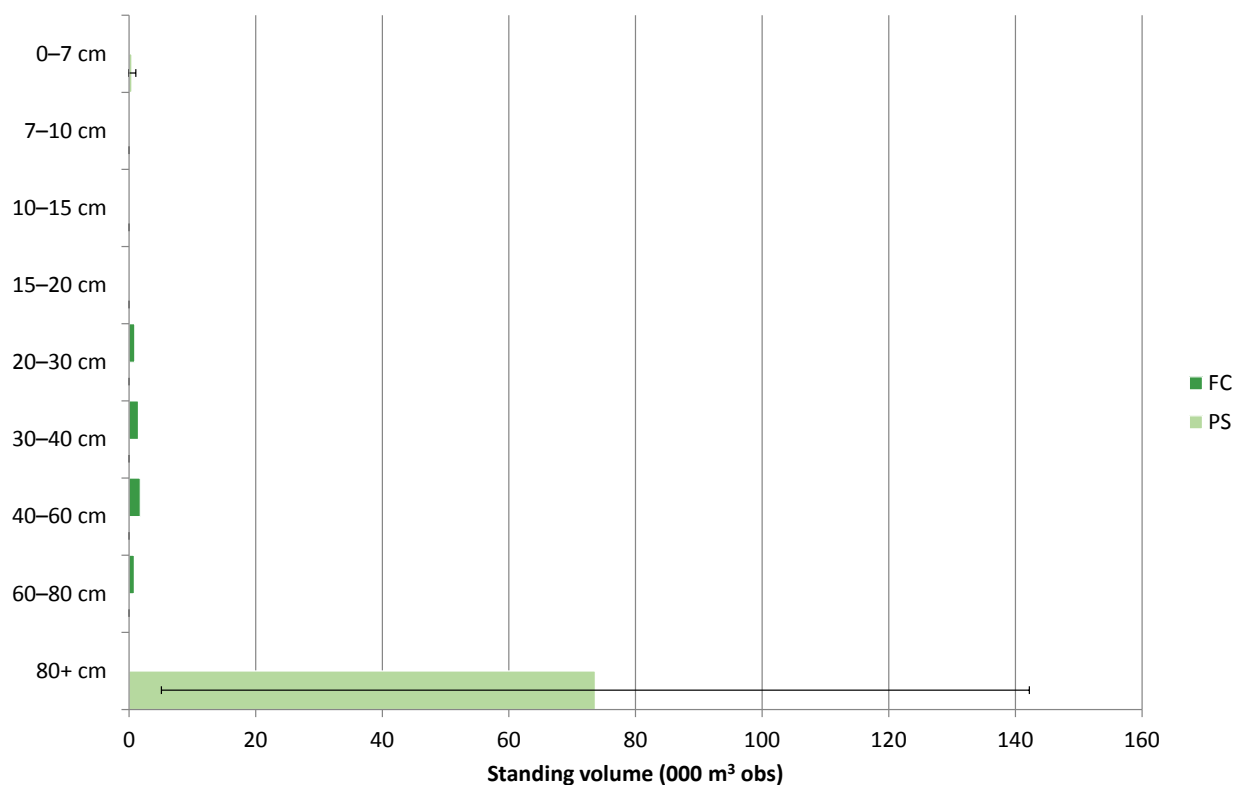


**Table 64** Standing volume of sweet chestnut by age class

Age class (years)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
0–10	0	0	-	0
11–20	0	< 1	125	< 1
21–40	< 1	0	-	< 1
41–60	0	0	-	0
61–80	< 1	0	-	< 1
81–100	< 1	0	-	< 1
100+	5	74	93	79
<b>Total</b>	<b>5</b>	<b>74</b>	<b>92</b>	<b>79</b>

## Part 4 – Tree health

**Figure 66** Standing volume of sweet chestnut by mean stand dbh class

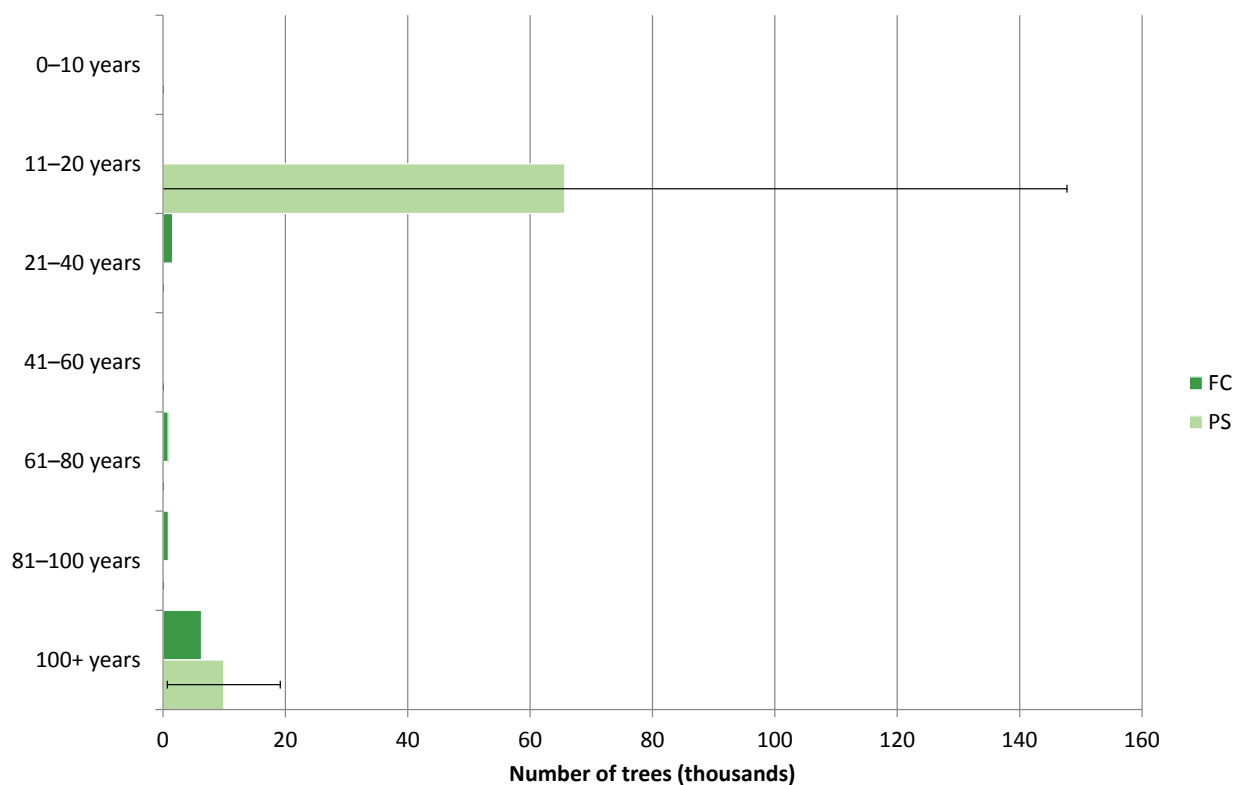


**Table 65** Standing volume of sweet chestnut by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
0-7	< 1	< 1	125	< 1
7-10	< 1	0	-	< 1
10-15	< 1	0	-	< 1
15-20	< 1	0	-	< 1
20-30	< 1	0	-	< 1
30-40	1	0	-	1
40-60	2	0	-	2
60-80	< 1	0	-	< 1
80+	0	74	93	74
<b>Total</b>	<b>5</b>	<b>74</b>	<b>92</b>	<b>79</b>

## Part 4 – Tree health

**Figure 67** Number of sweet chestnut trees by age class

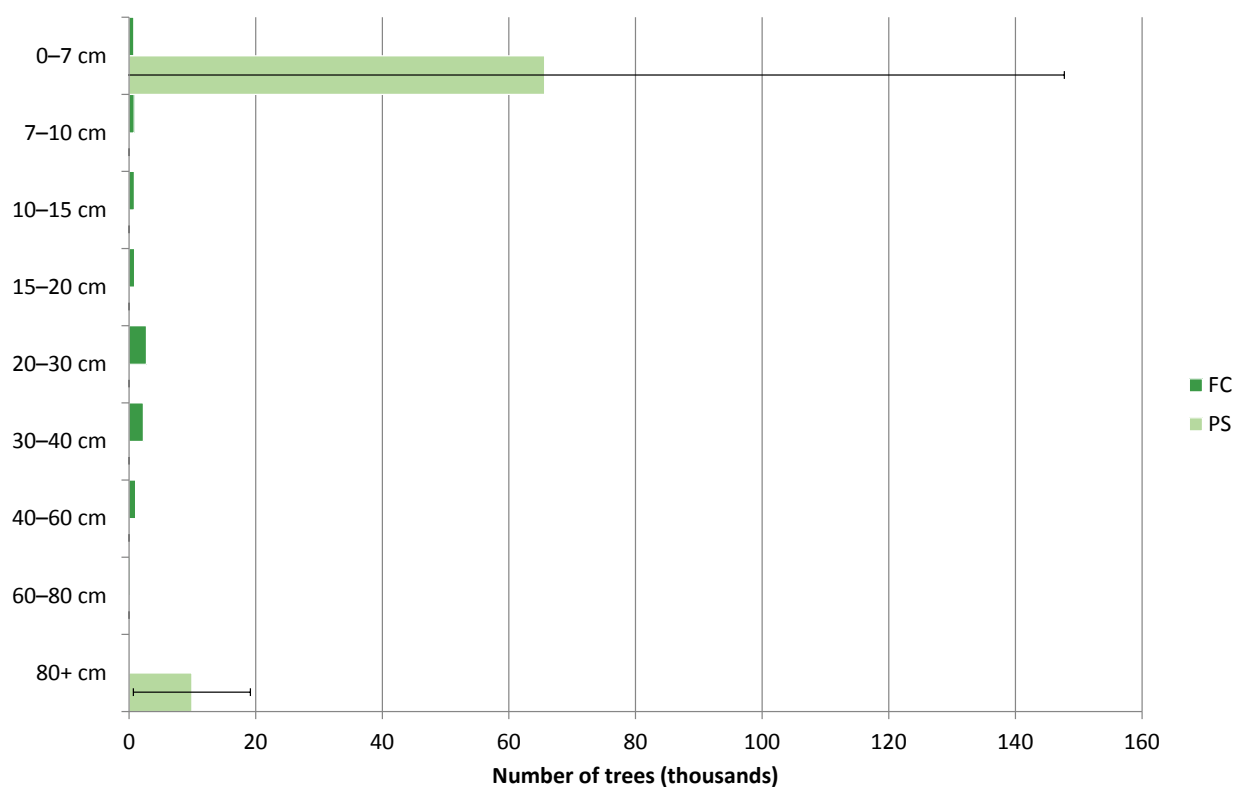


**Table 66** Number of sweet chestnut trees by age class

Age class (years)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire				
0–10	0	0	-	0
11–20	0	66	125	66
21–40	2	0	-	2
41–60	0	0	-	0
61–80	< 1	0	-	< 1
81–100	< 1	0	-	< 1
100+	6	10	93	16
<b>Total</b>	<b>10</b>	<b>76</b>	<b>109</b>	<b>85</b>

## Part 4 – Tree health

**Figure 68** Number of sweet chestnut trees by mean stand dbh class



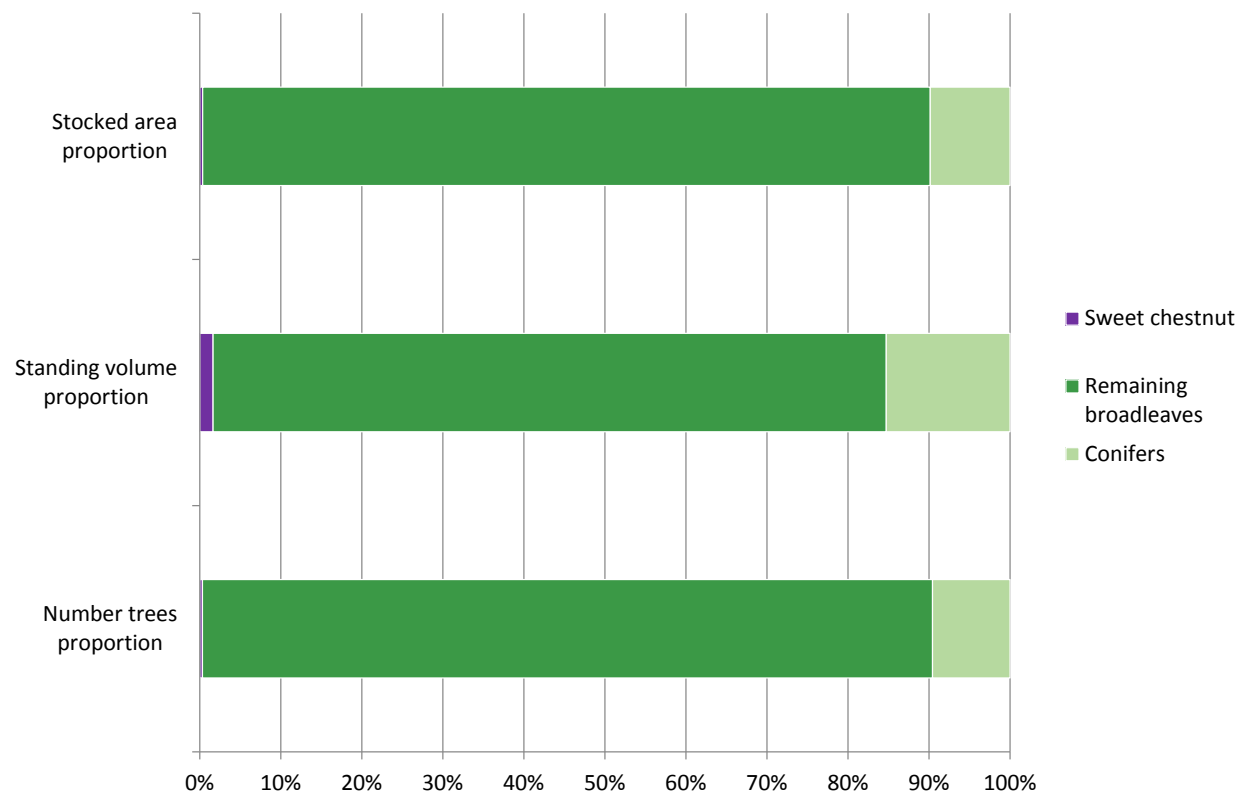
**Table 67** Number of sweet chestnut trees by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire				
0-7	< 1	66	125	66
7-10	< 1	0	-	< 1
10-15	< 1	0	-	< 1
15-20	< 1	0	-	< 1
20-30	3	0	-	3
30-40	2	0	-	2
40-60	1	0	-	1
60-80	< 1	0	-	< 1
80+	0	10	93	10
<b>Total</b>	<b>10</b>	<b>76</b>	<b>109</b>	<b>85</b>



# Part 4 – Tree health

**Figure 69** Sweet chestnut as a proportion of woodland



## Part 4 – Tree health

**Table 68** Stocked area of sweet chestnut as a proportion of woodland

Aligned area	Stocked area of sweet chestnut			
	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire	< 0.1	< 0.1	75	< 0.1

**Table 68 (cont'd)** Stocked area of sweet chestnut as a proportion of woodland

Aligned area	Stocked area of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of sweet chestnut in all broadleaves	Percentage of sweet chestnut in all species
	area (000 ha)	area (000 ha)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	24.2	26.9	0	0

**Table 69** Standing volume of sweet chestnut as a proportion of woodland

Aligned area	Standing volume of sweet chestnut			
	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire	5	74	92	79

**Table 69 (cont'd)** Standing volume of sweet chestnut as a proportion of woodland

Aligned area	Standing volume of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of sweet chestnut in all broadleaves	Percentage of sweet chestnut in all species
	volume (000 m³ obs)	volume (000 m³ obs)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	4,046	4,775	2	2

## Part 4 – Tree health

**Table 70** Number of sweet chestnut trees as a proportion of woodland

Aligned Area	Numbers of trees of sweet chestnut			
	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire	10	76	109	85

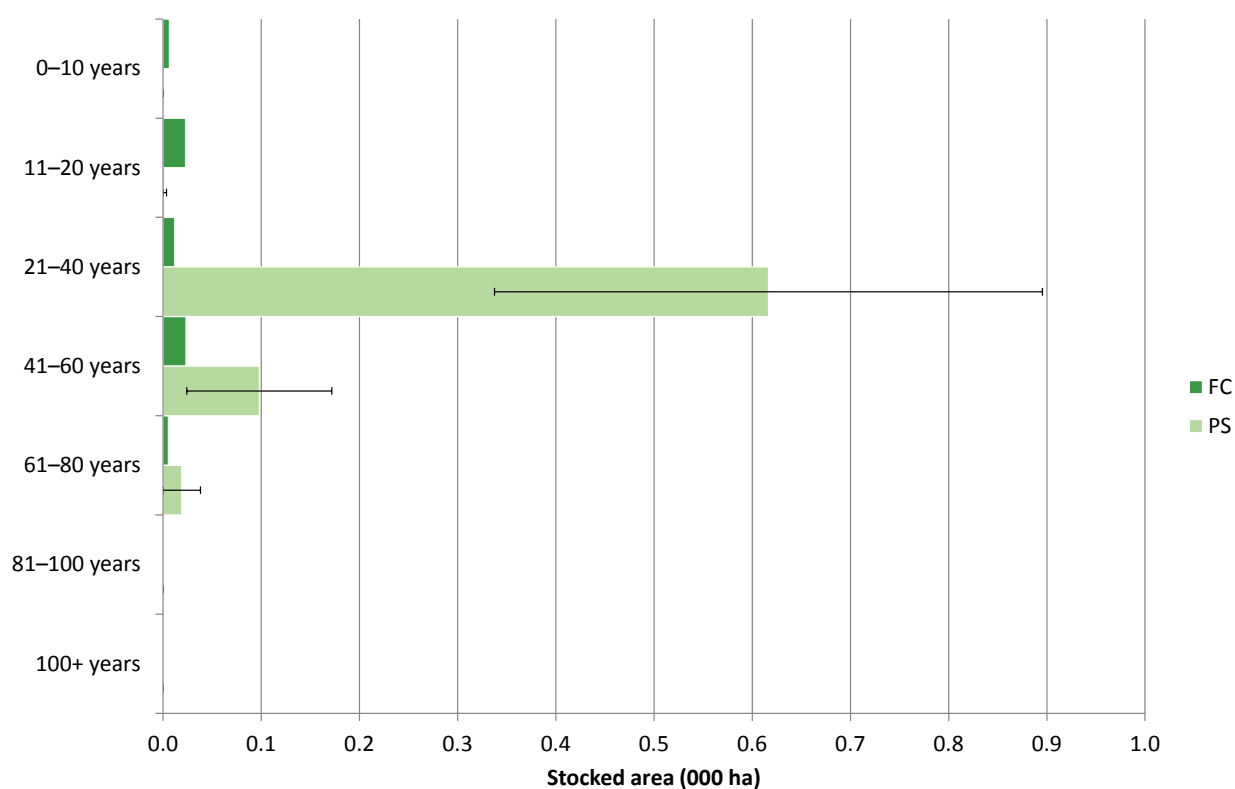
**Table 70 (cont'd)** Number of sweet chestnut trees as a proportion of woodland

Aligned Area	Number of trees of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of sweet chestnut in all broadleaves	Percentage of sweet chestnut in all species
	number of trees (thousands)	number of trees (thousands)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	22,197	23,119	0	0

## Part 4 – Tree health

### Larch

**Figure 70** Stocked area of larch by age class

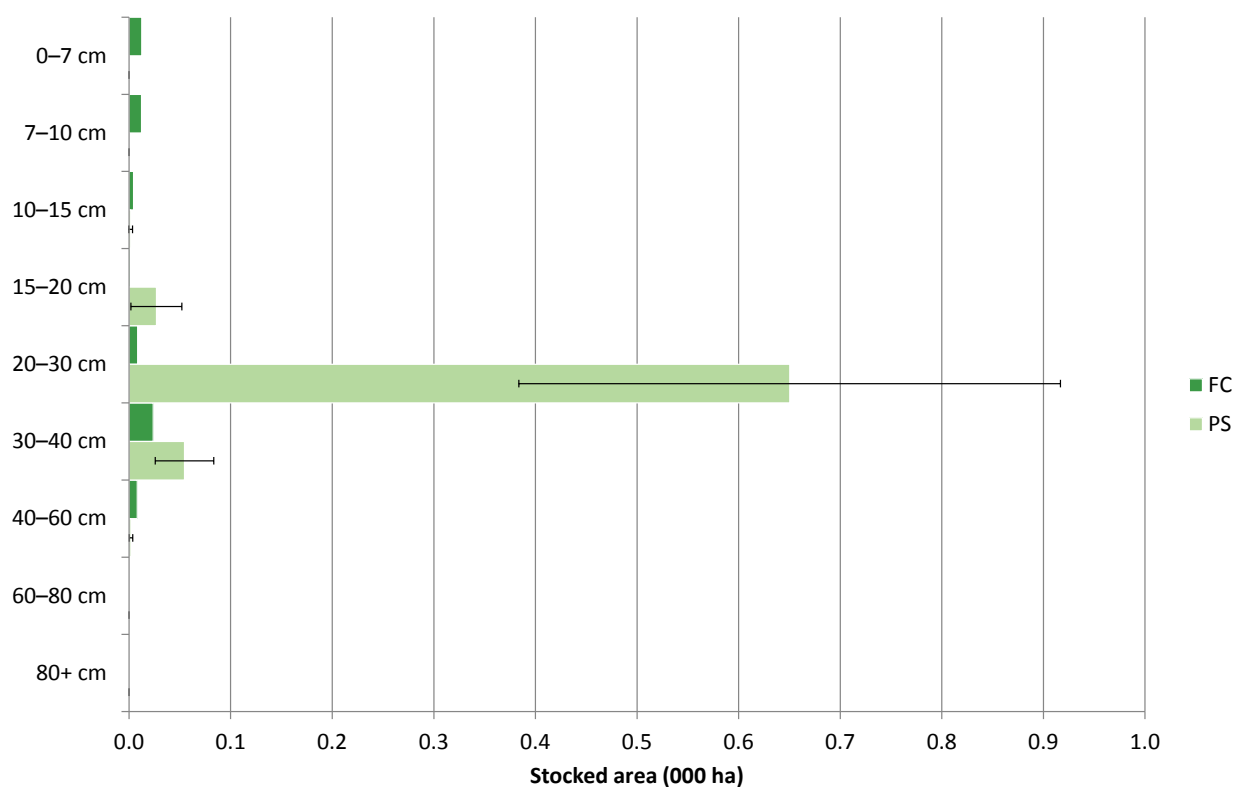


**Table 71** Stocked area of larch by age class

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire				
0–10	< 0.1	0.0	-	< 0.1
11–20	< 0.1	< 0.1	107	< 0.1
21–40	< 0.1	0.6	45	0.6
41–60	< 0.1	< 0.1	75	0.1
61–80	< 0.1	< 0.1	100	< 0.1
81–100	< 0.1	0.0	-	< 0.1
100+	< 0.1	0.0	-	< 0.1
<b>Total</b>	<b>&lt; 0.1</b>	<b>0.7</b>	<b>36</b>	<b>0.8</b>

## Part 4 – Tree health

**Figure 71** Stocked area of larch by mean stand dbh class

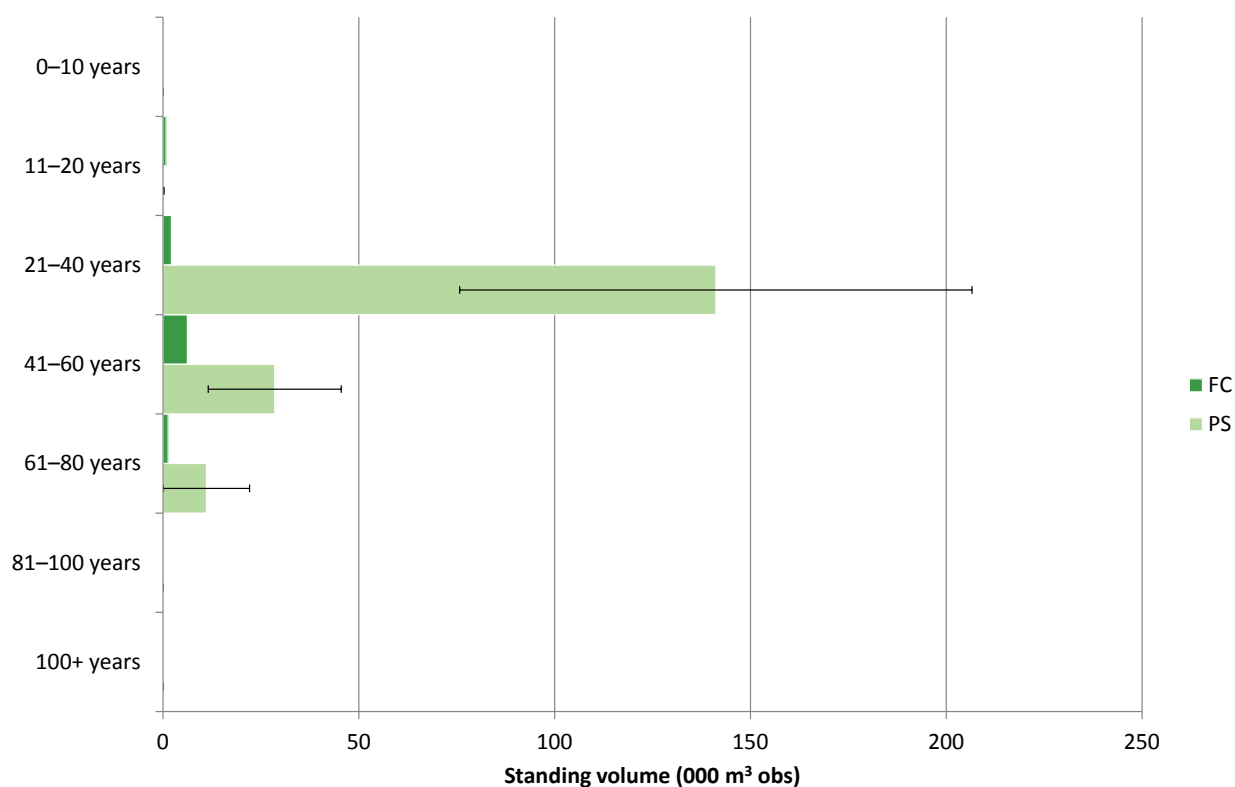


**Table 72** Stocked area of larch by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire				
0-7	< 0.1	0.0	-	< 0.1
7-10	< 0.1	0.0	-	< 0.1
10-15	< 0.1	< 0.1	107	< 0.1
15-20	< 0.1	< 0.1	93	< 0.1
20-30	< 0.1	0.7	41	0.7
30-40	< 0.1	< 0.1	53	< 0.1
40-60	< 0.1	< 0.1	93	< 0.1
60-80	< 0.1	0.0	-	< 0.1
80+	0.0	0.0	-	0.0
<b>Total</b>	<b>&lt; 0.1</b>	<b>0.7</b>	<b>36</b>	<b>0.8</b>

## Part 4 – Tree health

**Figure 72** Standing volume of larch by age class

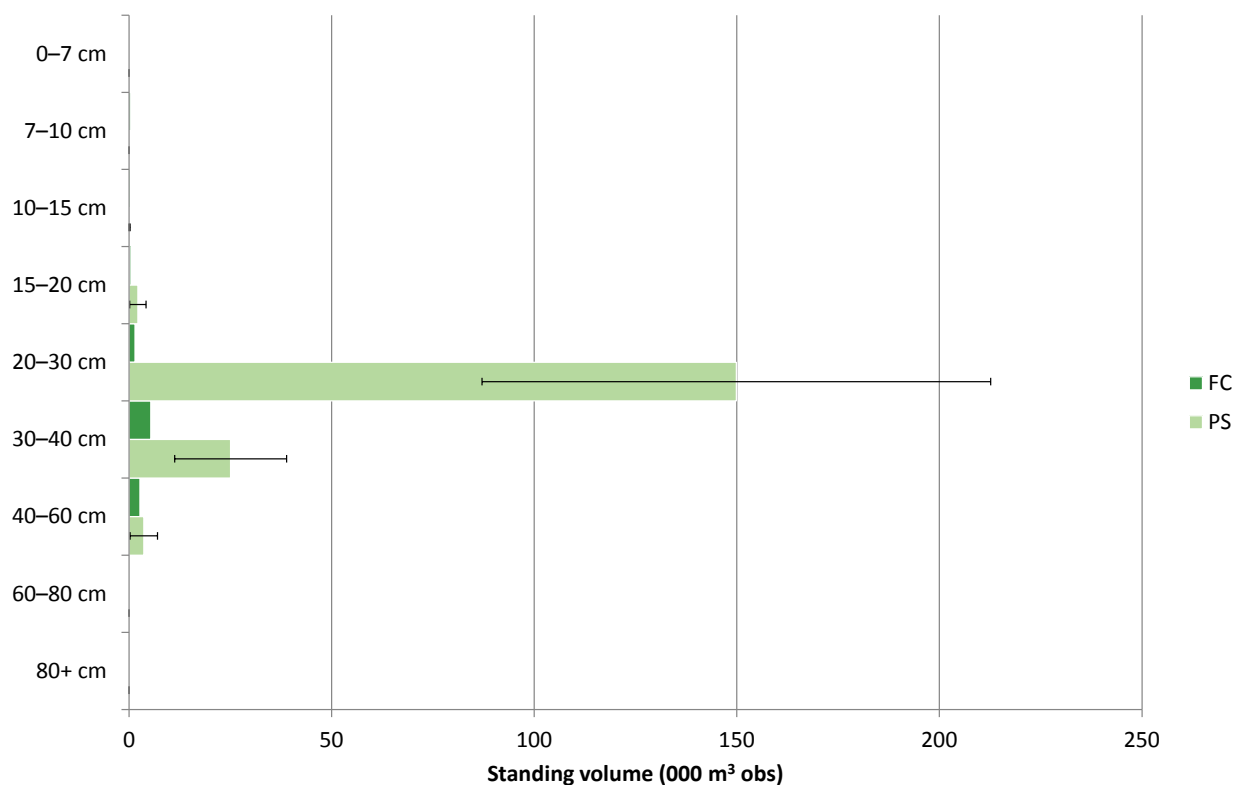


**Table 73** Standing volume of larch by age class

Age class (years)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
0–10	< 1	0	-	< 1
11–20	< 1	< 1	107	< 1
21–40	2	141	46	143
41–60	6	29	60	35
61–80	1	11	100	12
81–100	< 1	0	-	< 1
100+	< 1	0	-	< 1
<b>Total</b>	<b>11</b>	<b>181</b>	<b>34</b>	<b>192</b>

## Part 4 – Tree health

**Figure 73** Standing volume of larch by mean stand dbh class

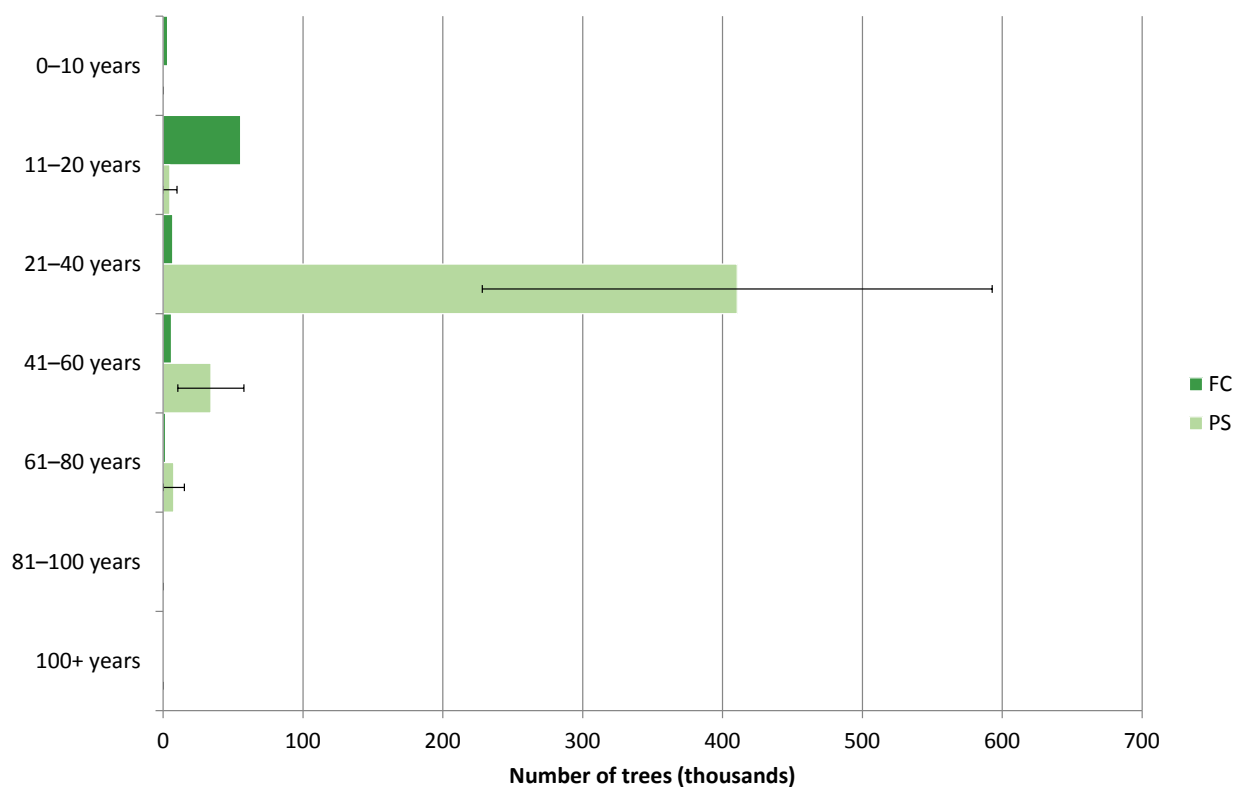


**Table 74** Standing volume of larch by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire				
0-7	< 1	0	-	< 1
7-10	< 1	0	-	< 1
10-15	< 1	< 1	107	< 1
15-20	< 1	2	93	2
20-30	1	150	42	151
30-40	5	25	55	30
40-60	3	4	93	6
60-80	< 1	0	-	< 1
80+	0	0	-	0
<b>Total</b>	<b>11</b>	<b>181</b>	<b>34</b>	<b>192</b>

## Part 4 – Tree health

**Figure 74** Number of larch trees by age class



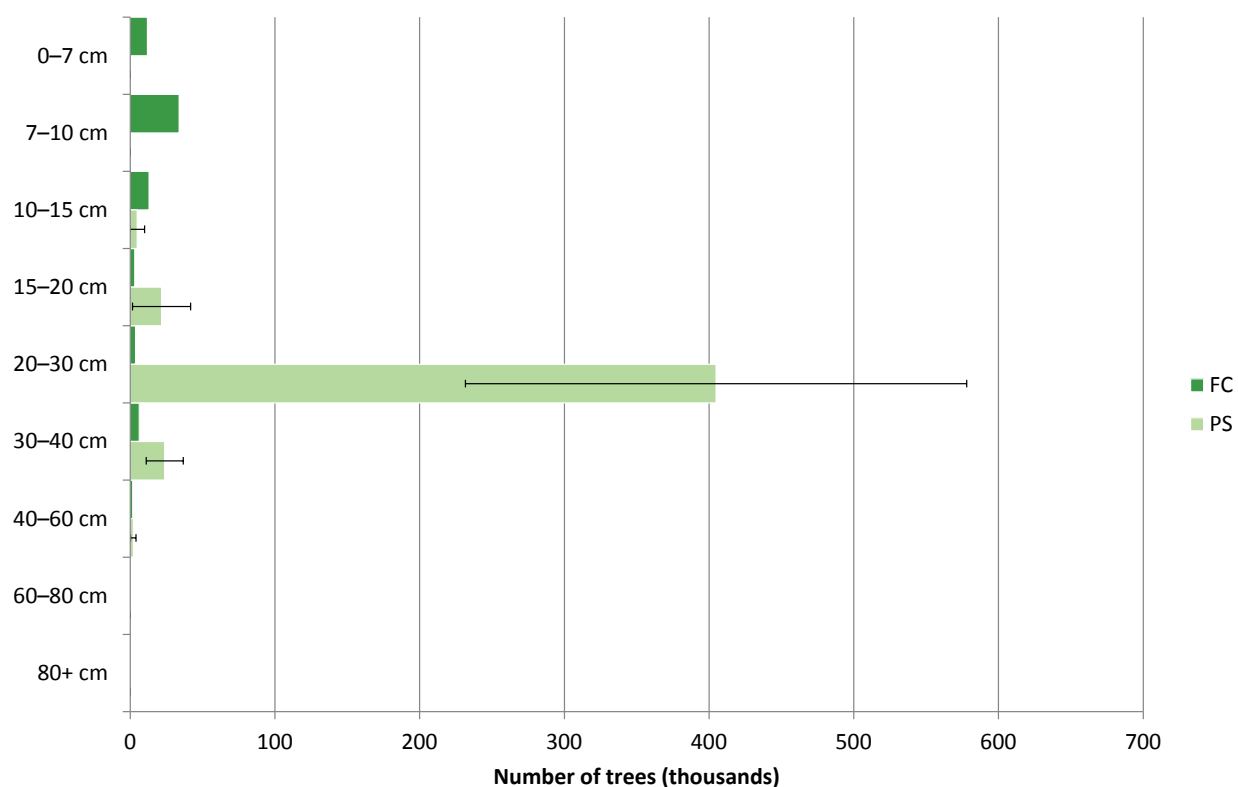
**Table 75** Number of larch trees by age class

Age class (years)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire				
0-10	3	0	-	<b>3</b>
11-20	55	5	107	<b>60</b>
21-40	7	410	44	<b>417</b>
41-60	6	34	69	<b>40</b>
61-80	2	8	100	<b>9</b>
81-100	< 1	0	-	<b>&lt; 1</b>
100+	< 1	0	-	<b>&lt; 1</b>
<b>Total</b>	<b>73</b>	<b>457</b>	<b>38</b>	<b>530</b>



## Part 4 – Tree health

**Figure 75** Number of larch trees by mean stand dbh class

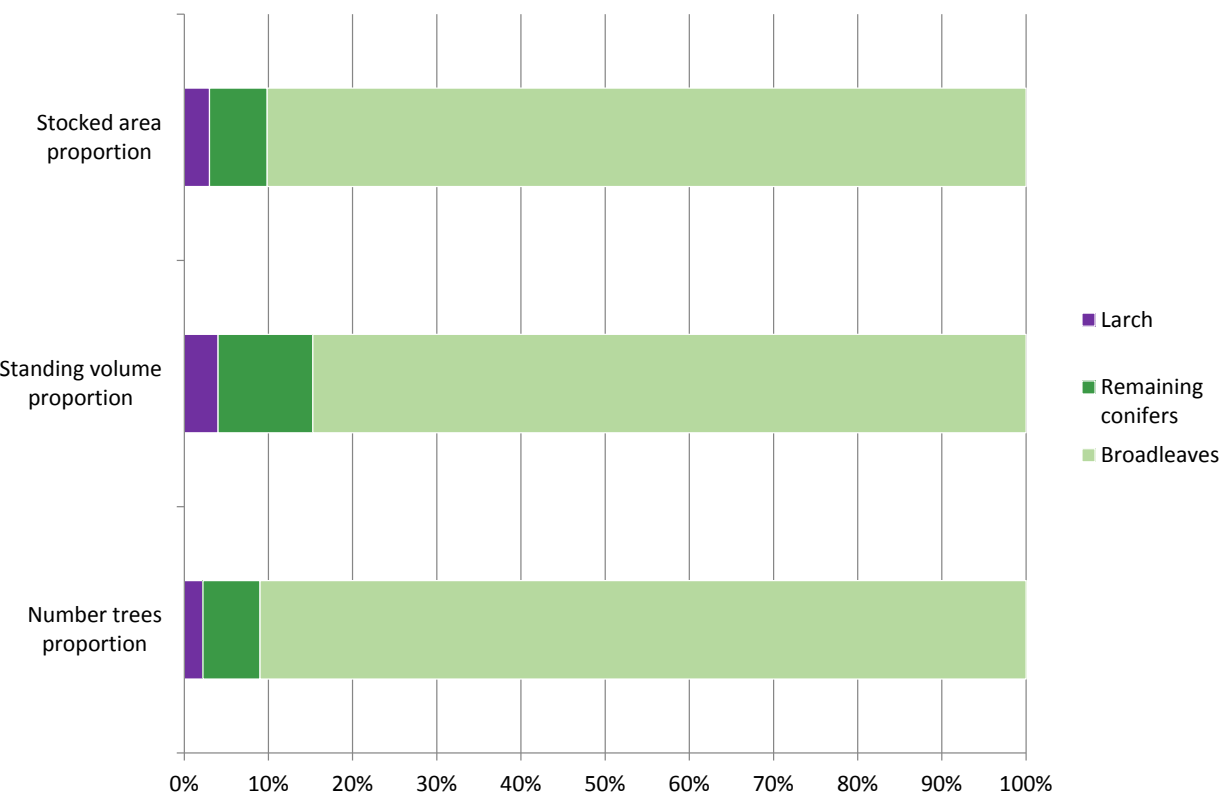


**Table 76** Number of larch trees by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire				
0-7	12	0	-	12
7-10	34	0	-	34
10-15	13	5	107	18
15-20	3	22	93	25
20-30	4	405	43	408
30-40	6	24	54	30
40-60	2	2	93	4
60-80	< 1	0	-	< 1
80+	0	0	-	0
<b>Total</b>	<b>73</b>	<b>457</b>	<b>38</b>	<b>530</b>

# Part 4 – Tree health

**Figure 76** Larch as a proportion of woodland



## Part 4 – Tree health

**Table 77** Stocked area of larch as a proportion of woodland

Aligned area	Stocked area of larch			
	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Greater Manchester Merseyside and Cheshire	< 0.1	0.7	36	0.8

**Table 77 (cont'd)** Stocked area of larch as a proportion of woodland

Aligned area	Stocked area of all conifers and all species			
	Total of all conifers	Total of all species	Percentage of larch in all conifers	Percentage of larch in all species
	area (000 ha)	area (000 ha)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	2.6	26.9	30	3

**Table 78** Standing volume of larch as a proportion of woodland

Aligned area	Standing volume of larch			
	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
Greater Manchester Merseyside and Cheshire	11	181	34	192

**Table 78 (cont'd)** Standing volume of larch as a proportion of woodland

Aligned area	Standing volume of all conifers and all species			
	Total of all conifers	Total of all species	Percentage of larch in all conifers	Percentage of larch in all species
	volume (000 m³ obs)	volume (000 m³ obs)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	729	4,775	26	4

## Part 4 – Tree health

**Table 79** Number of larch trees as a proportion of woodland

Aligned Area	Numbers of trees of larch			
	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Greater Manchester Merseyside and Cheshire	73	457	38	530

**Table 79 (cont'd)** Number of larch trees as a proportion of woodland

Aligned Area	Number of trees of all conifers and all species			
	Total of all conifers	Total of all species	Percentage of larch in all conifers	Percentage of larch in all species
	number of trees (thousands)	number of trees (thousands)	(percent)	(percent)
Greater Manchester Merseyside and Cheshire	2,144	23,832	25	2

## Appendix A – Aligned area nomenclature

**Table 80** Aligned area long and short names

Long name	Short name	Abbreviation
Cumbria and Lancashire	Cumbria and Lancashire	CLA
Devon Cornwall and the Isles of Scilly	Devon and Cornwall	DCS
East Anglia	East Anglia	EAN
East Midlands	East Midlands	EMD
Greater Manchester Merseyside and Cheshire	Gtr Mancs Mersey and Ches	GMC
Hertfordshire and North London	Herts and North London	HNL
Kent South London and East Sussex	Kent S London and E Sussex	KSL
Lincolnshire and Northamptonshire	Lincs and Northants	LNA
North East	North East	NEA
Solent and South Downs	Solent and South Downs	SSD
Thames	Thames	THS
Wessex	Wessex	WSX
West Midlands	West Midlands	WMD
Yorkshire	Yorkshire	YOR

## Glossary

Actual production	Timber reported as having been felled and removed from the forest. The Forestry Commission keeps records of actual production for its estate, while estimates for the Private sector come from surveys of harvesting companies and timber processors. These figures are available from Forestry Commission Statistics.
Aerial photograph	Photograph of the ground taken from an elevated/direct-down position, with a camera that is not supported by a ground-based structure.
Age class	A grouping of trees into specific age ranges for classification purposes.
Area (forest/woodland)	Forest and woodland area can be defined in net or gross terms. Net area is the land actually covered by trees (in the National Forest Inventory that is to the drip line of the canopy). Gross area includes both the area covered by trees and the open spaces (<0.5 hectare) within (e.g. rides, glades, ponds).
Availability	A term to describe what timber could potentially be available for harvesting within a forest area.
Biological potential	A term applied to forecast scenarios with the objective of maximising timber production. It typically involves felling stands in the year of maximum MAI and management table thinning. It may not take account of factors that constrain thinning and felling (e.g. wind risk or pest attack). The forecast results set out in this report involve constraints on thinning and times of felling to take account of wind risk.
Broadleaves	Trees and shrubs that belong to the angiosperm division of the plant kingdom (as distinct from the gymnosperm division that includes conifers). Most in the UK have laminar leaves and are deciduous. Sometimes referred to as 'hardwoods'.
Canopy cover	Area covered by a mass of foliage and branches formed collectively by the crowns of trees.
Clearfell area	Area here all the trees have been felled at once. In non-clearfell areas, only some of the trees are felled at any one time.
Clearfelling	Cutting down of an area of woodland (if it is within a larger area of woodland it is typically a felling greater than 0.25 hectare). Sometimes a scatter or small clumps of trees may be left standing within the felled area.
Conifers	Trees and shrubs that belong to the gymnosperm division of the plant kingdom (as distinct from the angiosperm division that includes broadleaves). Conifers mostly have needles or scale-like leaves and are usually evergreen. Sometimes referred to as 'softwoods'.
Cumulative volume production	The total volume of timber that is forecast to be produced over the entire forecast period, including any overdue timber.
DAMS (Detailed Aspect Methodology Score)	A measure of exposure at a particular location. Can be used as a proxy indicator of the risk of catastrophic wind damage to a stand of trees. May be used to influence decisions on thinning and timing of clearfelling where wind is a risk factor.
DBH (diameter at breast height)	The diameter on the stem of a tree at 'breast height', defined as 1.3 m from ground level.
Dothistroma needle blight	A disease of conifers (especially pine) which causes defoliation, losses in yield and, in severe cases, tree death. Also known as red band needle blight.

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Felling plan	A spatial and temporal plan of harvesting activities within a forest or woodland.
Forest (or woodland)	Land predominately covered in trees (defined as land under stands of trees with a canopy cover of at least 20%, or the ability to achieve this, and with a minimum area of 0.5 hectare and minimum width of 20 m), whether in large tracts (generally called forests) or smaller areas known by a variety of terms (including woods, copses, spinneys or shelterbelts).
Forest management plan	A holistic spatial and temporal plan stating the objectives of management together with details of forestry proposals over a period of five years and outlining intentions over a minimum total of 10 years. Such plans allow managers to communicate proposals and demonstrate sustainable forest management. They can be used to authorise thinning, felling and other management operations.
Forest Service	An agency within the Department of Agriculture and Rural Development (DARD) in Northern Ireland responsible for the regulation of forestry and the management of state forests in Northern Ireland.
Forestry Commission	The government department responsible for regulating forestry, implementing forestry policy and managing state forests in England and Scotland. Forestry policy is devolved, with the exception of common issues addressed on a GB or UK basis, such as international forestry, plant health and forestry standards.
Forestry Commission (FC) estate	Forests, woodlands, open land and other property managed by the Forestry Commission.
Great Britain (GB)	England, Scotland and Wales.
Hardwood	The wood of broadleaved trees or the broadleaves themselves.
High forest	Woodland which is not managed as coppice or pollards and which may or may not be managed for timber.
Increment	The increase in volume of a tree or a stand over a year or annualised over a specified period measured either in m <sup>3</sup> per year or in m <sup>3</sup> per hectare per year. See also Mean Annual Increment (MAI).
Interpreted forest type (IFT)	Interpreted forest type is a classification of woodland into woodland types as identified from aerial photography and satellite imagery.
Interpreted open area (IOA)	Interpreted open area is a classification of open spaces within woodlands as identified from aerial photography and satellite imagery.
Like-for-like (restocking)	The restocking of areas of felled trees with trees of the same species and yield class.
Maximising productivity	The management of woodland to maximise volume production by thinning at the MTI.
Mean annual increment (MAI)	The average annual rate of volume production from year of planting to a given year, expressed in m <sup>3</sup> obs per hectare per year. In even-aged stands it is calculated by dividing cumulative volume production by age.
MTT (management table thinning)	A sequence of thinnings prescribed by Forestry Commission yield tables over the life of a forest stand. Management table thinning refers to the pattern of thinning recommended in these yield tables. In standard yield tables the thinnings are set to an intensity which aims to maximise diameter increment whilst also maintaining maximum cumulative volume production
MTI (marginal thinning intensity)	The maximum sustainable intensity of thinning defined as 70% of yield class per hectare per year (m <sup>3</sup> obs/ha/year).

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Maximum MAI (maximum mean annual increment) (MMAI)	The age at which a stand reaches the maximum average rate of volume increment which it can achieve. Felling the stand at this age will ensure that the stand reaches its highest average production per annum for its lifespan, thus optimising the stand in terms of volume production over the long term.
Mean annual increment (MAI)	The average rate of volume production up to a given year, expressed in m <sup>3</sup> per hectare per year. In even-aged stands it is calculated by dividing cumulative volume production by age.
Mensuration	The study of the measurement of lengths, areas, volumes and related quantities. Forest mensuration is concerned with the measurement of trees, woodlands and forests, including standing and felled timber.
National Forest Inventory (NFI)	An inventory run by the Forestry Commission, set up in 2009, to provide a record of key information about GB forests and woodlands.
National Inventory of Woodland and Trees (NIWT)	An inventory run by the Forestry Commission, set up in 1995 and completed in 2002, to provide a record of key information about GB forests and woodlands.
Natural Resources Wales (NRW)	Natural Resources Wales is the largest Welsh Government Sponsored Body - employing 1,900 staff across Wales with a budget of £180 million. NRW was formed in April 2013, largely taking over the functions of the Countryside Council for Wales, Forestry Commission Wales and the Environment Agency in Wales, as well as certain Welsh Government functions.
Overbark	Used as a qualification when the diameter or volume of wood includes the bark.
Overbark standing (OBS)	Timber is defined in this report as the volume of stemwood to 7 cm top diameter in m <sup>3</sup> overbark standing (obs), including stump (above ground) and usable branchwood (of minimum 3 m in length and 7 cm top diameter).
Overdue	Timber contained in stands that are beyond the felling age prescribed by the harvesting scenario at the start of the forecast.
Phytophthora	Fungus-like pathogens that can cause extensive damage and mortality to trees and other plants.
Planned production	The volumes and assortments published in the removals forecast, reflecting the cumulative impact of managing the FC estate (as of 31 March 2012) in accordance with approved forest design and thinning plans.
Potential production	A forecast which will not necessarily transpire. As the private sector estate forecast makes assumptions about future levels of harvest, and the assumptions may not transpire, this forecast is one of potential production.
Private sector estate	Forests and woodlands in the UK not managed by the Forestry Commission, Natural Resources Wales or Forest Service. In the context of the National Forest Inventory, 'Private sector' is used for convenience although it includes land owned or managed by bodies such as local authorities and charities.
Production forecast	A forecast of softwood volume production based on a firm plan of harvesting.
Restocking plan	A spatial and temporal plan describing how felled areas are to be replanted or regenerated.
Satellite imagery	Imagery of the earth taken from space from a satellite.
Softwood	The wood of coniferous trees or the conifers themselves.



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Stand	A distinct area of woodland, generally composed of a uniform group of trees in terms of species composition and spatial distribution, and age and size class distribution.
Standard error (SE)	The measure of the margin of error associated with an estimate as a result of sampling from a population with statistical variability. Larger standard errors indicate less precision in the estimate. Standard errors in this report are quoted in relative terms (i.e. as percentages of the value of the estimate).
Standing volume	The live stemwood and usable branchwood of trees (up to 7 cm top diameter). It excludes roots, below ground stump material, small branches, foliage and deadwood. For Private sector woodland only, it also excludes trees in woodlands of less than 0.5 hectare. Usually expressed as m <sup>3</sup> overbark standing (m <sup>3</sup> obs).
Stemwood	The woody material forming the above ground main growing shoot(s) of a tree or stand of trees. The stem includes all woody volume above ground with a diameter greater than 7 cm overbark. Stemwood includes wood in major branches where there is at least 3 m of straight length to 7 cm top diameter.
Stocked area	The area stocked with living trees. The stocked areas in this report are quoted in gross terms for the FC/NRW estate and in net terms for the private sector estate (see the definition of area above).
Sub-compartment database (SCDB)	A database owned and maintained by the Forestry Commission that holds an inventory of all stands of trees managed by the Forestry Commission (including that formerly managed by Forestry Commission Wales which is now managed by Natural Resources Wales).
Sustainable forest management	The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity and vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions at local, national and global levels, and that does not cause damage to other ecosystems.
Terminal height	The top height of a stand at which wind damage is expected to reach a level necessitating clearfelling.
Thinning	The periodic harvesting of trees in a woodland, involving the removal of some trees for commercial use and the retention of others for future production or long-term retention.
Thinning plan	A spatial and temporal plan of harvesting activities within a forest or woodland.
Top diameter	The diameter of the smaller (top) end of a length of stemwood, branchwood or log, often used to define different categories of wood products (e.g. sawlogs, roundwood, pulp) and merchantable timber.
Top height	The mean total height of the 100 largest dbh trees per hectare.
UK (United Kingdom)	Great Britain and Northern Ireland.
Windthrow	Uprooting of trees by the wind. Windthrow can be endemic – i.e. that caused by frequently recurring peak winds – or catastrophic – an infrequent occurrence associated with exceptionally strong winds where large areas/numbers of trees are blown down.
Woodland	see Forest.
Yield class (YC)	An index used in the UK of the potential productivity of even-aged stands of trees based on maximum MAI. It reflects the potential productivity of the site for the tree species growing on it.

## Aligned area reports in this series

This report is one in a series of reports describing the current stocks in woodland, the economic viability data, timber availability forecasts and estimates of the current stocks within woodland of four species currently at risk from pests and diseases.

Reports are available for:

- England
- Cumbria and Lancashire
- Devon Cornwall and the Isles of Scilly
- East Anglia
- East Midlands
- **Greater Manchester Merseyside and Cheshire**
- Hertfordshire and North London
- Kent South London and East Sussex
- Lincolnshire and Northamptonshire
- North East
- Solent and South Downs
- Thames
- Wessex
- West Midlands
- Yorkshire

The methodology, data sources and assumptions are described in the England report. It is important that the estimates presented in this report are interpreted in the light of the information provided in the England report.

## NFI national reports and papers

This series of reports is part of the wider suite of publications from the National Forest Inventory (NFI). NFI reports that contain information relating to this series of reports are:

- NFI woodland area statistics, Great Britain, England, Scotland, Wales (2011)
- Standing timber volume for coniferous trees in Britain (2012)
- 25-year forecast of softwood availability (2012)
- 25-year forecast of standing coniferous volume and increment (2012)
- Preliminary estimates of broadleaved species in British woodlands, with special focus on ash (2012)
- Biomass in live woodland trees in Britain (2014)
- Carbon in live woodland trees in Britain (2014)
- 50-year forecast of softwood availability (2014)
- 50-year forecast of hardwood availability (2014)
- 25-year forecast of softwood availability (2016)

Each theme has a series of associated reports, papers and data, tailored for different audiences and uses.

This report is a supporting document for the Official Statistics report *National Forest Inventory statistics for England and aligned areas* (2017) and provides more detailed results for Greater Manchester Merseyside and Cheshire.

National Forest Inventory statistician: Alan Brewer

## Lead authors

L. Halsall, E. Whitton, S. Cameron

## Reviewed by:

B. Ditchburn, D. Ross, D. Cross, members of the FC England Aligned Areas steering group