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BS 5837:2012 Tree Survey, Arboricultural Impact Assessment and Tree Constraints/Protection Plan
Including Method Statement

219 Philip Lane, London N15 4HL

Report Reference: 120922/RP/PL
Tree Constraints and Root Protection Plan: AA01TCPP/PL

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Client:	Anita Cudjoe – Business Address/ 219 Philip Lane, London N15 4HL
Report Ref and Drawing Ref: no:	Report Reference: 120922/RP/PL
Site details:	Tree Constraints and Root Protection Plan: AA01TCPP/PL Rear Garden of 219 Philip Lane, London N15 4HL
Date of Site Inspection:	12 th September 2022
Proposal:	New landscaping in the rear garden consisting of new hard surfacing and tree removal
Report Author and Surveyor:	Rebecca Peace HND. Hort & Land, LANTRA Professional Tree Inspector, Professional Member of The Consulting Arborist Society, QTRA registered User and experienced Arboricultural Consultant

1.0 Instruction and the Purpose of the Survey and Report

- 1.1 This report provides an Arboricultural Impact Assessment (AIA) and indicative Tree Constraints/Protection Plan and Method Statements for proposed new resurfacing works in the rear garden of 219 Philip Lane, London N15 4HL.
- 1.2 This tree report is principally to accompany the new planning application to show that all legislation, responsibilities and tree protection are fully understood and will be implemented before and during construction.
- 1.3 The initial tree survey, Arboricultural Impact Assessment (AIA) and Tree Constraints/Protection Plan are compliant with BS5837:2012 (Trees in relation to Design, Demolition and Construction – Recommendations) as requested by Anita Cudjoe
- 1.4 The survey extent is the land shown as marked on drawing no. **AA01TCPP/PL** as shown in the appendices. The tree survey is based on an overall site survey and information provided by the client.

2.0 The Scope of the survey - Methodology & Limitations

- 2.1 The tree survey process consisted of a ground-based visual inspection only, and is applied only to the area proposed for development. Soil type was not assessed.
- 2.2 This report is valid for **36 months** from the date of site inspection. The condition of trees can change following severe meteorological conditions, the effects of diseases and pests, and other abiotic factors.
- 2.3 The surveyed trees are numbered and listed in the survey data table attached to this report, and are plotted onto the associated plan no. **AA01TCPP/PL**
- 2.4 No confidential details relating to the location or the installation of services have been supplied. Therefore, this report can only deal with this issue in a preliminary manner. The positioning of services should be approved by a suitably qualified surveyor.
- 2.5 Limitations of use and copyright: All rights in this report are reserved. No part of it may be reproduced or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or stored in any retrieval system of any nature, without written permission. Its content and format are for the exclusive use of the addressee in dealing with this site. It may not be sold, lent, hired out or divulged to any third party not directly involved in this site without the written consent of *Rebecca Peace Arboriculture*©.

3.0 Site Location and Development Description

- 3.1 The house is originally a Victorian villa being constructed of yellow London stock brick with detailed frontage and a large rear garden. The rear garden consists of several trees with hard surfacing through the centre and the rear.
- 3.2 The proposed development will include the laying of a new hard surface in the garden to both sides of the original central concrete already in place. The trees within the garden are on the boundaries but the new surfacing will affect the trees in a neighbouring garden.

4.0 Nature of Tree Stock at 219 Philip Lane

- 4.1 The table of results in Appendix 1 provides details of the condition of the trees and their suitability for retention according to BS 5837:2012. Where there are trees of particular interest or merit, or require reference due to their condition; these will be discussed below.
- 4.2 **BS5837:2012** requires a survey of any tree population to identify four categories of trees; trees that are (**A**) highly desirable to retain, (**B**) moderate quality trees and (**C**) trees which may or may not be suitable for retention. Trees marked '**U**' (Unsuitable for retention) should be removed due to their condition and/or life expectancy. The system assesses not only tree health and condition, but other factors such as their long-term impact on adjacent structures and good arboricultural management.
- 4.3 Trees marked '**C**' are trees of low quality with an estimated remaining life expectancy of at least ten years, or are below 150mm in stem diameter, or are unremarkable specimens of limited merit or such an impaired condition as to not qualify in the higher '**A**' and '**B**' categories.
- The trees within the new surfacing area and the neighbouring garden are of a mixed quality in the **A**, **B** and **C** categories.
- 4.4 All other trees and groups are categorised in the tree data table.

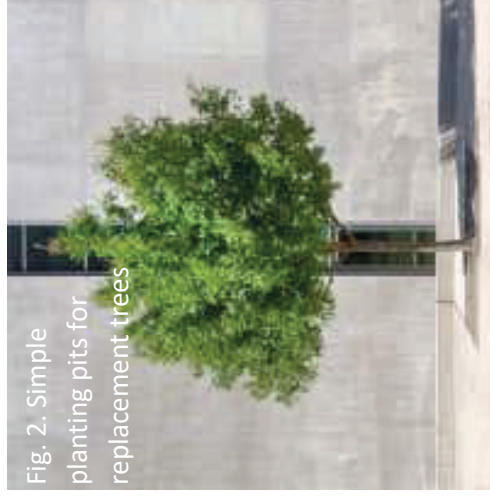
5.0 Root Protection Areas (RPAs)

- 5.1 BS 5837:2012 makes recommendations for the provision of areas around trees where their roots should be protected, known as **Root Protection Areas**, or **RPAs** and always expressed in meters. For any tree, BS5837:2012 prescribes this area according to a formula using stem diameter measurements of the trees in question.
- 5.2 The RPA of all trees has been plotted on the tree position plan as inferred due to scaling on plan **AA01TCPP/PL**; these are guidelines.

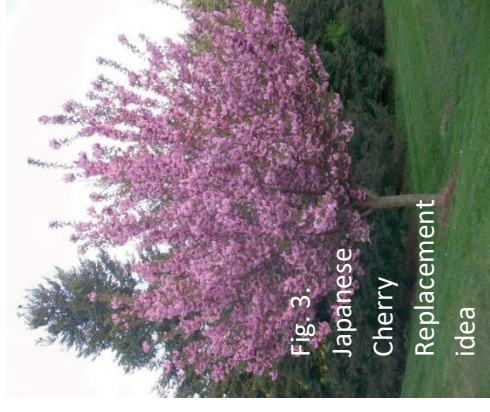
6.0 Arboricultural Impact Assessment (AIA)

6.1 The Arboricultural Impact Assessment (AIA) utilises the information from the Tree Constraints / Protection Plan **AA01TCPP/PL** to evaluate the effect of the proposed new surfacing and where necessary recommend suitable mitigation. Potential losses and potential damage to the retained trees by activities before, during and after construction are assessed.

6.2 There are 3 initial tree removals proposed **T2, T3** and **T5**. All these trees are very low quality and are not conducive to the final use of the area. The garden will need to be accessed by people with special needs and so ease of entry and low obstacles is paramount. The replacement trees will need to be suitable safety wise and be able to flourish with straightforward maintenance. These can be placed in areas near to original planting and planting holes can be left in the concrete with the option of a porous covering over the open planting pit. (*See right photo 1 & 2*)



6.3 The proposed tree removals consists of 2 cherries and 1 apple tree. These could be replaced by more ornamental trees with lower maintenance and less falling debris. The two cherries could be replaced by non-fruiting ornamental cherries such as the Japanese cherry of which there are many varieties. With maybe a non-native replacement for the apple such as the sweet gum (*Liquidambar*) which has brilliant autumn colour giving a contrasting background to the area. The Sweet Gum is easy to grow and drought tolerant. (*See right photo 3 & 4*)



6.4 **Potential Root Damage:** According to the drawing, the resurfacing will impact on to the RPA of **T5**. This is a third-party tree and so it will be imperative to protect the root system of this tree. The tree is a category 'A' tree which means it will have 40 years



plus to contribute to the landscape. Mitigation will consist of laying no concrete within this area and laying a porous layer for water and protection with access. One idea would be to place a cellular confinement system for ground protection with gravel as the substrate or just gravel on it own.

6.5 **T1** has concrete in place underneath at the moment and this area can be fenced off to alleviate any tree damage during the process of resurfacing. It is not proposed to go as far as this tree.

6.6 The works will not require further earth movements and/or re-distribution of soil within any retained tree RPA. No soil will be piled onto RPA's and no changes of ground level will be made in this areas.

7.0 Method Statement - Order of Arboricultural Works

7.1 **General requirements:** The arboricultural method statement and Tree Protection Plan shall remain on site for the duration of the construction will be available to site operatives at all times. All operatives at the site shall be briefed about tree related factors as part of their site induction.

7.2 Any variation from the methodology described in this method statement shall be discussed with the supervising arboriculturist or informed site manager and agreed with the local authority arboricultural officer.

7.3 **Initial tree works:** There are three tree removals proposed **T2, T3** and **T5**. These can be removed before works begin and replacement trees can be planted after.

7.4 Plant machinery shall not be used to scrape vegetation within root protection areas or access the site until the tree protection barriers have been installed.

7.5 No bonfires shall be lit within a root protection area or on any part of the site

7.6 Trees should be checked for protected species before works are undertaken. It is against the law to disturb bats or their roosts under the Conservation of Habitat and Species Regulations. Nesting birds are protected by the Wildlife and Countryside Act. If protected species are discovered, Natural England should be contacted for advice.

7.7 The tree works contractors should carry out all tree works to BS3998: 2010 '*Tree works – recommendations*' as modified by research that is more recent. They should also carry relevant, adequate and up to date insurance.

7.8 It is recommended that an Arboricultural Association approved contractor carry out all tree works. Approved contractors are expected to work to industry best standards. The Arboricultural Association website contains contact details and information on engaging a suitable contractor.

- 7.9** The area to be surfaced is mainly out of the root protection area of most trees and the design of the surfacing in the RPA area has been changed to accommodate drainage and access to water.
- 7.10** The areas within the RPA (Root Protection Area) shall be referred to as the construction exclusion zones. The following actions shall be prohibited within the exclusion zones:
- Vehicular access.
 - Regular pedestrian access unless on suitable ground protection.
 - Storage of construction materials.
 - Storage or handling of harmful chemicals.
 - Any change in ground level.
- 7.11** **Storage and handling of harmful chemicals:** Provision needs to be made to avoid the storage and handling of harmful chemicals in proximity to trees. Harmful chemicals include fuels, oils, builder's sand (which has a high salt content) and cement. Cement mixing shall only occur where there is no potential for cement washings to leech into a root protection area. Provision shall also be made to prevent fuelling or the handling of cement from occurring in areas proposed for further planting.
- 7.12** **Contractor facilities:** No provision will be need for contractor facilities as property has all amenities needed.
- 7.13** **Excavation within root protection areas of retained trees:** As far as is reasonable, the excavations shall occur by hand where needed, no root pruning will be necessary.
- 7.14** Any plant machinery must be operated from outside the root protection area. A banksman must be used to spot overhanging branches or shallow roots that may not be visible from within the cabin of the excavator.
- 7.15** In addition to the above, a system and programme of onsite monitoring by the appointed Arboricultural consultant should be agreed with the Local Authority Arboricultural Officer if it is deemed necessary.
- 7.16** If significant root growth is disturbed during construction activities that are not within the scope of this report, the work shall cease until the project arboriculturist has been consulted. Roots greater than 25mm in diameter or dense/matted fibrous roots shall be considered significant root growth. It should be remembered that whilst root protection areas are part of industry best practice, tree root growth is influenced by several factors and may not conform to expected ideals.
- 7.17** If at any time during the construction process, damage is inadvertently caused to a tree, the project arboriculturist shall be notified to assess the likely implications and to prescribe potential remedial measures to be implemented. Damage can be in the form of chemical or fuel spillage, mechanical damage to either the above ground parts of the tree or the roots, fire or any other unforeseen circumstance.

8.0 Legal Constraints

- 8.1 **Trees subject to statutory controls:** The property is in a designated conservation area. The Local authority is London Borough of Haringey. This means that permission will be needed before any tree works commence. [Click here for details](#) London Borough of Haringey, Conservation Area No. 19, Clyde Circus
- 8.2 **Statutory wildlife obligations:** The Wildlife and Countryside Act 1981 as amended by the Countryside and The Habitat Regulations 2012 provide statutory protection to birds, bats and other species that inhabit trees. All tree work operations are covered by these provisions and advice from an ecologist should be obtained before undertaking any works that might constitute an offence.

9.0 Conclusions

- 9.1 A resurfacing undertaking is proposed for 219 Philip Lane, London, encompassing the resurfacing of a large area of the rear garden. This will be used for access and recreation to residents of the house, all who have special needs and will benefit from an accessible and uncomplicated outside space.
- 9.2 This report presents the results of a tree survey for the site in accordance with BS 5837:2012 (Trees in relation to design, demolition and construction – Recommendations) and a Tree Constraints Plan accompanies the report.
- 9.3 Indicative tree protection measures are recommended by this report, although it is acknowledged that the tree protection arrangements are likely to require on-going monitoring and adjustment. This will be mainly in the method of construction and design to alleviate any root damage.
- 9.4 Root Protection during construction – In order to retain healthy, undamaged, functioning roots, there must be no excavation, soil stripping, raising or lowering of soil levels or site grading within the Root Protection Area.
- 9.5 In order to avoid damage to tree roots within in the Root Protection Areas (RPA) of retained and neighbouring trees, the new surface area will be constructed in the RPA zones using a No-Dig Methodology. Principles set out in APN 12 Through the Trees to Development, Tree Advice Trust, Patch and Holding will apply. This is in accordance with the British Standard 5837 (2012) ‘Trees in Relation to Design, Demolition and Construction’.

Appendix 1. Tree Inspection/Survey Results

Table 1. SURVEY KEY: Abbreviations and categories used in the survey are as follows:

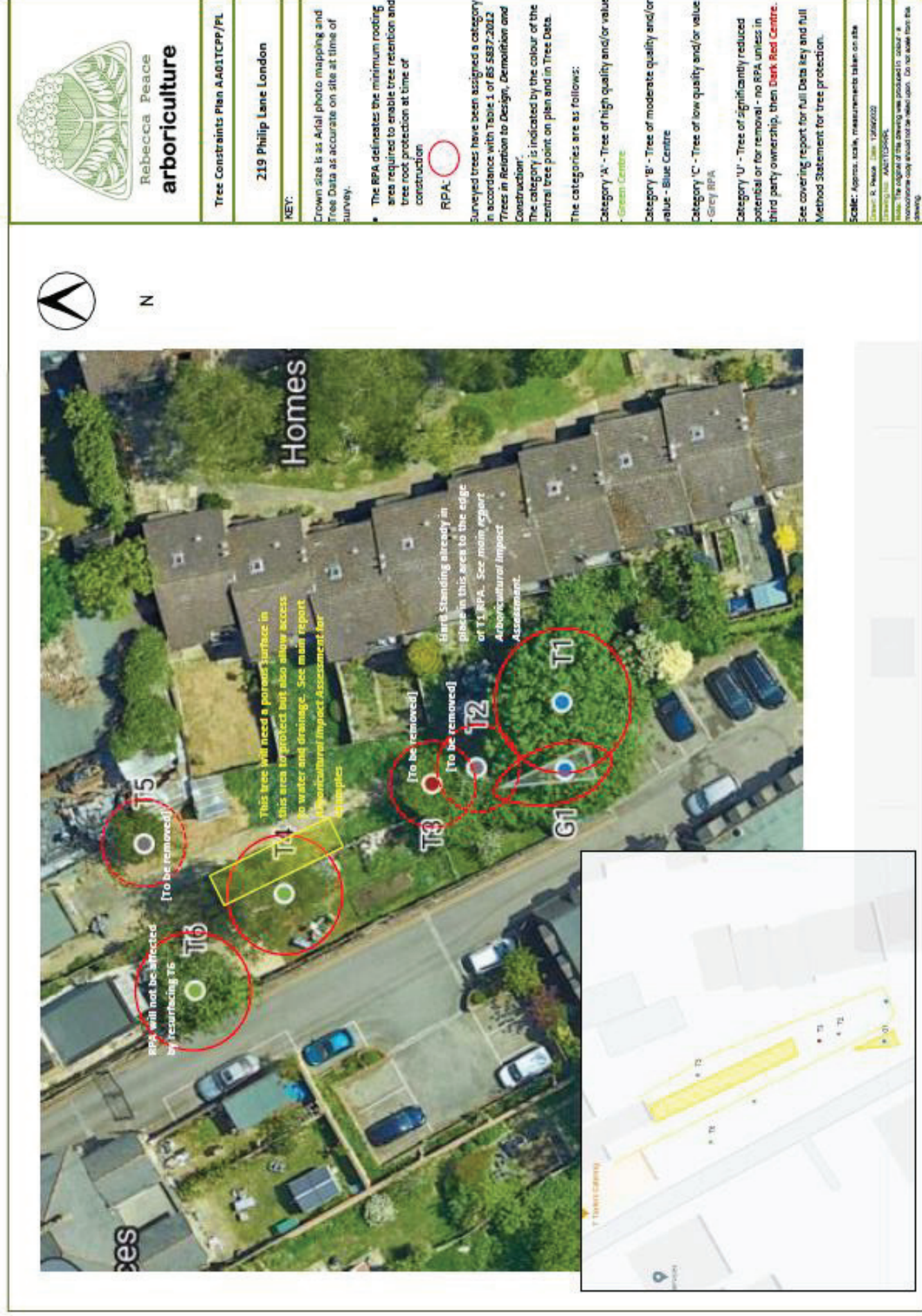
Tree Type and No	T = Tree, G = Group, S = Shrub, H= Hedge. Number of tree and corresponding number on plan.
Species.	Common name and scientific in name in <i>italics</i> .
Height	Estimated height in metres
DBH (Stem diameter)	Diameter measured in centimetres at 1.5m above ground level. MS:=Multiple stems
Crown spread	Measured from centre to average branch spread in metres. Four points measured North, South, East and West.
Age Class.	Young (Y). Semi Mature (SM). Early Mature (EM). Mature (M). Over Mature (OM). Veteran (V).
Physiological and Structural Condition	Good. (G) Fair. (F) Poor. (P) Dead. In addition, specific diseases, defects or faults are described.
Recommendations for Work	Recommendations for tree work where observed as necessary, including further investigations of suspected defects which may require more detailed assessment. If blank no works are recommended.
Cat: Category Grading (BS5837) with estimated remaining contribution in years	U or A, B, C (See table below). Less than 10 years. <10. 10-20 years. 20 -40 years. More than 40 years. 40> <i>SULE = Safe Useful Life Expectancy</i>
Root Protection Area. (RPA).	The root protection in metres as radial distance as measured from the centre of the tree stem. Where an * is present the R.P.A. cannot be achieved due to ground constraints, or it is located outside the site.

Table 2. SURVEY KEY: British Standards Categories and Criteria

Category & definition	Criteria (including subcategories where appropriate)	2 Mainly landscape qualities	3 Mainly cultural values incl conservation
Category U Trees in such a condition that they cannot realistically be retained as living trees in the context of current land use for <10 yrs.	- 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 category U trees - Trees that are dead or showing signs of significant, immediate and irreversible decline - Trees infected with significant pathogens affecting health or safety, or very low-quality trees suppressing trees of better quality <i>NOTE: these trees can have existing or potential conservation value making retention desirable</i>		
Category A Trees of high quality with an estimated remaining life expectancy of >40 yrs	Particularly good examples of their species, especially if rare or unusual. Those that are essential components of groups or formal or semi-formal arboreal features	Trees, groups or woodlands of particular visual importance as arboreal and/or landscape features.	Trees, groups or woodlands of significant conservation, historical, commemorative or other value
Category B Trees of moderate quality with an estimated remaining life expectancy of >20 yrs	Trees that might be included in category A but are downgraded because of impaired condition such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit category A designation.	Trees present in numbers, usually growing as groups or woodlands such that they attract a higher collective rating that they might as individuals. Trees occurring as collectives but situated so as to make little visual contribution to the area.	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of >10 years, or young trees with a stem diameter <150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary landscape benefits.	Trees with no material conservation or other cultural value.

Appendix 1. (cont.) Tree and group Data including Root Protection Area.

Tree No.	Latin Name	Height (m)	DBH (cm)	RPA Calc. (m)	CS North (m)	CS East (m)	CS South (m)	CS West (m)	Height of ground clearance (m)	Age Class	Phys. Condition	Structural Condition	Recom. Work	Category Grading	Notes	Photo	Photo
Tree Position	T1	Sycamore <i>Acer pseudoplatanus</i>	16	55	6.6	6	6	6	6	3.5	Good	Good	None	B2 (20-40)	Very close to wall with hard standing in place to 3m. Will need drainage and porous area for water. other side of fence is open and roots will be baes there	Photo	Photo
Tree Position	G1	Hazel and various shrubs <i>Corylus avellana</i> and other shrubs.	9	20	2.4	2	2	2	2	0	Good, Fair	Good	None	B2 (20-40)	Group of lower fruit trees in open ground. Third Party Shrubs	Photo	Photo
Tree Position	T2	Apple <i>Malus domestica</i>	6	30	3.6	2	2	1	2	3	Poor	Very poor	Fell and replant	U (<10)	Tree is hollow with decay throughout, fruiting body at 70cm from base. This is not a quality tree. Replant with sweeter apple or cherry.	Photo	Photo
Tree Position	T3	Cherry Plum <i>Prunus cerasifera</i>	5	31	3.7	1	1	1	1	1	Fair	Fair, has been reduced in the past.		C (10-20)	Scarlet tree but with maintenance could contribute to garden scheme	Photo	Photo
Tree Position	T4	Silver Birch <i>Betula pendula</i>	16	31 & 24	4	5	4	4	4	4	Good	Good		A2 (40+)	Third Party Tree Co dominant stemmed tree of good quality. RPA will need to be protected	Photo	Photo
Tree Position	T5	Cherry <i>Prunus avium</i>	4	30	3.6	1	1	1	1	3	Poor	Very poor	Fell and replant	U (<10)	Low quality tree not viable for future growth	Photo	Photo
Tree Position	T6	Apple <i>Malus domestica</i>	9	45	4.5	3	3	3	3	0	Good	Good	None	A2 (40+)	Third Party Tree, well maintained	No photo	As third Party



Appendix 3. Glossary of Terms & Abbreviations

- **Compression fork/Co-dominant stem.** Can be a failure point at a fork between two branches or limbs, which, as they grow, press against each other, causing a build-up of stresses similar to the effect you would get if a wedge were hammered into the fork. Increased end-loading as the limbs grow can lead to the fork failing.
- **Cavity.** Hole in a tree resulting from decay or damage
- **Deadwood.** Twigs or branches in the crown of the tree which have died off. This can indicate the tree's inability to transport fluid and/or nutrients to its extremities signifying that the tree is under stress or has failing systems. It can also take place naturally when a branch affects a process known as "self-pruning". This occurs when the energy needed to sustain the live branch outweighs the energy it produces
- **Decay.** This can be minor, such as on the surface of a shallow wound, or severe, with large sections of the trees structure being decayed. It is a problem that can progress to the point where the tree collapses.
- **Epicormic growth.** This can sometimes indicate a problem within the tree's systems. Epicormic growth is produced by the tree to gain a greater ability to photosynthesize when it is in need of extra resources. Some trees, such as Lime, produce epicormic growth, particularly from the base, as part of their natural growth habit.
- **Lean.** A lean does not necessarily mean inherent instability but when a tree's stem loses structural integrity, it can become a hazard, especially if the weakness is on the side to which the tree is leaning.
- **Loosened bark.** This indicates a problem under the surface in either the wood or the inner layers of bark (cambium). Bark can fall away from decaying wood behind it, or can start to die off due to a range of reasons (bacterial infections etc). The bark can then no longer transport fluid or nutrients around the tree.
- **Mechanical Damage.** Damage caused by non-biological means i.e. vehicle impact or damage caused by animals trying to eat bark. Damage of this kind can penetrate into the structure and is more often found on the surface of the tree.
- **Reaction wood/growth.** Where weakness or decay within a tree occurs, the tree will grow material to compensate for it. It is often seen as 'cable' like structures with patches of uneven bark which indicate irregular growth patterns. Another form of reaction growth can be seen as 'bulges' on a trees structure. Large amounts of reaction growth indicate advanced decay or weakness within the tree structure.
- **Sail Area.** The area of the tree that is affected by the wind
- **Weak unions.** The unions between the stem (trunk) and structural limbs or branches sometimes develop weakly, and as the tree ages can become unstable. This can be exacerbated when the tree is affected by other problems. Also, certain tree species are prone to developing weak unions.

Appendix 4 Internet and Reading References

General

<http://www.treecall.co.uk/trees-a-the-law>

<http://www.forestry.gov.uk/safetreemanagement>

<https://www.gov.uk/guidance/developers-get-environmental-advice-on-your-planning-proposals> (SSSI)

Mattheck & Breloer H. (1994). Research for Amenity Trees No.4: The Body Language of Trees, HMSO, London.

Strouts R.G. & Winter T.G. (1994). Research for Amenity Trees No.2: Diagnosis of ill health in Trees. Department of the Environment, HMSO.

Weber K., Mattheck C. (2003). Manual of Wood Decays. The Arboricultural Association

Tree Protection

<https://ecogrid.co.uk/popular-uses/tree-root-protection/>

<http://www.ground-guards.co.uk/sectors/>

<http://www.geosyn.co.uk/product/cellweb-tree-root-protection>