Site – Green Lane, Heaton Mersey

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HND in Arboriculture

TREE SURVEY REPORT

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Contents

Appendices

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 The proposed path widening extends north along the pedestrianised length of Green Lane towards the junction with Bowerfold Lane.

1.3 None of the trees are considered an imminent danger, however, several are in a very poor condition. Along much of the route of the path there is an outgrown hawthorn hedge, which has not been maintained as a hedge for a considerable time and is overgrown by adjacent trees, which are also supressing it. To the west of the path, there are several sycamore trees which are to close to the adjacent fence, considering their potential mature size.

1.4 The trees identified to be in a poor condition should be removed to ensure safety of future path users. Much of the hawthorn hedge will require removal is the path will extend into the rooting zone and will further compromise its health and stability. Replacement planting would be anticipated. Opportunity should be taken to remove any inappropriate trees along the length of the root, such as the sycamore to the west of the path.
Trees to be retained should be afforded protection, by use of appropriate fencing.

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2. Terms of Reference

2.1 Instruction

2.1.1 Greenspace Consultancy is instructed by Richard Fenton, Senior Engineers, Place Management:

Carry out assessment of trees along the length of the proposed path improvements, Green Lane, Heaton Mersey.

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 along the route of the path are generally in quite a neglected state, although none are considered to pose an imminent danger.

7.2.1 A significant number of the trees along the route are part of an outgrown hawthorn hedge, which appears to have been approximately 1m high in the past, but now grows to a height of 2-4m. Being overhung by large surrounding trees has also contributed to its deterioration.

7.2.2 To the west of the path, there are several Sycamore trees, tight up against the adjacent garden fence. These trees have the potential to grown very large, in maturity.

8. Recommendations

8.1 Remove trees identified to be in a poor condition, to create a long-term, safe environment for path users.

8.2 Where the hawthorn hedge is to be further compromised by the widening of the path, it should be felled and grubbed out, with replacement planting carried out as part of a complimentary planting scheme. Where the hedge can be retained, it should be cut down to approximately 1m in height and maintained at this height.

8.3 Those sycamore trees to the west of the path should be felled and treated to prevent damage to the adjacent property and allow greater illumination for the path.

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 – Green Lane, Heaton Mersey

Tree	Species	Age	DBH (mm)	Height (m)	Crown spread (m)	Structural condition	Health condition	Life expectancy	Priority	Recommendations	Comments	Retention category
900266	Acer pseudoplatanus	Y	200	6	4	Fair	Good	100+	2	Fell and poison	Too close to fence	B
900267	Acer pseudoplatanus	Y	300	7	4	Fair	Good	100+	2	Fell and poison	Too close to fence	B
900268	Acer pseudoplatanus	Y	120	6	4	Fair	Good	100+		No work required		B
900269	Crataegus monogyna	MA	120	5	3	Fair	Good	100+		No work required		B
900270	Salix fragilis	MA	400	6	6	Fair	Good	>50	2	Fell and grub out	Multi-stemmed. Too close to proposed widening	B
900271	Salix caprea	MA	420	6	3	Fair	Good	>50		No work required	Bifurcates at 1m	B
900272	Acer pseudoplatanus	MA	400	7	4	Fair	Good	100+		No work required	Twin stemmed	B
900273	Salix caprea	MA	350	7	4	Fair	Good	>50	2	Fell and grub out	Bifurcates at 1m. Too close to proposed widening	B

900274	Salix caprea	MA	300	6	5	Fair	Good	>50	2	Fell and grub out	Extends over path. Too close to proposed widening	B
900275	Salix caprea	MA	260	5	3	Fair	Good	>50	2	Fell and grub out	Too close to proposed widening	B
900276	Salix fragilis	M	500	6	6	Poor	Fair		1	Fell and grub out	Half snapped out over path	C
900277	Salix caprea	Y	160	5	3	Fair	Good	>50	2	Fell and grub out	Bifurcates @ 0.5m	B
900278	Crataegus monogyna	Y	100	3	2	Fair	Fair	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	U
900279	Crataegus monogyna	M	300	4	2	Fair	Fair	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	B
900280	Sambucus nigra	M	320	7	6	Fair	Fair	>50	2	Fell and grub out	Weak unions	B

900281	Crataegus monogyna	M	300	5	4	Fair	Fair	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	B
900282	Corylus avellana	M	450	6	4	Fair	Good	50+	2	Fell and grub out		B
900283	Crataegus monogyna	M	500	5	4	Fair	Good	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	B
900284	Acer pseudoplatanus	M	400	12	6	Fair	Good	100+	2	Fell and grub out	Too close to proposed widening	B
900285	Crataegus monogyna	MA	110	4	2	Fair	Fair	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	B
900286	Crataegus monogyna	MA	240	3	2	Fair	Fair	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	B
900287	Crataegus monogyna	MA	100	2	1	Poor	Fair	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	U

900288	Salix caprea	MA	110	6	3	Fair	Good	>50	2	Fell and grub out	Too close to proposed widening	U
900289	Crataegus monogyna	MA	130	3	1	Fair	Poor	<20	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	C
900290	Sambucus nigra	MA	110	4	3	Poor	Poor	<20	2	Fell and grub out		U
900291	Crataegus monogyna	MA	110	3	2	Fair	Fair	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	U
900292	Corylus avellana	M	600	8	5	Poor	Good	>50	2	Crown reduce back to original cuts	Outgrown coppice. Too close to proposed widening	B
900293	Crataegus monogyna	MA	110	3	2	Poor	Fair	>50	2	Crown reduce back to original cuts	Outgrown hedge. Too close to proposed widening	C
900294	Crataegus monogyna	M	220	4	3	Poor	Fair	>50	2	Crown reduce back to original cuts	Outgrown hedge. Too close to proposed widening	C

900295	Sambucus nigra	M	350	6	5	Poor	Poor	<10	1	Remove debris	Fallen	U
900296	Crataegus monogyna	MA	230	4	2	Poor	Poor	<10	1	Fell and grub out	Almost dead	U
900297	Acer pseudoplatanus	MA	550	8	5	Fair	Good	>50	2	Fell and grub out	Bifurcates @1m. Too close to proposed widening	C
900298	Crataegus monogyna	MA	160	3	2	Poor	Fair	>50	2	Crown reduce back to original cuts	Outgrown hedge. Too close to proposed widening	C
900299	Crataegus monogyna	MA	200	4	2	Poor	Fair	>50	2	Crown reduce back to original cuts	Outgrown hedge. Too close to proposed widening	C
900300	Acer pseudoplatanus	MA	220	8	4	Fair	Good	>100		No work required		B
900301	Acer pseudoplatanus	MA	230	8	4	Fair	Good	>100	2	Fell and grub out		B
900302	Crataegus monogyna	MA	110	3	1	Fair	Good	>50	2	Crown reduce back to original cuts	Outgrown hedge. Too close to proposed widening	C

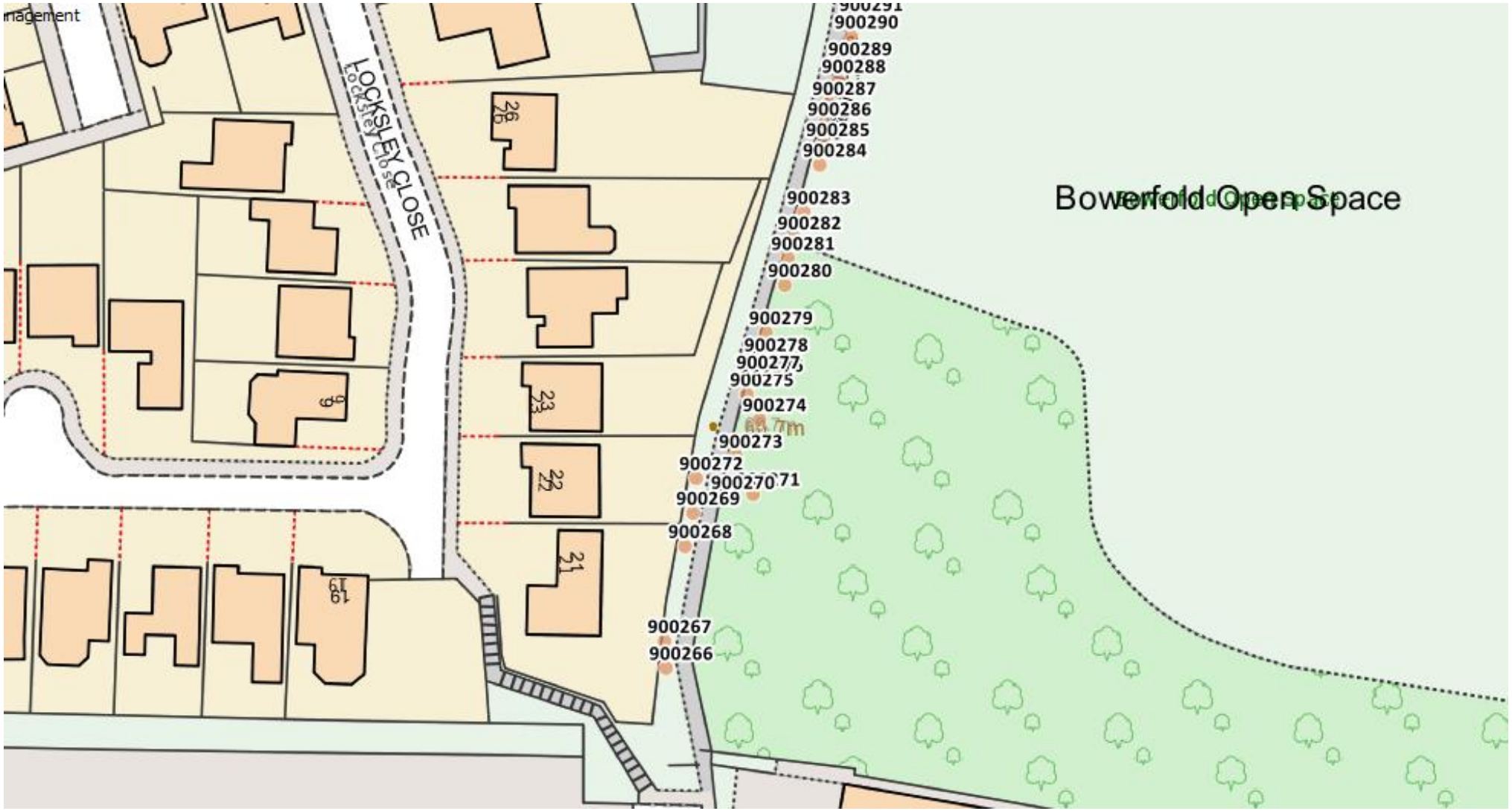
900303	Crataegus monogyna	MA	180	3	2	Fair	Good	>50	2	Crown reduce back to original cuts	Outgrown hedge. Too close to proposed widening	C
900304	Acer pseudoplatanus	MA	300	12	5	Fair	Good	>100	2	Fell and grub out		B
900305	Crataegus monogyna	MA	110	4	2	Fair	Fair	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	U
900306	Crataegus monogyna	MA	110	4	2	Fair	Good	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	U
900307	Crataegus monogyna	MA	250	4	2	Fair	Good	>50	2	Fell and grub out		B
900308	Crataegus monogyna	MA	200	4	2	Fair	Good	>50	2	Fell and grub out	Outgrown hedge. Too close to proposed widening	B
900309	Acer pseudoplatanus	M	400	14	8	Fair	Good	100+		No work required		B
900310	Acer pseudoplatanus	M	900	18	10	Fair	Good	>100		No work required	**In private ownership**	B

900311	Populus nigra italica	M	1200	24	6	Fair	Good	>30		No work required	**In private ownership**	B

Appendix 2

Site Plan 1 (North Section) – Green Lane, Heaton Mersey

Site Plan 2 (South Section) – Green Lane, Heaton Mersey



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	900268, 900269, 900271, 900272, 900300, 900309, 900310, 900311		900266, 900267, 900270, 900273, 900274, 900275, 900276, 900277, 900278, 900279, 900280, 900281, 900282, 900283, 900284, 900285, 900286, 900287, 900288, 900289, 900290, 900291, 900292, 900293, 900294, 900295, 900296, 900297, 900298, 900299, 900301, 900302, 900303, 900304, 900305, 900306, 900307, 900308

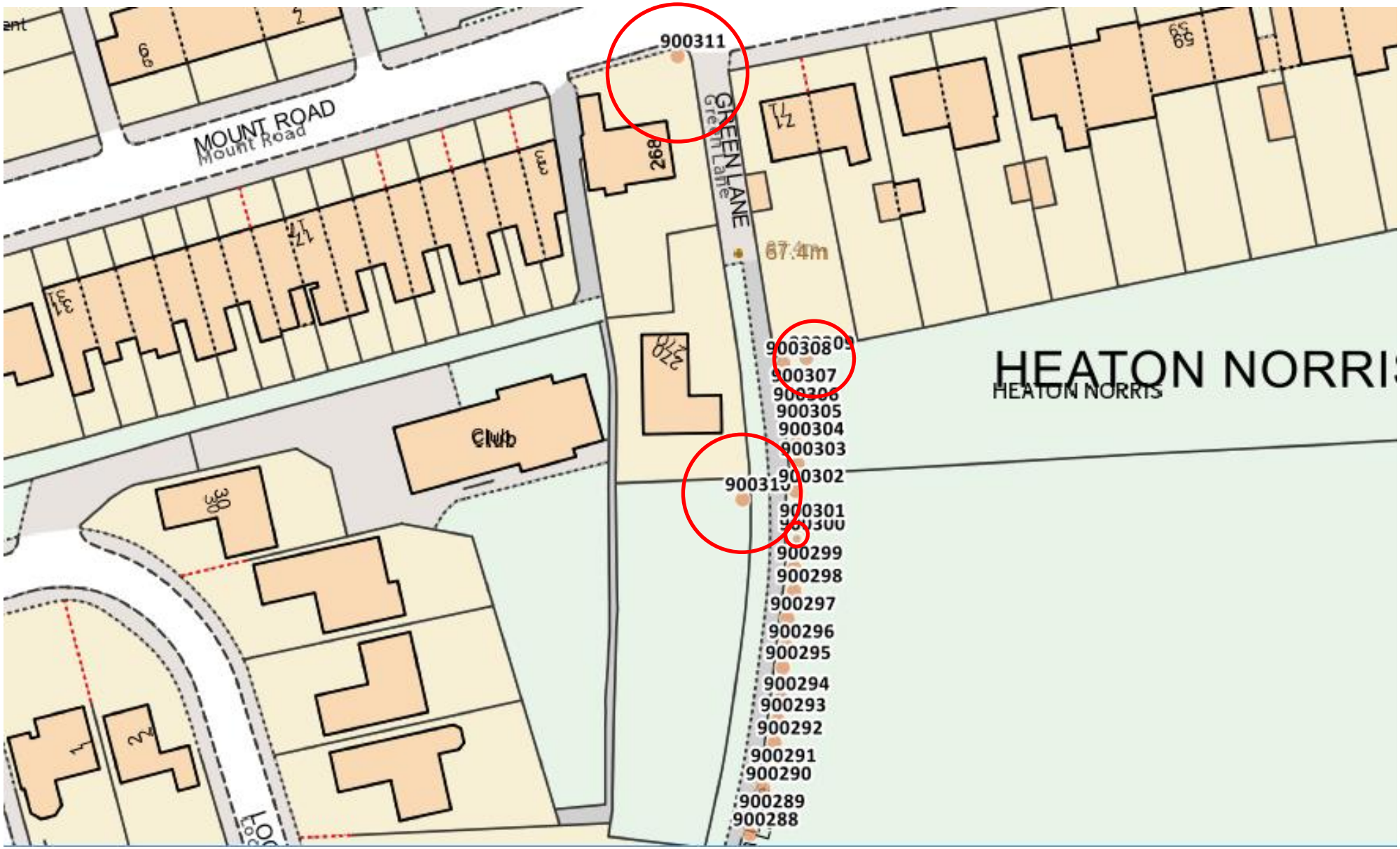
Root Zone Protection for Retained Trees

Tree No	Root protection radius (m)	Root protection area (m^2)
900268	1.4	6.5
900269	1.4	6.5
900271	5.0	80
900272	4.8	72
900300	2.6	22
900309	5.0	80
900310	**10.8**	**367**
900311	**14.4**	**652**

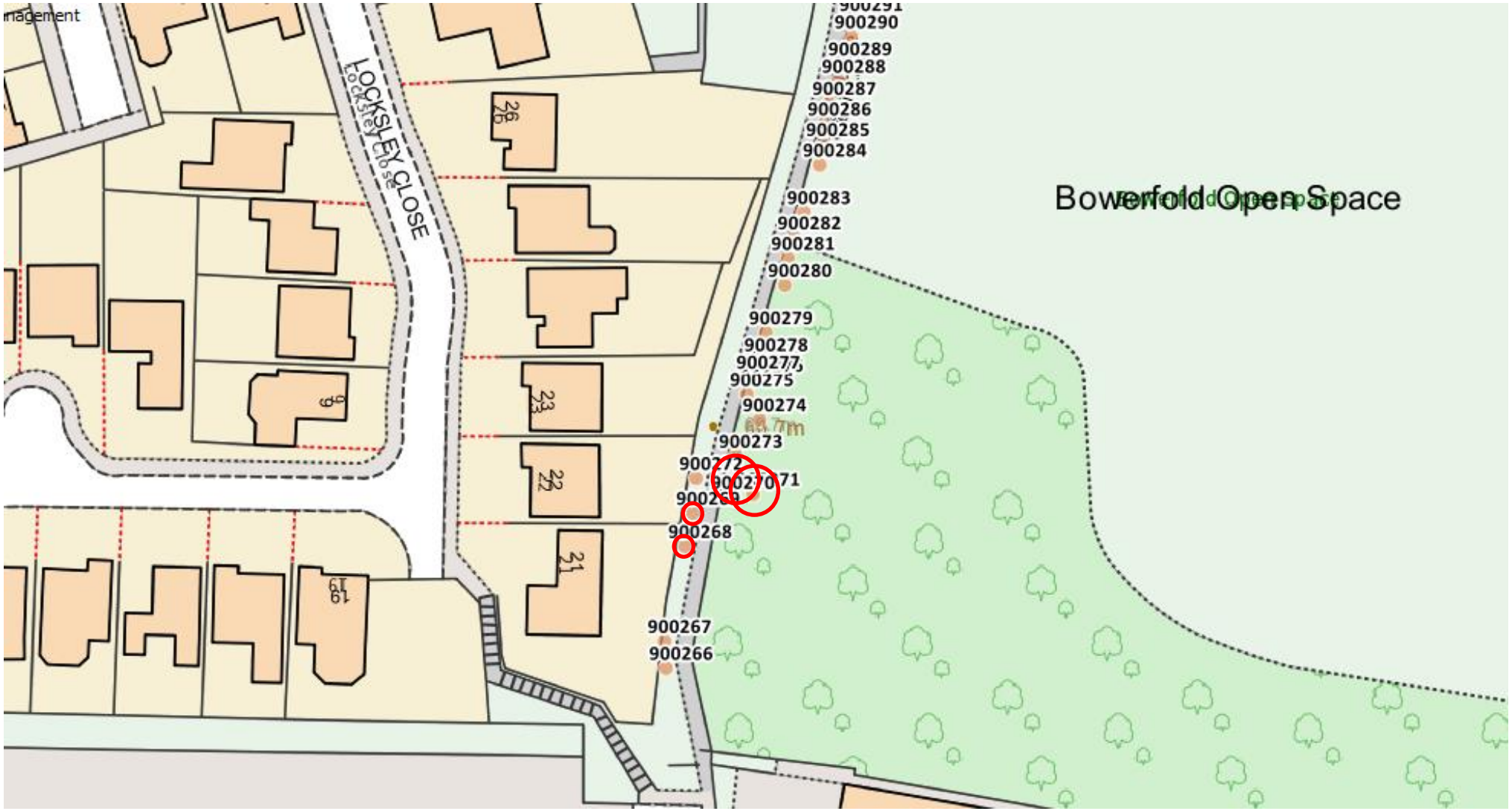
Emboldened trees in adjacent private ownership

Appendix 4

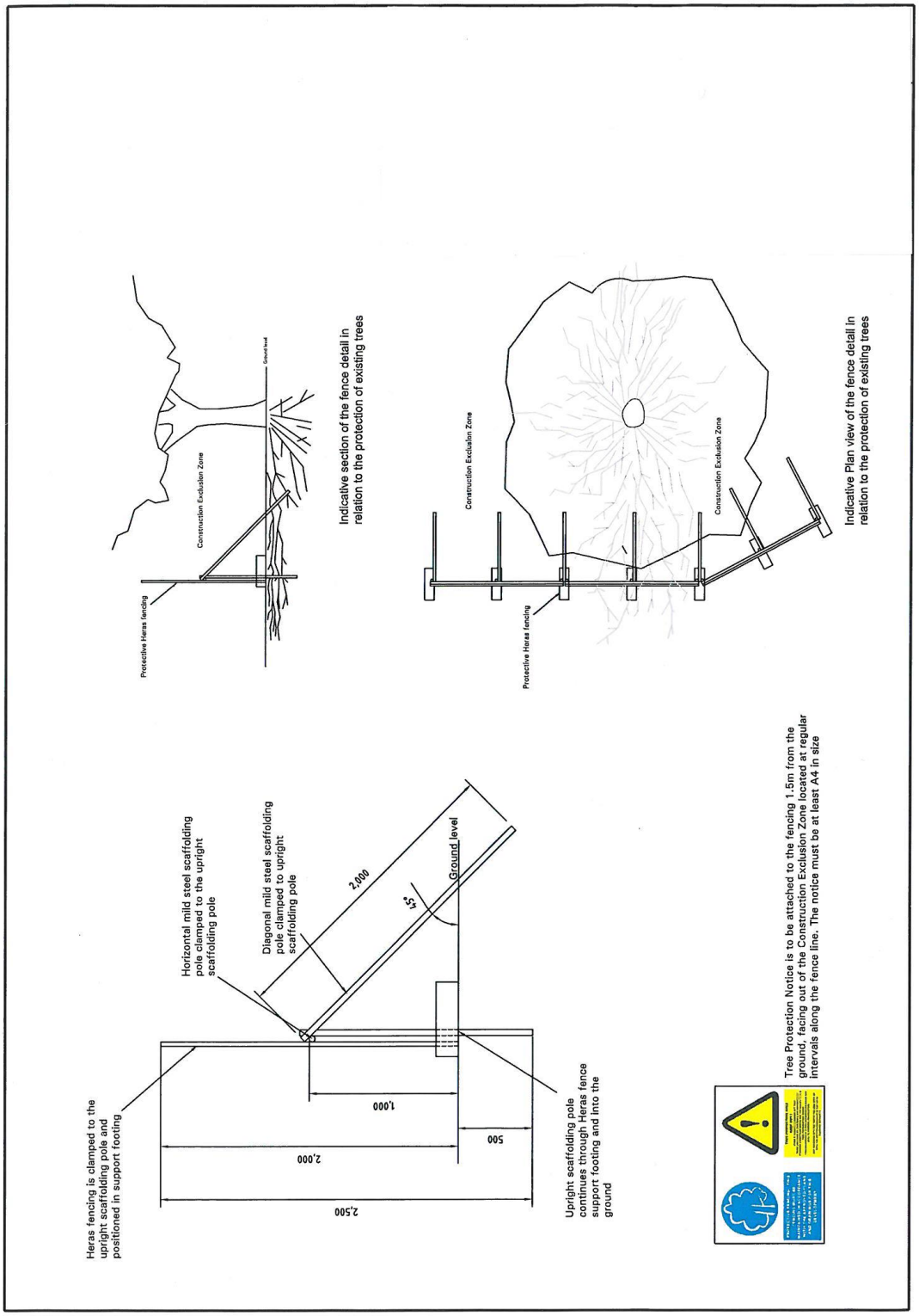
Tree Protection Plan 1 (North Section) - Green Lane



Tree Protection Plan 2 (South Section) - Green Lane



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 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

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

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

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

Excrescence. 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)

Fastigiate. 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

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

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

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)

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

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

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

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

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