ARBORICULTURAL SURVEY

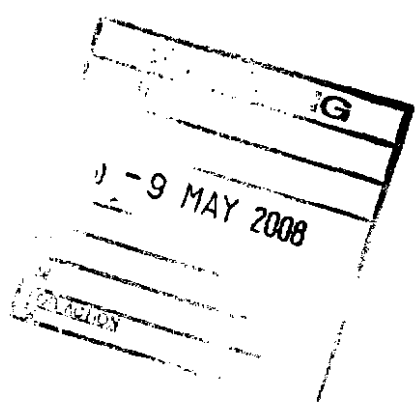
28 DEMESNE ROAD, WHALLEY RANGE, M16 8HJ

FOR

ARCHIRAMA LTD.

Ref: SFPS1063

Date: 02 MAY 2008



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1.0 Purpose of the report

1.1 A report is required to provide detailed arboricultural advice on trees present and recommendations on any remedial works necessary in response to findings at the location shown on the title page in relation to proposals for the development of the site.

2.0 Terms of reference

2.1 I am instructed by the client, Archirama Ltd to: -

- Survey from ground level, trees on site that will be affected by planning, identifying species, condition and suitability for retention within the context of the given proposals;
- Assess the impact of any proposed development on adjacent trees;
- Advise on removal, retention and management of trees;
- Prepare a schedule of surveyed trees;
- Produce initial guidance outlining the main tree related issues in relation to the development on the site;

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

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

2.4 The consultant accepts no liability in respect of the trees unless the recommendations of this report are carried out under his supervision.

2.5 Assessing the potential influence of trees, upon load bearing soils, beneath existing and proposed structures, resulting from water abstraction by trees or rehydration of shrinkable soils, was not included in the contract brief and is, therefore, not considered in the report. The consultant cannot be held responsible for damage arising from such action.

3.0 Introduction

3.1 The client has a development opportunity at the site of 28 Demesne Rd, Whalley Range and requires arboricultural advice on the impact of proposed works in relation to trees present.

3.2 Scott Fitzgerald carried out the assessment of trees. The survey and assessment of trees was carried out on 24th April 2008. Weather conditions during the site visit were fine.

3.3 All data collected from the tree survey is produced in a tabulated schedule in **Appendix 1.** The assessment of trees was of a general nature and was carried out from ground level without invasive investigation; therefore the disclosure of hidden crown defects cannot be expected.

3.4 I have been provided with a topographical survey drawing that I have amended to indicate tree positions, crown spread, retention categories and root protection areas. The scale is 1:500 at A2 and can be found in **Appendix 2** to this report. All levels and dimensions must be checked on site and not taken from this drawing.

4.0 The Site

4.1 The site comprises a plot of land with several small trees and a single story outbuilding and greenhouse and is located within the City of Manchester. The site is mainly level.

4.2 Consultation with Manchester City Council has revealed that there are no Tree Preservation Orders on site but it is within a Conservation Area. Consent of the local planning authority will be required before any works can be undertaken on trees with a diameter greater than 75mm at breast height (1.5m above ground level).

5.0 Tree data collection

5.1 Data collected during the survey is detailed in the Tree Survey Schedule in **Appendix 1** and has been carried out in accordance with British Standard 5837 (2005) - Trees in Relation to Construction.

5.2 **Height** of the tree is estimated to the nearest half metre or where possible by using a clinometer.

5.3 **D.B.H. (Diameter at Breast Height)** is the size of the girth of the main trunk measured at 1.5m above ground level where possible with a diameter tape and recorded in millimetres.

5.4 **Crown Spread** is measured in metres from the centre of the tree to the crown extremities to 4 compass points (north, south, east and west) for individual trees and is measured as the maximum crown diameter for trees within groups.

5.5 **Age Range** Tree maturity has been assessed as Y = Young, SM = Semi Mature, EM = Early Mature, M = Mature, PM = Post Mature.

5.6 **Condition** is an indication of the health of the tree. Trees have either been assessed as D = Dead, M = Moribund, P = Poor, F = Fair or G = Good. This is not an indication of the structural stability of the tree.

5.7 Retention Category values for surveyed trees are listed in **Table 1.**

5.8 Notes This column records any relevant features that may help clarify the retention category allocation.

5.9 Root Protection Area (RPA) The minimum area in m^2 that should be left undisturbed around each retained tree as recommended in **Table 2 of BS 5837.**

6.0 Conclusions

6.1 Although the site is within a conservation area, the majority of trees are small or young and could easily be replaced if removed and several of the surveyed trees are below 75mm DBH and therefore not protected.

6.2 T1 is a mature Lime situated on the pavement outside the curtilage of site to the front of the property. This tree should be protected following measures set out in the method statement in **Appendix 3.**

6.3 Several trees will need to be removed to enable the development to go ahead. However, their loss will not have a significant impact on the local visual amenity. This loss of trees could be mitigated by establishing replacement plantings or transplanting younger trees that are already present as part of landscape proposals.

7.0 Recommendations

7.1 Follow recommendations set out in the **Method Statement** in **Appendix 3** in relation to construction within the rooting zone of retained trees.

7.2 All arboricultural works should be carried out by suitably qualified personnel and to standards contained in BS3998 - Recommendations for Tree Work (1989). All personnel must use personal protective equipment to the minimum current industry standards and in accordance with arboricultural industry codes of practice.

8.0 References

BS5837 - 2005 - *Trees in Relation to Construction* - British Standards Institute, London

BS3998 - 1989 - *Recommendations for Tree Work* - British Standards Institute, London

Tree Survey Schedule and Explanatory Notes for 28 Demesne Road, Whalley Range

Tree No	Species	Height (m)	D.B.H (mm)	Crown spread (m)	Age Range	Condition	Retention category	Notes	Root Protection Area (m^2)
1	Common Lime - *Tilia europea*	22.5	755	N6 S7 E5 W6	M	G	A2	• Stem leans to north east	258
2	Bird Cherry - *Prunus padus*	5	120 @ Grd	N0.5 S0.5 E0.5 W0.5	SM	G	C1	• Situated very close to T3 • Previously topped at 1.5m	5
3	Bird Cherry - *Prunus padus*	7	165 @ Grd	N0.5 S1 E1 W1	SM	G	C1	• Situated very close to T2 • Previously topped at 1.5m	9
4	Lawson's Cypress - *Chamaecyparis lawsoniana*	5	170 @ Grd	N1.5 S1.5 E1.5 W1.5	Y	G	B1	•	9
5	Leyland's Cypress - *X Cupressocyparis leylandii*	4	65	N0.5 S0.5 E0.5 W0.5	Y	G	C1	•	2
6	Leyland's Cypress - *X Cupressocyparis leylandii*	4	65	N0.5 S0.5 E0.5 W0.5	Y	G	C1	•	2
7	Leyland's Cypress - *X Cupressocyparis leylandii*	4	80	N1 S1 E0.5 W1	Y	G	C1	•	3
8	Leyland's Cypress - *X Cupressocyparis leylandii*	5	100 @ Grd	N1 S1 E1 W0.5	Y	G	C1	•	3

Tree Survey Schedule and Explanatory Notes for 28 Demesne Road, Whalley Range

9	Leyland's Cypress - *X Cupressocyparis leylandii*	5	105 @ Grd	N0.5 S0.5 E0 W0.5	Y	G	C1	•	3
10	Leyland's Cypress - *X Cupressocyparis leylandii*	5	110 @ Grd	N0.5 S0.5 E0.5 W0	Y	G	C1	•	4
11	Leyland's Cypress - *X Cupressocyparis leylandii*	3	90 @ Grd	N1 S1 E1 W1	Y	G	C1	•	3
12	Leyland's Cypress - *X Cupressocyparis leylandii*	4	85 @ Grd	N1 S1 E1 W1	Y	G	C1	•	2
13	Wild Cherry - *Prunus avium*	7	125	N2 S2 E1 W2	Y	G	C1	•	7
14	Plum - *Prunus domestica*	2	85 @ Grd	N1 S1 E1 W1	Y	G	C1	•	2
15	Plum - *Prunus domestica*	6	125 @ Grd	N2 S3 E3 W2	Y	G	C1	•	5
16	Plum - *Prunus domestica*	5	100 @ Grd	N3 S0 E1 W1	Y	G	C1	•	3
17	Wild Cherry - *Prunus avium*	7	200 @ Grd	N2 S2 E2 W2	Y	G	B1	•	13

Tree Survey Schedule and Explanatory Notes for 28 Demesne Road, Whalley Range

18	Wild Cherry - *Prunus avium*	7	145	N2 S2 E2 W2	Y	G	C1	•	10
19	Wild Cherry - *Prunus avium*	7	140	N3 S2 E3 W1	Y	G	C1	•	9
20	Wild Cherry - *Prunus avium*	7	120	N2 S1 E0 W2	Y	G	C1	•	7

Tree Survey Schedule and Explanatory Notes for 28 Demesne Road, Whalley Range

Explanatory Notes

- **Abbreviations:**

M	: Metre
mm	: Millimetre
m^2	: Metres squared
N/A	: Non Applicable
>	: Greater than
≤	: Less than or equal to
est	: Estimated where access is restricted
@ Grd	: At ground level

Height of the tree is estimated to the nearest half metre or where possible by using a clinometer.

D.B.H. (Diameter at Breast Height) is the size of the girth of the main trunk measured at 1.5m above ground level where possible with a diameter tape and recorded in millimetres.

Crown Spread is measured in metres from the centre of the tree to the crown extremities to 4 cardinal points (north, south, east and west) for individual trees and is measured as the maximum crown diameter for trees within groups.

Age Range Tree maturity has been assessed as Y = Young, SM = Semi Mature, EM = Early Mature, M = Mature, PM = Post Mature.

Condition is an indication of the health of the tree. Trees have either been assessed as D = Dead, M = Moribund, P = Poor, F = Fair or G = Good. This is not an indication of the structural stability of the tree.

Retention Category values for surveyed trees are listed below.

Notes This column records any relevant features that may help clarify the retention category allocation.

Root Protection Area (RPA) The minimum area in m^2 that should be left undisturbed around each retained tree as recommended in **Table 2 of BS 5837**.

Table 1 — Cascade chart for tree quality assessment

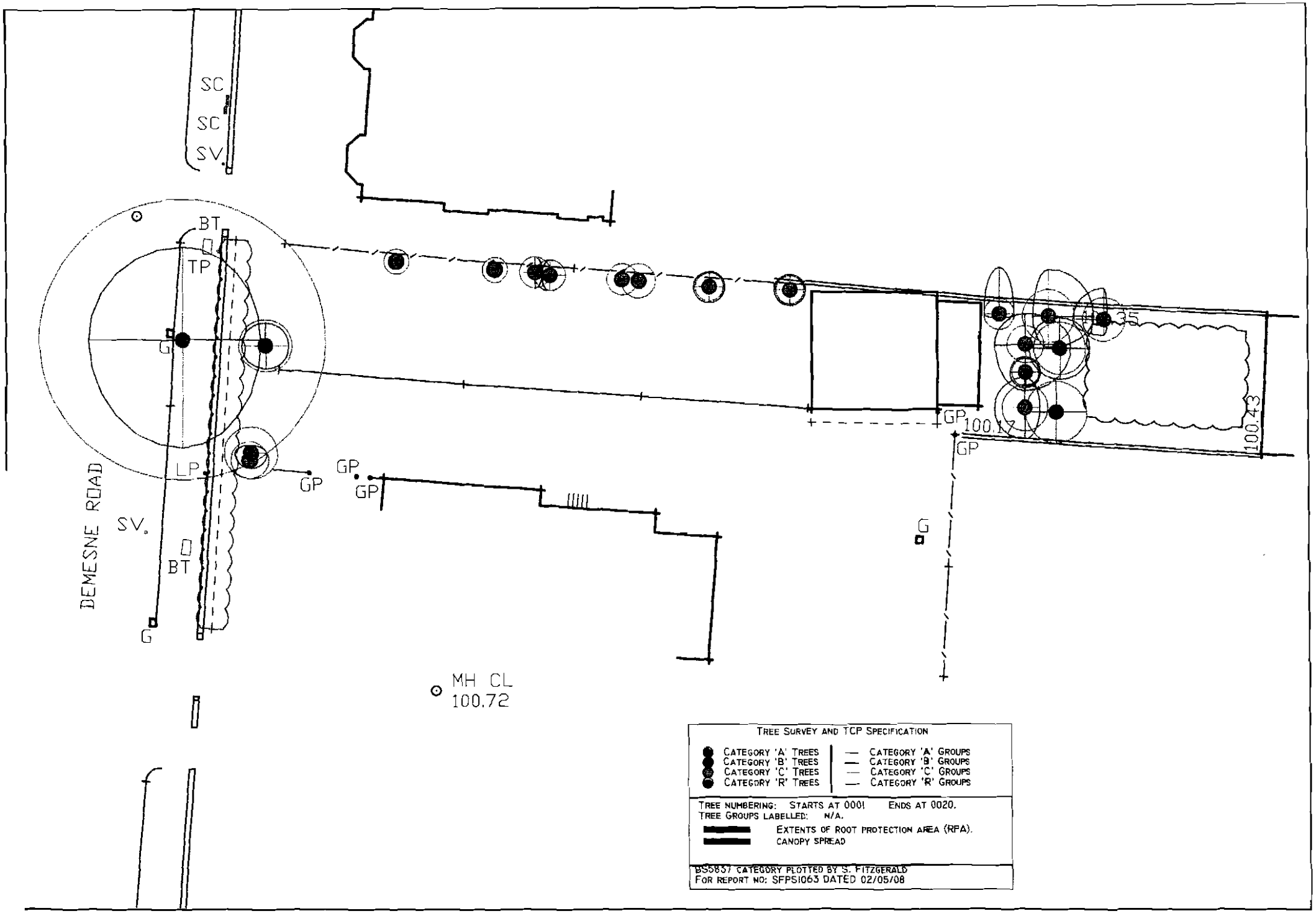
TREES FOR REMOVAL

Category and definition	Criteria	Identification on plan
Category R Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other R category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning). • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. • Trees infected with pathogens of significance to the health and/or safety of other trees nearby (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality. NOTE Habitat reinstatement may be appropriate (e.g. R category tree used as a bat roost: installation of bat box in nearby tree).	RGB code: 127-000-000 AutoCAD 246

TREES TO BE CONSIDERED FOR RETENTION

Category and definition	Criteria – Subcategories			Identification on plan
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation	
Category A **Those of high quality and value**: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	RGB code: 000-255-000 AutoCAD 90
Category B **Those trees of moderate quality and value**: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	RGB code: 000-000-255 AutoCAD 170
Category C **Those trees of low quality and value**: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150 mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits	RGB code: 91-91-91 AutoCAD 252
	NOTE Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150 mm should be considered for relocation.			

EXTRACT FROM BS5837:2005 'TREES IN RELATION TO CONSTRUCTION – RECOMMENDATIONS' © BSI 2005
ADDITIONAL COLOUR INFORMATION PROVIDED BY JFL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TREE SURVEY AND TCP SPECIFICATION
CATEGORY 'A' TREES
CATEGORY 'B' TREES
CATEGORY 'C' TREES
CATEGORY 'R' TREES
CATEGORY 'A' GROUPS
CATEGORY 'B' GROUPS
CATEGORY 'C' GROUPS
CATEGORY 'R' GROUPS
TREE NUMBERING: STARTS AT 0001 ENDS AT 0020.
TREE GROUPS LABELLED: N/A.
EXTENTS OF ROOT PROTECTION AREA (RPA).
CANOPY SPREAD
BS5837 CATEGORY PLOTTED BY S. FITZGERALD
FOR REPORT NO: SFPS1063 DATED 02/05/08

Method Statement for the protection of trees at 28 Demesne Road, Whalley Range

1.0 General

1.1 This document sets out the methodology for proposed works that affect trees on and adjacent to the site. Compliance with this method statement will be a requirement of all relevant contracts associated with the development proposals.

1.2 Copies of this document will be available for inspection on site.

1.3 The developer will inform the local planning authority within twenty-four hours if the arboricultural consultant is replaced.

2.0 General Precautions

2.1 No materials that are likely to have an adverse effect on tree health such as oil, bitumen or cement should be stored or discharged within 10 metres of the trunk of a tree that is to be retained.

2.2 No fires will be lit within 20 metres of the trunk of any tree that is to be retained.

2.3 Do not secure temporary overhead cables or floodlights to trees.

2.4 Do not change the ground level within the branch spread of retained trees.

2.5 Do not mix cement near trees.

3.0 Foundation Design

3.1 If roots larger than 25mm in diameter are found during exploratory excavations, it may be necessary to construct the proposed extension using pile foundations.

3.2 The smallest practical pile diameter should be used to reduce the possibility of striking major roots. Wherever possible, sheathed piles should be used to protect the soil and adjacent roots from the potential toxic effects of concrete.

3.3 Pile foundations should be designed by an engineer and constructed in accordance with the recommendations of NHBC Standards Chapter 4.2 (Building near trees) and Chapter 4.5 (Raft, pile, pier and beam foundations).

4.0 Root Protection

4.1 Excavations within the Root Protection Area of retained trees should be carried out carefully by hand, avoiding damage to the protective bark covering larger roots. This will determine the positions to sink piles.

4.2 Roots, whilst exposed, should be wrapped in dry, clean Hessian sacking to prevent desiccation and to protect from rapid temperature changes. In warmer weather, roots should be covered with damp sacking.

4.3 Roots with a diameter of more than 25mm should not be severed without the advice of an arboriculturist. Roots that are smaller than 25 mm diameter may be pruned back, preferably to a side branch, using a sharp cutting tool such as bypass secateurs or handsaws leaving the smallest wound possible.

4.4 Care should be taken to avoid damage to overhead branches from the drilling rig. Where necessary, some smaller diameter branches may need to be pruned to facilitate the development on the advice of the arboricultural consultant or tree officer.

4.5 Backfilling of any excavation should be carried out by hand to avoid direct root damage by excessive compaction and should include, where possible, the replacement of inert granular material mixed with sharp sand (not builder's sand) around retained roots.

5.0 Surface Design

5.1 It may be necessary to lay paving and other surfaces on a flexible base to allow movement and to facilitate relaying if distortion becomes excessive due to the activity of tree roots.

5.2 It is essential to maintain adequate supplies of water and oxygen for trees through the soil. New impermeable surfacing should not cover more than 20% of the Root Protection Area.

5.3 Design and construction specification should take account of further growth.

5.4 Paving slabs and block pavers are available with built in infiltration spaces between the slabs or blocks. They should be laid dry-jointed on a sharp sand foundation to allow air and moisture to penetrate to the rooting area.

5.5 Edgings and associated foundations and haunchings can damage tree roots. Within the Root Protection Area, this should be avoided either by the use of alternative methods of edge support or by not using supports at all

6.0 Supervision and Monitoring

6.1 The arboricultural consultant will be responsible for monitoring of all arboricultural works and issuing a certificate of practical completion. In addition, the arboricultural consultant will inspect the protective fencing and monitor any works within exclusion zones.

6.2 A record of site visits will be maintained for inspection on site and copies forwarded to the developer/agent and to the local planning authority.

7.0 References

BS5837: 2005 Trees in Relation to Construction

National Joint Utilities Group (Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees)

National House Building Council Standards Chapter 4.2 (Building Near Trees)

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

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

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

Compartmentalization. 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

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 vitality 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

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 there is a well defined central main stem, bearing branches which are limited in their length, diameter and secondary branching (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 other living 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 1.5m or the nearest measurable point. Where measurement at a height of 1.5 metres is not possible, another height may be specified

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

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 which 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

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 the crown is borne on a number of major widely-spreading and secondarily branched limbs (cf. excurrent)

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

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

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

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

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

Heartwood/false-heartwood/ripewood. Sapwood that has become dysfunctional as part of the natural aging processes

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. 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 to Table 1 of BS5837 (1991) Guide for Trees in Relation to 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

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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
Red-rot. A form of decay in which reddish pigments are present but which is biochemically a white-rot; not to be confused with brown-rots which sometimes also have a reddish-brown colour
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 dead wood. Unless otherwise specified, this refers to the removal of all accessible dead, dying and diseased branchwood and broken snags
Removal of major dead wood. The removal of, dead, dying and diseased branchwood above a specified size
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 zone. Area of soils containing absorptive roots of the tree/s described
microscopic and dispersed in air or water. 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
Shedding. In woody plants, the normal abscission, rotting off or sloughing of leaves, floral parts, twigs, fine roots and bark scales
Silvicultural thinning. Removal of selected trees to favour the development of retained specimens to achieve a management objective
Simultaneous white-rot. A kind of wood decay in which lignin and cellulose are degraded at about the same rate
Snag. In woody plants, a portion of a cut or broken stem, branch or root which extends beyond any growing-point or dormant bud; a snag usually tends to die back to the nearest growing point
Soft-rot. A kind of wood decay in which a fungus degrades cellulose within the cell walls, without any general degradation of the wall as a whole
Spores. Propagules of fungi and many other life-forms; most spores are **Shrub species.** Woody perennial species forming the lowest level of woody plants in a woodland and not normally considered to be trees
Sporophore. The spore bearing structure of fungi
Sprouts. Adventitious shoot growth erupting from beneath the bark
Stem/s. The main supporting structure/s, from ground level up to the first major division into branches
Stress. In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition or extremes of temperature
Stress. In mechanics, the application of a force to an object
Stringy white-rot. The kind of wood decay produced by selective delignification
Storm. A layer of tissue which supports the fruit bodies of some types of fungi, mainly ascomycetes
Structural roots. Roots, generally having a diameter greater than ten millimetres, and contributing significantly to the structural support and stability of the tree
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
Understorey. A layer of vegetation beneath the main canopy of woodland or forest or plants forming this
Understorey tree species. Tree species not having potential to attain a size at which they can contribute to the closed high canopy of a woodland
Vascular wilt. A type of plant disease in which water-conducting cells become dysfunctional
Vessels. Water-conducting cells in plants, usually wide and long for hydraulic efficiency; generally not present in coniferous trees
Veteran tree. A loosely defined term for an old specimen that is of interest biologically, culturally or aesthetically because of its age, size or condition and which has usually lived longer than the typical upper age range for the species concerned
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'

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