



Arboricultural Safety Report

Report No: 161104

Client: South Axholme Academy

Site Address: Epworth Primary School, Fieldside Road,
Epworth, DN19 1DR
and
South Axholme Academy, Burnham Road,
Epworth, DN19 1BY

Survey Date: November 4th 2016

Lincolnshire Tree Services

Jim's Yard, Bully Hill Top, Tealby, Market Rasen, Lincolnshire LN8 6JA



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Introduction

Survey Details

I have been instructed by Rob Holah of South Axholme Academy to visit the sites of Epworth Primary School and South Axholme Academy and prepare my findings in a report.

The site includes the entire grounds of both sites and the approach drive to Epworth Primary School. A plan of the site was not provided.

This report has been commissioned to assess the condition of the trees on site and the risks they pose. In addition recommendations will be made to mitigate risks of a significant level.

The survey was conducted between October 27th and November 4th 2016 by Daniel Kendall and Kyle Lowman of Lincolnshire Tree Services.

Our reference number for this report is 161104.

Purpose of the Report

This report details the findings of an expert arboricultural safety survey and risk assessment of the trees on the site specified.

This report details the relevant arboricultural information which is required to inform the owners of the condition of their trees and provides specific management actions that, once undertaken, demonstrate that a duty of care has been taken with regards to tree management.

This report is compiled in accordance with the current British Standard BS 3998: 2010 – 'Recommendations for tree work'.

Survey Method

Inspection was made visually from ground level, in order to assess the trees condition and potential to cause harm. Where necessary, management recommendations have been made. This may include tree removal, pruning, future monitoring or the need for a further detailed inspection, such as climbed inspections or decay detection surveys.

Measurements were obtained using GPS, clinometers, specialist tapes or electronic distometers. Where this was not possible measurements were estimated. Significant and suspected decay points were investigated using a sounding hammer and probe.

Site Overview

The boundaries of the site at Epworth Primary school are clearly defined by a perimeter fence. The only exceptions are the grounds of the pre-school in the north west corner of the site and the main entrance driveway from Fieldside Road. We were informed by Rob Holah not to survey the grounds of the pre-school however the main entrance driveway was included.

The boundaries of the site at South Axholme Academy are also defined by a perimeter fence. All trees were surveyed within the enclosed area.

Both sites are busy educational facilities with a mixture of school buildings, recreation grounds, playing fields, car parks and access ways. The sites are separated by a public footpath. The combined site is bordered on all sides by residential areas apart from on the southern boundary of South Axholme Academy which borders with Epworth Leisure Centre and agricultural land.

From the information passed to us and from our observations during the survey, persons or property that could be reasonably contemplated to be at significant risk due to the trees on the site include;

- Persons attending, working at or visiting the sites
- Buildings and property at the sites
- Persons or property at the residential dwellings surrounding the sites
- Persons or property at the Epworth Leisure Centre
- Person using the public footpath dividing the two sites

Tree Status

It has been brought to our attention that some of the trees on the site are subject to a Tree Preservation Order. Prior to any works being carried out conditions must be checked for and the relevant permissions sought from the appropriate local authority.

Discussion

1. In total approximately 270 trees were surveyed in addition to a small number of hedges and groups of younger trees. The trees present comprise a mix of species and are predominantly semi-mature with a few faster growing species reaching maturity. The trees have been maintained to a reasonable standard however some maintenance is now due.
2. Apart from some issues with the population of Lombardy Poplars the general level of risk the trees present is low. With regards to the Lombardy Poplars, some convey a moderate to high risk depending on their faults and their position on the site.
 - 2.1. The primary concern with the Lombardy Poplars is the volume of dead wood present. The majority have dead wood in their crowns with a number of pieces large enough to cause serious harm.
 - 2.2. In addition a number of Lombardy Poplars are showing signs of infection by decay pathogens. Fungal fruiting bodies were found at the base of T190 and T232 as well as at the base of the Red Oak T158 (see images in Appendix 4). These are strongly suspected to be that of *Pholiota squarrosa*. Studies have shown this particular pathogen can cause serious decay in the lower stems of Poplar. In addition it's worth noting that Poplar is one of the fastest woods to decay once infected. Also showing significant signs of decay are T129, T242, and T253. Although no fruiting bodies are present these trees either have visible decay at their base or have revealed stem decay when tested with a sounding hammer.
 - 2.3. Finally the recent removal of a number of Lombardy Poplars has exposed those remaining adjacent to the leisure centre (T265-273) to the full force of the prevailing winds. There is evidence of reactionary growth in the crown of the foremost tree (T265) which is likely a response to this new wind loading. The crowns of these trees also overhang significantly into the leisure centre grounds. In addition T263 has also lost companion cover following the recent felling. The tree has two co-dominant stems with a tight main union where reactionary growth has recently occurred.
3. The next most significant area of concern relate to some medium sized trees also on the Axholme Academy site.
 - 3.1. There are three Silver Birch trees in the front grounds of the school, two of which have significant issues. T142 is heavily ivy covered and in poor physiological condition. The decision was taken not to sever the ivy as the tree may be relying on it for structural support. Either way it is suspected the tree will only continue to decline. T145 is situated adjacent to the school canteen in a very busy area regularly frequented by staff and students with car parking beneath. The tree has significant cavities on the main stem.
 - 3.2. Also of concern are some of the Horse Chestnut trees along the northern boundary of the Axholme Academy grounds. T152 and T156 both have end weighted limbs that threaten

users of the school grounds and neighbouring gardens. Furthermore T157 is in severe decline with major dead wood in its crown.

4. Finally there are a number of other trees that present some risk but aren't worth of individual note. Full details of these can be found in Appendix 1 or in the accompanying spread sheet data file. To summarise there are four small trees with significant structural or physiological deficiencies, fourteen requiring dead wood removal or crown cleaning, and nine with limb faults or significantly asymmetrical crowns.
5. Moving on from immediate safety concerns there are some general tree maintenance issues you may wish to address. We have made some recommendations based on these issues. They can be easily identified in Appendix 1 as their work priorities are marked as 3 years. The issues here are mainly competitive growth between trees, excessive growth that may eventually pose a risk, and aesthetic concerns for particularly prominent trees.
6. Our last observation is general one related to the tree population across both sites. Not only are there are a considerable number of trees present but also relatively high levels of occupation around them. Furthermore, unlike recreational parkland, school grounds are often frequented in adverse weather conditions. Finally the tree species selection on the site is not ideal. The combination of these factors creates some areas for concern.
 - 6.1. The main areas of concern are those around the Lombarby Poplars. This species grows rapidly and to a considerable height. It's quite likely the trees will increase from their current height of 30m to nearly 40m. Furthermore the timber is relatively brittle compared to other broadleaved trees and can be broken down rapidly by decay pathogens. These conditions can lead to limb, stem or whole tree failure with little or no outward sign of defects.
 - 6.2. Also present on site are two Silver Maples, one situated in a particularly high traffic area to the north of the Axholme Academy buildings. This species also grows rapidly and has a reputation for developing weak branch unions.
 - 6.3. Horse Chestnut trees also suffer from weak branch unions as well as decay related failures. In addition they develop heavy lateral limbs that can fail with little warning in both unsettles and fine weather.
 - 6.4. Finally the Hornbeams lining the southern and western boundaries of the primary school may also pose problems in the longer term. Although the species develops with few faults and is decay resistant the trees in question have grown in close competition. This has led to tall slender specimens that will one day become an issue, primarily for neighbouring properties which they invariably overhang. Some Hornbeams have in fact already been cut back on the western boundary. It's suspected this was to reduce shading in neighbouring gardens. The work has not been done to the best standard.

Conclusion

1. As previously stated the population of Lombardy Poplars presents the greatest problem from a risk prospective. The main issues fall into three categories.
 - 1.1. The amount of dead wood present poses the greatest risk. Where the trees stand in less frequented areas its removal is recommended within 1 year and in busier areas the work should be completed within 3 months. That said having all deadwood removed at the same time may prove to be more cost effective while high access equipment is on site.
 - 1.2. The second highest risk areas is where the Lombardy Poplars have been exposed to new wind loading following recent tree removals. Here, graduated height reductions of the most windward trees (T265 & T266) should be carried out along with dead wood removal and crown reductions on the leisure centre side for the rest of this group. The loss of companion cover and poor form of T263 also must be addressed by way of a height reduction. All these works should be completed within 3 months.
 - 1.3. There are also a number of Lombardy Poplars with signs of decay in their lower stems. The *Pholiota squarrosa* infections of T190 and T232 have not yet produced outwardly detectible signs of decay. However when tree height, site usage and the poor decay resistance of Poplar are taken into account there is still cause for concern. It is for these reasons we have recommended height reductions for these trees within 1 year. If however there is a strong desire to keep these trees intact they could alternatively be re-inspected in 18 months to monitor the situation. At this point if decay has not developed significantly they could be resurvey at the same intervals as the rest of the population.
 - 1.4. Finally, regarding the Lombardy Poplars there are some trees with detectible decay in vital structural areas. T129 has notable root buttress decay. Due to its position between neighbouring properties and the school driveway it has been recommended for height reduction within 1 year. When tested with a sounding hammer T242 and T253 revealed internal decay in their lower stems. In addition T242 has a small but deep cavity between its root buttresses whereas T253 is in poor vigour. Due to the condition of these trees and their location in a busy part of the playing fields they have been recommended for removal within 3 months.
2. The other trees worth of individual note are the Silver Birches and Horse Chestnuts on the Axholme Academy site. Ivy covered T142 is in an irredeemable state and should be removed. T145, despite some notable structural issues, is nice specimen in a prominent position. As its location is also a busy one we have recommended a modest crown reduction. We have also recommended limb/crown spread reductions of Horse Chestnuts T152 and T156 to remove minor hazards and to keep the trees 'in check'. Unfortunately T157 is in poor all-around condition and should be removed. All these works should be completed within 1 year.

3. The bulk of the remaining liability based recommendations consist of minor works on small to medium sized trees to mitigate relatively low risks. Full details of these can be found in Appendix 1. These works should be completed within 1 year.
4. Finally the recommendations with priority time scales of 3 years are for maintenance or formative reasons rather than risk reduction. These works are only advisory.
 - 4.1. On the subject of maintenance there are some more general observations. With the volume of trees present, the species mix and site usage we recommend the development of a tree management plan to identify and deal with longer term issues. Steps to consider may include height reductions to all Lombardy Poplars as well as to the Hornbeams on the southern primary school boundary. A cycle of crown reductions for the Silver Maples and Horse Chestnuts should also be considered. Ultimately the removal and replanting of some of these trees with more suitable species may be the most logical approach. Where trees are subject to a Tree Preservation Order involvement from your local tree officer is recommended from the outset when formulating your approach.
5. In terms of re-inspection I recommend the site be loosely split into two parts each with different re-inspection intervals. The tree populations in the grounds of Epworth Primary School and in the grounds in front of Axholme Academy generally present less potential for harm due to their size and species. These should be re-inspected every 5 years. The trees in the grounds to the north, west and south of Axholme Academy however present a greater potential for harm and should be inspected every 3 years.
 - 5.1. There are five trees in the grounds of Epworth Primary School that have been marked for re-inspection at a 3 year interval. These trees have minor structural defects that can be monitored at the same time as the larger trees at Axholme Academy. By the next inspection our aim would be to decide whether these faults are improving or degenerate then either recommend corrective work or extend their re-inspection intervals to 5 years along with the rest of the population.
6. Finally accompanying this report is a spreadsheet file with additional information captured during the survey. Amongst other things the file contains GPS coordinates for each tree as well as the type and location of any faults present. This information may be of use to your local authority tree officer or to those carrying out the work recommended.

Appendix 1: Survey Details

Tree ID	Common Name	Height (m)	Maturity	Physiological Condition	Recommendation	Priority	Next Survey (months)	Comments
1	Silver Birch	4	Semi-mature	Good	No work required	n/a	60	
2	Silver Birch	4	Semi-mature	Good	No work required	n/a	60	
3	Silver Birch	4	Semi-mature	Good	No work required	n/a	60	
4	Cherry	3	Young	Poor	Fell	1 year		
5	Deodar Cedar	3	Semi-mature	Good	Crown Clean	1 year	60	
6	Common Hawthorn	5	Semi-mature	Fair	No work required	n/a	60	
7	Mountain Ash	5	Semi-mature	Good	No work required	n/a	60	
8	A Hedgerow	5	Semi-mature	Fair	Remove dead wood	1 year	60	Laurel hedge
9	Norway Maple	7	Semi-mature	Fair / Good	No work required	n/a	60	
10	Leyland Cypress	9	Semi-mature	Good	No work required	n/a	60	
11	A Hedgerow	5	Young	Good	No work required	n/a	60	Leylandii hedge
12	Silver Birch	8	Semi-mature	Fair / Good	Fell	1 year		33° lean at breastbone height to North due to severed roots on South side. Removal now will allow neighbouring trees to better develop.
13	Common Hawthorn	7	Semi-mature	Fair / Good	No work required	n/a	60	
14	Field Maple	9	Semi-mature	Good	No work required	n/a	60	
15	Field Maple	9	Semi-mature	Good	No work required	n/a	60	
16	Silver Birch	18	Mature	Good	Remove dead wood	1 year	60	
17	Common Oak	11	Semi-mature	Good	No work required	n/a	60	
18	Field Maple	11	Semi-mature	Good	No work required	n/a	60	
19	Common Hornbeam	11	Semi-mature	Fair / Good	No work required	n/a	60	

20	Common Hornbeam	12	Semi-mature	Fair	No work required	n/a	60	
21	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
22	Common Walnut	11	Semi-mature	Fair / Good	Remove dead wood	1 year	60	
23	Silver Birch	16	Semi-mature	Fair / Good	Remove dead wood	1 year	60	
24	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	Small cavity (occluding) at base of lowest limb
25	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
26	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
27	Common Hornbeam	3	Semi-mature	Poor / Fair	No work required	n/a	60	
28	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
29	Whitebeam	12	Semi-mature	Fair / Good	No work required	n/a	60	
30	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
31	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
32	Whitebeam	8	Semi-mature	Fair / Good	No work required	n/a	60	
33	Silver Birch	16	Mature	Fair / Good	No work required	n/a	60	25° lean at breastbone height to NE
34	Silver Birch	16	Mature	Fair	Remove dead wood	1 year	60	
35	Silver Birch	15	Semi-mature	Poor / Fair	No work required	n/a	60	
36	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
37	Common Alder	12	Semi-mature	Fair / Good	Remove dead wood	1 year	60	
38	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
39	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
40	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
41	Common Alder	11	Semi-mature	Fair / Good	Crown Clean	1 year	60	
42	Common Hornbeam	13	Semi-mature	Fair	No work required	n/a	36	
43	Common Hawthorn	5	Semi-mature	Fair / Good	No work required	n/a	60	
44	Red Oak	12	Semi-mature	Fair / Good	Remove lowest significant limb due to weak union.	1 year	60	Remove lowest significant limb due to weak union.

45	Norway Maple	13	Semi-mature	Fair / Good	No work required	n/a	60	
46	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
47	Common Alder	12	Semi-mature	Fair	No work required	n/a	60	
48	Silver Birch	12	Semi-mature	Fair	No work required	n/a	60	
49	Silver Birch	15	Semi-mature	Fair	No work required	n/a	36	
50	Silver Birch	12	Young	Fair	No work required	n/a	60	
51	Common Hornbeam	12	Young	Fair	No work required	n/a	60	
52	Common Hornbeam	12	Young	Fair	No work required	n/a	60	
53	Common Hornbeam	12	Young	Fair	No work required	n/a	60	
54	Common Alder	16	Semi-mature	Fair / Good	No work required	n/a	60	
55	Common Oak	16	Semi-mature	Good	Crown Clean	1 year	60	
56	Common Alder	15	Semi-mature	Fair / Good	No work required	n/a	60	
57	Common Hornbeam	13	Semi-mature	Fair / Good	Remove lowest limb to NW due to weak union	1 year	60	Remove lowest limb to NW due to weak union
58	Common Hornbeam	13	Semi-mature	Good	No work required	n/a	60	
59	Common Hawthorn	5	Semi-mature	Good	No work required	n/a	60	
60	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
61	Common Hornbeam	13	Semi-mature	Fair	No work required	n/a	60	
62	Common Hawthorn	4	Dead	Dead	Fell	1 year		
63	Italian Alder	15	Mature	Good	Reduce limb and canopy to NW Crown clean	1 year	60	Reduce limb and canopy to NW. Crown clean.
64	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
65	Sweet Chestnut	7	Semi-mature	Fair	Crown Clean	1 year	60	
66	Norway Maple	7	Semi-mature	Fair / Good	No work required	n/a	60	
67	Common Hawthorn	5	Semi-mature	Poor	No work required	n/a	60	
68	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
69	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	

70	Common Hornbeam	13	Semi-mature	Fair	No work required	n/a	60	
71	Common Hornbeam	13	Semi-mature	Fair	No work required	n/a	60	
72	Common Oak	15	Semi-mature	Fair / Good	Crown Clean	1 year	60	
73	Silver Birch	10	Semi-mature	Fair	No work required	n/a	60	
74	Common Beech	8	Semi-mature	Fair / Good	No work required	n/a	60	
75	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	36	
76	Common Hornbeam	13	Semi-mature	Good	No work required	n/a	60	
77	Cherry	12	Semi-mature	Fair / Good	No work required	n/a	60	
78	Cherry	9	Semi-mature	Fair / Good	No work required	n/a	60	
79	Common Hornbeam	13	Semi-mature	Fair / Good	No work required	n/a	60	
80	Cherry	12	Semi-mature	Fair	Crown Clean	1 year	60	
81	A Group	11	Semi-mature	Fair	Fell	3 Years	60	Group of hornbeam and cherry along fence. Will require thinning or removal in future.
82	Cherry	11	Semi-mature	Fair / Good	No work required	n/a	60	Slightly unusual sounding at base.
83	Cherry	12	Mature	Fair / Good	Crown Clean	1 year	60	
84	Cherry	11	Semi-mature	Fair	No work required	n/a	60	
85	Cherry	11	Semi-mature	Fair / Good	No work required	n/a	60	
86	Cherry	11	Semi-mature	Fair / Good	No work required	n/a	60	
87	A Group	11	Semi-mature	Fair	Thin group leaving tree to NE towards playing field and tree to SW nearest fence.	3 Years	60	Group of 8 cherry trees in competition. Thin leaving tree to NE towards playing field and tree to SW nearest fence.
88	Cherry	10	Semi-mature	Fair / Good	No work required	n/a	60	
89	Cherry	8	Semi-mature	Fair / Good	No work required	n/a	60	
90	Common Hornbeam	10	Semi-mature	Fair / Good	No work required	n/a	60	
91	Mountain Ash	8	Semi-mature	Fair	No work required	n/a	60	

92	Common Hornbeam	8	Semi-mature	Fair / Good	No work required	n/a	60	Ingrown wire. No issue at current time.
93	Mountain Ash	7	Semi-mature	Fair / Good	No work required	n/a	60	
94	Common Hornbeam	8	Semi-mature	Fair / Good	No work required	n/a	60	
95	A Group	8	Semi-mature	Fair	No work required	n/a	60	
96	Mountain Ash	6	Semi-mature	Fair	No work required	n/a	60	
97	Common Hornbeam	9	Semi-mature	Fair / Good	Reduce in height to 5m, reduce crown spread to E by 2m, minor crown lift to E.	3 Years	60	Upper leader has a crack (occluding) on its upper side at 2.5m. Reduce in height to 5m, reduce crown spread to E by 2m, minor crown lift to E.
98	Common Hornbeam	5	Semi-mature	Fair	Reduce crown spread to E by 2m, minor crown lift to E.	3 Years	60	Large bark wound on upper side of main leader. Reduce crown spread to E by 2m, minor crown lift to E.
99	Mountain Ash	9	Semi-mature	Fair / Good	No work required	n/a	60	
100	Common Hornbeam	3	Semi-mature	Fair	Reduce crown over playing field by 4m.	1 year	60	Reduce crown over playing field by 4m.
101	Common Hornbeam	4	Semi-mature	Fair	Reduce crown over playing field by 4m.	1 year	60	Reduce crown over playing field by 4m.
102	Common Hornbeam	4	Semi-mature	Fair	Reduce crown over playing field by 4m.	1 year	60	Reduce crown over playing field by 4m.
103	Common Hornbeam	4	Semi-mature	Fair	No work required	n/a	60	
104	Common Hornbeam	8	Semi-mature	Fair	Remove stem overhanging playing field to the west.	1 year	60	Remove stem overhanging playing field to the west.
105	Common Hornbeam	8	Semi-mature	Fair / Good	No work required	n/a	60	
106	Common Hornbeam	8	Semi-mature	Fair / Good	No work required	n/a	60	

107	Common Hornbeam	5	Semi-mature	Fair	Fell	1 year		
108	Common Hornbeam	8	Semi-mature	Fair / Good	No work required	n/a	60	
109	Common Hornbeam	9	Semi-mature	Fair / Good	No work required	n/a	60	
110	Common Hornbeam	9	Semi-mature	Fair	No work required	n/a	60	
111	Common Alder	11	Semi-mature	Good	No work required	n/a	60	
112	Common Alder	10	Semi-mature	Fair / Good	No work required	n/a	60	
	Common Ash	10	Semi-mature	Poor / Fair	Remove all limbs overhanging playground back to the boundary line.	1 year	36	Belonging to neighbouring property. Showing signs of die back. Remove all limbs overhanging playground. Tree to be re-inspected in 3 years.
113	Mountain Ash	7	Semi-mature	Good	No work required	n/a	60	
114	Common Ash	8	Young	Good	No work required	n/a	60	
115	Goat Willow	8	Semi-mature	Fair / Good	No work required	n/a	60	
116	Cherry	7	Semi-mature	Fair / Good	No work required	n/a	60	
117	Silver Birch	11	Semi-mature	Good	No work required	n/a	60	
118	Silver Birch	14	Mature	Good	No work required	n/a	36	
119	Common Hawthorn	5	Semi-mature	Poor / Fair	No work required	n/a	60	
120	Silver Birch	12	Semi-mature	Good	No work required	n/a	60	
121	A Group	7	Semi-mature	Fair / Good	No work required	n/a	60	
122	Common Hawthorn	8	Mature	Fair / Good	No work required	n/a	60	
123	Red Oak	9	Semi-mature	Good	No work required	n/a	60	
124	Lombardy Poplar	27	Mature	Good	Remove dead wood	3 months	36	
125	Lombardy Poplar	30	Mature	Good	Remove dead wood	3 months	36	Minor buttress root decay on NE
126	Lombardy Poplar	32	Mature	Good	No work required	n/a	36	
127	Lombardy Poplar	32	Mature	Good	No work required	n/a	36	
128	Lombardy Poplar	32	Mature	Good	No work required	n/a	36	

129	Lombardy Poplar	32	Mature	Fair	Reduce Tree Height to 20m Remove dead wood.	1 year	36	Significant decay on root buttresses. Reduce Tree Height to 20m Remove dead.
130	Lombardy Poplar	32	Mature	Good	No work required	n/a	36	
131	Lombardy Poplar	32	Mature	Good	No work required	n/a	36	
132	Lombardy Poplar	32	Mature	Good	No work required	n/a	36	
133	Lombardy Poplar	32	Mature	Good	Remove dead wood	3 months	36	
134	Lombardy Poplar	32	Mature	Good	Remove dead wood	3 months	36	
135	Lombardy Poplar	32	Mature	Good	Remove dead wood	3 months	36	
136	Cotoneaster	6	Semi-mature	Poor	Fell	3 Years		Removal will allow neighbouring holly to better develop.
137	Common Holly	5.5	Semi-mature	Fair	No work required	n/a	60	
138	Common Laburnum	5	Semi-mature	Good	No work required	n/a	60	
139	A Hedgerow	11	Semi-mature	Good	No work required	n/a	60	Leyland hedge.
140	Cherry	11	Mature	Good	No work required	n/a	60	Base obscured by gardening debris.
141	Silver Birch	12	Mature	Fair / Good	No work required	n/a	36	
142	Silver Birch	8	Mature	Poor	Fell	1 year		In decline due to heavy ivy coverage. Unlikely to regenerate if ivy severed and may also become unstable with removal of its support.
143	Field Maple	5	Semi-mature	Fair / Good	No work required	n/a	60	
144	Broad-Leafed Lime	10	Semi-mature	Good	No work required	n/a	60	

145	Silver Birch	12	Mature	Good	20% crown reduction (1 meter all around)	1 year	36	Cavity at 1.5m on main stem on SE side probed to depth 30cm. Cavity at 1.5m on S side probed to depth of 25cm (limited reaction wood present) QTRA t2,s2,p4 20% crown reduction (1 meter all around).
146	Common Hawthorn	7	Mature	Good	No work required	n/a	60	
147	Silver Maple	17	Semi-mature	Good	30% crown reduction (remove 2m all around)	3 Years	36	Currently sound but species very prone to limb failure. Crown reduce to mitigate risk in longer term.
148	Common Beech	9	Semi-mature	Good	No work required	n/a	60	
149	Common Beech	7	Semi-mature	Good	No work required	n/a	60	
150	Common Beech	6	Semi-mature	Good	No work required	n/a	60	
151	Silver Maple	18	Mature	Good	30% crown reduction (remove 2m all around)	3 Years	36	Currently sound but species very prone to limb failure. Crown reduce to mitigate risk in longer term.
152	Common Horse Chestnut	11	Semi-mature	Good	Reduce SE limb by 2m and S limb by 1.5m.	1 year	36	Significant girdling roots. Limbs at 2m to SE and S end weighted. Reduce SE limb by 2m and S limb by 1.5m.
153	Common Horse Chestnut	15	Semi-mature	Good	No work required	n/a	36	
154	Common Horse Chestnut	12	Semi-mature	Fair / Good	No work required	n/a	36	
155	Common Horse Chestnut	12	Semi-mature	Fair	No work required	n/a	36	

156	Common Horse Chestnut	15	Semi-mature	Fair / Good	Limb at 2m to SE end weighed. Reduce limb by 2.5m Reduce crown over neighbouring property.	1 Years	36	Union between stems had open wound. Monitor. Limb at 2m to SE end weighed. Reduce limb by 2.5m Reduce crown over neighbouring property.
157	Common Horse Chestnut	9	Semi-mature	Poor	Fell	1 year		
158	Red Oak	14	Semi-mature	Good	No work required	n/a	36	Suspected Pholiota squarrosa present between buttresses on E side see photo.
159	Lombardy Poplar			Fair / Good	No work required	n/a	36	
160	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
161	Lombardy Poplar	30	Mature	Fair	No work required	n/a	36	
162	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
163	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
164	Lombardy Poplar	30	Mature	Good	No work required	n/a	36	
165	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
166	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
167	Lombardy Poplar	26	Mature	Fair / Good	Sever/remove ivy	1 year	36	
168	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
169	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
170	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
171	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
172	Lombardy Poplar	26	Mature	Fair / Good	No work required	n/a	36	
173	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
174	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
175	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	

176	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
177	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
178	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
179	Lombardy Poplar	26	Mature	Fair	Remove dead wood	1 year	36	
180	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
181	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
182	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
183	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
184	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
185	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
186	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
187	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
188	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
189	Lombardy Poplar	26	Mature	Fair / Good	No work required	n/a	36	
190	Lombardy Poplar	30	Mature	Fair / Good	Reduce Tree Height to 20m	1 year	36	Suspected Pholiota squarrosa present between buttresses on W side.
191	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
192	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
193	Lombardy Poplar	26	Mature	Fair / Good	Remove dead wood	1 year	36	
194	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
195	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
196	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
197	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
198	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
199	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
200	Lombardy Poplar	30	Mature	Fair	Remove dead wood	1 year	36	
201	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
202	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
203	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
204	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	

205	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
206	Norway Maple	12	Semi-mature	Fair	No work required	n/a	36	
207	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
208	Norway Maple	13	Semi-mature	Fair / Good	No work required	n/a	36	
209	Lombardy Poplar			Fair / Good	Remove dead wood	1 year	36	
210	Norway Maple	12	Semi-mature	Poor	Reduce limb over path by 2m Crown Clean	1 year	36	Deadwood and reduce limb over path by 2m.
211	Norway Maple	13	Semi-mature	Good	No work required	n/a	36	
212	Norway Maple	12	Semi-mature	Fair / Good	No work required	n/a	36	
213	Norway Maple	12	Semi-mature	Fair	Remove dead wood	1 year	36	
214	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
215	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
216	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
217	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
218	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
219	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
220	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
221	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
222	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
223	Lombardy Poplar	30	Mature	Fair / Good	No work required	n/a	36	
224	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
225	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
226	Lombardy Poplar	30	Mature	Fair	No work required	n/a	36	
227	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
228	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
229	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
230	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	

231	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
232	Lombardy Poplar	30	Mature	Fair / Good	Reduce tree height to 20m Remove dead wood	1 year	36	Single old fruiting body at base possibly same as others on site (Pholiota squarrosa)
233	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
234	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
235	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
236	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
237	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
238	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
239	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
240	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
241	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
242	Lombardy Poplar	30	Mature	Fair / Good	Fell	3 Months		Hollow sounding to 2m. Cavity at base on SE side, probed to 50cm depth.
243	Lombardy Poplar	30	Mature	Fair	Remove dead wood	1 year	36	
244	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
245	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
246	Lombardy Poplar	30	Mature	Fair	Remove dead wood	1 year	36	
247	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
248	Lombardy Poplar	30	Mature	Fair	Remove dead wood	1 year	36	
249	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
250	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
251	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
252	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	1 year	36	
253	Lombardy Poplar	30	Mature	Fair	Fell	3 Months		Hollow sounding at 2m. Poorer vigour and buttress development than neighbouring trees.
254	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	3 Months	36	

255	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	3 Months	36	
256	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	3 Months	36	
257	Lombardy Poplar	30	Mature	Fair	Remove dead wood	3 Months	36	
258	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	3 Months	36	
259	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	3 Months	36	
260	Lombardy Poplar	26	Mature	Fair	Remove branch with deep pocket at main union at 1m on N side. Remove dead wood	3 Months	36	Branch union with deep pocket at 1m on N side. Remove branch.
261	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	3 Months	36	
262	Lombardy Poplar	30	Mature	Fair / Good	Remove dead wood	3 Months	36	
263	Lombardy Poplar	30	Mature	Fair / Good	Reduce Tree Height to 20m Remove dead wood.	3 Months	36	Weak union between stems at 12m Reduce tree height to 20m
264	Silver Birch	13	Mature	Good	No work required	n/a	36	Toadstools found near base of tree (see photos) not thought to be of significance to tree stability.
265	Lombardy Poplar	30	Mature	Fair / Good	Reduce Tree Height to 20m Reduce crown spread to S by 1.5m Remove dead wood	3 Months	36	Tree has recently lost companion cover following removal of neighbouring Lombardi's. Height reduction is to compensate for this. Reduce crown spread to S by 1.5m. Remove deadwood.
266	Lombardy Poplar	30	Mature	Fair / Good	Reduce Tree Height to 25m Reduce crown spread to S by 1.5m Remove dead wood	3 Months	36	Tree has recently lost companion cover following removal of neighbouring Lombardi's. Height reduction is to compensate for this. Reduce crown spread to S by 1.5m. Remove deadwood.
267	Lombardy Poplar	30	Mature	Fair / Good	Reduce crown spread to S by 1m.	3 Months	36	Reduce crown spread to S by 1m.

268	Lombardy Poplar	30	Mature	Fair / Good	Reduce crown spread to S by 1.5m. Remove dead wood	3 Months	36	Reduce crown spread to S by 1.5m. Remove deadwood.
269	Lombardy Poplar	30	Mature	Fair	Reduce crown spread to S by 1.5m.	3 Months	36	Reduce crown spread to S by 1.5m.
270	Lombardy Poplar	30	Mature	Fair / Good	Reduce crown spread to S by 2m. Remove dead wood.	3 Months	36	Reduce crown spread to S by 2m. Remove deadwood.
271	Lombardy Poplar	30	Mature	Fair / Good	Reduce crown spread to S by 1.5m. Remove deadwood.	3 Months	36	Reduce crown spread to S by 1.5m. Remove deadwood.
272	Lombardy Poplar	30	Mature	Fair / Good	Reduce crown spread to S by 1.5m. Remove dead wood.	3 Months	36	Reduce crown spread to S by 1.5m. Remove deadwood.
273	Lombardy Poplar	30	Mature	Fair / Good	Reduce crown spread to S by 2m. Remove dead wood.	3 Months	36	Reduce crown spread to S by 2m. Remove deadwood.
274	Myrobalan Plum	6	Semi-mature	Good	Crown Clean	3 Years	36	
275	Hornbeam	6	Semi-mature	Good	Crown Clean	3 Years	36	

Appendix 2: Glossary of Terms

Tabular Headings

Tree ID: Unique reference number (tree tag number is when available)

Tree Type: Common name of tree

Height: Total height in meters either measure with a distometer or estimated

Maturity: Approximate age class of tree categorised to; Young (Y), Semi-mature (SM), Mature trees (M), Over mature trees (OM)

Physiological Condition: Health of tree taking into account vigour, presence of disease, and dieback. Categorised to; Good (G), Fair (F), Poor (P), Dead (D)

Next Survey: Timescale within which trees should be re-inspected. Frequency indicates the potential level risk posed by the trees. Categorised to; 6 months, 18 months, 36 months, 60 months

Comments: Explanation of significant defects present

Recommendations: Remedial work advised

Work Time Scale: Timescale within which tree work should be completed. Duration indicates level of work priority. Categorised to; 1 month (Urgent Priority), 3 months (High Priority), 1 year (Medium Priority), 3 years (Low Priority)

General Terms

Access facilitation pruning. One off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site

Adaptive growth. In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium. This helps to maintain a uniform distribution of mechanical stress

Adaptive roots. The adaptive growth of existing roots; or the production of new roots in response to damage, decay or altered mechanical loading

Adventitious shoots. Shoots that develop other than from apical, axillary or dormant buds; see also 'epicormic'

Anchorage. The system whereby a tree is fixed within the soil, involving cohesion between roots and soil and the development of a branched system of roots which withstands wind and gravitational forces transmitted from the aerial parts of the tree

Arboricultural Method Statement. Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained

Arboriculturist. Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction **Architecture.** In a tree, a term describing the pattern of branching of the crown or root system

Axil. The place where a bud is borne between a leaf and its parent shoot

Bacteria. Microscopic single-celled organisms, many species of which break down dead organic matter, and some of which cause diseases in other organisms

Bark. A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, thus including the phloem, cortex and periderm; occasionally applied only to the periderm or the phellem

Basidiomycotina (Basidiomycetes). One of the major taxonomic groups of fungi; their spores are borne on microscopic peg-like structures (basidia), which in many types are in turn borne on or within conspicuous fruit bodies, such as brackets or toadstools. Most of the principal decay fungi in standing trees are basidiomycetes

Bolling. A term sometimes used to describe pollard heads

Bottle-butt. A broadening of the stem base and buttresses of a tree, in excess of normal and sometimes denoting a growth response to weakening in that region, especially due to decay involving selective delignification

Bracing. The use of rods or cables to restrain the movement between parts of a tree

Branch:

- **Primary.** A first order branch arising from a stem
- **Lateral.** A second order branch, subordinate to a primary branch or stem and bearing sub-lateral branches
- **Sub-lateral.** A third order branch, subordinate to a lateral or primary branch, or stem and usually bearing only twigs

Branch bark ridge. The raised arc of bark tissues that forms within the acute angle between a branch and its parent stem

Branch collar. A visible swelling formed at the base of a branch whose diameter growth has been disproportionately slow compared to that of the parent stem; a term sometimes applied also to the pattern of growth of the cells of the parent stem around the branch base

Brown-rot. A type of wood decay in which cellulose is degraded, while lignin is only modified

Compartmentalisation. The confinement of disease, decay or other dysfunction within an anatomically discrete region of plant tissue, due to passive and/or active defences operating at the boundaries of the affected region

Competent person. A person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

Compression fork. An acute angled fork that is mechanically optimised for the growth pressure that two or more adjacent stems exert on each other

Compression strength. The ability of a material or structure to resist failure when subjected to compressive loading; measurable in trees with special drilling devices

Compressive loading. Mechanical loading which exerts a positive pressure; the opposite to tensile loading

Condition. An indication of the physiological condition of the tree. Where the term 'condition' is used in a report, it should not be taken as an indication of the stability of the tree

Construction. Site based operations with the potential to affect existing trees

Construction exclusion zone. Area based on the Root Protection Area from which access is prohibited for the duration of the project

Crown/Canopy. The main foliage bearing section of the tree

Crown lifting. The removal of limbs and small branches to a specified height above ground level

Crown thinning. The removal of a proportion of secondary branch growth throughout the crown to produce an even density of foliage around a well-balanced branch structure

Crown reduction/shaping. A specified reduction in crown size whilst preserving, as far as possible, the natural tree shape

Crown reduction/thinning. Reduction of the canopy volume by thinning to remove dominant branches whilst preserving, as far as possible the natural tree shape

Deadwood. Dead branch wood

Defect. In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment

Delamination. The separation of wood layers along their length, visible as longitudinal splitting

Dieback. The death of parts of a woody plant, starting at shoot-tips or root-tips

Disease. A malfunction in or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic micro-organisms

Distal. In the direction away from the main body of a tree or subject organism (cf. proximal)

Dominance. In trees, the tendency for a leading shoot to grow faster or more vigorously than the lateral shoots; also the tendency of a tree to maintain a taller crown than its neighbours

Dormant bud. An axial bud which does not develop into a shoot until after the formation of two or more annual wood increments; many such buds persist through the life of a tree and develop only if stimulated to do so

Dysfunction. In woody tissues, the loss of physiological function, especially water conduction, in sapwood

Buckling. An irreversible deformation of a structure subjected to a bending load

Buttress zone. The region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper side of the junctions

Cambium. Layer of dividing cells producing xylem (woody) tissue internally and phloem (bark) tissue externally

Canker. A persistent lesion formed by the death of bark and cambium due to colonisation by fungi or bacteria

Canopy species. Tree species that mature to form a closed woodland canopy

Cleaning out. The removal of dead, crossing, weak, and damaged branches, where this will not damage or spoil the overall appearance of the tree

Epicormic shoot. A shoot having developed from a dormant or adventitious bud and not having developed from a first year shoot

Excrecence. Any abnormal outgrowth on the surface of tree or other organism

Excurrent. In trees, a system of branching in which there is a well-defined central main stem, bearing branches which are limited in their length, diameter and secondary branching (cf. decurrent)

Fastigate. Having upright, often clustered branches

Felling licence. In the UK, a permit to fell trees in excess of a stipulated number of stems or volume of timber

Field layer. Herbs, ferns, grasses and sedges

Flush-cut. A pruning cut which removes part of the branch bark ridge and or branch-collar

Girdling root. A root which circles and constricts the stem or roots possibly causing death of phloem and/or cambial tissue

Ground layer. Mosses, ivy, lichens and fungi

Guying. A form of artificial support with cables for trees with a temporarily inadequate anchorage

Habit. The overall growth characteristics, shape of the tree and branch structure

Hazard beam. An upwardly curved part of a tree in which strong internal stresses may occur without being reduced by adaptive growth; prone to longitudinal splitting

Heartwood/false-heartwood. The dead central wood that has become dysfunctional as part of the aging processes and being distinct from the sapwood

Heave. A term mainly applicable to a shrinkable clay soil which expands due to re-wetting after the felling of a tree which was previously extracting moisture from the deeper layers; also the lifting of pavements and other structures by root diameter expansion; also the lifting of one side of a wind-rocked root-plate

High canopy tree species. Tree species having potential to contribute to the closed canopy of a mature woodland or forest

Incipient failure. In wood tissues, a mechanical failure which results only in deformation or cracking, and not in the fall or detachment of the affected part

Included bark (ingrown bark). Bark of adjacent parts of a tree (usually forks, acutely joined branches or basal flutes) which is in face-to-face contact

Increment borer. A hollow auger, which can be used for the extraction of wood cores for counting or measuring wood increments or for inspecting the condition of the wood

DBH (Diameter at Breast Height). Stem diameter measured at a height of 1.5 metres (UK) or the nearest measurable point. Where measurement at a height of 1.5 metres is not possible, another height may be specified

Deadwood. Branch or stem wood bearing no live tissues. Retention of deadwood provides valuable habitat for a wide range of species and seldom represents a threat to the health of the tree. Removal of deadwood can result in the ingress of decay to otherwise sound tissues and climbing operations to access deadwood can cause significant damage to a tree. Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard

Engineer-designed hard surfacing. Hard surfacing constructed within the 'Root protection area' of a tree, which will be designed by a structural or geotechnical; engineer in collaboration with an arboriculturist as set out in clause 7.4 of British Standard BS5837:2012. The purpose being to minimise the effects of the construction on the health of the tree.

Occlusion. The process whereby a wound is progressively closed by the formation of new wood and bark around it

Pathogen. A micro-organism which causes disease in another organism

Photosynthesis. The process whereby plants use light energy to split hydrogen from water molecules, and combine it with carbon dioxide to form the molecular building blocks for synthesizing carbohydrates and other biochemical products

Phytotoxic. Toxic to plants

Pollarding. The removal of the tree canopy, back to the stem or primary branches, usually to a point just outside that of the previous cutting. Pollarding may involve the removal of the entire canopy in one operation, or may be phased over several years. The period of safe retention of trees having been pollarded varies with species and individuals. It is usually necessary to re-pollard on a regular basis, annually in the case of some species

Primary branch. A major branch, generally having a basal diameter greater than 0.25 x stem diameter

Primary root zone. The soil volume most likely to contain roots that are critical to the health and stability of the tree and normally defined by reference BS5837 (2012) Trees in Relation to design, demolition and construction

Probability. A statistical measure of the likelihood that a particular event might occur

Proximal. In the direction towards from the main body of a tree or other living organism (cf. distal)

Pruning. The removal or cutting back of twigs or branches, sometimes applied to twigs or small branches only, but often used to describe most activities involving the cutting of trees or shrubs

Radial. In the plane or direction of the radius of a circular object such as a tree stem

Rams-horn. In connection with wounds on trees, a roll of occluding tissues which has a spiral structure as seen in cross-section

Rays. Strips of radially elongated parenchyma cells within wood and bark. The functions of rays include food storage, radial translocation and contributing to the strength of wood

Reactive Growth/Reaction Wood. Production of woody tissue in response to altered mechanical loading; often in response to internal defect or decay and associated strength loss (cf. adaptive growth)

Removal of deadwood. Unless otherwise specified, this refers to the removal of all accessible dead, dying and diseased branchwood and broken snags

Infection. The establishment of a parasitic micro-organism in the tissues of a tree or other organism

Lever arm. A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or an individual branch

Lignin. The hard, cement-like constituent of wood cells; deposition of lignin within the matrix of cellulose microfibrils in the cell wall is termed Lignification

Lions tailing. A term applied to a branch of a tree that has few if any side-branches except at its end, and is thus liable to snap due to endloading

Loading. A mechanical term describing the force acting on a structure from a particular source; e.g. the weight of the structure itself or wind pressure

Longitudinal. Along the length (of a stem, root or branch)

Lopping. A term often used to describe the removal of large branches from a tree, but also used to describe other forms of cutting

Microdrill. An electronic rotating steel probe, which when inserted into woody tissue provides a measure of tissue density

Minor deadwood. Deadwood of a diameter less than 25mm and or unlikely to cause significant harm or damage upon impact with a target beneath the tree

Mulch. Material laid down over the rooting area of a tree or other plant to help conserve moisture; a mulch may consist of organic matter or a sheet of plastic or other artificial material

Mycelium. The body of a fungus, consisting of branched filaments(hyphae)

Occluding tissues. A general term for the roll of wood, cambium and bark that forms around a wound on a woody plant (cf. woundwood)

Selective delignification. A kind of wood decay (white-rot) in which lignin is degraded faster than cellulose

Service. Any above- or below-ground structure or apparatus required for utility provision e.g. drainage, gas supplies, ground source heat pumps, CCTV and satellite communications

Shedding. In woody plants, the normal abscission, rotting off or sloughing of leaves, floral parts, twigs, fine roots and bark scales

Silviculture. The practice of controlling the establishment, growth, composition, health, and quality of forests to meet diverse needs and values

Silvicultural thinning. Removal of selected trees to favour the development of retained specimens to achieve a management objective

Simultaneous white-rot. A kind of wood decay in which lignin and cellulose are degraded at about the same rate

Snag. In woody plants, a portion of a cut or broken stem, branch or root which extends beyond any growing-point or dormant bud; a snag usually tends to die back to the nearest growing point

Soft-rot. A kind of wood decay in which a fungus degrades cellulose within the cell walls, without any general degradation of the wall as a whole

Spores. Propagules of fungi and many other life-forms; most spores are microscopic and dispersed in air or water

Shrub species. Woody perennial species forming the lowest level of woody plants in a woodland and not normally considered to be trees

Sporophore. The spore bearing structure of fungi

Sprouts. Adventitious shoot growth erupting from beneath the bark

Removal of major deadwood. The removal of, dead, dying and diseased branchwood above a specified size

Respacing. Selective removal of trees from a group or woodland to provide space and resources for the development of retained trees

Residual wall. The wall of non-decayed wood remaining following decay of internal stem, branch or root tissues

Rib. A ridge of wood that has usually developed because of locally increased mechanical loading. Often associated with internal cracking in the wood of the stem, branch or root.

Ring-barking (girdling). The removal of a ring of bark and phloem around the circumference of a stem or branch, normally resulting in an inability to transport photosynthetic assimilates below the area of damage. Almost inevitably results in the eventual death of the affected stem or branch above the damage

Ripewood. The older central wood of those tree species in which sapwood gradually ages without being converted to heartwood

Root-collar. The transitional area between the stem/s and roots

Root-collar examination. Excavation of surfacing and soils around the root-collar to assess the structural integrity of roots and/or stem

Root protection area (RPA). Layout design tool indicating a national minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability and where the protection of the roots and soil structure is treated as a priority

Root zone. Area of soils containing absorptive roots of the tree/s described. The **Primary** root zone is that which we consider of primary importance to the physiological well-being of the tree

Sapwood. Living xylem tissues

Secondary branch. A branch, generally having a basal diameter of less than 0.25 x stem diameter

Tree Risk Assessment. An assessment and description of the risks and where appropriate the values associated with a tree or trees. The primary risk being considered is that from falling trees. Other risks, such as damage to infrastructure, interruption of service and building subsidence may also be considered

· Walkover – A general view of the tree population considered in the context of the adjacent land-use to identify trees that present significantly elevated risks

· Drive-by - A general view of the tree population from a moving vehicle and considered in the context of the adjacent land-use to identify trees that present significantly elevated risks

· Individual – the assessment of risks from a single tree considered in the context of the adjacent land-use to identify trees that present significantly elevated risks

Vascular wilt. A type of plant disease in which water-conducting cells become dysfunctional

Vessels. Water-conducting cells in plants, usually wide and long for hydraulic efficiency; generally not present in coniferous trees

Veteran tree. Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned. These characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem

Vigour. The expression of carbohydrate expenditure to growth (in trees)

Volunteer trees. Trees arising from natural colonisation rather than having been planted

White-rot. A range of kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded

Stem/s. Principle above-ground structural component(s) of a tree that supports its branches

Stress. In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition or extremes of temperature

Stress. In mechanics, the application of a force to an object

Stringy white-rot. The kind of wood decay produced by selective delignification

Storm. A layer of tissue which supports the fruit bodies of some types of fungi, mainly ascomycetes

Structural roots. Roots, generally having a diameter greater than ten millimetres, and contributing significantly to the structural support and stability of the tree

Structure. Manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork

Subsidence. In relation to soil or structures resting in or on soil, a sinking due to shrinkage when certain types of clay soil dry out, sometimes due to extraction of moisture by tree roots

Subsidence. In relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight

Taper. In stems and branches, the degree of change in girth along a given length

Target canker. A kind of perennial canker, containing concentric rings of dead occluding tissues

Targets. In tree risk assessment (with slight misuse of normal meaning) persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it

Topping. In arboriculture, the removal of the crown of a tree, or of a major proportion of it

Torsional stress. Mechanical stress applied by a twisting force

Tree Protection Plan. Scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures

Wind exposure. The degree to which a tree or other object is exposed to wind, both in terms of duration and velocity

Wind pressure. The force exerted by a wind on a particular object

Windthrow. The blowing over of a tree at its roots

Wound dressing. A general term for sealants and other materials used to cover wounds in the hope of protecting them against desiccation and infection; only of proven value against fresh wound parasites

Woundwood. Wood with atypical anatomical features, formed in the vicinity of a wound

Appendix 3: Guidelines & Limitations

All work must be to BS 3998: 2010 - 'Recommendations for tree work'.

Staff carrying out the work must be qualified, experienced contractors, and should be covered by adequate public liability insurance.

This report is based upon a visual inspection. The consultant shall not be responsible for events which happen after this time due to factors which were not apparent at the time, and the acceptance of this report constitutes an agreement with the guidelines and the terms listed in this report.

Any defects seen by a contractor or the employer that were not apparent to the consultant must be brought to the consultant's attention immediately.

No liability can be accepted by the consultant in respect of the trees unless the recommendations of this report are carried out as outlined and within the stated timescales.

It is advisable to have trees inspected by an arboricultural consultant regularly. In this instance it is recommended that these inspections are made as per the recommended re-inspection timings in this report. Furthermore it is recommended that trees be re-inspected following certain events. These include; severe weather events, significant changes to site usage, changes that affect wind loading on the trees (e.g. Removal of neighbouring trees, erection/demolition of buildings).

Appendix 4: Images



Image 1 – Fruiting body from base of Red Oak T158



Image 2 – Fruiting body from base of Lombardy Poplar T190