

Site – Heatons Cycle Link, Burnage Lane to Priestnall Fields Section

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TREE SURVEY REPORT

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1. Executive Summary

- 1.1 Trees were plotted and assessed individually. Comments were made where it was identified as presenting potentially significant elevated risk, being of particular note or requiring specific management treatments.
- 1.2 This section of the path runs west to east, from Burnage Lane to join a path running north to south through Priestnall School fields. The majority of trees are mature, supplemented with more recent planting.
If the path is extended to the full width it would mean the relocation of several saplings. There are also a number of trees, which due to their condition, it is suggested are to be removed as they are either dead or in decline and may pose a hazard to users of the path. Replacement planting is advised along the course of the path.
- 1.3 Several of the trees are encroaching on the path and pruning should be included in any path widening to give clearance to machinery and to final path users.

2. Terms of Reference

2.1 Instruction

2.1.1 Greenspace Consultancy is instructed by Phil Gibbon of Stockport MBC:

Carry out assessment of trees alongside the route of the path from Burnage Lane to Priestnall School fields

Assess at an appropriate level of detail and record any tree identified as presenting a significantly elevated risk

Produce a plan and schedule of trees setting out our data survey

Produce a report outlining our findings and propose work to allow the works to be carried out

3. Limitations

3.2.1 The Trees were assessed visually from ground level. Where potential problems were identified, further inspection by tree climbing is recommended. No digging or drilling methods were employed during this survey.

3.2.2 This report and associated documents remain the copyright of Greenspace Consultancy and there shall be no transfer of rights to any third party without our express consent

4. Introduction

4.1 The trees have been assessed in accordance to British Standard 5837 (2012), Trees in relation to design, demolition and construction.

4.2 The assessment takes account of the structural and physiological condition of the tree, its age, dimensions and any conservation or landscape value

4.3 The retention category of each Tree or groups of trees is based on the information detailed above using the following categories.

U	= Remove (saplings, irremediable or with less than 10 years contribution).
A	= High quality and value, preferably with min. 40 years contribution.
B	= Moderate quality and value.
C	= Low quality and value. Also young trees with stem diameter below 150mm (these may be considered for relocation).

5. Statutory Controls

- 5.1 The site is not designated to be of special merit and the trees are not afforded any statutory protection.
- 5.2 As the changes to the site, including tree felling, would be considered as a planning application, it would not be subject to the Forestry Act (1967), in regard to requiring a felling license.

6. Method

- 6.1 The area was assessed as a group and a number of individual trees with unique identifying numbers allocated.
- 6.2 A visual assessment was carried out from the ground, to determine the health and structural condition. Dimensions were measured where appropriate or estimated otherwise.
 - 6.2.1 Height - overall estimated height of the tree in metres (rounded up to the nearest metre for trees over 10m high.)
 - 6.2.2 Stem diameter - measured in millimetres at 1.5m above ground (on sloping ground measured on the upslope of the stem) in accordance with annex C of BS5837:2012
 - 6.2.3 Branch spread - measured in metres (rounded up to the nearest half metre) along the four cardinal points of the compass to derive an accurate representation of the crown.
 - 6.2.4 Height of crown - the existing height, measured in metres, above ground level of the first significant branch.
 - 6.2.5 Age class - Young (Y) Middle aged (MA) Mature (M) Over Mature (OM)
 - 6.2.6 Physiological condition - Good (G) moderate (M) poor (P) dead (D)
 - 6.2.7 Health and significant defects - overall form of the Tree, presence of decay, any physical defects and observations.
Category U or A to C grading as defined in table 1 BS.5837:2012
 - 6.2.8 Management recommendations - including any further investigations required, wildlife habitat potential, management or pruning works.
 - 6.2.9 The Estimated Remaining Contribution measured in years (<10, 10+, 20+, 40+)

7. Significant Findings

- 7.1 The trees are generally in a good condition, however, there are some dead trees along the route, which present a potential danger and also several which are in an advanced state of decline and will pose a danger in the future. Some of the more recent plantings, near to the access of Bluestone Drive, could also be better located (several have already died).
- 7.2 Several of the trees also encroach on the existing path and will hinder construction/path use, unless attended to.
- 7.3 Along the majority of the route an existing path of similar dimensions already exists, so there should be very little disturbance to the trees, however, a length of the path south of Bluestone Drive will need significant work to provide the required specification.

8. Recommendations

- 8.1 Trees identified as dead or in severe decline should be removed as a priority with replacement trees being planted along the route.
- 8.2 Those trees which encroach on the path should be pruned prior to footpath work commencing.
- 8.3 Where the path is being significantly widened/improved and trees are close by, then special construction measures will need to be employed, such as a minimal or no dig method.

9. References

British Standard 5837 (2012) - Trees in relation to design, demolition and construction.
British Standard 3998 (2010) – Recommendations for tree works

Appendix 1

Tree schedule – Burnage Lane to Priestnall Fields

Tree Number	Species	Age	DBH	Height	Crown spread	Structural Condition	Health Condition	Life Expectancy	Priority	Works Required	Comments	Retention category
13437	Pyrus calleryana Chanticleer	Y	40	4	0.5	Good	Good	80+		No work required		U
13438	Tilia x europaea	M	400	13	4	Fair	Fair	>80	1	Dead wood & remove epicormic	Epicormic over path	B
13439	Betula pendula	M	300	10	4	Fair	Fair	>50	1	Dead wood	Supressed	C
13440	Betula pendula	M	300	9	4	Good	Fair	>50		No work required		B
13441	Tilia x europaea	M	390	9	3	Good	Good	>50	1	Crown lift including all epicormics growth		B
13442	Sorbus aucuparia	Y	50	3	1	Good	Good	>50	1	Remove stake		B
13443	Fraxinus excelsior	M	750	11	11	Good	Good	>75	1	Remove dead wood		B
13444	Platanus x hispanica	MA	220	8	4	Good	Good	100+		No work required		A
13445	Quercus palustris	MA	220	8	6	Good	Good	100+	1	Crown lift	Low hanging	A
13446	Sambucus nigra	MA	500	4	4	Fair	Good	>30		Clear fallen stem on ground	Multi-stemmed	C
13447	Platanus x hispanica	MA	280	8	6	Good	Good	100+	1	Crown lift	Low hanging	A
13448	Fraxinus excelsior	MA	700	8	6	Fair	Good	>50		No work required	Multi-stemmed	B

13449	Sorbus aucuparia	Y	400	3	1	Fair	Fair	100+		No work required	Stake rubbing	B
13450	Sorbus aucuparia	MA	400	5	6	Fair	Fair	>40		Crown lift	Low hanging	C
13451	Platanus x hispanica	M	750	18	12	Good	Good	100+		Crown reduce off property		B
13452	Fraxinus excelsior	M	480	16	8	Good	Good	100+		No work required		B
13453	Acer pseudoplatanus 'Variegatum'	M	500	16	12	Good	Good	>100		No work required		A
13454	Acer cappadocicum	M	650	16	10	Fair	Good	50+		No work required		B
13455	Fraxinus excelsior	M	550	16	10	Fair	Good	<50		Clear self-seeded trees around tree	Trees growing around base	B
13456	Prunus avium	M	350	7	8	Good	Good	<50		No work required		A
13457	Fraxinus excelsior	Y	80	3	2	Good	Good	100+	1	Remove stake/tie	Stake/tie tight	C
13458	Fraxinus excelsior	M	500	10	0	Dead	Dead	0	2	Grind out stump and clear felled stem. Plant new tree	Felled stem on grass	U
13459	Tilia x europaea	M	800	22	12	Good	Fair	100+	1	Dead wood	Dead wood over path	B
13460	Tilia x europaea	M	800	20	15	Good	Fair	>100	1	Dead wood	Dead wood over path	B
13461	Acer platanoides	M	400	10	10	Good	Good	>100		No work required		A

13462	Acer platanoides	MA	320	8	8	Good	Good	100+		No work required		A
13463	Prunus avium	MA	350	7	10	Good	Good	<50		No work required		A
13464	Acer platanoides	MA	280	7	6	Fair	Good	100+		No work required		A
13465	Acer platanoides	MA	320	8	7	Good	Good	100+		No work required		A
13466	Platanus x hispanica	M	1200	20	15	Good	Good	100+		Crown reduce canopy by 20% including deadwood		A
13467	Tilia x europaea	M	400	14	8	Fair	Fair	<50	1	Remove epicormics growth back to stem and Dead wood	Supressed, with dead wood	C
13477	Acer pseudoplatanus	M	320	10	8	Fair	Fair	50+		No work required		C
13478	Acer pseudoplatanus	M	420	8	5	Fair	Fair	50+		No work required	Twin- stemmed	C
13479	Fraxinus excelsior	M	380	10	5	Good	Fair	<50	1	Dead wood	Significant dead wood	C
13480	Fagus sylvatica	M	600	12	7	Good	Good	100+		No work required		A
13481	Fraxinus excelsior	M	520	14	8	Good	Good	<50	1	Crown reduce by 30% including dead wood		B

13482	Crataegus prunifolia	Y	60	3	2	Good	Good	50+		No work required		C
13483	Crataegus prunifolia	Y	60	4	2	Good	Good	50+		No work required		C
13484	Crataegus prunifolia	Y	60	4	2	Good	Good	50+		No work required		C
13485	Fraxinus excelsior	M	450	14	6	Good	Good	<50		No work required		B
13486	Fagus sylvatica	M	500	7	0	Dead	Dead	0	1	Fell	Dead stem	U
13487	Fraxinus excelsior	M	500	16	8	Good	Good	<50	1	Crown reduce by 30%		B
13488	Robinia pseudoacacia	M	400	9	5	Poor	Poor	<20	1	Fell, grind and replace including all regen	Severe decline	C
13489	Acer saccharinum	M	500	3	0	Dead	Dead	0	1	Fell and clear	Dead, top snapped out	U
13490	Tilia x europaea	M	750	20	10	Fair	Fair	50+	1	Dead wood and crown lift	Significant dead wood	B
13491	Acer pseudoplatanus	M	400	10	8	Fair	Fair	<50	1	Dead wood and remove epicormic	Significant dead wood	C
13492	Acer pseudoplatanus	M	400	14	5	Fair	Good	50+	2	Remove epicormic	Assymmetric crown	B
13493	Fraxinus excelsior	M	700	20	9	Fair	Fair	<50	1	Deadwood	Bifurcates @8m	B
13494	Tilia x europaea	M	600	20	10	Good	Fair	50+	1	Dead wood and crown lift	Significant dead wood	B

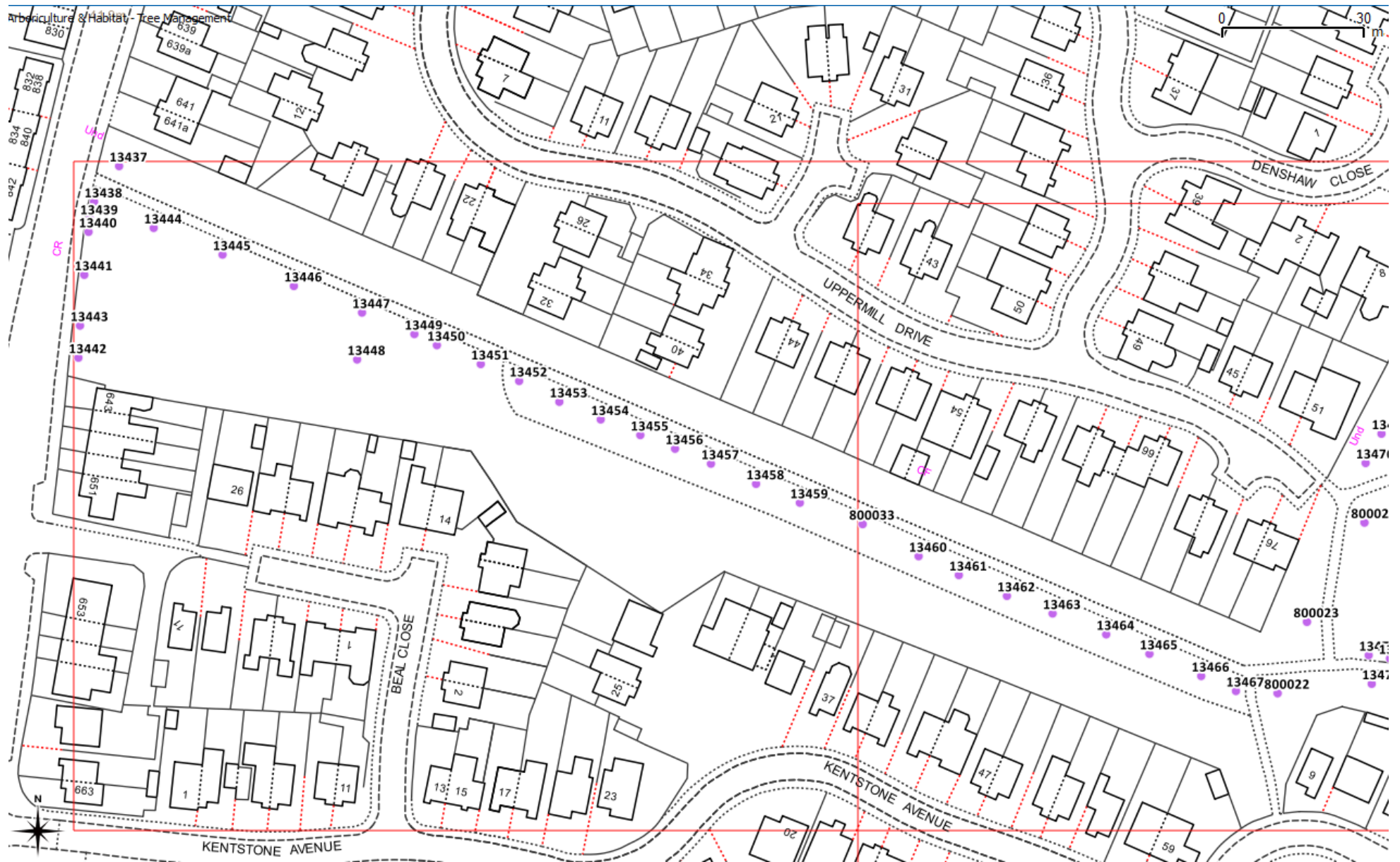
13495	Acer pseudoplatanus	M	420	16	9	Fair	Good	50+		No work required	Supressed	B
13496	Fagus sylvatica	M	700	18	10	Fair	Good	100+	1	Crown reduce by 20%		B
13497	Acer pseudoplatanus	M	600	16	10	Fair	Good	50+		No work required		B
13498	Prunus avium	M	220	6	7	Fair	Good	<50		No work required	Stem damage	B
13499	Prunus avium	M	30	3	0	Dead	Dead	0	2	Dig, new tree	Dead	U
13500	Alnus glutinosa	MA	450	6	6	Fair	Good	50+	1	Fell and grind out and replant x2	Poor specimen Multi- stemmed tree can be removed and replaced with more appropriate species	B
13501	Alnus glutinosa	Y	120	4	4	Fair	Good	50+		No work required		B
13502	Acer pseudoplatanus	M	600	4	2	Poor	Poor	<10		Grind, replant	Re-sprouting stump	U
13503	Acer pseudoplatanus	M	650	16	14	Fair	Good	100+		No work required		B

13509	Acer pseudoplatanus	M	800	22	14	Fair	Good	<100		No work required	Small area of decay @ base on west side	B
13510	Fagus sylvatica	M	420	14	10	Fair	Good	100+	1	Crown lift and removed elder and sycamore saplings		B
800019	Acer pseudoplatanus	M	520	16	9	Fair	Good	<100		No work required	Asymmetric crown	B
800020	Fagus sylvatica	OM	1200	24	13	Poor	Good	<50	1	Fell completely or reduce to habitat 6metre pole	Half of the crown snapped out	C
800021	Fagus sylvatica	OM	900	12	8	Dead	Dead	0	1	Fell completely or reduce to habitat 5metre pole	Dead	U
800022	Pyrus calleryana Chanticleer	Y	30	3	2	Good	Good	50+		No work required	Sapling	U
800027	Crataegus prunifolia	Y	20	3	1	Dead	Dead	0	1	Dig and replant	Dead	U
800028	Crataegus prunifolia	Y	20	3	1	Dead	Dead	0	1	Dig and replant	Dead	U
800029	Crataegus prunifolia	Y	30	3	1	Good	Good	100+		No work required	Sapling	U
800030	Crataegus prunifolia	Y	20	3	1	Dead	Dead	0	1	Dig and replant	Dead	U

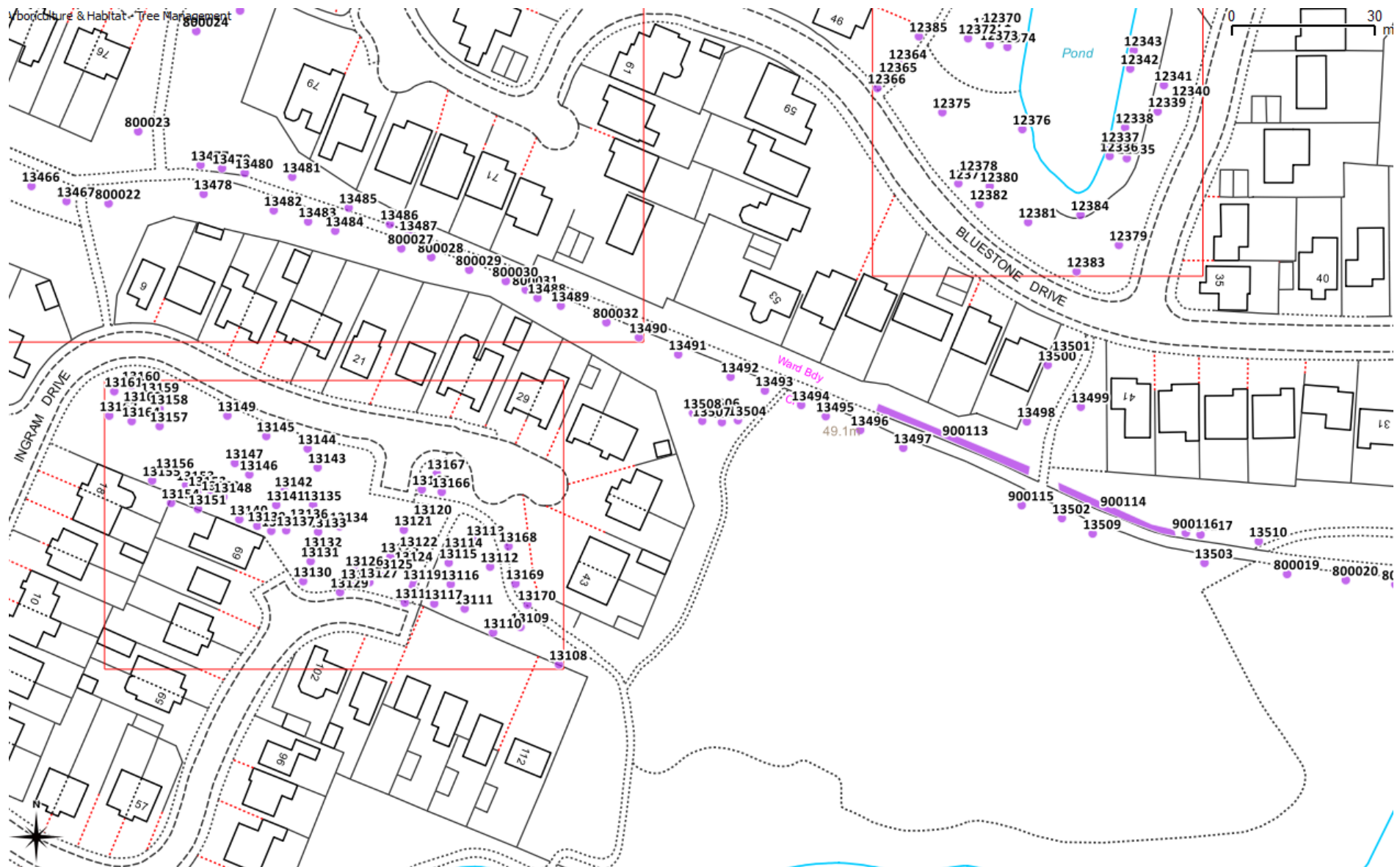
800031	Crataegus prunifolia	Y	30	3	1	Good	Good	100+		No work required	Sapling	U
800032	Crataegus prunifolia	Y	30	3	1	Good	Good	100+		No work required	Sapling	U
800033	Tilia x cordata Greenspire	Y	20	1	0	Poor	Fair	<10	1	Dig and replant	Top snapped out	U
900113	Crataegus monogyna	M	120	4	2	Fair	Good	50+		No work required	Overgrown hedge, retain if possible	B
900114	Crataegus monogyna	M	120	4	2	Fair	Good	50+		No work required	Overgrown hedge, retain if possible	B
900115	Acer pseudoplatanus	M	800	12	6	Poor	Fair	50+	2	Fell	Multi-stemmed	C
900116	Sambucus nigra	MA	200	5	4	Dead	Dead	0	1	Fell	Dead	U
900117	Sambucus nigra	MA	200	5	4	Dead	Dead	0	1	Fell	Dead	U

Appendix 2

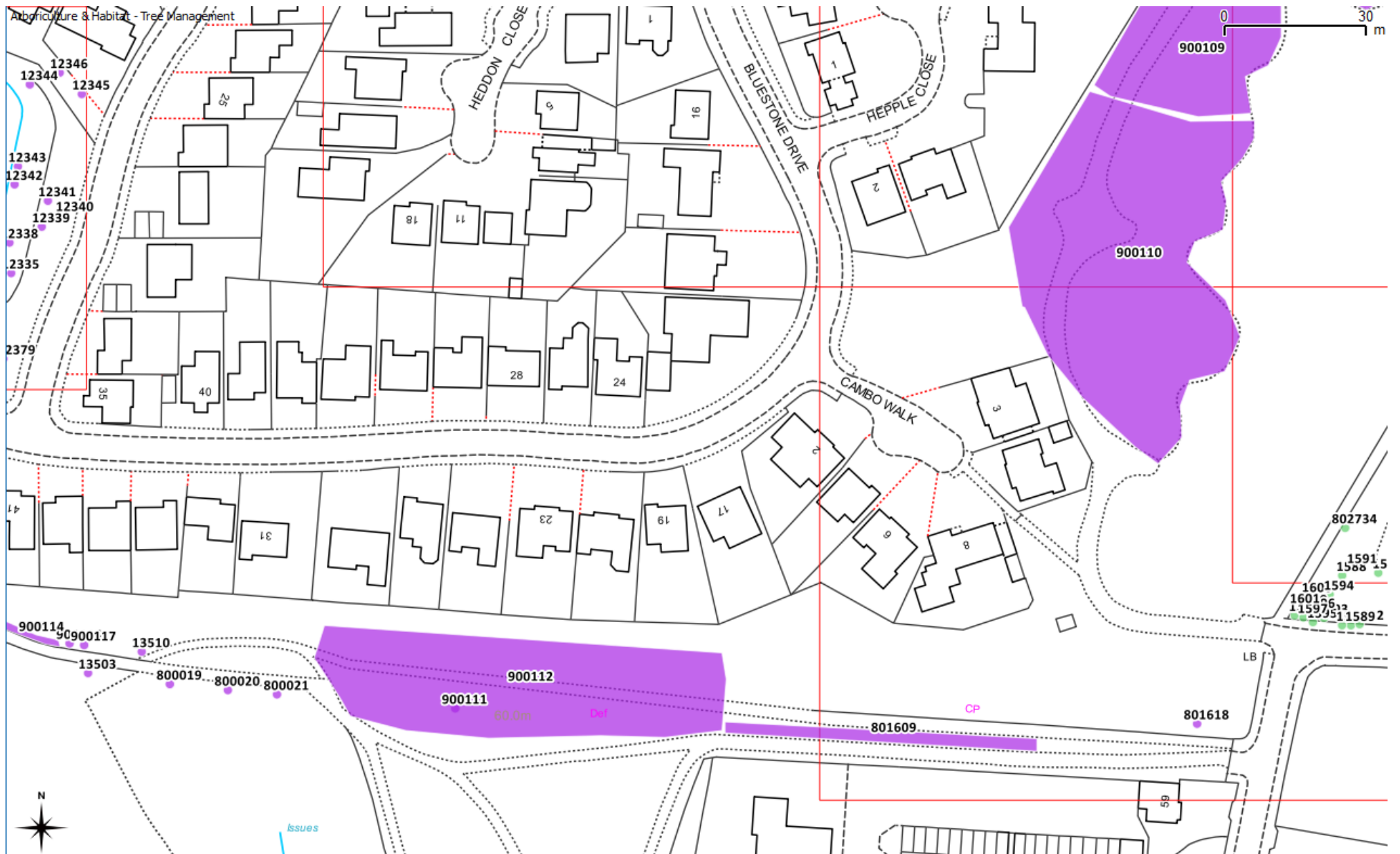
Site Plan – Burnage Lane to Priestnall Fields (west section)



Site Plan – Burnage Lane to Priestnall Fields (central section)



Site Plan – Burnage Lane to Priestnall Fields (east section)



Appendix 3

Impact Assessment

	Tree to be Retained – No Impact	Tree to be Retained – with management	Trees to be removed due to condition/development (may alter, dependent upon final line of path)
Tree No	13438, 13439, 13445, 13447, 13457, 13459, 13460, 13467, 13479, 13490, 13491, 13494, 13458, 13492, 13437, 13440, 13444, 13446, 13448, 13449, 13450, 13451, 13452, 13453, 13454, 13455, 13456, 13461, 13462, 13463, 13464, 13465, 13466, 13477, 13478, 13480, 13481, 13482, 13483, 13484, 13485, 13487, 13493, 13495, 13496, 13497, 13498, 13500, 13501, 13502, 13503, 13509, 13510, 800019, 800022, 800029, 800031, 800032, 900113, 900114	13438, 13439, 13445, 13447, 13457, 13459, 13460, 13467, 13479, 13490, 13491, 13494, 13492	13486, 13488, 13489, 800021, 900116, 900117, 800020, 900115, 800027, 800028, 800030, 800033, 13499

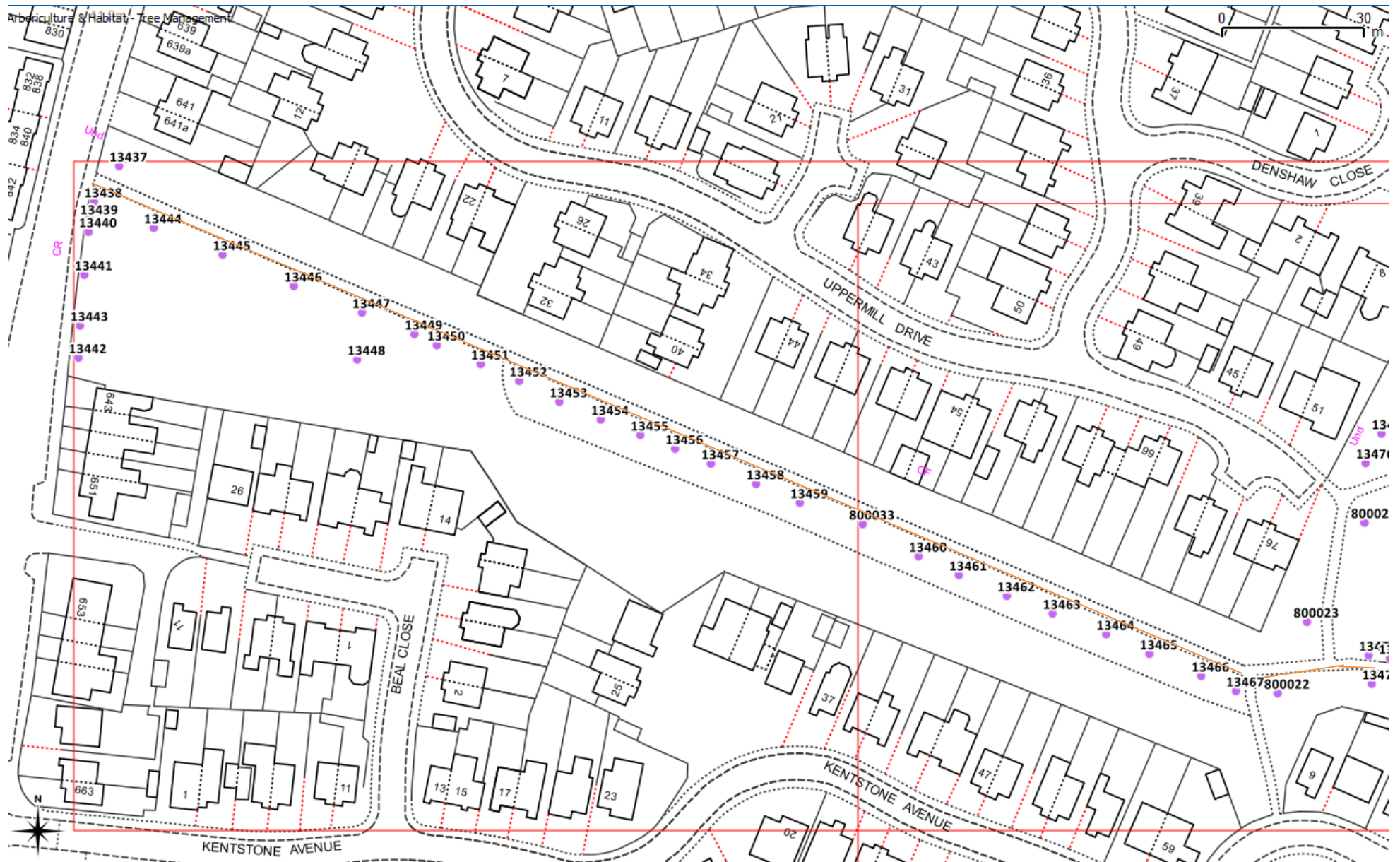
Root Zone Protection for Retained Trees

Tree Number	DBH (mm)	Root protection radius (m)	Root protection area (m ²)
800022	30	0.4	0.4
800029	30	0.4	0.4
800031	30	0.4	0.4
800032	30	0.4	0.4
13437	40	0.5	0.7
13482	60	0.7	1.6
13483	60	0.7	1.6
13484	60	0.7	1.6
13457	80	1	3
900113	120	1.4	6.5
900114	120	1.4	6.5
13501	120	1.4	6.5
13445	220	2.6	22
13444	220	2.6	22
13498	220	2.6	22

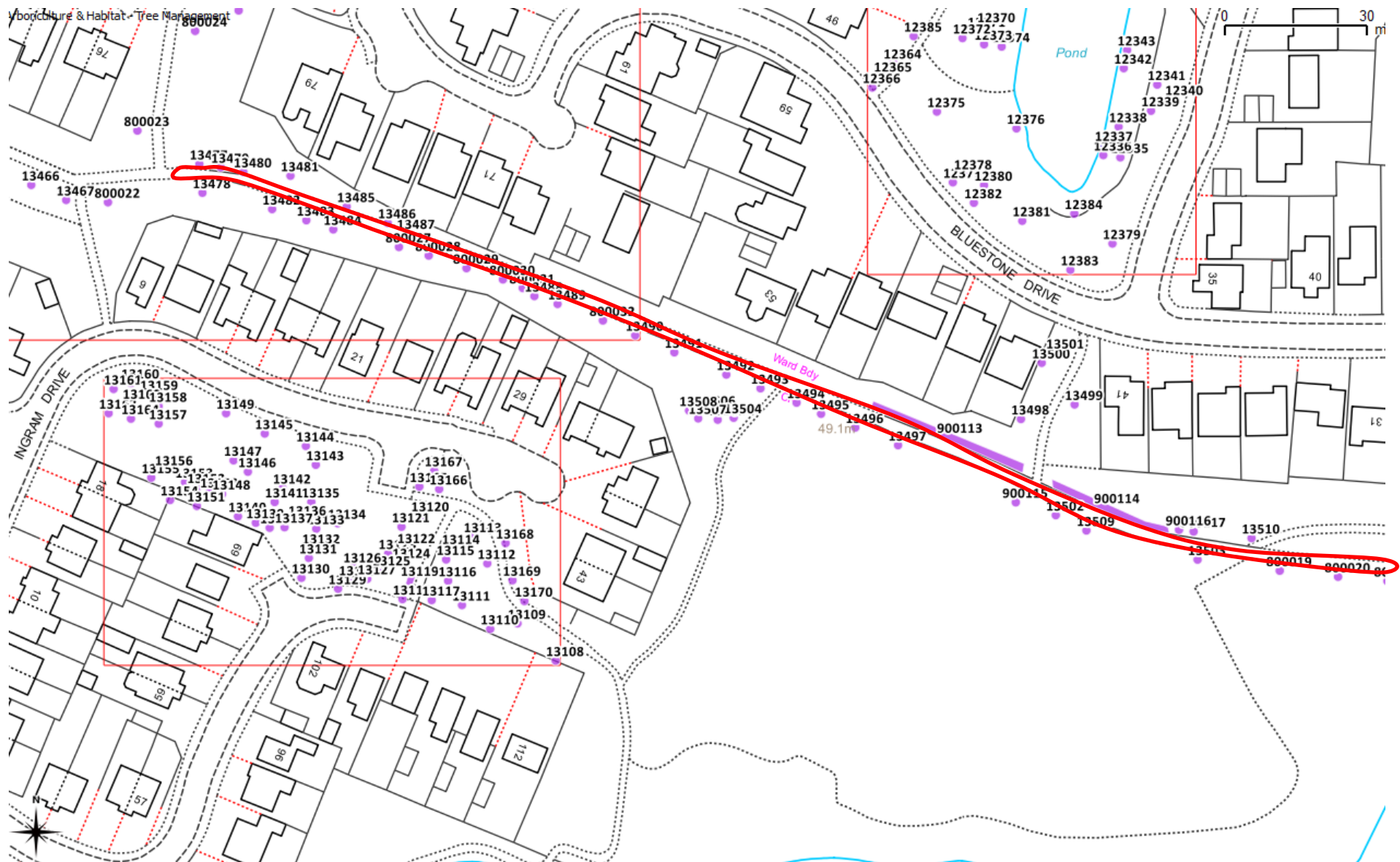
13447	280	3.4	36
13464	280	3.4	36
13439	300	3.6	41
13440	300	3.6	41
13462	320	3.8	46
13465	320	3.8	46
13477	320	3.8	46
13456	350	4.2	55
13463	350	4.2	55
13479	380	4.6	65
13438	400	4.8	72
13467	400	4.8	72
13491	400	4.8	72
13492	400	4.8	72
13449	400	4.8	72
13450	400	4.8	72
13461	400	4.8	72
13478	420	5	80
13495	420	5	80
13510	420	5	80
13485	450	5.4	92
13500	450	5.4	92
13452	480	5.8	104
13458	500	6	113
13446	500	6	113
13453	500	6	113
13487	500	6	113
13481	520	6.2	122
800019	520	6.2	122
13455	550	6.6	137
13494	600	7.2	163
13480	600	7.2	163
13497	600	7.2	163
13502	600	7.2	163
13454	650	7.8	191
13503	650	7.8	191
13448	700	8.4	222
13493	700	8.4	222
13496	700	8.4	222
13490	750	9	255
13451	750	9	255
13459	800	9.6	290
13460	800	9.6	290
13509	800	9.6	290
13466	1200	14.4	652

Appendix 4

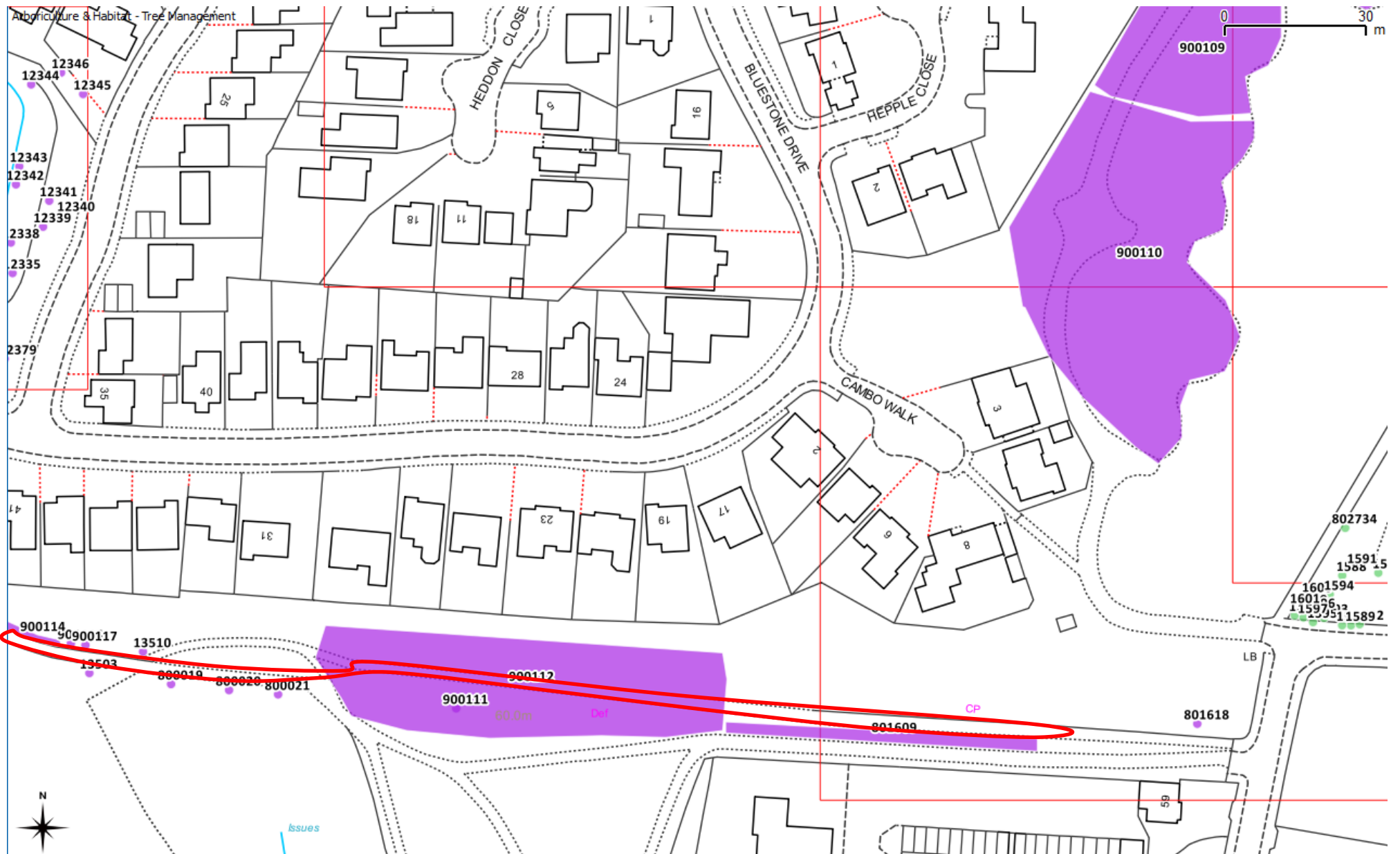
Tree Protection Plan – Burnage Lane to Priestnall Fields (west section)



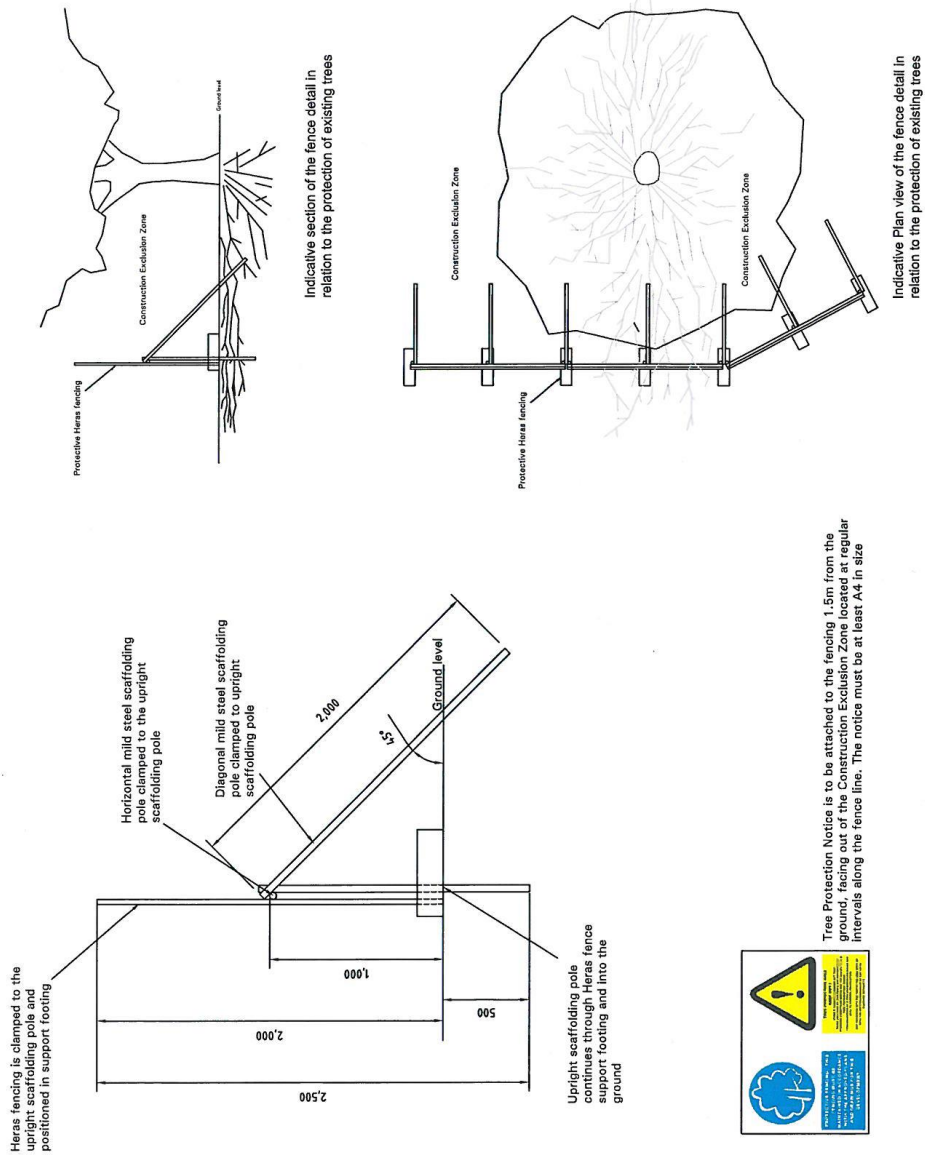
Tree Protection Plan – Burnage Lane to Priestnall Fields (central section)



Tree Protection Plan – Burnage Lane to Priestnall Fields (eastern section)



Protective fencing details



Protective fencing notice



Scheduling of work

Any tree work noted, should be carried out prior to the erection of the protective fencing. Following the erection of the protective fencing no further tree work should be carried out, without the consent of the Local Authority tree Officer.

Root protection areas

The extent to which a tree may represent a constraint to the development will depend both upon the location of the trunk and the size and nature of the canopy and also the extent of the roots below ground. The tree survey drawing plots the location of the tree above ground and through application of the calculation provided in section 5.5.2 of BS 5837:2012; the extent of root protection area has been plotted on the Tree constraints drawing.

The root protection area represents a potential constraint to the development which may be modified in pattern, although not overall area, by existing site conditions such as structures, soil types and drainage, and an appreciation of the nature of particular tree species and root morphology.

Protection is afforded to the tree by defining a Root Protection Area (RPA) within which no development activity should take place. The size of the RPA is defined in the British Standard and relates to trunk diameter plotted in a circle centred on the base of the stem. The RPA is normally the minimum position for protective fencing.

Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution.

Activity within the RPA must be agreed by the Local Planning Authority (LPA) before commencing. Where there is an overriding justification for construction within the RPA, technical solutions might be available that prevent damage to the trees. (see section 7 in BS5837 (2012)). If operations within the RPA are proposed, it must be possible for the project arboriculturalist to demonstrate that trees can remain viable and that the area lost to encroachment can be compensated for elsewhere within the RPA. If encroachment is to take place, a series of mitigation measures to improve the soil environment must be implemented to promote further rooting structures.

Where new permanent hard surface including paving or a slab for a minor structure (e.g. shed base) is to be formed within the RPA, it should bear on existing ground level, and should not exceed an area greater than 20% of the existing un-surfaced ground.

Where the LPA agrees to activity taking place within the RPA then it is likely that special measures will be required, such as a 'no dig' construction method for drives.

To give the best chance of continued good health of the retained trees, it will be essential to prevent root severance or compaction of the soil in the Root Protection Area. To achieve this, a stout fence should be erected at the position shown on the plan (or if this is not indicated, at the limit of the Root Protection Area). This should be done before any site materials or machinery are brought onto site, and should comprise a scaffold frame with steel mesh panels securely attached (eg Heras). Mesh is preferred to boarding as it can be seen through and should be re-useable. Use of rubber or concrete feet instead of a frame is not acceptable as these can easily be moved. Once in place, the fence must be regarded as sacrosanct with no storage of materials/spoil or access by machinery within the protected area.

All-weather notices should be fixed to the barrier reading "Root Protection Area – No Access".

Where temporary access within the Root Protection Area is agreed, the fence may need to be realigned and the ground surface protected. For vehicular access this protection will need to be specifically detailed and agreed.

Site operations such as deliveries, site machines, crane jibs etc. should be organised to avoid damaging the trunk or crown of trees. Where this conflict is unavoidable then facilitation pruning should be carried out in advance, rather than after damage has occurred. This may be required to allow demolition operations.

Material which could contaminate the soil e.g. concrete mixing, fuel, vehicle washings etc. should not be discharged within 10m of the stem of any tree, and not on ground beyond sloping down to the tree.

Fires should either not be permitted, or else not lit where flames could extend to within 5m of the foliage, branches or trunk.

No notice boards, cables, nails or other items should be attached to any part of the tree.

Appendix 4

Guidance Note – Statutory Controls

WILDLIFE ISSUES AND TIMING OF OPERATIONS

Bats. Under current legislation it is an offence to ‘intentionally or recklessly disturb a bat’ or ‘damage, destroy or block access to the resting place of any bat’. For further details consultation must be made with the Statutory Nature Conservancy Organisation (Natural England, 0300 060 1842 www.naturalengland.org.uk). **Where relevant any current ecological surveys for the site will take precedence in this matter.**

Birds. It is also likely to be an offence to kill, injure or take any wild bird; or take, damage or destroy the nest of any wild bird while it is in use or being built. Therefore work likely to disturb nesting birds should be avoided from late March to August.

All trees requiring work here should be evaluated prior to work starting, and **ideally work should be carried out during August – early October.**

The pruning of some species should avoid specific times. *Prunus* species (eg flowering and fruiting Cherry, Plum, Almond etc) should only be pruned during June – August in order to minimise the risk of infection by Silver Leaf disease. *Acer* (Maples including Sycamore), *Betula* (Birches) and, *Morus* (Mulberry) should not be pruned February – June due to sap bleeding; also *Juglans* (Walnut) from December – June

Appendix 5

GLOSSARY OF ARBORICULTURAL TERMS

Abscission. The shedding of a leaf or other short-lived part of a woody plant, involving the formation of a corky layer across its base; in some tree species twigs can be shed in this way

Abiotic. Pertaining to non-living agents; e.g. environmental factors

Absorptive roots. Non-woody, short-lived roots, generally having a diameter of less than one millimetre, the primary function of which is uptake of water and nutrients

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 phloem

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

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

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

Decurrent. In trees, a system of branching in which the crown is borne on a number of major widely-spreading limbs of similar size (cf. excurrent). In fungi with toadstools as fruit bodies, the description of gills which run some distance down the stem, rather than terminating abruptly

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

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

Endophytes. Micro-organisms that live inside plant tissues without causing overt disease, but in some cases capable of causing disease if the tissues become physiologically stressed, for example by lack of moisture

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.

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

Haloling. Removing or pruning trees from around the crown of another (usually mature or post-mature) tree to prevent it becoming suppressed

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

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

Internode. The part of a stem between two nodes; not to be confused with a length of stem which bear nodes but no branches

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 end-loading

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

Mature Heights (approximate):

- **Low maturing** – less than 8 metres high
- **Moderately high maturing** – 8 – 12 metres high
- **High maturing** – greater than 12 metres high

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

Mycellium. 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)

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

Priority. Works may be prioritised, 1. = high, 5. = low

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

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

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

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

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

Single-up. Removal of stems from a multi-stemmed tree with the aim of developing a tree with a single stem.

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

Sporophore. The spore bearing structure of fungi

Sprouts. Adventitious shoot growth erupting from beneath the bark

Squirrel damage. Stripping of the bark from stems or branches by squirrels. This can result in the death of branches or even entire trees

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

Strain. In mechanics, the distortion of an object caused by a stress

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

Translocation. In plant physiology, the movement of water and dissolved materials through the body of the plant

Transpiration. The evaporation of moisture from the surface of a plant, especially via the stomata of leaves; it exerts a suction which draws water up from the roots and through the intervening xylem cells

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

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

Understorey. This layer consists of younger individuals of the dominant trees, together with smaller trees and shrubs which are adapted to grow under lower light conditions

Understorey tree species. Tree species not having potential to attain a size at which they can contribute to the closed high canopy of a woodland

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)

Vitality. A measure of physiological condition. N = within normal range for species and age, R = reduced from the normal range for the species and age, P = poor

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

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