Arboricultural Survey

45 Broadhurst Gardens
London
NW6 3QT

27th October 2015

PJC ref: 3836B/15-01

This report has been prepared by

PJC Consultancy Ltd

on behalf of

Hergren Investments Ltd

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Checked by	**Adam Earl BSc(Hons) MCIEEM** Adam has received a BSc(Hons) in Applied biology and is a full member of the Chartered Institute for Ecology and Environmental Management. He has over five years experience in the ecology and arboriculture industry and is currently training for the professional tree inspection certificate.
Approved by	**Nick Betts HND For M.Arbor.A** Nick has attained an HND in forestry management and is a professional member of both the Arboricultural Association and the Consulting Arborists Society. He has worked in the arboricultural and forestry industries for 14 years. He started his career as a forestry worker before qualifying as a tree surgeon, working in both the private and commercial sectors. He has been a practising consultant since 2004.

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1 INTRODUCTION

1.1 **Instruction:** PJC Consultancy has been instructed by Hergren Investments Ltd to provide an arboricultural survey of 45 Broadhurst Gardens in the London Borough of Camden.

1.2 **Brief:** PJC Consultancy has been commissioned to undertake an initial arboricultural survey following the guidelines set out in BS5837: 2012 '*Trees in relation to design, demolition and construction – Recommendations*'.

1.3 **Scope of this report:** This report is primarily concerned with a mature lime tree located in the front garden of the property. Additional trees and shrubs have been surveyed that are located around the curtilage of the garden. Further trees are located to the rear of the property that are outside the scope of the potential works area so have not been surveyed for this report.

1.4 **Purpose of report:** This survey has been undertaken to record the condition and value of all significant trees at the site as well as the material constraints they pose on the development. The information in this report should be used to guide the design proposals.

1.5 **Documents and information provided:** No documents or site plans have been provided to produce this report. The Tree Constraints Plan in Appendix 1 is based on a sketch layout in which all dimensions are indicative and must not be scaled from.

2 SITE VISIT AND SURVEY METHODOLOGY

2.1 **Site visit:** A site visit was carried out on 22nd October 2015. The weather conditions at the time were fine and dry. The visibility was good.

2.2 **Tree information:** The following measurements and information were recorded in the Tree Survey Schedule for each individual tree (average dimensions are recorded for groups):

- Tree reference number.
- Species (common and scientific name).
- Overall tree height (m).
- Stem diameter (mm) per stem or average diameter for multi-stemmed trees with six or more stems.
- Branch spread (m) measured to the four cardinal points.
- Existing height (m) above ground level of lowest significant branch and direction of growth (for individual trees only).
- Existing height (m) above ground level of canopy.
- Age class (young, semi mature, early mature, mature, over mature or veteran).
- Physiological condition (good, fair, poor).
- Structural condition (good, fair, poor).
- Comments (general description of tree including any notable features).
- Preliminary management recommendations (prescriptions for tree management processes based on the current land use and not related to the proposed development).
- Tree categorisation (see below).
- Root protection area (m^2).
- Root protection radius (m).

2.3 **Tree categorisation:** The condition and value of each tree was evaluated based on the current land use. Each tree or tree group has been awarded either category A, B, C or U and a sub category of either 1,2 or 3 or a combination of the sub categories.

2.4 Tree categorisation summary:

- A – Trees of good condition or high value, with a predicted life span in excess of forty years.
- B – Trees of moderate condition or value, with a predicted life span in excess of twenty years.
- C – Trees of poor condition or low value, with a predicted life span in excess of ten years.
- U – Trees of such impaired condition that they cannot realistically be retained as living trees in the context of the current land use for more than ten years.

2.5 Tree sub categorisation summary:

- 1 – Trees have mainly arboricultural value, e.g. trees of good condition, form and vitality or rare tree species.
- 2 – Trees have mainly landscape value, e.g. trees of landscape prominence, that serve to screen unsightly views or that are required for privacy.
- 3 – Trees with mainly cultural value including conservation, e.g. commemorative trees, trees of historical significance, trees of ecological significance or veteran trees.

2.6 Each tree can only be categorised as A, B or C but may comply with more than one sub category. A cascade chart further explaining how tree categorisation is decided is included in Appendix 3.

2.7 **Root protection areas:** Each tree's stem diameter was recorded, and applied to the formula found in Appendix 4 to establish its root protection area. A root protection area represents a calculation of the minimum area of root growth required to support the tree, not the total rooting area.

2.8 The root protection areas are plotted on to the Tree Constraints Plan in Appendix 1, and recorded in the Tree Survey Schedule in Appendix 2. These are represented as a circle on the plan (unless significant rooting constraints are present), and are colour coded depending on the category the tree has been awarded. Where existing site conditions/features are present that are deemed likely to have affected the root morphology, the root protection areas have represented as a polygon of equivalent size. It should be noted that without a scale base plan, the root protection areas shown on the Tree Constraints Plan are indicative only.

2.9 The disturbance of a tree's root system can result in crown dieback and even death of the tree. Roots are used to support the tree structurally and act as transport for water and nutrients. Direct damage such as root severance can lead to ill health, as can compaction of the soil by construction traffic, heavy plant and storage of materials. Changing the nature of the surface above the growing medium, (i.e. from porous to non-porous), can alter the resources available to the tree, which in turn can lead to its decline.

2.10 The root protection areas must be left free from excavation and disturbance, and protected from compaction or contamination during any proposed works. The majority of root growth is usually found within the top meter of soil. As such, even shallow disturbance within root protection areas can potentially have a significant impact on the trees.

2.11 **Limitations of site visit:** The survey methodology was restricted to a visual tree assessment from ground level. No tree climbing or ground investigation was carried out for this report. Where existing site constraints are present such as ivy covered trees, a very dense under-storey, or where trees are located on third party land to which access was not granted, tree dimensions were estimated by eye as accurately as possible.

3 SITE DETAILS AND SURVEY FINDINGS

3.1 **Site location:** The site is situated in the London Borough of Camden, to the west of Finchley Road Station. It has a central OS grid reference of TQ261846. The surrounding land use is comprised of railway track and commercial buildings beyond Broadhurst Gardens to the north and residential properties in all remaining directions. The location of the site within its environs is shown in figure 1.

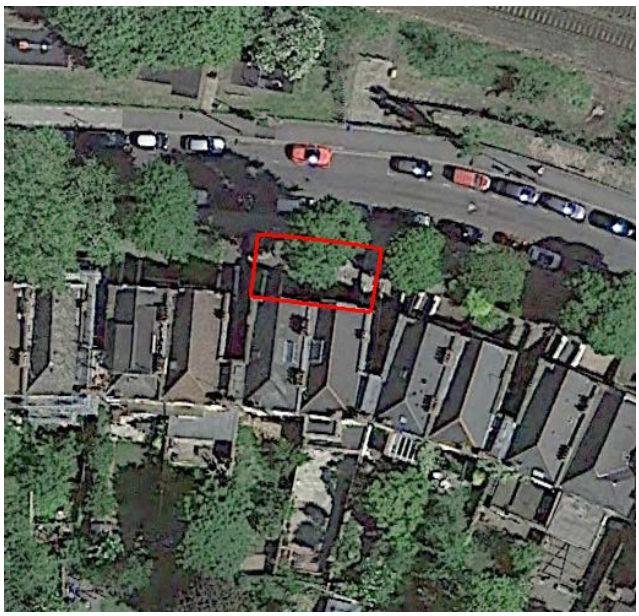

Figure 1: Location of Site and Environs

3.2 **Site layout:** The front garden of 45 Broadhurst Gardens comprises two main areas. The first is a paved area providing pedestrian access between the road and two flights of steps leading up to the front door and down to a path around the edge of the building. The western half of the front garden comprises bare ground that slopes gently down to a retaining wall located close to the wall of the building. The only tree located within the front garden of number 45 is T1, a mature lime protected by a Tree Preservation Order in the north west corner of the bare-ground section of the garden.

3.3 The lime has previously been reduced to a relatively upright habit as a result of its proximity to the building. It has also received a high crown lift. It is exhibiting good vitality and possesses no major visible structural defects. T1 forms one of several trees located in the front gardens of properties on Broadhurst Garden, which collectively possess significant visual amenity value and contribute to the Conservation Area. T1 has a predicted life span of between twenty and forty years and has been awarded category B2 for its landscape value.

3.4 The buttress of T1 abuts against the low brick wall that separates the gardens of numbers 45 and 47. As a result, the wall has partially collapsed, as has the section of wall on the road frontage directly north of the buttress. A large buttress root from T1 extends above ground level, through the wall directly west of the tree. It will not be feasible to repair the wall adjacent to T1 in its existing location whilst the tree is still present. The majority of the dividing wall can be repaired, however the section immediately adjacent to the buttress would either have to remain as existing or be removed. If this section of the wall is removed, it is recommended that the footings be left in situ below ground level to avoid unnecessary disturbance to the buttress roots,

3.5 The ground level surrounding the buttress of T1 is slightly raised. It is important to avoid any soil stripping around the buttress of the tree that would result in roots being exposed.

3.6 Root growth from T1 also appears to have had an impact on areas of surfacing within the front garden of 47 Broadhurst Gardens. There are two main areas of paving within the garden of number 47. The eastern section of the garden comprises irregular paving slabs that appear to have been slightly lifted in places, potentially by tree roots. The western half of the garden comprises tarmac with cracks extending in an east/west orientation, which is along the root radii of T1 so root growth may again potentially be the cause. Given the size and proximity of T1, and the presence of the large buttress root extending through the dividing wall, it should be assumed that roots from T1 will be located beneath all areas of paving in the front garden of number 47. However, whether incremental root growth is the cause of the damage to the surfaces cannot be absolutely confirmed without ground investigation.

3.7 A diagonal crack is present in the dividing wall, to the south of the retaining wall at the southern end of the garden of number 45. The form of the crack suggests it may have resulted from the partial collapse of the wall adjacent to the buttress of T1.

3.8 Tree T2 comprises a mature, pollarded horse chestnut located in the garden of 43 Broadhurst Road. The root protection area of this tree also encroaches the front garden of number 45 and would need to be protected should any works occur in this area.

3.9 Further information for each tree can be viewed in the Tree Survey Schedule in Appendix 2.

3.10 **Statutory tree protection:** Tree T1 is protected by TPO ref H3. The site is also located within the South Hampstead Conservation Area. Any persons proposing to undertake tree works must gain the necessary consent from Camden Council before works are undertaken.

3.11 Financial penalties and/or criminal proceedings can result if tree works are carried out on a protected tree without consent. The entirety of the tree is protected, both above and below ground.

3.12 **Tree categorisation summary:** Two trees were surveyed for this report, both of which have been categorised as B2.

4 CONCLUSIONS

4.1 To comply with BS5837: 2012, it is recommended that an arboricultural impact assessment be produced when the proposed layout has been finalised. The arboricultural impact assessment should include a schedule of trees to be retained and removed, evaluate the likely effects of construction works on retained trees including post development pressures and provide recommendations on mitigation measures to be implemented. It should also include a Tree Retention Plan.

4.2 As far as possible new buildings and areas of hard surfacing should be located outside of the root protection areas of retained trees. In certain situations, engineered solutions are available to allow construction within the root protection areas. Further input from an arboriculturalist should be sought regarding their site-specific viability before these methods are relied upon.

4.3 Allowance should be made for future canopy and stem growth of both existing and newly planted trees. Trees growing in areas of limited space may require regular future pruning works. The suitability of different species for regular crown reductions, the affect on their amenity value and the cost of future tree works should be considered.

5 OTHER CONSIDERATIONS

5.1 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.

5.2 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.

5.3 It is also recommended that all tree works be carried out by an Arboricultural Association approved contractor. Approved contractors are expected to work to industry best standards, and the Arboricultural Association website contains contact details and information on engaging a suitable contractor.

5.4 The trees at this site were assessed for their condition and safety in relation to the average range of weather conditions that the region experiences. Any weather events that exceed the average norm cannot be predicted, and so their effects are not considered within this report.

5.5 The views and opinions contained within this report are entirely those of the author.

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Date: 27th October 2015

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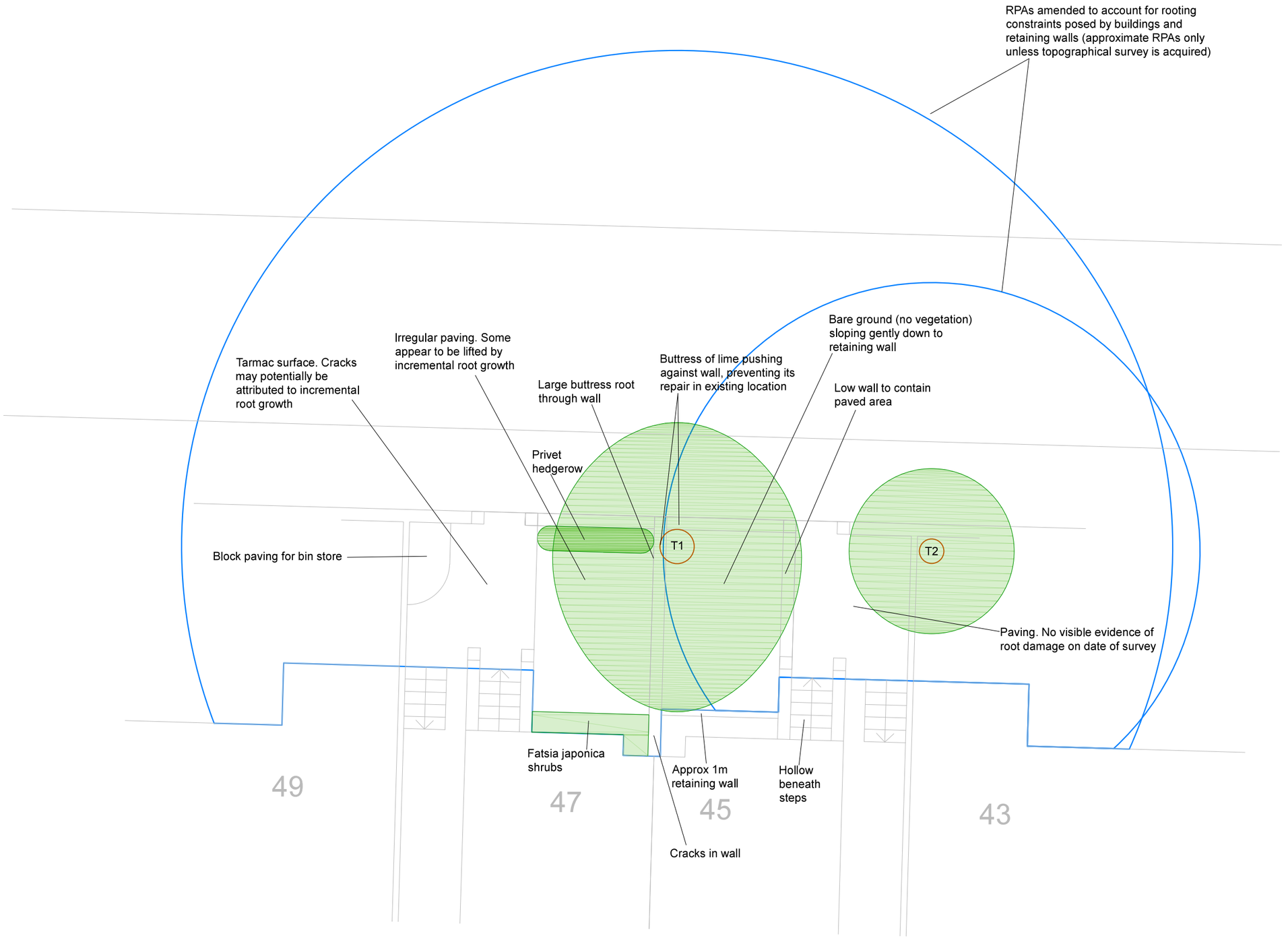
APPENDIX 1
Tree Constraints Plan



Key:

RPA for CAT B Tree*

Tree canopy

**** Tree categorised in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.***

Appendix 2, (Tree Survey Schedule) contained within the arboricultural report ref. no. PJC/3836B/15-01 contains further information for each tree.

This drawing should be viewed in colour.

All dimensions on this plan are indicative and must not be scaled from.

Drawing no: PJC/3836B/15/A **Rev:** 01 **Sheet number:** 1 of 1

Client and site:
Hergren Investments Ltd

45 Broadhurst Gardens
Camden
NW6 3QT

Drawing title: Tree Constraints Plan

Date drawn: 27/10/2015

Scale: 1:100 at A3

Drawn by: PD **Checked by:** NB

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APPENDIX 2
Tree Survey Schedule

Tree Survey Schedule

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Client: Hergren Investments Ltd
Site: 45 Broadhurst Gardens, Camden
Survey date: 22/10/2015
Surveyor: Peter Davies

Tree ref. no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Preliminary management recommendation	Category grading	Root Protection Area (m2)	Root Protection Radius (m)
T1	Lime (Tilia europea)	18	830	N: 3 E: 3 S: 4 W: 3	Crown: 6 average Branch: 7 north	Mature	Good	Fair	Previously crown lifted and reduced to upright form due to space constraints. No major visible defects.	Remove epicormic growth (for aesthetics and to allow comprehensive future inspection)	B2	311.7	Refer to Tree Constraints plan
T2	Horse chestnut (Aesculus hippocastanum)	7	500 est	N: 2.5 E: 2.5 S: 2.5 W: 2.5	Crown: 2 average Branch: 2 average	Mature	Fair	Fair	Defoliation from leaf miner moth. Pollarded. Third party tree only viewed from street.	No action required on date of survey.	B2	113.1	Refer to Tree Constraints plan

APPENDIX 3
Cascade Chart for Tree Quality Assessment

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Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of their current land use for longer than 10 years	• 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 the removal of other category U trees (e.g. 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, or very low quality trees suppressing adjacent trees of better quality *Note Category U trees can have existing or potential conservation value which it might be desirable to preserve*			Red
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi---formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood---pasture)	Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remedial defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	Blue
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	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/transient landscape benefits	Trees with no material conservation or other cultural value	Grey

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APPENDIX 4
Root Protection Area Formulas

CALCULATING THE RPA

For single stemmed trees

$$\mathbf{RPA(m^2) = \frac{(stem\ diameter\ (mm)\ @\ 1.5\ m \times 12)^2 \times 3.142}{1000}}$$

For trees with two to five stems, a combined stem diameter is calculated as follows:

$$\mathbf{\sqrt{(stem\ diameter\ 1)^2 + (stem\ diameter\ 2)^2 \ldots + (stem\ diameter\ 5)^2}}$$

For trees with more than five stems, the combine stem diameter is calculated as follows:

$$\mathbf{\sqrt{(mean\ stem\ diameter)^2 \times number\ of\ stems}}$$

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APPENDIX 5
Photographs

Photograph 1 – Damage to dividing wall from T1

Photograph 2 – Buttress root from T1 through boundary wall

Photograph 3 – Damage to boundary wall from T1

Photograph 4 – Crack in dividing wall potentially attributed to T1

Photograph 5 – Cracks in tarmac surface of number 47

Photograph 6 – Bare ground in garden of number 45

Photograph 7 – Hollow space beneath steps at number 45

Photograph 8 – Paved area at number 45. No visible signs of root damage