

# **TFL\_PSF\_9131 SITE INVESTIGATIONS: SMALL SITES INITIATIVE LAND AT CHRISTCHURCH ROAD AND BRIXTON HILL, LAMBETH, SW2 4AP**

**Site Ref: 901**

**Preliminary BS5837:2012 Tree Survey Report**

OCTOBER 2017

# LAND AT CHRISTCHURCH ROAD AND BRIXTON HILL, LAMBETH, SW2 4AP

## Preliminary BS5837:2012 Tree Survey Report

Author Callum Henderson



Checker Brandon Murray



Approver Martina Girvan



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## VERSION CONTROL

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This report dated 02 October 2017 has been prepared for Transport for London (TfL) (the "Client") in accordance with the terms and conditions of appointment dated 02 May 2017 (the "Appointment") between the Client and Arcadis Consulting (UK) Limited ("Arcadis") for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party

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# 1 Introduction

## 1.1 Overview

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Transport for London (TfL) 'the Client' to undertake a number of technical surveys for Land at Christchurch Road & Brixton Hill, Lambeth, SW2 4AP hereafter referred to as "the Site".

TfL is aiming to divest a number of small Sites to enable prospective regeneration. The objective of the Small Sites Initiative is to provide robust and pragmatic advice such that unreasonable "abnormal" development costs are not included by developers.

The objective of this assessment is to present the potential constraints and future requirements with regards to trees and any future development.

## 1.2 Site Location and Setting

The Site is located south of the A205, in the London Borough of Lambeth and centred at the central grid reference of 530503, 173418 and around the postcode of SW2 4AP.

It is approximately 0.32ha in area and is currently comprised of dense scrub dense scrub, tall ruderals and managed and unmanaged grassland with scattered broadleaved trees.

The immediate surrounding is largely residential. The Site adjoins the public footpath to the north and west, to the south is an area of dense scrub that has a number of scattered mature trees within it, and to the east Garden Lane an unclassified access road.

An aerial screen shot illustrating the Site boundary is presented in Image 1-1. Photographs of the Site and trees can be found in Appendix D - Photographs.

Image 1-1 Site Location Plan



## 2 Methodology

### 2.1 Tree Survey Methodology

An Arboricultural Survey was undertaken by Callum Henderson BSc (For) M. ArborA (Principle Arboriculturist) on 30<sup>th</sup> June 2017 in accordance with BS 5837:2012.

Observations were conducted from ground level, utilising the “Visual Tree Assessment” (VTA) system as outlined in The Body Language of Trees, A Handbook for Failure Analysis Research for Amenity Trees No.4 (Department of the Environment, 1994) with the aid of binoculars.

The Site and its immediate surroundings were surveyed. This area is referred to as the study area.

### 2.2 Individual Trees and General Data Capture

For reference, individual trees are identified with the letter T and associated number on the Tree Schedules and a Tree Constraints Plan. The stem diameter of the trees on Site was recorded using a rounded down diameter tape at 1.5m above ground level. Measurements were taken in millimetres. The height of the subject trees was estimated to the nearest metre using a digital clinometer.

Maximum crown spread of the subject tree was measured from the centre of the trunk to the tips of the live lateral branches taken at four compass points (N-E-S-W) using a ground tape. Crown spread measurements were taken in metres.

Tree age was estimated from visual indicators (such as tree size and appearance of bark) which was taken as a provisional guide. Age estimates often need to be modified based on further information such as historical records and local knowledge.

If direct access to the tree was not possible, estimations from appropriate vantage points were taken, any limitations or estimations are presented within the survey limitations section and noted in the associated schedules.

### 2.3 Groups of Trees

Groups of trees are identified with the letter G and number on the associated Tree Schedules and Tree Constraints Plan. Stem diameter of groups of trees was set as an average stem diameter of the trees within these individual groups and a maximum height of the tallest tree within the group.

### 2.4 Categorisation

In compliance with Table 1 of BS 5837: 2012 the trees surveyed have been categorised according to their arboricultural quality and value. A glossary of survey terms can be found in Appendix A - Explanation of Terms.

### 2.5 Root Protection Area

The Root Protection Areas (RPA) of the trees were calculated in accordance with Section 4.6.1 in BS: 5837:2012. This is calculated from the measurement of the stem diameter at 1.5m above ground level or at ground level if the tree is multi-stemmed. These are recorded in Table B2 in the appendix and as a circle on the initial Tree Protection Plan (TPP) and form the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the Site. The RPA is represented by pink-shaded areas in the Tree Constraints Plan. The shape and size of RPAs can be amended in accordance with Section 4.6.3 in BS: 5837:2012.

Within Section 5.3.1 in BS: 5837:2012 it is stated the default position is that proposed development should not be within the RPA of retained trees, however, where there is an overriding need for construction and associated activity with the RPA of trees arboricultural mitigation should take place to protect the trees.

### 2.6 Survey Limitations

Topographical base mapping was provided. For the purposes of BS 5837: 2012, only trees with a stem diameter greater than 75mm, (measured at 1.5m above ground level), have been included within the survey.

However, it should be noted that a number of individual trees and shrubs with a stem diameter of less than 75mm were present within the study area.

Only trees within the study area as defined above were assessed. The RPAs are based on a given tree stem diameter taken at 1.5m above ground level with each RPA (see Appendix B - Tree Schedules) being calculated from the above ground portions of the tree. It should be recognised that the RPA may not entirely encompass all of the tree's rooting material.

Some areas of the study area were off-Site within neighbouring properties, preventing a full assessment and an accurate measurement of some trees. Where tree survey data has been estimated (based on assessments from the nearest safe vantage points). These trees are denoted by a # in the associated Schedules.

Trees are living organisms and as such their health and condition are naturally subject to change over time. Unforeseen future circumstances such as neglect, wilful damage or severe/extreme weather conditions may affect the future health and condition of the trees included in this report.

## **2.7 Statutory Tree Protection**

A search was undertaken on the Local Planning Authority (LPA) on 6<sup>th</sup> July 2017. According to the London Borough of Lambeth pdf list on their Websites <https://www.lambeth.gov.uk/sites/default/files/pl-tree-preservation-order-schedule.pdf> there are Orders protecting trees on and off-Site.

The trees within the Site are protected by London Borough of Lambeth No.160 (Land fronting Streatham Hill and Christchurch Road) TPO 1980.

The off-Site trees to the east of the Site on the other side of Garden Lane, separated from the site by a single track road, are protected by London Borough of Lambeth No.159 (Land between 6 Christchurch Road and Garden Lane) TPO 1980.

The Site and the off-Site trees are not within a Conservation Area and there are no Planning Application Conditions protecting the trees.

The 12 on-Site trees covered by TPO No.160, five have been previously felled and are numbered T2, 4, 5, 10, 11 and 12 on the TPO (Appendix E) which relate to T5, 8, 7,17, 16, 14 within this report.

The off-Site trees T8 to T13 covered by TPO No. 159 and are numbered T1, 2 and G1 within this report and may be within the zone of influence of future development on the Site (Appendix E).

When tree maintenance works are undertaken by a Highway Authority to trees protected by a TPO and within a Conservation Area are considered an exception within the Town and Country Planning (Tree Preservation) (England) Regulations (2012). However, all non-routine tree works including works to enable development must have a decision notice approving the tree works or Full Planning Consent from the LPA before the tree works take place.



## 3 Tree Survey Results

### 3.1 Tree Assessment and Categorisation

A total of 23 arboricultural items were recorded within the study area as follows:

- Twelve individual trees on-Site (T3, T7, T8, T9, T10, T11, T12, T13, T14, T15, T16 and T17);
- Three groups of trees on-Site (G4, G5 and G6);
- Five individual trees (T1, T2, T4, T5 and T6) on the east side of Garden Lane;
- Three groups of trees (G1, G2 and G3) on the east side of Garden Lane.

Full details of the survey data are presented within the Tree Schedules in Appendix B and Figure 1 Tree Constraints Plan.

Each arboricultural item was assigned to one of four categories, as listed below:

- Category A individual trees, groups of trees: Three individual trees (T8, T9 and T17) and one group (G1) were graded as Category A (trees of high quality) as part of this survey;
- Category B individual trees, groups of trees: Three individual trees (T2, T5 and T7) and one group (G6) were graded as Category B (trees of moderate quality) as part of this survey;
- Category C individual trees, groups of trees: Four individual trees (T6, T12, T13 and T14) and two groups (G2 and G3) were graded as Category C (trees of low quality) as part of this survey due to poor form or inappropriate past management;
- Category U individual trees, groups of trees: Seven individual trees (T1, T3, T4, T10, T11, T14 and T15) and two groups (G4 and G5) were graded as Category U (trees of poor quality unsuitable for retention) as part of this survey due to poor structural and physiological condition.

### 3.2 Tree Species Diversity

Ten different tree species were recorded during the survey and are represented throughout the study area. A summary of the species surveyed can be found within the Tree Schedule in Appendix B and also provided in Table 1 Table 1 Tree Species Recorded. The numbers below include species of individual trees and groups of trees.

Table 1 Tree Species Recorded

Tree Species	Number of Individual Stems	Approximate Percentage
Ash ( <i>Fraxinus excelsior</i> )	8	11%
Common holly ( <i>Ilex aquifolium</i> )	1	1.5%
Common lime ( <i>Tilia x europaea</i> )	8	11%
False acacia ( <i>Robinia pseudoacacia</i> )	41	55%
Goat willow ( <i>Salix caprea</i> )	1	1.5%
Holm oak ( <i>Quercus ilex</i> )	1	1.5%
Horse chestnut ( <i>Aesculus hippocastanum</i> )	1	1.5%

Tree Species	Number of Individual Stems	Approximate Percentage
London plane ( <i>Platanus x hispanica</i> )	1	1.5%
Sycamore ( <i>Acer pseudoplatanus</i> )	10	14%
Wild cherry ( <i>Prunus avium</i> )	1	1.5%
<b>Totals</b>	<b>73</b>	<b>100%</b>

### 3.3 Age Diversity

Analysis of the data identified that the majority of the trees within the study area were within the young age classification set by BS 5837: 2012 with an estimated useful life expectancy of over 20 years, as illustrated in Table 2.

Table 2 Age Diversity

Age Class	Number of Individual Stems	Approximate Percentage
Young	39	53%
Early-mature	5	7.25%
Semi-mature	4	5.5%
Mature	20	27%
Over-mature	5	7.25%
<b>Totals</b>	<b>73</b>	<b>100%</b>

### 3.4 Bat Roosting Potential

While undertaking the Arboricultural Survey, an assessment of the trees potential to support roosting bats was undertaken in accordance with Bat Conservation Trust (BCT), Bat Surveys for Professional Ecologists: Good Practice Guidelines, 2016. All trees that were surveyed within this Tree Survey had negligible potential to support bats.



## 4 Discussion and Conclusions

A total of 23 arboricultural items were recorded within the study area as follows:

- Twelve individual trees on-Site (T3, T7, T8, T9, T10, T11, T12, T13, T14, T15, T16 and T17);
- Three groups of trees on-Site (G4, G5 and G6);
- Five individual trees (T1, T2, T4, T5 and T6) on the east side of Garden Lane;
- Three groups of trees (G1, G2 and G3) on the east side of Garden Lane.

Within the Site three individual trees (T8, T9 and T17) and one group off-Site (G1) has been identified as Category A (trees of high quality). Within the Site one individual tree (T7) and one Group (G6) and two off-Site individual trees (T2 and T5) have been identified as Category B (trees of moderate quality). Within the Site four individual trees (T6, T12, T13 and T14) and two groups (G2 and G3) have been identified as Category C (trees of low quality). Within the Site five individual trees (T3, T10, T11, T14, T15) and two groups of trees (G4 and G5) and two off-Site individual trees (T1 and T4) have been identified as Category U (trees of poor quality unsuitable for retention).

Although the Site and the off-Site trees are not within a Conservation Area and there are no Planning Application Conditions protecting the trees, some trees that were recorded within the study area (the Site and its immediate surroundings) are protected by two Tree Preservation Orders (TPO) that protect on-Site and off-Site trees. These Orders are the London Borough of Lambeth No.160 (Land fronting Streatham Hill and Christchurch Road) TPO 1980 and London Borough of Lambeth No.159 (Land between 6 Christchurch Road and Garden Lane) TPO 1980. Within the Site a total of five trees are protected by TPO No.160, one off-Site is protected by TPO No.160 and six off-Site trees are protected by TPO No.159.

In the absence of a design layout for the site, it is difficult to say whether the trees would need to be removed and if there is space for any new trees to be re-provisioned on the site. Once designs are developed then this could be determined.

While not likely to prevent development, tree protection for trees to be retained and tree re-provisioning for any trees lost due to development are a material consideration for planning determination. The TPOs may present constraints to the design and construction of this Site in terms of a reduction in potentially developable land if they are to be retained. For any works to trees covered by a TPO it is a requirement to contact the LPA and follow the appropriate procedures before undertaking any works that might affect the protected trees. The procedures require an application to the LPA to remove or undertake works on the TPO trees, a decision which can often take at least 2 months. This application to remove can also be incorporated into a planning application submission and subsequent decision. Consultation with the LPA is recommended at the earliest opportunity to determine the development parameters of the Site.

If trees cannot be replaced on-Site due to development, off-Site options for tree re-provisioning to ensure no net loss should be considered. Individual Local Planning Authority (LPAs) may ask for re-provisioning in excess of 1 to 1 for trees of Category A or B grade or ask for additional re-provisioning for trees with protected by a TPO.

The on-Site trees T8 London plane (*Platanus x hispanica*), T9 common lime (*Tilia x europaea*) and T17 common lime are all Category A trees and T8 and T17 are protected within the TPO No.160. These trees are likely to present a constraint to any future development of the Site in terms of a reduction in developable land if they are to be retained or the need for gaining consent for any impacts on the trees.

The on-Site false acacia (*Robinia pseudoacacia*) T14 (protected by TPO no.160) and T15 have been categorised as Category U trees given their dangerous structural form and they are located within failure distance of the public highway. Given that T14 is protected by a TPO a five days' notice of an imminently hazardous and or dangerous tree has to be submitted to the LPA before any tree works take place.

The off-Site trees common lime within G1 and T2, (known as T9 to T13 on the TPO) are Category A (G1) and Category B (G2) trees and are protected within the TPO No.159. These trees have the potential to be an access constraint within any future construction and development of the Site should the Green Lane need to be widened. Given the protection of these lime trees full consideration should be given to preventing impacts

to these trees should Garden Lane be used as an access route for construction. The crowns of G1 and T2 are over growing Garden Lane and the roots are likely to be running underneath the lane. Any works to crown lift (i.e. to remove the basal branches of the tree) the trees and works that would prune the roots of G1 will require consent from the LPA.

The off-Site horse chestnut T1 is also within the TPO No.159 (known as T8 on the TPO) and may also be within the zone of influence of any future development. The other trees covered within the TPO No 159 are not likely to be within the zone of influence of the scheme.

The main development considerations for the trees protected by the on-Site Order (TPO No.160) and the off-Site Order (No.159) are:

- Location of TPO trees within developable area;
- Over-hanging crowns;
- The planting location, height, width and density of the crowns will cast shade on to the Site;
- The RPA of the trees within the Site; and
- According to British Geological Survey on-line map the Site is on London Clay. Therefore, the foundation design of any proposed new structure will have to reduce the risk of vegetation induced clay shrinkage subsidence damage occurring.

## 5 Further Work

Consultation with the LPA regarding the potential TPO constraints is advised at the earliest opportunity to determine the parameters of any future development.

Should any future proposed development require tree removals or RPA incursions within RPA's of the retained trees an Arboricultural Impact Assessment (AIA) will be required by the LPA in support of a planning application.

The AIA should include a tree schedule, although one is provided within this report, a review of any proposed development should be undertaken to ensure that there are no additional trees within the zone of influence of the development. For example, parking requirements often extend the zone of influence.

The AIA should state the trees to be removed due to the design and access requirements and any proposed tree facilitation pruning works. This should also be accompanied by an assessment of the likely impacts due to construction activity on the trees to be retained. Indicative arboricultural mitigation measures should be provided which would include recommendations for tree re-provisioning. The AIA should be accompanied by an updated Tree Constraints Plan and a Tree Impact and Protection Plan based on the proposed design.

The AIA should also include a Tree Replacement Strategy which should take into consideration the landscape character, local treescape and biodiversity features of the immediate and adjoining areas. The species, number, size, type of stock, location and planting aids for the compensating planting should be chosen for landscape, wildlife and arboriculture values. To ensure that appropriate and sustainable planting is achieved advice should be sought from an ecologist and arboriculturist. Furthermore, liaison with the LPA Tree Officer will be necessary during the planning process to agree an approved tree compensation and or landscape scheme plan.

All new tree planting should be in accordance with British Standard 8545: Trees: From Nursery to Independence in the Landscape – Recommendations, 2014 and all tree works must be carried out by a qualified contractor in accordance with BS3998:2010: Tree Work – Recommendations.

This document encloses a Preliminary Arboricultural Method Statement (AMS) outlining tree protection measures. However following planning determination and when full construction measures are known a bespoke AMS may be required to ensure protection of the trees to be retained on and adjoining the Site.

## 6 References

British Standards Institution (2010) BS 3998:2010, Tree Work Recommendations.

British Standards Institution (2012) BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations.

British Standards Institution (2014) BS 8545: Trees: From nursery to Independence in the Landscape – Recommendations.

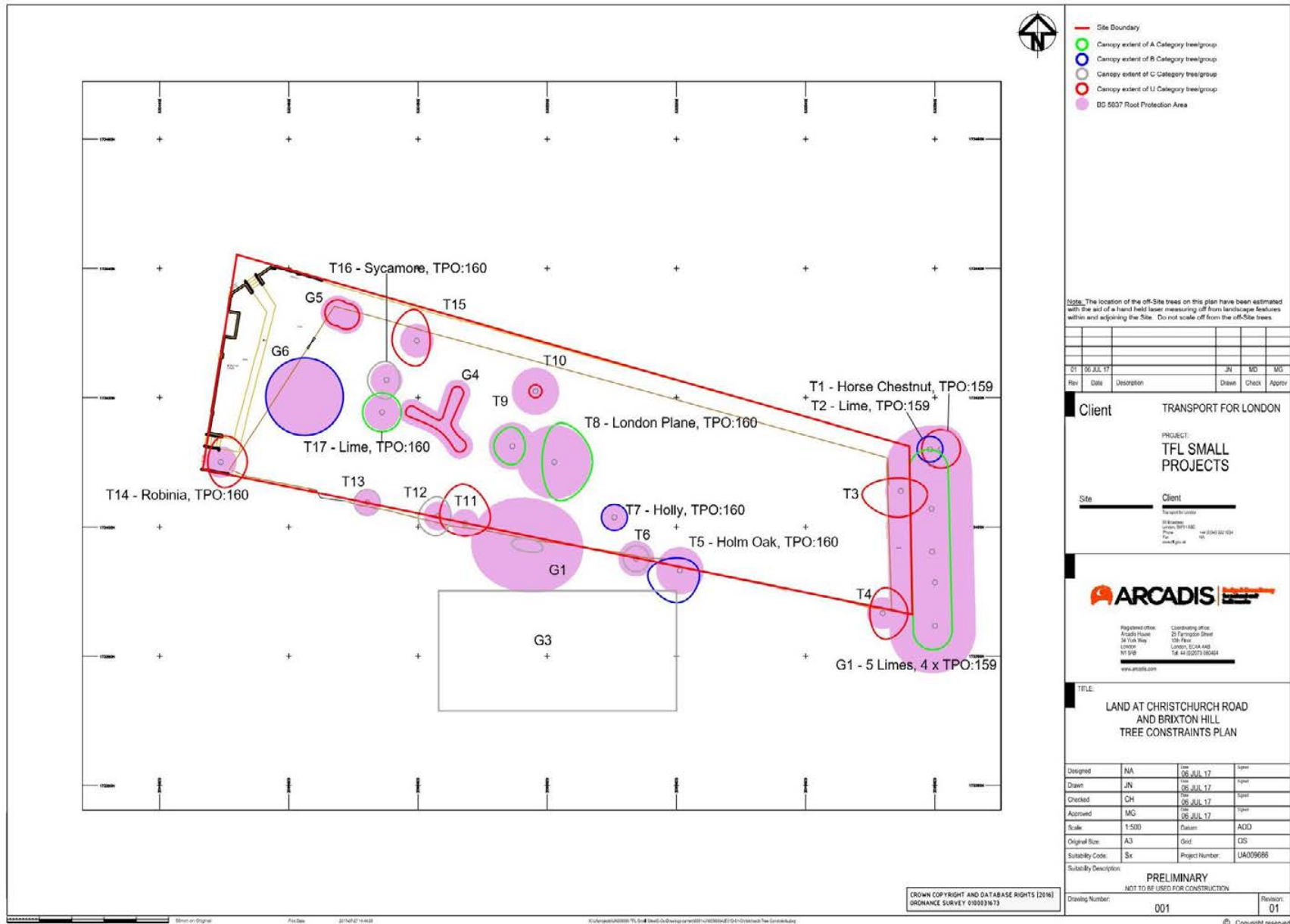
Mattheck, C. and Broeler, H. DETR (1994) The Body Language of Trees: A Handbook for Failure Analysis Research for Amenity Trees No.4.

The Secretary of State for Communities and Local Government, Statutory Instruments (2012) No. 605, The Town and Country (Tree Preservation) (England) Regulations 2012.

British Geological Survey on-line map accessed July 2017

<http://mapapps.bgs.ac.uk/geologyofbritain/home.html?location=SW23ES&gobBtn=go>

**FIGURE 1. Tree Constraints Plan**



## **APPENDIX A. Explanation of Terms**

### **Age Class**

Young – Trees in the first fifth of full life expectancy

Semi-mature – Trees in the second fifth of full life expectancy

Early-mature – Trees in the third fifth of full life expectancy

Mature – Trees in the fourth fifth of full life expectancy

Over Mature – Trees having reached full life expectancy and trees in natural decline

Veteran – Trees of interest biologically, culturally and aesthetically because of their age

### **Stem Diameter**

The diameter of the stem measured in millimetres (mm) at a height of 1.5m above ground level

### **Crown Spread**

Average measured in metres using a ground tape where possible

### **Physiological Condition**

Good – Healthy tree with no signs of ill health and signs of good extension growth for species

Fair – Trees with signs of disease, minor defects and decreased life expectancy due to physical damage

Poor – Trees with significant disease, significantly reduced life expectancy and/or under major physiological stress

Dead – Dead tree or trees with over 70% crown dieback

### **Structural Condition**

Good – Trees with no significant defects

Fair – Trees with remedial defects which require minor tree surgery works

Poor – Trees with remedial defects which require significant tree surgery works or felling

Dead – Trees which require felling

### **BS 5837 Retention Category**

Each tree, group of trees or hedge is assigned to a retention category where:

*Table A1 Categorisation of trees*

Category	Description
A	Trees of high quality and value, retention is highly desirable
B	Trees of moderate quality and value where retention is desirable
C	Trees of low quality and value, or young trees with a stem diameter <150mm. Category C trees may be retained, replaced or in the case of younger trees, relocated
U	Trees of poor quality and value, unsuitable for retention or trees which should be removed

In addition, each tree, group of trees or hedge is assigned to a retention sub-category where categorisation is for:

*Table A2 Reasons for Categorisation*

Sub-category	Reason for Categorisation
1	Mainly arboricultural qualities
2	Mainly landscape qualities
3	Mainly cultural values, including conservation



## APPENDIX B. Tree Schedules

Client: **Transport for London (TfL)**  
Survey date: **30<sup>th</sup> June 2017**

Project: **Land at Christchurch Hill and Brixton Hill, Lambeth SW2 4AP**  
Surveyor: **Callum Henderson BSc (For) M. ArborA**

Table B1 Tree Schedule

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age class	Physiological condition	Structural condition	Additional Information/Bat Roosting Potential	Estimated remaining contribution (years)	Category grading
				N	E	S	W							
T1	Horse chestnut ( <i>Aesculus hippocastanum</i> )	20	600	3	3	3	3	2	Over-mature	Poor	Poor	Negligible <b>TPO No 159 T8</b>	<10	U
T2	Common lime ( <i>Tilia x europaea</i> )	22	600	2	2	2	2	2	Mature	Fair	Fair	Negligible <b>TPO No 159 T9</b>	20-40	B1,2,3
T3	Sycamore ( <i>Acer pseudoplatanus</i> )	16	340	2	5	4	6	2	Mature	Fair	Poor	Negligible	<10	U
T4	Sycamore ( <i>Acer pseudoplatanus</i> )	16	400	4	4	4	2	2	Over-mature	Poor	Poor	Negligible	<10	U
T5	Holm oak ( <i>Quercus ilex</i> )	18	600	2	3	5	5	1	Mature	Fair	Poor	Negligible <b>TPO No 160 T2</b>	20-40	B1,2,3
T6	Ash ( <i>Fraxinus excelsior</i> )	12	450	2	2	2	2	2	Early-mature	Poor	Poor	Negligible	10-20	C2
T7	Common holly ( <i>Ilex aquifolium</i> )	10	300	2	2	2	2	1	Semi-mature	Fair	Good	Negligible <b>TPO No 160 T5</b>	20-40	B2
T8	London plane ( <i>Platanus x hispanica</i> )	18	940	6	6	6	3	2	Mature	Good	Good	Negligible <b>TPO No 160 T4</b>	+40	A1,2
T9	Common lime ( <i>Tilia x europaea</i> )	18	600	3	2	3	3	2	Mature	Good	Fair	Negligible	+40	A1,2
T10	False acacia ( <i>Robinia pseudoacacia</i> )	6	MS 300	1	1	1	1	1	Young	Fair	Poor	Negligible	<10	U
T11	Wild cherry ( <i>Prunus avium</i> )	8	350	6	4	2	4	0	Over-mature	Dead	Poor	Negligible	<10	U
T12	Sycamore ( <i>Acer pseudoplatanus</i> )	16	360	3	2	3	3	2	Semi-mature	Fair	Fair	Negligible	10-20	C1
T13	Sycamore ( <i>Acer pseudoplatanus</i> )	16	320	2	2	2	2	0	Semi-mature	Fair	Fair	Negligible	10-20	C1
T14	False acacia ( <i>Robinia pseudoacacia</i> )	16	MS 480	4	4	4	2	4	Over-mature	Poor	Dangerous	Negligible <b>TPO No 160 T12</b>	<10	U
T15	False acacia ( <i>Robinia pseudoacacia</i> )	18	420	5	2	4	4	2	Over-mature	Poor	Dangerous	Negligible	<10	U

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age class	Physiological condition	Structural condition	Additional Information/Bat Roosting Potential	Estimated remaining contribution (years)	Category grading
				N	E	S	W							
T16	Sycamore ( <i>Acer pseudoplatanus</i> )	16	400	3	2	3	3	0	Semi-mature	Poor	Fair	Negligible <b>TPO No 160 T11</b>	10-20	C1,2
T17	Common lime ( <i>Tilia x europaea</i> )	18	440	3	3	3	3	2	Mature	Good	Good	Negligible <b>TPO No 160 T10</b>	+40	A1,2
#G1	5x Common lime ( <i>Tilia x europaea</i> )	22	850	3	3	3	3	3	Mature	Fair	Fair	Negligible <b>TPO No 159 T10, T11, T12, T13,</b>	+40	A1,2,3
#G2	1x Ash ( <i>Fraxinus excelsior</i> ), 2x Sycamore ( <i>Acer pseudoplatanus</i> ) and 1x Goat willow ( <i>Salix caprea</i> )	10	MS 200	2	2	2	2	2	Early-mature	Fair	Fair	Negligible	10-20	C2
#G3	6x Ash ( <i>Fraxinus excelsior</i> ), 1x Sycamore ( <i>Acer pseudoplatanus</i> )	18	750	3	3	3	3	6	Mature	Poor	Fair	Negligible	10-20	C1,2,3
G4	35x False acacia ( <i>Robinia pseudoacacia</i> )	5	MS 100	1	1	1	1	1	Young	Fair	Poor	Negligible	<10	U
G5	3x False acacia ( <i>Robinia pseudoacacia</i> )	6	MS 125	2	2	2	2	1	Young	Fair	Poor	Negligible	<10	U
G6	2x Sycamore ( <i>Acer pseudoplatanus</i> )	16	MS 600	6	6	6	6	1	Mature	Good	Fair	Negligible	20-40	B1,2

#. Tree located off Site within neighbouring property and survey data has been estimated (based on assessments from the nearest safe vantage points)

Preliminary BS5837:2012 Tree Survey Report

Table B2 Root Protection Area

Tree reference number	Species	Stem diameter (mm)	Radius of nominal circle (m)	RPA (m <sup>2</sup> )
T1	Horse chestnut ( <i>Aesculus hippocastanum</i> )	600	7.2	162.9
T2	Common lime ( <i>Tilia x europaea</i> )	600	7.2	162.9
T3	Sycamore ( <i>Acer pseudoplatanus</i> )	340	4.1	52.3
T4	Sycamore ( <i>Acer pseudoplatanus</i> )	400	4.8	72.4
T5	Holm oak ( <i>Quercus ilex</i> )	600	7.2	162.9
T6	Ash ( <i>Fraxinus excelsior</i> )	450	5.4	91.6
T7	Common holly ( <i>Ilex aquifolium</i> )	300	3.6	40.7
T8	London plane ( <i>Platanus x hispanica</i> )	940	11.3	399.8
T9	Common lime ( <i>Tilia x europaea</i> )	600	7.2	162.9
T10	False acacia ( <i>Robinia pseudoacacia</i> )	MS 300	3.0	28.3
T11	Wild cherry ( <i>Prunus avium</i> )	350	4.2	55.4
T12	Sycamore ( <i>Acer pseudoplatanus</i> )	360	4.3	58.6
T13	Sycamore ( <i>Acer pseudoplatanus</i> )	320	3.8	46.3
T14	False acacia ( <i>Robinia pseudoacacia</i> )	MS 480	4.8	72.4
T15	False acacia ( <i>Robinia pseudoacacia</i> )	420	5.0	79.8

Preliminary BS5837:2012 Tree Survey Report

Tree reference number	Species	Stem diameter (mm)	Radius of nominal circle (m)	RPA (m <sup>2</sup> )
T16	Sycamore ( <i>Acer pseudoplatanus</i> )	400	4.8	72.4
T17	Common lime ( <i>Tilia x europaea</i> )	440	5.3	87.6
#G1	5x Common lime ( <i>Tilia x europaea</i> )	850	10.2	326.9
#G2	1x Ash ( <i>Fraxinus excelsior</i> ), 2x Sycamore ( <i>Acer pseudoplatanus</i> ) and 1x Goat willow ( <i>Salix caprea</i> )	MS 200	2.0	12.6
#G3	6x Ash ( <i>Fraxinus excelsior</i> ), 1x Sycamore ( <i>Acer pseudoplatanus</i> )	750	9.0	254.5
G4	35x False acacia ( <i>Robinia pseudoacacia</i> )	MS 100	1.0	3.1
G5	3x False acacia ( <i>Robinia pseudoacacia</i> )	MS 125	1.3	4.9
G6	2x Sycamore ( <i>Acer pseudoplatanus</i> )	MS 600	6.0	113.1

Table B3 Key to Categories

Tree Reference Number	Category
T/GXX	Category A
T/GXX	Category B
T/GXX	Category C
T/GXX	Category U

Table B4 Key to Bat Roost Potential\*

Bat Roost Potential Category	Reason for Categorisation
Negligible	Saplings or semi-mature trees with a small girth. No ivy cover, loose bark, cracks or fissures
Low	Small or semi-mature trees. May have small amounts of ivy present, stems of small diameter. Trees may have some loose bark but no obvious cracks, fissures or holes.
High/medium	Trees with large crack, crevices or disused woodpecker holes that can provide refuge for bats. Trees may support dense ivy with multiple stems.
Known or confirmed roost	Tree with know or confirmed roosts from previous ecology survey.

\*Bat Conservation Trust Bat Surveys for Professional Ecologists: Good Practice Guidelines, 2016

## APPENDIX C. Preliminary Arboricultural Method Statement

### Overview

This Preliminary Arboricultural Method Statement provides generic best practice measures to be adopted in order to protect retained trees during the development process. It has been prepared in order to inform the planning and the construction/ development process.

### Protective Fencing

The purpose of this fencing is to provide protection to the RPA of retained trees/groups and to protect trees and hedgerows prior to their translocation. The type of fencing used shall be appropriate to the level of adjacent construction activity and shall be agreed with the Local Authority tree officer. Weather-proof notices shall be attached to any protective fencing located adjacent to retained trees displaying the words “Construction Exclusion Zone” and listing restrictions which apply. All personnel must be made aware of these restrictions.

It is anticipated that three specifications for fencing would be employed during construction.

#### Low-use areas

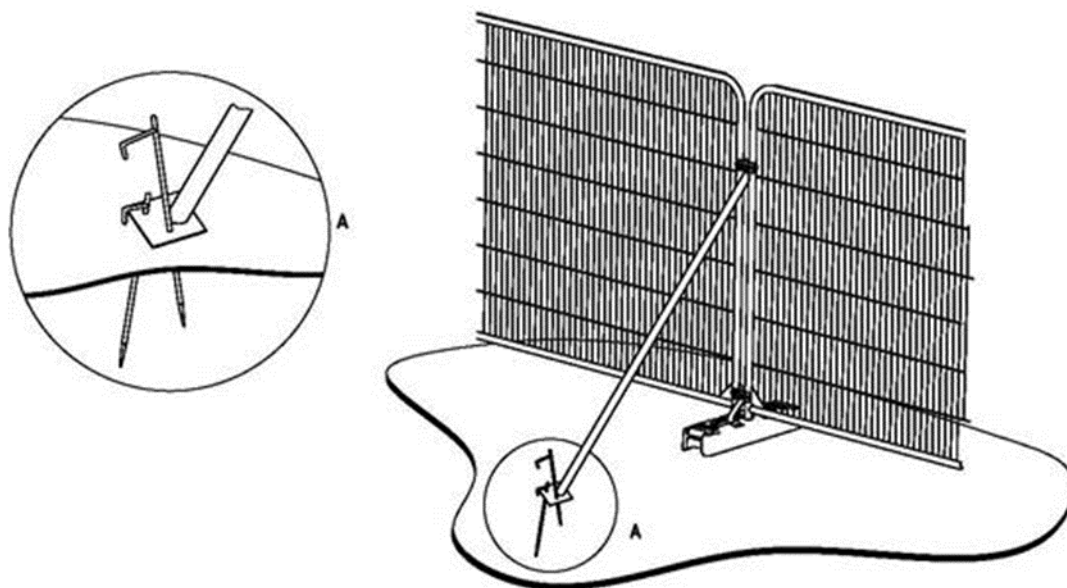
The system illustrated in Figure C1 is adequate to define areas of protected vegetation and exclude traffic, and comprises Cleft Chestnut Pale Fence in accordance with *BS 1722 Part 4: Specification for cleft chestnut pale fences (British Standards Institution, 1991)* supported by 150mm wooden stakes. Assembled with galvanized 14-gauge (2 mm) wire, four strands per row, peeled and pointed one end. Approximate spacing of pales 75 mm.



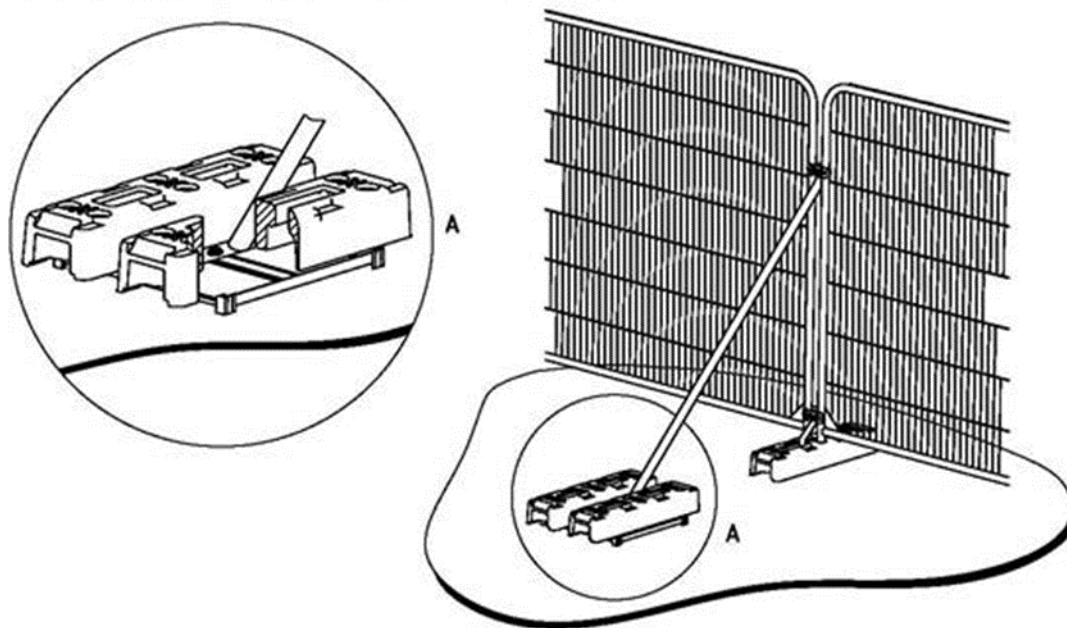
Figure C1 Tree Protection fencing example for low use areas

#### Medium-use areas

This system comprises anti-climb weldmesh panels connected by clamps and supported by rubber or concrete bases and bracing struts. The system is illustrated in Figure C2 and is based on *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution, 2012)* (Ref 1) guidelines. This kind of system is robust enough to withstand occasional knocks by plant machinery.



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Figure C2 Tree Protection Fencing specification (extract from BS 5837)

## High-use areas

This system involves driving scaffold poles into the ground, onto which are affixed horizontal scaffold poles and diagonal bracing struts. Anti-climb weldmesh panels are secured to this scaffold framework using standard scaffold clips or wire. The system is illustrated in diagram Figure. C3 and is based on *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* (British Standards Institution, 2012) (Ref 1) guidelines. This kind of system provides the highest level of security.



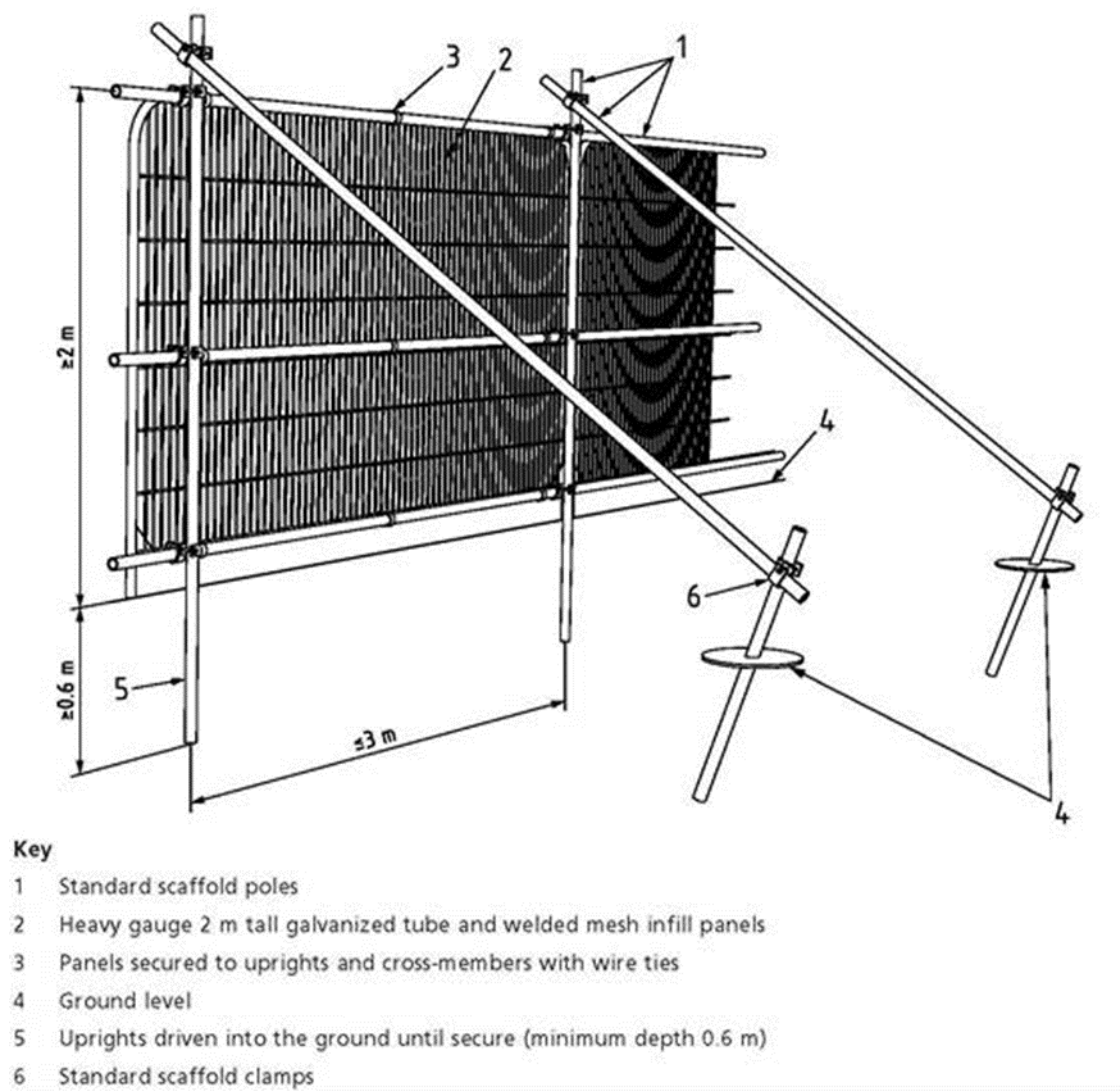


Figure C3 Tree Protection Fencing specification (extract from BS5837)

## Construction Exclusion Zone (CEZ)

The Construction Exclusion Zone (CEZ) is the area identified by an arboriculturist to be protected during development, including Site clearance and construction work, through the use of barriers and/or ground protection fit-for-purpose to ensure the successful long-term retention of a tree. The area within the construction exclusion zone is to be regarded as sacrosanct and the fencing shall not be taken down or relocated at any time.

All areas excluded by protective tree fencing shall be treated as CEZs, and the following restrictions shall apply:

- No construction activity whatsoever must occur within these areas.
- No tree works, without the written consent from the Local Authority.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No excavation.
- No temporary structures. \*
- No storage of soil, rubble or other materials.
- No vehicles or machinery to be used or parked without appropriate ground protection measures as per BS5837 recommendations. This will require the use of a proprietary system of reinforced concrete slabs/steel road plates on a compressible layer, or side butting scaffold boards/ 18mm plywood sheets on a compressible layer. The type of ground protection used shall be appropriate for the likely loading applied.
- No fixtures (lighting, signs etc.) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedgerow.

1

*\*Sales Cabins or Site huts, provided they are of the Jack Leg type, can be sited to act as ground protection for the duration of the construction.*

## General Construction Activity

Since the canopies of retained trees may be in close proximity to areas of crane operation, the following restrictions will apply:

- All cranes will be sited outside the defined RPAs of retained trees / groups, and the appointed contractor will ensure all relevant personnel shall be made aware of the location of branches and the need to avoid causing damage to them.
- Prior to the implementation of lifting operations, a representative from the equipment supply company shall visit the Site and ensure all operations can be completed without causing damage to retained trees. A lifting plan will be prepared and submitted for approval prior to all lifting operations. The lifting plan will make provision for the potential for damage of retained trees.
- All lifting operations will be completed under the close direction of a qualified banksman, who will be briefed by the appointed contractor as to the need to avoid damage the stems and branches of retained trees.
- Should additional tree removal or pruning be required the Local Authority Tree Officer shall be contacted and the scope of works agreed in writing.
- All materials will be stored within designated areas and no materials shall be stored within any RPA.

## Hazardous Materials


Any mixing of cement-based materials is to take place outside the RPAs of all trees. Provision shall be made to ensure that the mixing area is contained so that no water runoff enters the RPAs of any trees. All mixers and barrows shall be cleaned within this dedicated mixing area.

All other chemicals hazardous to tree health, including petrol and diesel, are to be stored in suitable containers as specified by the Control of Substances Hazardous to Health (COSHH) Regulations (2002) (Ref 4), and kept away from the RPAs.



## Example of Protective Fencing Signs





APPENDIX D. Photographs

Tree No.	Description	Photograph
G1 (5x common lime) and T3 (sycamore)	Green Lane possible access road G1 lime to the right of the image protected within TPO No.159 1980. Sycamore T3 Category U tree has been damage when the protective fence was installed. The T3 is holding deadwood and leaning towards the Site.	
T1 horse chestnut and T2 lime	T1 (horse chestnut <i>Aesculus hippocastanum</i> ) and T2 lime ( <i>Tillia x europeae</i> ) within TPO No.159 T2 separated from G1 limes by a wall.	



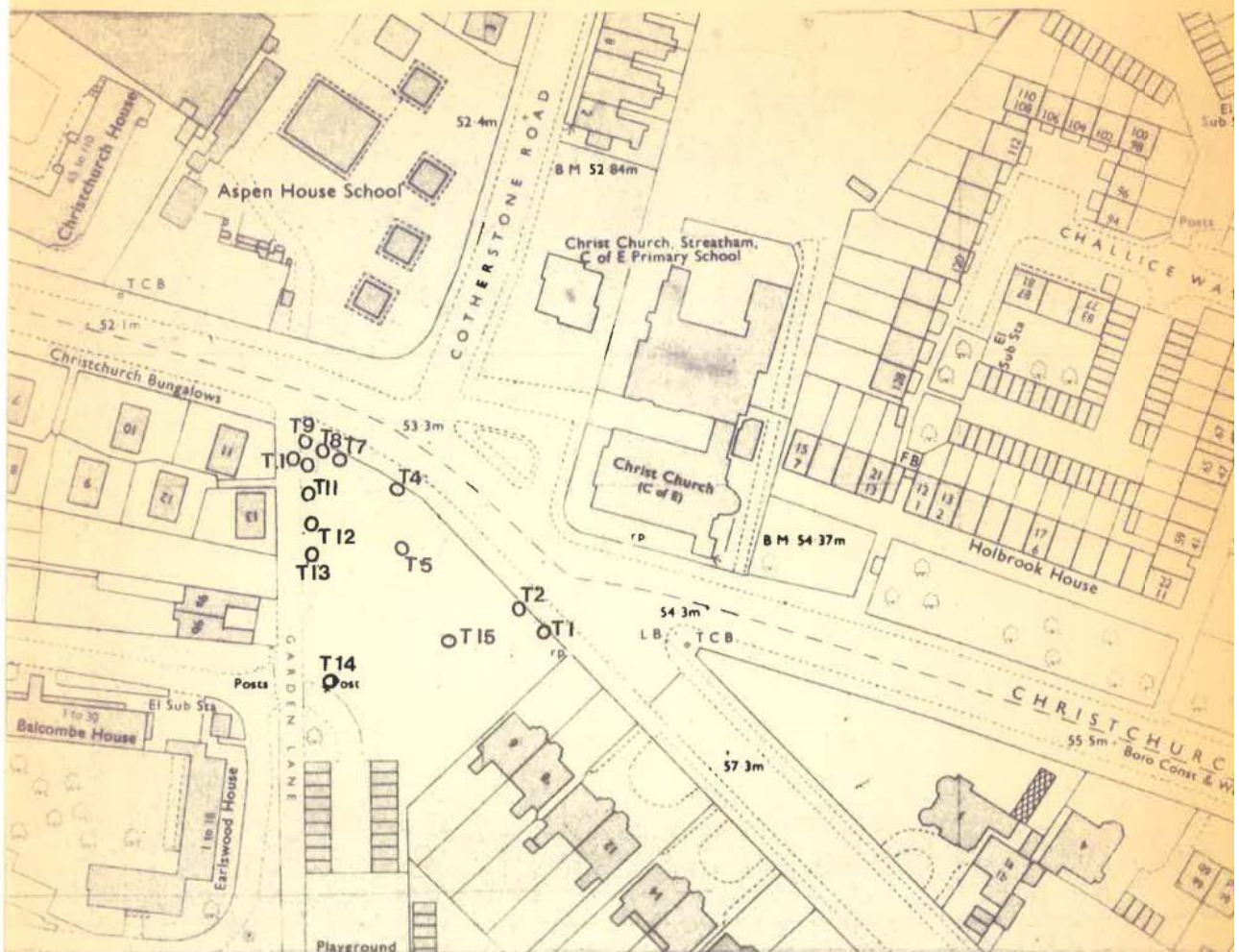
Tree No.	Description	Photograph
T8 London plane	T8 London plane ( <i>Platanus x hispanica</i> ) is protected by a TPO No. 160 1980. The tree is easily visible from the surrounding public highway	
T15 false acacia	Poor structural condition of the Category U tree	

Tree No.	Description	Photograph
T15 false acacia	Western upper stem the right-hand side apical attachment is suboptimal and increase the risk of failure of this part of the tree	
T14 false acacia	North and western side of tree dead wood on western canopy over the roadway Category U tree	

**APPENDIX E Tree Preservation Orders**



MAP REFERRED TO IN THE  
LONDON BOROUGH OF LAMBETH N O 159 (Land between 6 Christchurch Road and Garden Lane  
TREE PRESERVATION ORDER 1980.



THE COMMON SEAL OF  
THE LONDON BOROUGH OF LAMBETH  
WAS HERE UNTO AFFIXED THIS

DAY OF

19

LONDON BOROUGH OF LAMBETH  
DIRECTORATE OF TOWN PLANNING

Edward Hollamby OBE FRIBA FRTPi Dip TPI  
Director of Town Planning

CHIEF SOLICITOR

MAP NO 159 TPO scale 1:1250

LONDON BOROUGH OF LAMBETH NO.159

(6 Christchurch Road/Garden Lane)

TREE PRESERVATION ORDER 1980

FIRST SCHEDULE

TREES SPECIFIED INDIVIDUALLY (encircled in black on the map)

No. on Map	Description	Situation
1	Horse Chestnut	
2	Oak	
4	Lime	Area between No.6 Christchurch Road and Garden Lane
5	Ash	
7	Lime	
8	Horse Chestnut	
9	Lime	
10	Lime	
11	Lime	
12	Lime	
13	Lime	
14	Sycamore	
15	Lime	

LONDON BOROUGH OF LAMBETH NO.160  
(STREATHAM HILL/CHRISTCHURCH ROAD)  
TREE PRESERVATION ORDER 1980

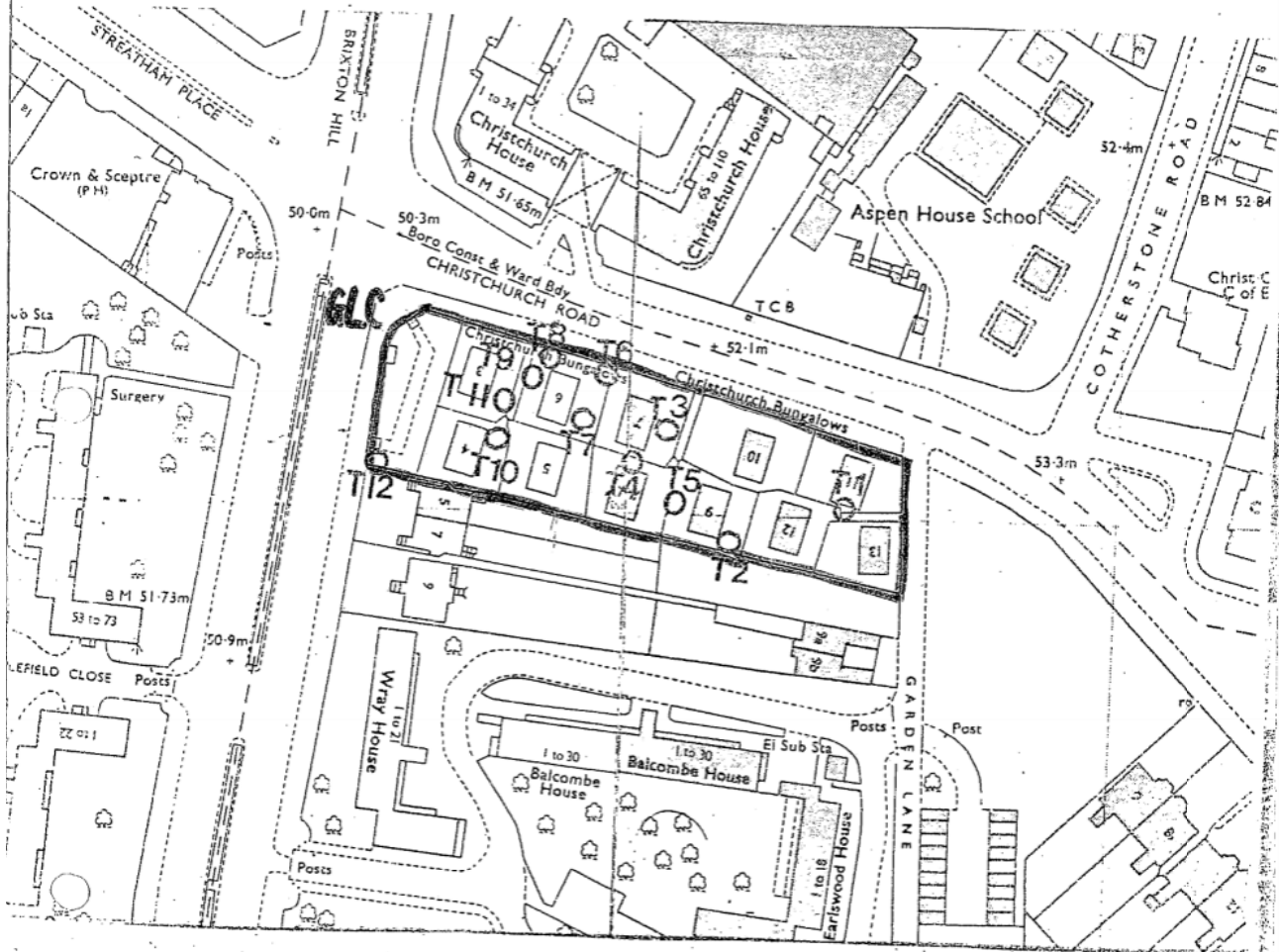
SCHEDULE

Trees specified individually (encircled in black on the map)

No. on Map	Description	Situation
1	Sycamore	
2	Holm Oak	
3	Copper Beech	
4	Plane	
5	Holly	
6	Lime	
7	Sycamore	
8	Sycamore	
9	Robinia	
10	Lime	
11	Sycamore	
12	Robinia	

Dec 27/1960

MAP REFERRED TO IN THE  
LONDON BOROUGH OF LAMBETH N O 160 (Land fronting Streatham Hill and Christchurch Road)  
TREE PRESERVATION ORDER 1980.



THE COMMON SEAL OF  
THE LONDON BOROUGH OF LAMBETH  
WAS HERE UNTO AFFIXED THIS

DAY OF

19

LONDON BOROUGH OF LAMBETH  
DIRECTORATE OF TOWN PLANNING

Edward Hollamby OBE FRIBA FRTP I Dip TPI  
Director of Town Planning

CHIEF SOLICITOR

MAP NO 160 TPO scale 1:1250

**Arcadis Consulting (UK) Limited**

Arcadis House,  
34 York Way,  
London, N1 9AB  
United Kingdom

[www.arcadis.com](http://www.arcadis.com)