

# **TFL\_PSF\_9131 SITE INVESTIGATIONS: SMALL SITES INITIATIVE LAND AT PALMERSTON CRESCENT AND BOWES ROAD, ENFIELD**

## **Preliminary BS5837:2012 Tree Survey Report**

FEBRUARY 2020



# LAND AT PALMERSTON CRESCENT AND BOWES ROAD, ENFIELD

## Preliminary BS5837:2012 Tree Survey Report

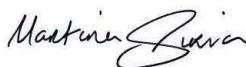
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Date FEBRUARY 2020

## VERSION CONTROL

Version	Date	Author	Changes
V1.0	February 2020	Nick Bolton	1 <sup>st</sup> Issue

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# 1 Introduction

## 1.1 Overview

Arcadis Consulting (UK) Limited (Arcadis) was commissioned by Transport for London (TfL) to undertake an arboricultural assessment to support the feasibility for potential development at Land at Palmerston Crescent and Bowes Road, Palmers Green, London, 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 that sensibly de-risks each of the sites such that unreasonable “abnormal” development costs are not included by developers.

The objective of this survey 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 north of the A406 North Circular Road and south of Elmdale Road, in the London Borough of Enfield. The Site is centred at grid reference of TQ 30822 92130 and around the postcode of N13 4UX.

The Site measures approximately 0.7ha in area and currently comprises a managed amenity grassland, along with scattered scrub, largely in the form of young tree planting (likely planted within the last 24 months), along with a small number of early-mature and mature broadleaved trees and areas of continuous dense scrub.

The landform at the Site has been altered to create a low-level bund that is parallel to the A406. The top of this bund is approximately 1m above the footpath and highway. The close board fence that delineates private gardens is approximately on the same level at the highway.

The area surrounding the Site is residential in nature and is characterised by terraced and semi-detached housing. Pymmes Brook and Russell Road Community Park are located to the immediate west of the Site.

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

Image 1 Site Location Plan



## 2 Methodology

### 2.1 Tree Survey Methodology

An Arboricultural Survey was undertaken by Nick Bolton BA (Hons), BSc (Hons) Arb, MArborA, MICFor, Director of Arboriculture for Lockhart Garratt Ltd on 23<sup>rd</sup> January 2020 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.

Maximum crown spread of each 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 Leica Disto Laser Distance Meter. 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 Hedgerows

Hedgerows were identified with the letter H and number on the associated schedules and plans. A 175m section of hedgerow was surveyed, recording the number of species. Any individual trees present within the hedgerow were recorded as individual trees.

### 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, but some items not recorded by the topographical survey were manually plotted using GPS. 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. 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.

Some areas of the study area were off-Site within neighbouring properties, preventing a full assessment and an accurate measurement of these 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 report and Tree Schedules (Appendix B).

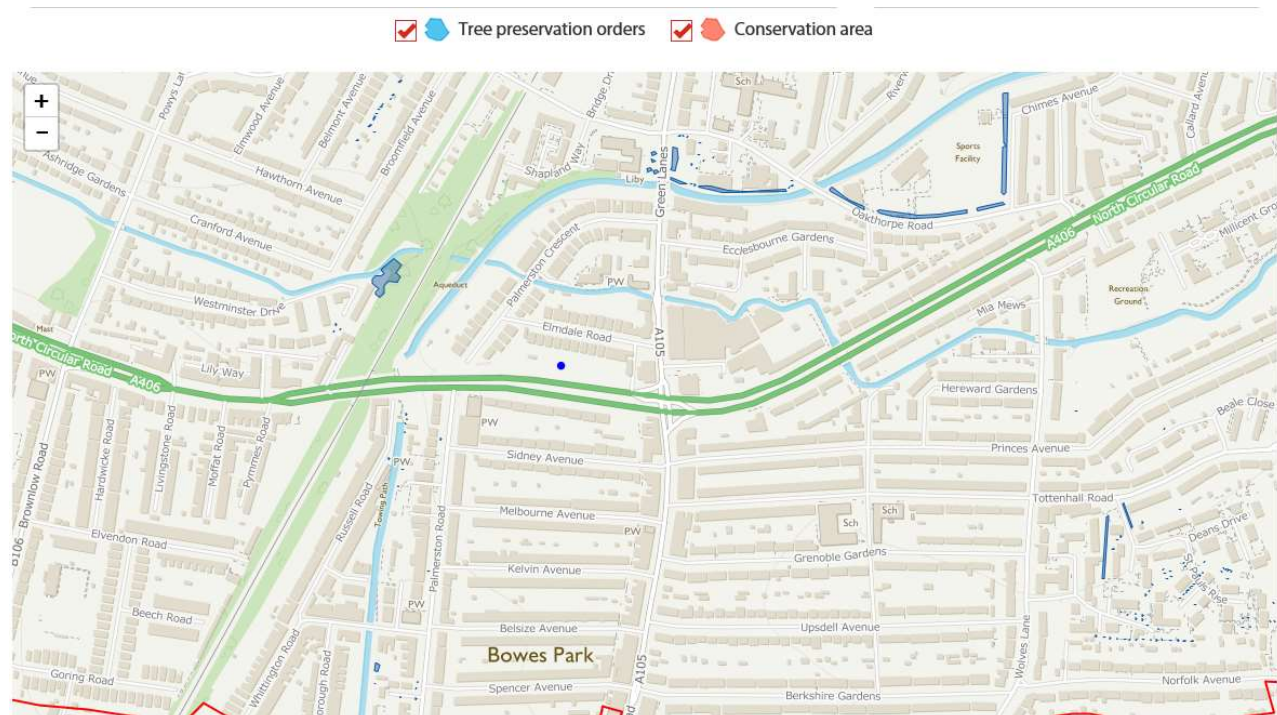
There are trees outside the study area that may have the potential to be affected by the development. Those trees were not assessed due lack of access and/ or a suitable vantage point.

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 review of London Borough of Enfield's online database on the 28 February 2020 has established the Site is not located within a Conservation Area, nor are there any trees subject to a Tree Preservation Order (TPO) within the study area. see Image 1 below.

*Image 1 Enfield Council Database*



### 3 Tree Survey Results

#### 3.1 Tree Assessment and Categorisation

A total of 10 arboricultural items were recorded within the study area as follows:

- Two individual trees (T1 & T9), two groups of trees (G5 & G10) and one hedge (H8) were recorded on-Site;
- Four individual trees (T2#, T3#, T6# & T7#) and one group of trees (G4#) were recorded off-Site.

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: No arboricultural items were identified as Category A (trees of high quality) as part of this survey;
- Category B individual trees: Three individual trees (T1, T2# & T6#) were graded as Category B (trees of moderate quality) as part of this survey;
- Category C individual trees: Three individual trees (T3#, T7# & T9), three groups of trees (G4#, G5 & G10) and one hedge (H8) 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: No items have been identified 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

Six 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. The numbers below include species of individual trees but do not include percentages of trees within hedgerows, these are presented in the accompanying schedules in Appendix B.

Table 1 Tree Species Recorded

Tree Species	Number of Individual Trees	Approximate Percentage
Lime, Small-leaved ( <i>Tilia cordata</i> )	1	6.6%
Ash, Common* ( <i>Fraxinus excelsior</i> )	5	33.3%
Cypress, Lawson ( <i>Chamaecyparis lawsoniana</i> )	1	6.6%
Sycamore* ( <i>Acer pseudoplatanus</i> )	6	40%
Apple ( <i>Malus</i> sp.)	1	6.6%
Purple-leaved plum ( <i>Prunus cerasifera</i> )	1	6.6%
<b>Totals</b>	<b>15</b>	<b>100%</b>

\*some arboricultural items were located within third-party land so numbers may vary slightly

### 3.3 Age Diversity

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

*Table 1 Age Diversity*

Age Class	Number of Individual Items	Approximate Percentage
Young	0	0%
Semi-mature	0	0%
Early-mature	6	60%
Mature	4	40%
Over-mature	0	0%
<b>Totals</b>	<b>10</b>	<b>100%</b>



## 4 Discussion and Conclusions

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

- Two individual trees (T1 & T9), two groups of trees (G5 & G10) and one hedge (H8) were recorded on-Site;
- Four individual trees (T2#, T3#, T6# & T7#) and one group of trees (G4#) were recorded off-Site.

Three individual trees (T1, T2# & T6#) were graded as Category B (trees of moderate quality) and three individual trees (T3#, T7# & T9), three groups of trees (G4#, G5 & G10) and one hedge (H8) were graded as Category C (trees of low quality).

There is currently no proposed design layout and therefore it is not possible 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. This can be determined once designs are developed.

The arboricultural assessment of the feasibility of development at Palmerstone Crescent is guided by the extent and quality of the existing tree stock and the benefits provided by these features to the biodiversity of the locality.

A total of ten arboricultural items (two individual trees, two groups and one hedge were recorded on-Site and four individual trees and one group of trees were recorded off-Site). All items recorded may present a potential constraint to development.

The Site is not within a Conservation Area nor are any of the trees covered by a TPO. If third-party trees are to be affected as part of the development, landowner consent will be required.

The only on-Site tree of significance in overall terms of quality and visual amenity is the Lime identified at T1. This mature specimen has been managed as pollard, but it offers very little by way of habitat or biodiversity benefits. Any development proposal that involved the removal of this tree would need to demonstrate why the loss of this would not breach policies D2, GI3 or GI4 of the emerging local plan. The retained policy under the Core Strategy is more general in its desire to maintain habitat and therefore the loss of this tree is unlikely to be in breach of that policy requirement.

There are off-Site trees that were not assessed due to lack of access and/or a suitable vantage point. RPAs are capped at 15m from the stem of individual trees (as per BS:5837 paragraph 4.6.1). Therefore, trees within 15m of the Site have the potential to be affected by ground-breaking works within the Site. Several of these trees were potentially within 5m of the Site and therefore may be impacted by Site development.

While unlikely 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. 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 Authorities may ask for re-provisioning in excess of 1 to 1 for trees of Category B grade.

The main development considerations for the trees are:

- The Root Protection Area RPA of the trees within and off-Site; and
- The retention and/or replacement of trees.

Consideration also needs to be given any future constraint that those off-Site trees present. This is unlikely to arise from issues relating the shading given that the trees will be on the northern side of any development, but the size of the trees could give rise to concerns relating the safety and the enjoyment that residents may have of their gardens.

Both the retained and emerging local plans seek to enhance green infrastructure through new planting schemes. Soil is an important component of the success of establishment of new trees, and it will therefore be necessary to understand the composition of the soils in the site.

## 5 Further Work

Should any future proposed development require tree removals or incursions within RPA's of the retained trees an Arboricultural Impact Assessment (AIA) will be required by the Local Planning Authority 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 increase the zone of influence.

The AIA should identify 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 Local Planning Authority 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) (Appendix C) 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.

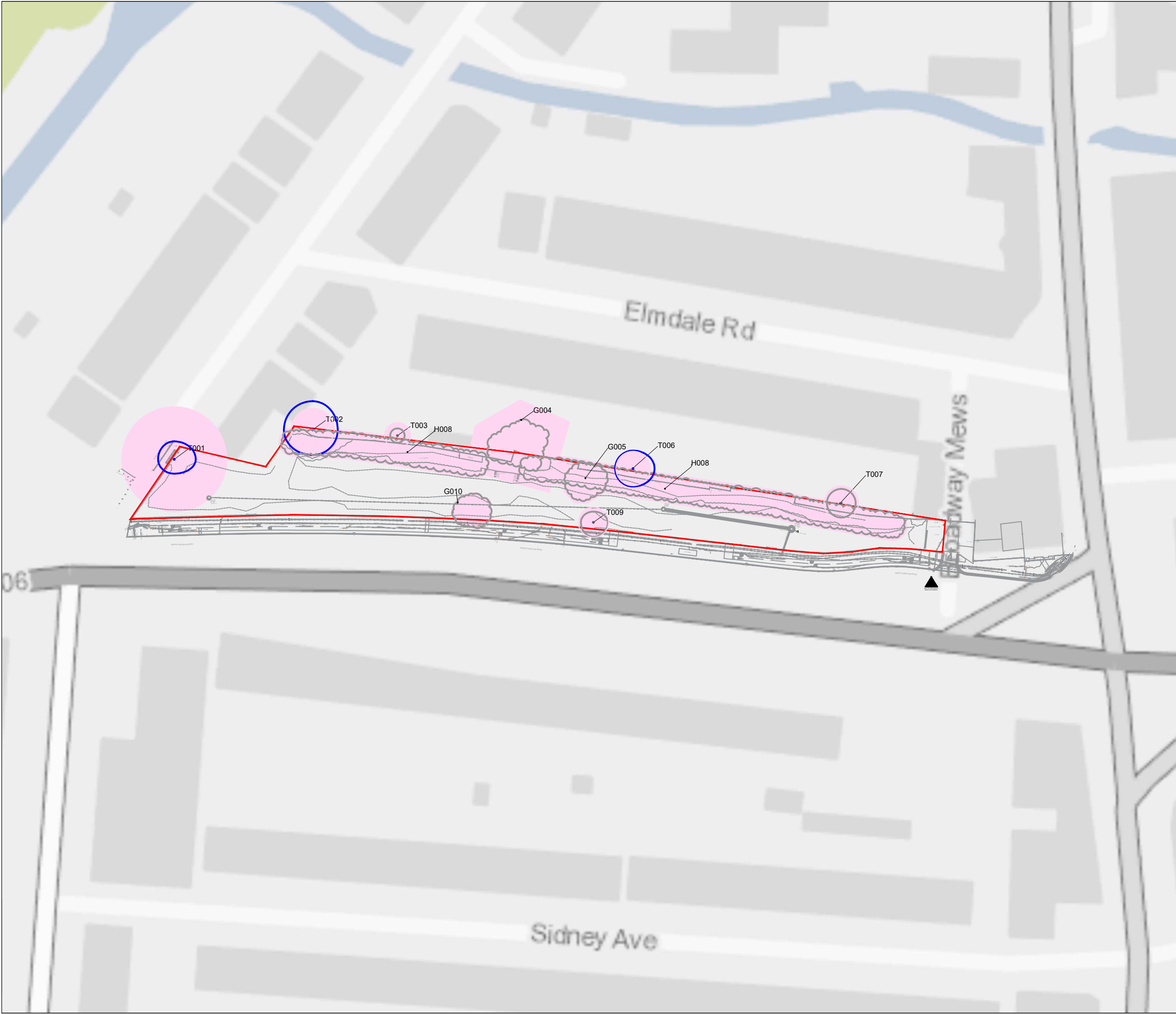
British Standards Institution (2014) BS 8545: Trees: From nursery to Independence in the Landscape – Recommendations.

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.

Enfield Council. Tree Preservation Order and Conservation Area Database <https://new.enfield.gov.uk/find-my-nearest/> [Accessed in February 2020]

## **FIGURE 1. Tree Constraints Plan**



**Legend:**

- Site Boundary
- Canopy extent of A Category tree/group
- Canopy extent of A Category tree/group
- Canopy extent of A Category tree/group
- Canopy extent of A Category tree/group
- BS5837 Root Protection Area (RPA)

01	07 FEB 20	For Information	RG	AB	MG
Rev	Date	Description	Drawn	Check	Approv

**Client** TRANSPORT FOR LONDON

PROJECT:  
SMALL SITES  
PALMERSTONE  
CRESCENT AND  
BOWES ROAD

**Transport for London**

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**TITLE:**

FIGURE 1  
ARBORICULTURAL ASSESSMENT  
TREE CONSTRAINTS PLAN  
PALMERSTON CRESCENT AND  
BOWES ROAD

Designed	NA	Date NA	Signed
Drawn	RG	Date 07 FEB 20	Signed
Checked	AB	Date 07 FEB 20	Signed
Approved	MG	Date 07 FEB 20	Signed
Scale:	1:1000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	Sx	Project Number:	10030793

Suitability Description:

**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

Drawing Number:  
**FIGURE 1**

Revision:  
**01**

## **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



Preliminary BS5837:2012 Tree Survey Report

APPENDIX B. Tree Schedules

Client: Transport for London (TfL)  
Survey date: 23<sup>rd</sup> January 2020

Project: Land at Palmerstone Crescent, Enfield  
Surveyor: Nick Bolton BA (Hons), BSc (Hons) Arb, MArborA, MICFor Lockhart Garratt

Table B1 Tree Schedule

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Radius of nominal circle (m)	RPA (m²)	Age class	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T1	Lime, Small-leaved ( <i>Tilia cordata</i> )	15	890	5	6	4	4.5	2	10.8	366	Mature	Fair	Fair	Possible limb decay at attachment points on limbs Tree is growing on made up land with prow and car parking on lower level to west and ground banks higher to east. Limited root space on eastern side and evidence of underground services under footpath	20+ Years	B2
T2#	Ash, Common ( <i>Fraxinus excelsior</i> )	17	500	8	7	7	8	2	6	113	Mature	Good	Fair	General waste scattered around base. Fractured limbs on eastern side over boundary fence still hanging from tree over fence.	20+ Years	B1
T3#	Cypress, Lawson ( <i>Chamaecyparis lawsoniana</i> )	14	300	2	2	2	2	3	3.6	41	Early Mature	Fair	Fair	Low quality offsite tree in neighbouring garden	20+ Years	C1
G4#	Ash, Common ( <i>Fraxinus excelsior</i> ) x4	17	1000 (combined)	5	5	8	5	2	12	452	Mature	Good	Fair	Offsite group of 4 trees on boundary. Homeless shelter set up at base within site boundary prevented closer inspection of tree and the impact of the shelter around the base.	20+ Years	C2
G5	Sycamore ( <i>Acer pseudoplatanus</i> ) x3*	12	380 (av)	5	3	3	4	2	4.5	64	Early Mature	Fair	Fair	Group of 3 trees on site with shared canopy. Made up ground to south, and evidence of damage in upper canopy.	20+ Years	C2
T6#	Apple ( <i>Malus</i> sp.)	10	400	5	6	5	5	3	3	72	Mature	Fair	Fair	Offsite tree growing boundary with canopy overhanging site.	20+ Years	B1
T7#	Sycamore ( <i>Acer pseudoplatanus</i> )	10	300	5	5	5	5	0	3.6	41	Early Mature	Fair	Fair	Densely covered in ivy preventing detailed inspection. All dimensions estimated. Group growing offsite in neighbouring garden.	10+ Years	C2
H8	Hawthorn, Common ( <i>Crataegus monogyna</i> )	3	200	2	2	2	2	0	2.4	1200	Early Mature	Fair	Fair	Boundary hedge which has not been maintained	10+ Years	C2
T9	Sycamore ( <i>Acer pseudoplatanus</i> )	10	300	3	4	4	3.5	2	3.6	41	Early Mature	Fair	Fair	Low branches (3m) obstruct pedestrian access. Inclusive bark at 0.5m. Minor wounds on main stem at 3m north side.	10+ Years	C1
G10	Mixed species x2	10	210 (av)	3	3	3	3	0	2.4	18	Early Mature	Fair	Fair	Group of 2 trees (sycamore & purple leafed plum) with shared canopy on edge of footpath	20+ Years	C2

#estimated trees \*Item located within third-party land with restricted view

Table B2 Key to Categories

Tree Reference Number	Category
T/GXX	Category A

T/GXX	Category B
T/GXX	Category C
T/GXX	Category U

## 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

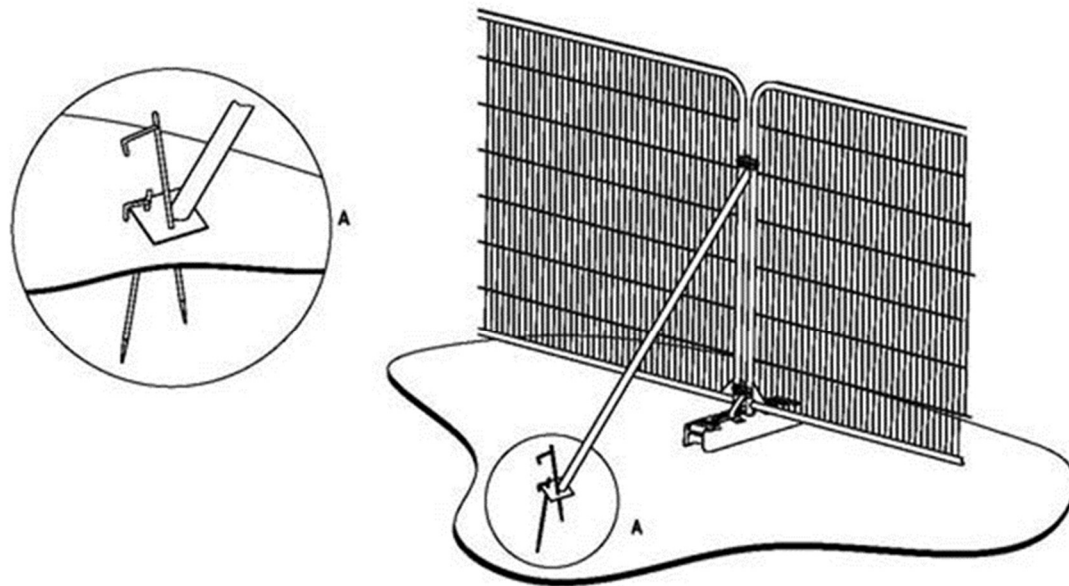
The system illustrated in Figure C1 is adequate to define areas of protected vegetation and exclude traffic, and comprises Cleft Chestnut Pale Fence in accordance with *BS 1722 Part 4: Specification for cleft chestnut pale fences (British Standards Institution, 1991)* supported by 150mm wooden stakes.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



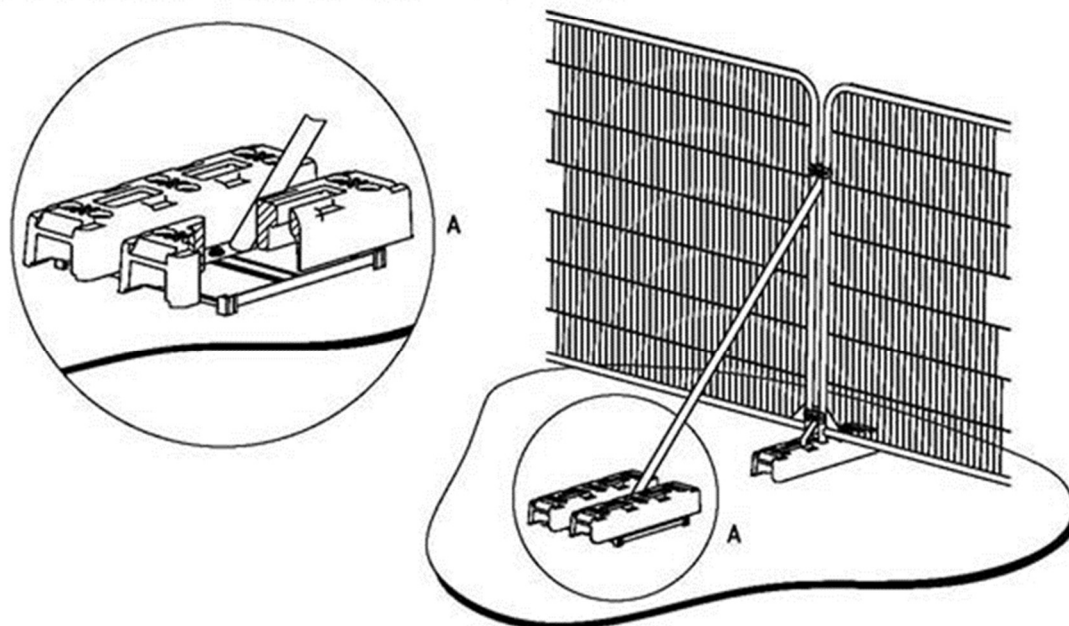
Figure C1 Tree Protection fencing example for low use areas

#### 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

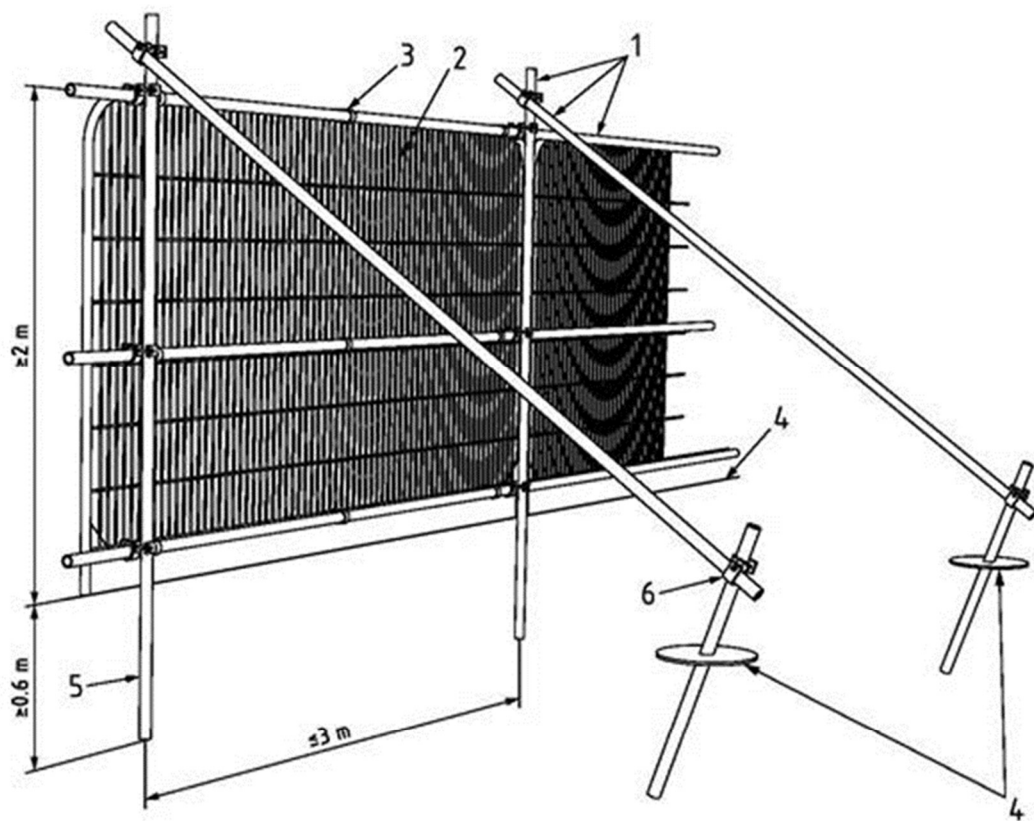


b) Stabilizer strut mounted on block tray

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.



**Key**

- 1 Standard scaffold poles
- 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
- 3 Panels secured to uprights and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
- 6 Standard scaffold clamps

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.

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*\*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
T1	Lime, Small- eaved	
T2#	Ash, Common	
T3#	Lawson cypress	
G4#	Sycamore group	

Tree No.	Description	Photograph
G5	Sycamore group	
T6#	Apple	
G7#	Sycamore group	
H8	Mixed species hedge	

Tree No.	Description	Photograph
T9	Sycamore	
G10	Mixed species group (Sycamore and plum)	

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