

Ms R Atherton  
Realty Management Limited  
Ground Floor, Discovery House  
Crossley Road  
Stockport  
SK4 5BH

Our Ref: CW/9659-R-23

11 October 2023

Dear Rebecca,

## **RISK ASSESSMENT OF DENE PARK, HEATON NORRIS, STOCKPORT, SK4 2HZ**

Further to my visit of 6 September 2023, I set out below the findings of my inspection and risk assessment of your trees along with my management recommendations.

### **Method**

The trees were assessed from ground level using binoculars. Stem diameters and heights were both measured and estimated.

Trees usually contain dead branches and minor defects that are not recorded individually unless they are of sufficient significance to affect the outcome of the risk assessment.

In consideration of the risks associated with the trees, the Quantified Tree Risk Assessment (QTRA) method has been applied. Guidance on the method, its application, and the use of results to inform management decisions is provided in the QTRA Practice Note<sup>1</sup>.

Based on you accepting the principles set out in the QTRA Practice Note, I have taken account of the cost/benefit balance when providing management recommendations.

Where technical terms are used, they are included in a glossary at Appendix 3.

### **Limitations**

Because the inspections were non-invasive and carried out from ground level, the disclosure of hidden defects cannot be expected. In this regard, I consider that a sufficient view was taken of the trees to inform the reasonable assessment of risks from their structural failure.

Assessment of the potential influence of trees, upon buildings or other structures resulting from the effects of trees upon shrinkable loadbearing soils, was excluded from our fee proposal, and therefore from this report.

### **Statutory protection of trees**

An online search of Stockport Council's interactive mapping facility confirmed that trees on the site are not protected by a tree preservation order (TPO) and the site is not in a conservation area.

## Tree data

My inspection records and management recommendations are in a tabulated Tree Risk Assessment Schedule (the Schedule) in Appendix 1, and trees are plotted on a Tree Risk Assessment Drawing (the Drawing) in Appendix 2. The trees were assessed in groups and recorded individually only where there was a potentially significantly elevated risk, or there was some other reason to do so. Group reference numbers are prefixed G and individual trees are either prefixed T or by the reference for the group within which they stand, e.g. G1/7 would be tree number 7 and located in group G1. Both groups and individual trees are colour coded in relation to risk as described in Table 1. The risk for groups is the residual risk after any higher risk trees have been considered and those trees recorded individually.

## Risk decision making guidance

In 2011, the National Tree Safety Group, comprising a wide range of stakeholders, published a suite of guidance for tree owners and managers.

The guidance, which seeks to encourage tree owners to take a balanced and proportionate approach to tree safety management, is set out in three documents with the overarching guidance in *Common sense risk management of trees: Guidance on trees and public safety in the UK for, owners, managers and advisers*<sup>2</sup>. There are also two summary documents, one for estates and smallholdings<sup>3</sup>, and another for householders.

Cheshire Woodlands cannot provide guarantees of safety or that trees or branches will not fail. We evaluate the structural condition of trees at what we consider to be an appropriate level of detail given their size and location in relation to people and property that could be harmed or damaged. What is an appropriate level of detail for our inspection of trees is informed by use of the QTRA method.

Risk control measures bring benefits in terms of reducing or eliminating a risk, but those benefits come at a cost that should, in broad terms, be balanced against the benefits of risk control. For guidance on considering costs and benefits, please refer to the QTRA Practice Note.

Based on the presumption that you agree to the principles set out here and in the QTRA Practice Note, I have taken account of the cost/benefit balance when providing management recommendations. You may wish to take a different approach; in which case I would review my advice.

For the avoidance of doubt, I am providing an inspection record and risk assessment of your trees, along with management advice. I am not providing guarantees of safety or dictating how you must manage your trees.

**Table 1. QTRA Advisory Risk Thresholds**

Risk Thresholds	Description	Action
1/ 1000	<ul style="list-style-type: none"> <li>Unacceptable</li> <li>Risks will not ordinarily be tolerated</li> </ul>	<ul style="list-style-type: none"> <li>Control the risk</li> </ul>
	<ul style="list-style-type: none"> <li>Unacceptable (where imposed on others)</li> <li>Risks will not ordinarily be tolerated</li> <li>Tolerable (by agreement)</li> <li>Risks may be tolerated if those exposed to the risk accept it, or the tree has exceptional value</li> </ul>	<ul style="list-style-type: none"> <li>Control the risk</li> <li>Review the risk</li> <li>Control the risk unless there is broad stakeholder agreement to tolerate it, or the tree has exceptional value</li> <li>Review the risk</li> </ul>
1/10 000	<ul style="list-style-type: none"> <li>Tolerable (where imposed on others)</li> <li>Risks are generally tolerable</li> </ul>	<ul style="list-style-type: none"> <li>Assess costs and benefits of risk control</li> <li>Control the risk only where a significant benefit might be achieved at a reasonable cost</li> <li>Review the risk</li> </ul>
1/1 000 000	<ul style="list-style-type: none"> <li>Broadly Acceptable</li> </ul>	<ul style="list-style-type: none"> <li>No action currently required</li> <li>Review the risk</li> </ul>

## Findings

No significantly elevated risks were identified and all of the assessed trees present risks within Broadly Acceptable (green) limits.

The central silver birch tree in group G3 is heavily suppressed and has limited future growth potential. Options to remove and replace the tree or prune to maintain a sustainable low crown are listed in the Schedule.

Trees T2 and G4/9 appear to exhibit signs of terminal decline. The trees present a low risk but options to retain and monitor them or remove and replace it are provided.

Crowns of trees in G8 and G12 are touching the adjacent dwellings. Pruning to provide sufficient separation is required to prevent structural damage.

Further needle browning was identified in pine trees in G13. Ongoing monitoring is advised.

The silver birch T4 has been replaced by a new Japanese cherry tree. The planting bed where the tree was situated has been replaced but has recently been damaged by a vehicle. The tree should be protected accordingly during any remedial works. It was noted during the survey that the soil bed was extremely dried out. Young trees will not tolerate drought of this scale. It is vital to ensure frequent irrigation of new trees during drought periods.

## Conclusions and Recommendations

All of the assessed trees were found to present risks within Broadly Acceptable (green limits) and no immediate safety works are proposed.

Management options are detailed in the Schedule and each is prefixed with a numbered category to help you prioritise the work.

I advise that you should periodically review the trees at perhaps 18 - 30 monthly intervals and carry out your own visual checks for signs of obvious damage to trees following severe wind events. Obvious damage might include broken and hanging branches, split branches or stems, partially failed trees that are hung up in neighbouring trees, or cracking in the ground around a tree indicating that there might have been excessive movement in its roots.

BS3998 2010 Tree work - Recommendations should be used as a reference point for standards of tree work. Cheshire Woodlands can provide on-site tree pruning and maintenance guidance for grounds staff if required.

Statutory protection of trees and wildlife should be considered in the planning and execution of tree pruning and removal. See our Guidance Note on Statutory Controls<sup>4</sup>.

Yours sincerely,



Tom Baron

**Cheshire Woodlands Limited**

## Appendices

1. Tree Risk Assessment Schedule
2. Tree Risk Assessment Drawing
3. Glossary of Terms

## Endnotes

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1. [Quantified Tree Risk Assessment Practice Note](#)
  2. [Common sense risk management of trees: Guidance on trees and public safety in the UK for, owners, managers and advisers](#)
  3. [Common sense risk management of trees: Landowner summary of guidance on trees and public safety in the UK for estates and smallholdings](#)
  4. [Guidance Note: Statutory Controls](#)

## **APPENDIX 1**

# TREE RISK ASSESSMENT SCHEDULE

(When printing always use colour)



CLIENT: Dene Park Maintenance Limited  
 PROJECT: Dene Court  
 Heaton Norris  
 Stockport  
 BRIEF: Walkover Tree Risk Assessment Review  
 SURVEYOR: T. Baron  
 DATE: 06 September 2023  
 REFERENCE: CW/9659-RAS-23

## HEADINGS & ABBREVIATIONS

GROUP/TREE REF: TREE OR GROUP REFERENCE  
 TAG NO: TAG NUMBER WHERE A TAG HAS BEEN AFFIXED TO TREE  
 AGE: Y = YOUNG, SM = SEMI MATURE, EM = EARLY MATURE, M = MATURE, PM = POST MATURE, V = VETERAN  
 HEIGHT (M): HEIGHT OF TREE OR MAXIMUM HEIGHT FOR THE GROUP, APPROXIMATELY 1 IN 10 TREES ARE MEASURED AND THE REMAINDER ESTIMATED AGAINST THE MEASURED TREES  
 DBH: STEM DIAMETER FOR THE TREE OR MAXIMUM DIAMETER FOR THE GROUP - MEASURED OR ESTIMATED AT A HEIGHT OF APPROXIMATELY 1.5 METRES  
 VITALITY: A MEASURE OF PHYSIOLOGICAL CONDITION. N = WITHIN NORMAL RANGE FOR SPECIES AND AGE, R = REDUCED FROM THE NORMAL RANGE FOR SPECIES AND AGE, P = POOR, MD = MORIBUND, D = DEAD  
 TARGET TYPE: V = VEHICLE ON HIGHWAY; H = HUMAN; P = PROPERTY  
 Mx TARGETS: WHERE TARGET HAS A VALUE GREATER THAN CONSTANT OCCUPATION BY ONE PERSON, OR A LIKELY REPAIR/REPLACEMENT VALUE GREATER THAN £2M  
 TARGET: LIKELIHOOD OF A TARGET BEING OCCUPIED OR THE REPAIR OR REPLACEMENT VALUE OF PROPERTY EXPRESSED AS A FRACTION OF £2M - EXPRESSED AS A RANGE OF VALUE (SEE QTRA PRACTICE NOTE)  
 SIZE: VALUE FOR THE RISK ASSESSED TREE OR BRANCH - EXPRESSED AS A RANGE OF SIZE (SEE QTRA PRACTICE NOTE)  
 POF: PROBABILITY OF FAILURE WITHIN 12 MONTHS OF THE ASSESSMENT - EXPRESSED AS A RANGE OF PROBABILITY (SEE QTRA PRACTICE NOTE)  
 MASS %: WHERE THE MASS OF A BRANCH IS REDUCED BY DEGRADATION, A FRACTION MAY BE INTRODUCED TO REFLECT THE PROPORTION OF THE REDUCTION  
 ROH: RISK OF HARM (ANNUAL)

## MANAGEMENT CATEGORIES

- 1) SAFETY - HIGH
- 2) SAFETY - MEDIUM
- 3) SAFETY - LOW
- 4) SAFETY - LONG TERM
- 5) DAMAGE TO STRUCTURES - HIGH
- 6) DAMAGE TO STRUCTURES - MEDIUM
- 7) DAMAGE TO STRUCTURES - LOW
- 8) GENERAL MANAGEMENT - HIGH
- 9) GENERAL MANAGEMENT - MEDIUM
- 10) GENERAL MANAGEMENT - LOW
- 11) ONGOING MANAGEMENT
- 12) IMMEDIATELY PRIOR TO NEXT ASSESSMENT
- 13) NO PRIORITY

Trees may be subject to legal controls, which should be investigated prior to any felling, pruning, or wilful damage. Unless otherwise agreed, data in this schedule are time limited to one year, after which they should be reviewed.

GRP REF	TREE REF	TAG NO	SPECIES	AGE	HT	DBH	VITALITY	REVIEW COMMENTS	MANAGEMENT & CATEGORY	RISK ASSESSMENT OF	TARGET TYPE	Mx TARGETS	TARGET SIZE	POF	MASS %	ROH
G1			Mixed broadleaved species [Holly, Rowan, Gum, Apple, Pear]	Y/SM/EM	10	300	N	2019 July: - Bark wound/s to stem/s 2021 November: - No obvious significant defects identified 2023 Sept: - No significant change since last assessment. See previous reviews		risk less than 1 in 1M - calculation unnecessary	-					<1/1M
G2			Mixed broadleaved species [Silver birch, Laburnum]	SM/EM	10	450	N/R	2019 July: - Tree/s recently topped 2023 Sept: - No significant change since last assessment. See previous reviews		risk less than 1 in 1M - calculation unnecessary	-					<1/1M
G3			Mixed species [Silver birch, Western hemlock]	SM/EM	12	500	N/R	2019 July: - Tree/s topped in the past 2021 November: - The hemlock tree is causing cracking and displacement of the bitmac surface and edging stones 2023 Sept: - The central birch tree is suppressed and has limited future growth potential. It should either be removed or pruned to maintain low form	10: Remove and replace the tree in a different location or prune to maintain a low form	risk less than 1 in 1M - calculation unnecessary	-					<1/1M
G4			Mixed broadleaved species [Silver birch, Apple, Prunus sp. - Plum]	SM/EM	9	300	N/R	2019 July: - Branch/es encroaching into footway - Tree/s recently topped 2023 Sept: - No significant change since last assessment. See previous reviews	11: Prune to provide 3m clearance over footway	risk less than 1 in 1M - calculation unnecessary	-					<1/1M
	G4/9		Crab apple	SM	5	200	P	2023 Sept: - Exhibits signs of terminal decline	4: Option a) Monitor Option b) Fell to ground level and grub out stump. Plant replacement tree	risk less than 1 in 1M - calculation unnecessary	-					<1/1M
G5			Mixed broadleaved species [Silver birch, Beech, Gean cherry, White stem birch]	SM	5	200	N/R	2019 July: - Root movement is causing cracking of the paving - Branch/es encroaching into footway - Tree/s recently topped 2021 November: - No significant change since last assessment. See previous reviews 2023 Sept: - Beech tree encroaching light column	11: Prune to provide 3m clearance over footway 7: Prune to provide clearance from lights	risk less than 1 in 1M - calculation unnecessary	-					<1/1M
G6			Mixed species [Silver birch, Leyland cypress, Stump, Acer sp. - Maple sp.]	SM/EM	13	350	N/R	2019 July: - Group contains stump of failed birch tree		risk less than 1 in 1M - calculation unnecessary	-					<1/1M

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(When printing always use colour)

GRP REF	TREE REF	TAG NO	SPECIES	AGE	HT	DBH	VITALITY	REVIEW COMMENTS	MANAGEMENT & CATEGORY	RISK ASSESSMENT OF	TARGET TYPE	Nx TARGETS	TARGET	SIZE	POF	MASS %	ROH
G7			Mixed species [Silver birch, Beech, Holly, Corsican pine, Japanese cherry, Apple, Prunus sp. - Plum, Oak, Japanese maple, Red oak]	Y/SM/EM	16	600	N/R/P/MD	2019 July: - Pine tree tag no. 1838 and the silver birch to the southwest exhibit poor vitality, most likely as a result of over pruning 2021 November: - Needle browning in some of the pine trees, indicating reduced vitality 2023 Sept: - No significant change since last assessment. See previous reviews	4: Monitor vitality	dead branch failure onto recreational area	H	1	4		2	100%	<1/1M
	G7/5		Scots pine	EM	16	650	N	2019 July: - Girdling roots - Branch/es obstructing lighting column 2021 November: - No significant change since last assessment. See previous reviews 2023 Sept: - No significant change since last assessment. See previous reviews		risk less than 1 in 1M - calculation unnecessary	-						<1/1M
G8			Mixed broadleaved species [Silver birch, Weeping willow]	SM/M	9	700	N/R	2019 July: - Tree/s displacing kerb/s - Tree/s displacing structure/s - Tree/s recently topped 2021 November: - A resident has voiced concerns over movement in the property during windy weather, that is associated with the tree. There are no obvious signs of property damage to the outer walls and the likely sandy nature of the underlying soils would commonly result in deeper rooting as opposed to lateral rooting. If the resident is to provide video evidence of the movement, would be prudent to contact a structural engineer to assess the situation 2023 Sept: - Bark wound/s to stem/s - Branch/es touching building - Visual and audible signs of decay to the lower stem/s and exhibiting adaptive growth	7: Prune to provide clearance from buildings	risk less than 1 in 1M - calculation unnecessary	-						<1/1M
G9			Mixed ornamental trees [Gean cherry, Rowan]	Y	5	100	N	2019 July: - Stakes and ties require adjusting 2021 November: - Tree stakes and ties removed 2023 Sept: - No significant change since last assessment. See previous reviews		risk less than 1 in 1M - calculation unnecessary	-						<1/1M
G10			Alder	EM	13	450	N	2019 July: - Ownership unclear - Displacing footway and kerb edgings - Epicormic shoots to base 2021 November: - Bark wound/s to stem/s 2023 Sept: - No significant change since last assessment. See previous reviews		risk less than 1 in 1M - calculation unnecessary	-						<1/1M
G11			Mixed ornamental trees [Silver birch, Gean cherry, White stem birch]	SM/EM	14	300	N/R	2019 July: - Tree/s displacing surface/s - Visual and audible signs of decay to the lower stem/s and exhibiting adaptive growth - Tree/s recently topped 2023 Sept: - No significant change since last assessment. See previous reviews	4: Monitor vitality	risk less than 1 in 1M - calculation unnecessary	-						<1/1M
G12			Beech	SM	11	300	N	2019 July: - Branch/es encroaching into recreational area 2021 November: - No significant change since last assessment. See previous reviews 2023 Sept: - Branch/es touching building	10: Lift crown/s to provide a minimum 3m ground clearance 6: Prune to provide clearance from buildings	risk less than 1 in 1M - calculation unnecessary	-						<1/1M

# TREE RISK ASSESSMENT SCHEDULE

(When printing always use colour)

GRP REF	TREE REF	TAG NO	SPECIES	AGE	HT	DBH	VITALITY	REVIEW COMMENTS	MANAGEMENT & CATEGORY	RISK ASSESSMENT OF	TARGET TYPE	MAX TARGETS	TARGET SIZE	POF	MASS %	ROH	
G13			Mixed species [Silver birch, Hawthorn, Leyland cypress, Corsican pine]	Y/SM/EM	14	850	N/R/P	2019 July: - Sparse crowns and many small diameter dead branches in some trees - Branches to the south of the group are in contact with the adjacent building - Branch/es encroaching into recreational area - Leaning stem/s - Tree/s recently topped 2021 November: - Some of the crowns are ging close to the buildings. There would be merit in mantining a 2m clearance from all structures 2023 Sept: - Needle browning evident in pine trees	11: Lift crown/s to provide a minimum 3m ground clearance 7: Prune to provide clearance from structures - 2m 4: Monitor health of pine trees	risk less than 1 in 1M - calculation unnecessary	-					<1/1M	
	G13/7		Corsican pine	EM	14	850	N	2021 November: - Minor dead hung-up branches in crown presenting a very low risk and do not require removing 2023 Sept: - No significant change since last assessment. See previous reviews		risk less than 1 in 1M - calculation unnecessary	-					<1/1M	
	G13/10		Silver birch	EM	14	400	P	2023 Sept: - Dead branches up to 100mm dia. in upper crown - Branch/es touching building - Ongoing decline evident in poor shoot and foliage distribution	3: Remove dead branches greater than 30mm dia. 6: Prune to provide clearance from building/s	dead branch failure onto private garden	H	1	4	4	2	100%	<1/1M
	T1		Laburnum	SM	6	350	N	2019 July: - Incremental growth of the tree will most likely displace the fence over time 2021 November: - No significant change since last assessment. See previous reviews 2023 Sept: - No significant change since last assessment. See previous reviews		risk less than 1 in 1M - calculation unnecessary	-					<1/1M	
	T2		Apple	EM	6	250	P	2021 November: - Ongoing decline evident in poor shoot and foliage distribution - Topped in the past 2023 Sept: - Exhibits signs of terminal decline	9: Option a) Monitor Option b) Fell to ground level and grub out stump. Plant new tree	risk less than 1 in 1M - calculation unnecessary	-					<1/1M	
	T3		Prunus sp. - Plum	EM	5	200	R	2021 November: - No significant change since last assessment. See previous reviews 2023 Sept: - No significant change since last assessment. See previous reviews	3: Monitor vitality	risk less than 1 in 1M - calculation unnecessary	-					<1/1M	
	T4		Japanese cherry	Y	3	75	N	2019 July: - Exhibits a decline in the crown with small dia. dead branches - Bark wound/s to the stem/s - Recently topped 2021 November: - Ongoing decline evident in poor shoot and foliage distribution 2023 Sept: - The silver birch has been removed and replaced by a Japanese cherry - The planting bed has been replaced but has recently been damaged by a vehicle. The tree should be protected during any remedial works - The soil bed was extremely dry during the time of the survey. Young trees will not tolerate drought of this scale. It is vital to ensure frequent irrigation of new trees during drought periods	8: Irrigate frequently during dry weather	risk less than 1 in 1M - calculation unnecessary	-					<1/1M	
	T6		Purple leaved plum	SM	8	200	R	2019 July: - Branch/es obstructing lighting column 2021 November: - Dieback of bark to stem/s 2023 Sept: - Ongoing decline evident in poor shoot and foliage distribution	11: Prune to provide clearance from light/s 4: Monitor vitality	risk less than 1 in 1M - calculation unnecessary	-					<1/1M	



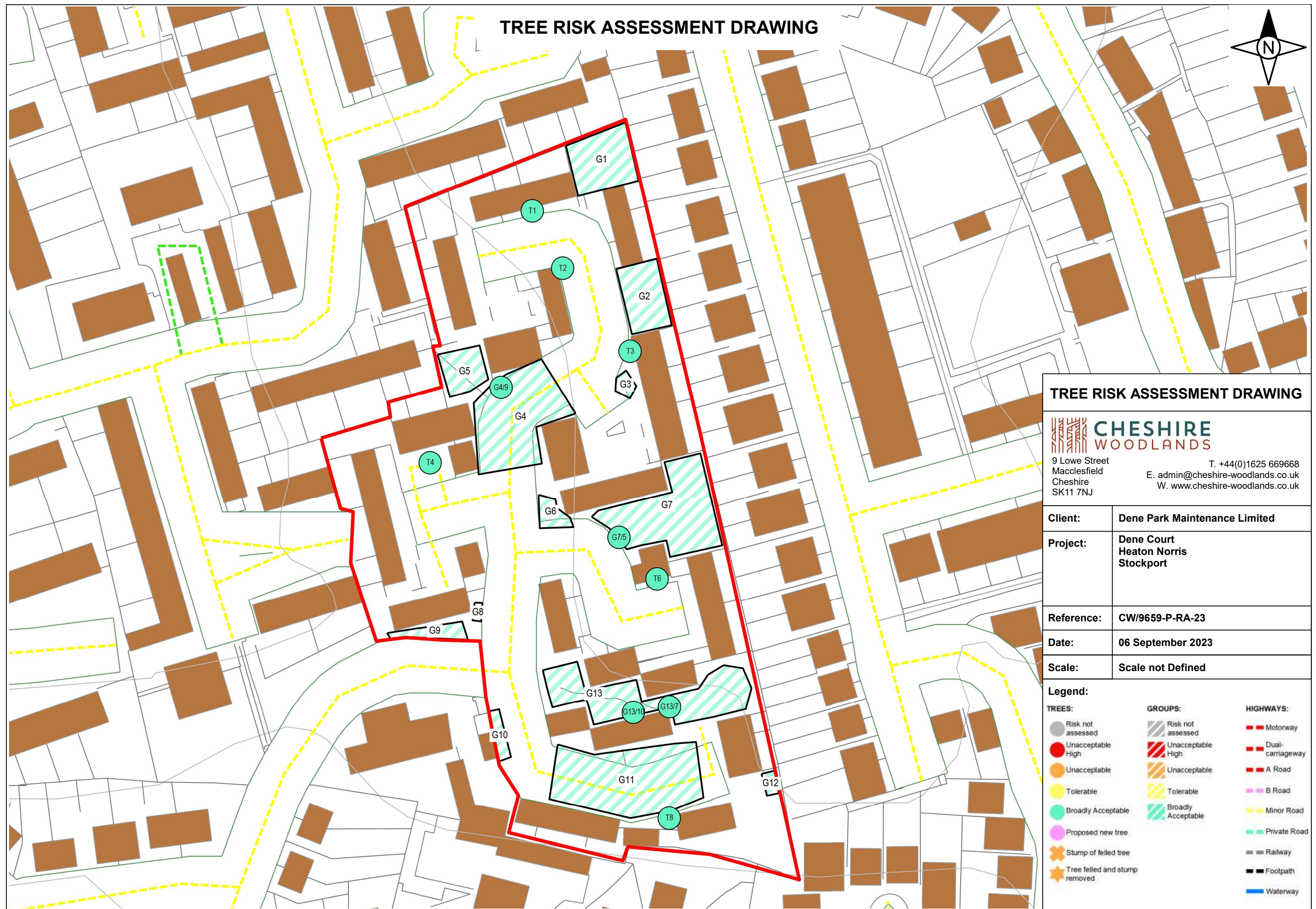
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GRP REF	TREE REF	TAG NO	SPECIES	AGE	HT	DBH	VITALITY	REVIEW COMMENTS	MANAGEMENT & CATEGORY	RISK ASSESSMENT OF	TARGET TYPE	MX TARGETS	TARGET	SIZE	POF	MASS %	ROH
	T8		Silver birch	SM	10	200	N	2021 November: - Branch/es touching building - Topped in the past 2023 Sept: - No significant change since last assessment. See previous reviews	7: Prune to provide clearance from building/s - 0.5m	risk less than 1 in 1M - calculation unnecessary	-						<1/1M

## **APPENDIX 2**



## **APPENDIX 3**



# 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

**Ancient tree.** A tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species. An ancient tree is one that has all or most of the following characteristics: a) biological, aesthetic or cultural interest, because of its great age; b) a growth stage that is described as ancient or post-mature; c) a chronological age that is old relative to others of the same species

**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

**Axial.** Aligned along the axis of the stem, branch or root

**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

**Bark expansion crack.** The pattern of axial strips of bark on smooth-barked trees that have grown faster than the adjacent bark. A growth response to stretching of the bark by expansion of the underlying xylem

**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

**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

**Cellulose.** A carbohydrate consisting of glucose molecules joined end-to-end, so as to form long filaments; a principal constituent of plant cell walls

**Chlorosis.** The loss of green pigment from plant tissues, caused by mineral deficiency. Chlorotic (adj.)

**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 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

**Decay.** (of organic tissue) decomposition by fungi or bacteria

**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

**Desire-line footpath.** A footpath that has been created by regular use rather than by design and construction

**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

**Early-wood.** The wood laid down around the time of the main flush of shoot growth in the early part of the growing season

**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)

**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

**Fibre-buckling.** The kinking of wood fibres and failure of other xylem elements when exposed to compressive loading

**Field layer.** Herbs, ferns, grasses and sedges

**First-order branch.** A high order branch, usually arising from a stem

**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 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

**Laser Rangefinder.** A device that uses a laser beam to measure distance, angle, and height.

**Lateral branch:** A side branch

**Late-wood.** The wood laid down after the time of the first main flush of shoot growth. Usually denser than the early-wood

**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

**Lesion.** Death or abnormal change in tissues, usually associated with disease or trauma

**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

**Loam.** A soil with roughly equal proportions of sand, silt, and clay

**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

**Marginal browning of leaves.** Death of a tissues to the margin or edge of the leaf

**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)

**Obvious defects.** Defects that are so apparent that most people, whether specialist or not, would recognise them on taking a general, but not necessarily close view of the tree. Whether an 'obvious defect' is significant depends on both a structural assessment, which may be purely visual, and on the land-use context

**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

**Phloem.** Vascular tissue that distributes the products of photosynthesis (sugars) around the plant

**Photosynthesis.** The process whereby plants use light energy to split hydrogen from water molecules and combine it with carbon dioxide to form carbohydrates that are the basic building block for plant growth. Photosynthetic capacity is the plant's ability to produce carbohydrates

**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

**Rhizomorph.** A root-like aggregation of fungal hyphae

**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-buttresses.** A buttress-like formation at the transition between roots and stems

**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

**Saprophytic fungi.** Fungi that live on dead or decomposing matter (in the tree) as opposed to functional, living tissues

**Sap-run.** Liquid running down a stem, branch, or root buttress and providing a food source or other habitat resource. Originating from phloem or xylem death or infections, or water that has accumulated in or run through decaying material.

**Sapwood.** Living xylem tissues

**Safety factor.** The ratio of the maximum stress that a structural part of a tree can withstand to the maximum stress experienced under normal conditions

**Screef.** To clear surface vegetation (commonly up to a depth of around 20mm)

**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

**Senescence.** The condition or process of deterioration with age.

**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

**Shoot.** The elongating region of a stem or branch

**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

**Soil auger.** A hand-held steel auger 60mm diameter auger used for extracting soil samples.

**Soil horizons.** A layer parallel to the soil surface, whose physical characteristics differ from the layers above and beneath:

- O) Organic matter - Litter layer of plant residues
- A) Surface soil - Layer of mineral soil with accumulation of organic matter
- B) Subsoil - This layer accumulates mineral and organic compounds.
- C) Parent rock - Layer of large unbroken rocks
- R) Bedrock - Partially weathered bedrock at the base of the soil profile

**Soil sample.** A sample of soil extracted for the purpose of either field or laboratory testing to determine mineral, chemical or structural composition, and or moisture content and shrinkability.

**Sounding hammer.** A small plastic or nylon hammer used for assessing the audible signs of decay, cracks and other features in trees

**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

**Stem taper.** The downward tapering of a tree stem out into the flare of the root buttresses

**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

**Terminal xylem.** The last layers of xylem cells produced at the end of the growing season

**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 cambium.** Sometimes described simply as 'cambium'. Layer of dividing cells producing xylem (woody) tissue internally and phloem (bark) tissue externally

**Vascular dysfunction.** Dysfunction of water conducting cells

**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.** A tree that has the physical characteristics of an ancient tree but is not ancient in years, compared with others of the same species

**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

**Weeping lesion.** Exudations from a lesion in plant tissue

**Wet flush.** Where water from underground flows out onto the surface to create an area of saturated ground, rather than a well-defined channel

**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

**Xylem.** Secondary xylem; the main structurally supporting and water-conducting element of trees (refined definition specific to this case)