

# Trees and Construction

## BS5837:2012 Tree Survey, Arboricultural Implications Assessment & Method Statement

**Site:** 1 Hampstead Hill Gardens, Hampstead, London  
NW3 2PH

**Ref:** 17089/A2-AIA

**Client:** BLM Developments



(Mail) 2nd Floor | 1 Hunters Walk | Canal Street | Chester | CH1 4EB

0333 123 7080 | [info@indigosurveys.co.uk](mailto:info@indigosurveys.co.uk)

[www.IndigoSurveys.co.uk](http://www.IndigoSurveys.co.uk)

<b>Arboricultural Consultant (Author):</b>
Rod Benzies <i>ND Arb, BSc Forestry</i>

**- March 2019 -**

## TABLE OF CONTENTS

<b>Chapter</b>	<b>Title</b>	<b>Page</b>
1	Introduction	3
2	Site & Application Information	4
3	Findings & Recommendations	5 - 6
4	Scheme / Impact Assessment	7
5	Method Statement	8 - 10
<b>Appendices</b>		
	Caveat	I
	Terms and Definitions	II
	Tree data table, Tree Constraints Plan & Tree Protection Plan	III
<b>Revision</b>	<b>Description</b>	<b>Date</b>
/	First report release 'baseline design guidance'	14/02/2019

## 1. INTRODUCTION

1.1 **Instruction:** This advice has been prepared for Mr Carmi Korine (hereafter; client) and is in respect of the tree related planning considerations at the 1 Hampstead Hill Gardens, Hampstead, London NW3 2PH (hereafter; site).

As the proposal relates to development works at site, the advice herein is produced in accordance with the British Standard 5837: 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (hereafter; BS5837).

1.2 **BS5837:** The scope of BS5837 is to provide guidance on how trees and other vegetation can be integrated into construction and development design schemes. The overall aim is to ensure the protection of amenity by trees which are appropriate for retention.

1.3 **Scope of this advice:** This assessment is produced in accordance with BS5837 and is secondary to arboricultural constraints advice which assisted with the design process as a '*Tree Survey Report*' ref: 17089/A1. This objective is to systematically assess the proposed scheme and provide suitable recommendations regarding the potential impact on trees and vice versa with associated tree protection recommendations.

1.4 Following instruction the consultant surveyed the site on the 8<sup>th</sup> February 2019 where a site walkover and BS5837 tree survey were carried out; all trees on site and around the application boundary were surveyed from ground level and plotted as either an individual or a tree group.

1.5 This advice is subject to caveat at Appendix I, outlines relevant terms and definitions at Appendix II and constitutes the findings of the preliminary site assessment and associated arboricultural recommendations.

1.6 The survey data and site observations used the supplied scheme layout to illustrate the surveyed trees in plan format as a '*Tree Constraints Plan*' (hereafter; TCP). The TCP was supplied with the initial tree survey advice, this informed this assessment and is used as a base layer for the appended '*Tree Protection Plan*' (hereafter; TPP); the TCP, TPP and tree survey data table are at Appendix III.

## 2. SITE INFORMATION & TREE ASSESSMENT

- 2.1 The site concerns the rear of 1 Hampstead Hill Gardens which is a substantial brick-built property. This is a walled private garden area. The site is bounded by similar properties
- 2.2 **Proposal:** It is understood that scheme is proposed to extend and alter the existing building.
- 2.3 The site requires consideration from an arboricultural perspective due to the presence of trees around the site; these trees are deemed to be within impacting distance of the existing property and potential construction area.
- 2.4 The trees -
- 2.4.1 The tree survey and assessment resulted in the BS5837 quality/retention categories of 'C - low' being attributed to the surveyed trees.
- 2.4.2 There are establishing features off site of category 'C'. These are situated within the garden confines.
- 2.4.3 No council search/contact has been requested and hence confirmation as to whether any of the trees are protected by Tree Preservation Order was unavailable at the time of writing this advice - please advise if this detail is at your disposal and/or confirm whether a conservation area and TPO check is to be made on your behalf as part of this advice.

### 3. FINDINGS & RECOMMENDATIONS

3.1 The following information, as with the prior contents of this report, should be read with the appended tree survey data table and Tree Constraints Plan (17089/TCP/01). These points were provided as our initial advice and is supplemented herein with a review of the scheme as the AIA (section 4) and the AMS 'considerations' (section 5).

#### 3.2 General Considerations for Tree Retention / Removal

3.2.1 Based on the location of T1, T3, T5 to T7, their retention and protection is assumed as part of the scheme. i.e., crown clearance, RPA avoidance and consideration for light shade impacts. T4 is to be removed for arboricultural reasons which leaves T2 only which is to be removed to allow the development

3.2.2 Generally limited contribution trees are categorised as low quality 'C' category trees. These may be suitable for retention for the most part but should not present a significant constraint to the scheme as mitigation planting can replicate and enhance their contribution.

3.2.3 The removal of tree or vegetation may have a small impact on the green cover in the first instance, however, the scheme presents an enhancement opportunity. Said removal would have no impact on the long-term amenity of the site and that some replanting could be implemented if required.

#### 3.3 Tree Protection

3.3.1 The design and layout of the site is to incorporate the essential components of retained trees (crown and rooting area) and provide a suitable level of clearance to allow for their long-term safe retention, i.e. RPA protection and crown clearance as well as for any new tree(s) being planted.

3.3.2 All retained trees have no ingress of RPA or crown into the construction area. As such protection of the trees can be accomplished for the most part by avoidance. Site fencing close to T3 will suffice in terms of protection of the trees.

#### 3.4 General Overview

3.4.1 The considerations for trees which are to be retained as part of the proposal need to be addressed in order to ensure their protection. This is to account for the potential impact on retained trees and their growing environment from the proposed development and vice versa (these follow).

### Tree Crowns

Consideration is required for any current or newly planted trees whereby the proposed construction should take account of trees reaching their full growth potential. It is always prudent to provide adequate clearance from a tree's current crown for future growth, i.e. to allow a tree adequate space to reach maturity without conflicts with new structures.

### Tree Works

No tree works are envisaged as a result of the site's development owing to their offsite location and crown clearance from the site boundary.

### Root Protection Areas (RPA)

As a minimum it would be suitable to consider the outer extents of retained trees' RPAs as construction exclusion zones and be protected.

As mentioned above, the surveyed trees are situated entirely off site (crowns and RPAs) and do not conflict with the site.

### Hard Landscape Works

As with previously mentioned arboricultural restrictions to construction, the proposed works should avoid retained trees' RPAs. No hard landscape works are envisaged within RPAs.

**NOTE:** Further to the above information which was provided within the 'tree survey report' for design guidance in consideration for trees, the proposed scheme (see; TCP) is reviewed hereafter at s.4 for an Arboricultural Implications Assessment (hereafter; AIA).

#### 4. SCHEME / IMPLICATIONS ASSESSMENT

- 4.1 For the purpose of this assessment, the 'proposed site plan' (ref: 525\_A\_1.1001\_C\_Proposed Basement Plan v2019-dwg and 525\_A\_1.1002\_B\_Proposed Ground Floor Plan v2019-dwg ) has been used as a basis for consideration. This takes account of anticipated tree removals, tree protection options and potential alterations to account for arboricultural features as per s.1.6 and s.2.2 herein, the TCP shows the proposed site plan for review.
- 4.2 T2 is a 'C' class tree which will require removal due to conflict with the proposed scheme. It is in close proximity to the proposed basement extension. As per s.3.2.2, these trees should not constrain development.
- 4.3 T4 is to be removed due to other Arboricultural reasons in that it is in close contact to the properties roof and gutter and its retention will. The removal of this 'U' category tree should be undertaken as part of H&S tree risk management in conjunction with the proposed scheme.
- 4.3 The remaining retained trees are situated for the most part away from the scheme presents no tree stem, crown or RPA conflicts, meaning the trees' protection will be achieved by securing the site, containing the works to the site local only, and active site management.

NOTE: Further to the above scheme review, the tree works and tree protection measures are outlined at s.5 as Arboricultural Method Statement 'considerations' (hereafter; AMS) and correspond to the appended Tree Protection Plan (TPP).

## 5. METHOD STATEMENT

### 5.1 Arboricultural Construction Restrictions

5.1.1 The following restrictions are considered relevant for tree protection purposes which are to be illustrated on a detailed Tree Protection Plan as part of planning conditions:

- a) **Tree Works** - removal of T2 and T4 as previously stated.
- b) **Tree Protection** - a site compound will be set up within the application boundary, excluding the surveyed trees as per the TPP, or Protective Barrier Fencing (PBF) is to be installed as per the TPP.
- c) **Construction Exclusion** - fenced off areas are Construction Exclusion Zones (CEZ).
- d) **Site Restrictions** - no chemicals / materials are to be transported / stored / used / mixed within the CEZ, and no fires are to be lit and no machinery, plant or vehicles are to be washed down within 10m of the tree's canopy or in a CEZ.
- e) **Completion** - only following construction and hard landscape completion can PBF be removed and any remaining boundary fence works be completed.

### 5.2 Arboricultural Site Monitoring / Supervision

5.2.1 The council will typically request 'a scheme of supervision for the arboricultural protection measures' to confirm tree protection and adherence to working methods around trees.

5.2.2 The appointed site contractor and project manager will be provided with an approved AMS and TPP and will need to be briefed as to prohibited works and tree protection.

5.2.3 A record of each site visit will be kept and a summary letter drafted for the client, the site manager and the local authority (to be sent to the client for distribution), thus -

- (1) **Pre-commencement** to confirm approved site hoarding / tree protection fence line and construction restrictions for ground works;
- (2) **Half way** through the programme to confirm maintained tree protection, no tree damage and exclusion of RPA access;
- (3) **Development completion** after all hard landscape works and tree and shrub planting is complete to sign off the site as having adhere to the AMS.



### 5.3 Protective Barrier Fencing (PBF) Specification

5.3.1 Barrier fencing is to be installed (and signed off by way of arboricultural supervision). It is illustrated on the Tree Protection Plan to aid ease of installation and is to remain in situ for the entire duration of the construction processes unless otherwise agreed in writing by the council.

5.3.2 The barrier fencing is to consist of a series of Heras panels secured in place by driven scaffold posts or a scaffold frame to ensure that the fencing lines are well braced to resist impact.

### 5.4 Underground utilities

5.4.1 Any new underground utilities are to utilise the construction area and hard surface extents for new installations and avoid the need for works in proximity to trees.

5.4.2 As demonstrated by the proposed scheme, utility installations are to be:

- Located outside of RPAs and construction exclusion zones; and
- Installed only following the installation of the protective barrier fencing to ensure the retained trees and their RPAs are protected.

### 5.5 Ground & Landscape Works

5.5.1 As the construction footprint is clear of retained trees and vegetation, no direct RPA incursion is anticipated and no working restrictions need apply outside of the protected areas.

5.5.2 The landscape details are yet to be finalised, but are also on site and clear of the offsite trees, meaning no restrictions to landscape works undertaken on site.

### 5.6 Report Handling

5.6.1 This report is released to the client and architect to be distributed at their discretion and the consultant is available for queries relating to this report and/or trees.

5.6.2 The proposed scheme is reviewed in respect of the Arboricultural constraints and is considered to be achievable in line with the BS5837 guidance.

5.6.3 This AMS and the TPP may be approved by the council in support of the application.

**This concludes our advice.**

## Appendix I

### Caveat

Any and all information supplied to Indigo Surveys Ltd by/on behalf of the client is assumed to be accurate unless otherwise informed. | This advice is limited to the observations made on the date of inspection as detailed herein and any deletion, editing or alteration will result in the advice being null and void in its entirety. | This advice in its entirety may be deemed null and void if remedial works are undertaken on any area of the site, on or after the date of the survey. | No liability is assumed by the author or by Indigo Surveys Ltd for any misuse, misinterpretation or misrepresentation of this advice. | This advice is not valid in adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events. | No responsibility is assumed either by the author of this advice or by Indigo Surveys Ltd for any legal matters that may arise as a consequence. | Neither the author nor Indigo Surveys Ltd will be required to attend court or give testimony as part of this agreement. | The responsibility for any works undertaken on the basis of the recommendations of this advice does not form part of this agreement.

## Appendix II

### Terms and Definitions

*“Arboriculturist”* - person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.

*“Competent Person”* - person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

*“Topographical survey”* - an accurately measured land survey undertaken to show all relevant existing site features. *A method of carrying out topographical surveys is given in RICS specification Surveys of land buildings and utility services at scales of 1:500 and larger.*

*“BS5837 Tree survey”* - should be undertaken by an arboriculturist to record information about the trees on or adjacent to a site. The results of the tree survey, including material constraints arising from existing trees that merit retention, should be used (along with any other relevant baseline data) to inform feasibility studies and design options. For this reason, the tree survey should be completed and made available to designers prior to and/or independently of any specific proposals for development.

*“Tree categorisation method”* - trees should be categorised in accordance with the BS5837 cascade chart by an arboriculturist. This is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring.

*“Root protection area (RPA)”* - layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority, shown as an arboricultural constraint in m<sup>2</sup>. The radius is calculated using the BS5837 calculation method. An arboriculturist may change the shape of an RPA but not reduce its area.

*“Arboricultural implications assessment”* - a study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

*“Arboricultural method statement”* - methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.

*“Tree protection plan”* - a scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.

## Appendix III

<b>Data Table:</b>	As appended (BS5837 Tree Survey Key & Table)
<b>Tree Constraints Plan:</b>	As appended (17089/TCP/01)
<b>'Draft' Tree Protection Plan:</b>	As appended (17089/TPP/01)

**TREE SURVEY IN ACCORDANCE WITH BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'**

CLIENT: Mr Carmi Korine

PROJECT REF: 17089/A1

SITE: 1 Hampstead Hill Gardens, Hampstead, NW3 2PH

CONTACT: /

SURVEY DATE: 26 September 2017

ARB CONSULTANT: Andrew Turnbull FDSc MArborA

TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
T1	Cherry; Prunus, Rosaceae	M	6	3.5	4	3.5	3	178	2.1	2	1m - union	Fair	10 - 20	2x stems (110mm, 140mm), co-dominant at 1m, close to wall, Wisteria in crown.	C 3	
T2	Goat Willow; Salix, Salicaceae	M	6	2	1.5	1	1.5	332	4.0	4 +	/	Fair	20 - 40	2x stems (230mm, 240mm), <1.5m from retaining wall, heavily pollarded, dense reaction growth and crown lifted.	C 3	
T3	Apple; Malus, Rosaceae	M	4.5	2.5	1.5	2	2	< 240	2.9	1.5 +	1m - multiple stem union	Normal	10 - 20	4x stems (<120mm), multiple stems at 1-1.5m, reduced canopy and good regrowth, Ivy covered structure.	C 1	
T4	Prunus, Rosaceae	SM / M	6	2	2.5	3.5	2	150	1.8	3 +	/	Poor	< 10	2x stems (75mm, 130mm), very close to roof and gutter, co-dominant at 1m, dieback.	U	Recommendation: fell to ground level and poison stump.
T5	Oak; Quercus, Fagaceae	Y / EM	6	1.25	1.25	1.25	1.25	120	1.4	2	3m - all round	Normal	20 - 40	Established planting, formally managed canopy.	1 C / 3	
T6.1	Sycamore; Acer, Aceraceae	M	7	2	2	2	2	410	4.9	2	2m - multiple stem unions	Fair / Poor	10 - 20	On raised level to property and lower garden, banked soils, heavily pollarded, close to neighbour's property, poor form, decay and topped, 1-2m regrowth.	C 2	Recommendation: maintain pollard every 'say' 5 years (depending on growth rate).
T6.2	Sycamore; Acer, Aceraceae							400	4.8							
T7	Lime; Tilia, Tiliaceae	M	8	2	2	2	2	370	4.4	2	/	Fair	20 - 40	On raised level to property and lower garden, banked soils, heavily pollarded, close to neighbour's property, cavity at 2m on stem, fair wound-wood development and support wood, multiple stems at 3.5m, 2-3m regrowth.	2 C / 3	Recommendation: maintain pollard every 'say' 5 years (depending on growth rate).

**TREE SURVEY IN ACCORDANCE WITH BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'**

*CLIENT:* Mr Carmi Korine

*PROJECT REF:* 17089/A1

*SITE:* 1 Hampstead Hill Gardens, Hampstead, NW3 2PH




*CONTACT:* /

*SURVEY DATE:* 26 September 2017





*ARB CONSULTANT:* Andrew Turnbull *FDSc MArborA*

TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W	STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
<b>TREE SURVEY 'KEY' - BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION &amp; CONSTRUCTION - RECOMMENDATIONS'</b>													
	<b>TPO/CA</b>	-	On client request: presence of Tree Preservation Orders (TPO) / site location within a Conservation Area (CA) & date checked;										
	<b>TREE REF. #</b>	-	Tree reference number: tag or plan number (T - individual tree, G - group of trees/shrubs, H - hedge);										
	<b>SPECIES</b>	-	Genus, species and/or common name;										
	<b>AGE</b>	-	Age classification (NP - new planting, Y - young, EM - Early-Mature, SM - semi mature, M - mature, LM - late mature, OM - over mature);										
	<b>HEIGHT (in m)</b>	-	Approximate height of tree in metres;										
	<b>CANOPY (in m) N - S - E - W</b>	-	Approximate branch spread in metres of the four principal compass points;										
	<b>STEM (in mm)</b>	-	Stem diameter in millimetres: measured in accordance with s.4.6 of BS5837;										
	<b>RPA (in m)</b>	-	Circle radius of the Root Protection Area: calculated using the stem diameter (single/multiple stem variant, as outlined within BS5837);										
	<b>CLEARANCE (in m)</b>	-	Crown clearance in metres above the adjacent ground level;										
	<b>1ST BRANCH (in m)</b>	-	Clearance in metres to first significant branch and direction of growth (where relevant);										
	<b>VITALITY</b>	-	Physiological condition typically gauged from canopy cover and annual extension growth (good, fair, poor, dead);										
	<b>ESTIMATED REMAINING CONTRIBUTION</b>	-	Approximate number of years a tree will continue to contribute without the need for oppressive arboricultural intervention, categorised in years as <10, 10-20, 20-40 and >40;										
	<b>NOTES</b>	-	Structural and physiological condition observations;										
	<b>BS CAT.</b>	-	BS5837 tree quality assessment category: resulting from structural/physiological condition and remaining contribution (approximate useful life expectancy); Standard retention category <b>U</b> : in such a condition that any existing value would be lost within 10 years; Standard retention category <b>A</b> : high quality and value, in such a condition as to be able to make substantial contribution of 40+ years; Standard retention category <b>B</b> : moderate quality and value, in such a condition as to make a significant contribution of 20+ years; Standard retention category <b>C</b> : low quality and value, currently in adequate condition to remain until new planting could be established 10+ years; Standard retention sub-category, mainly due to: <b>1</b> - Arboricultural values, <b>2</b> - Landscape values, <b>3</b> - Cultural values, including conservation;										
	<b>MANAGEMENT</b>	-	Preliminary management recommendations (as appropriate);										
	<b>***</b>	-	Within the survey schedule denotes an estimate										

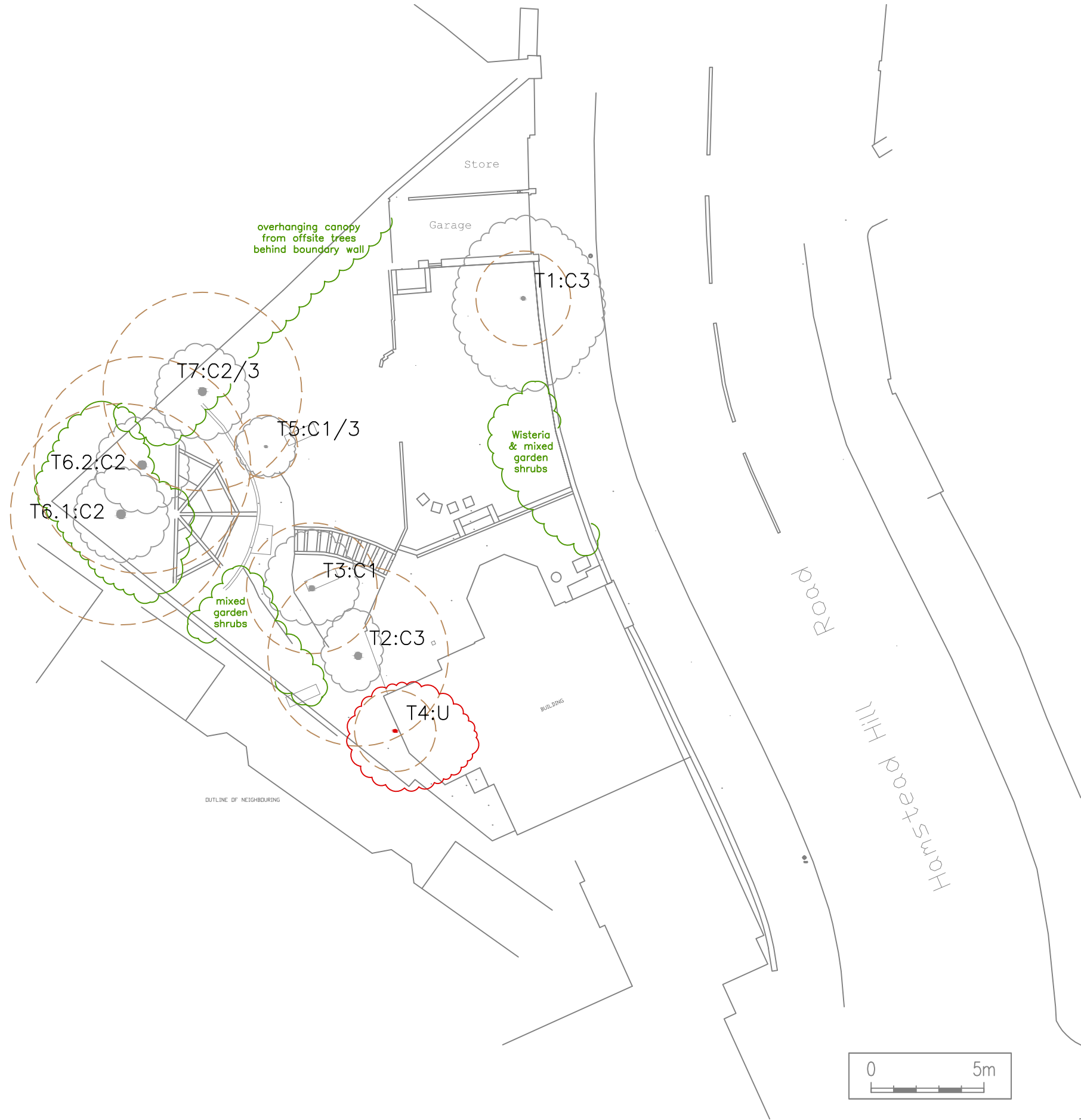
**KEY**

-  Tree Crown Spread
-  Root Protection Area (RPA)
-  Tree Stem
- T1 Tree No.

**Tree Condition Category**

-  A
-  B
-  C
-  U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'



REV.	DESCRIPTION	DWN	CHK'D	DATE
------	-------------	-----	-------	------

CLIENT  
Mr Carmi Korine

PROJECT  
17089/A1  
1 Hampstead Hill Gardens,  
Hampstead, NW3 2PH

TITLE  
Tree Constraints Plan

DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RCK	29/09/2017	AT	03/10/2017			1:200



(Mail) Second Floor, 1 Hunter's Walk, Canal Street, Chester. CH1 4EB  
Telephone: 0333 123 7080 www.indigosurveys.co.uk

Drawing Number  
17089/A1/TCP/01

A3  
REV.

THIS DRAWING IS CONFIDENTIAL AND MUST NOT BE REPRODUCED WITHOUT THE CONSENT OF INDIGO SURVEYS LTD.

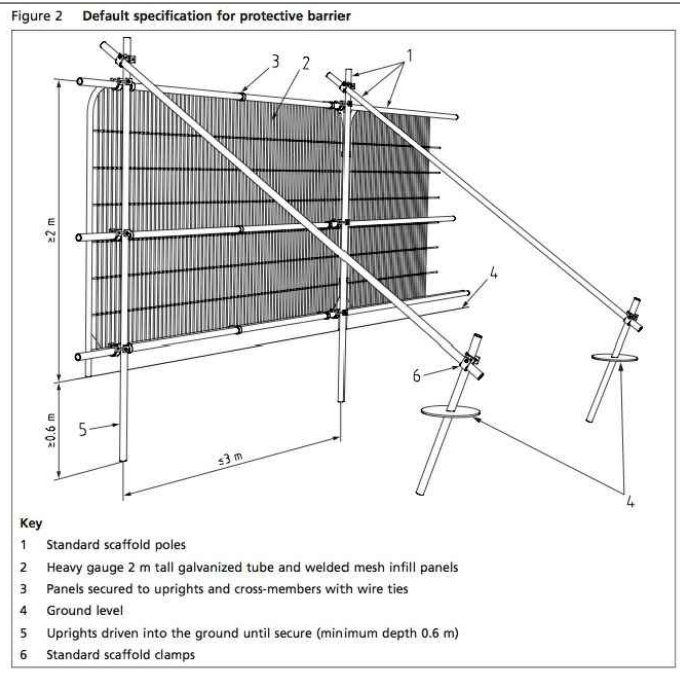
DO NOT SCALE FROM DRAWING

The original of this drawing was produced in colour – a monochrome copy should not be relied upon.

**Tree Removals** – T2 and T4. T2 to be removed to facilitate the scheme T4 for arboricultural reasons; replacement tree detail to be included within the landscape scheme.

**Protective Barrier Fencing (PBF):**

Heras panels to be installed (as per the illustration on this plan) with tree protection signs, to be fixed in place for the duration of site works for tree protection and to remain until construction completion, then to be realigned for landscape.

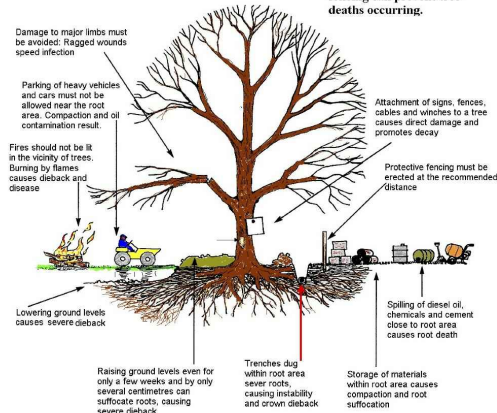


(c) British Standards Institute ([www.bsigroup.com](http://www.bsigroup.com))

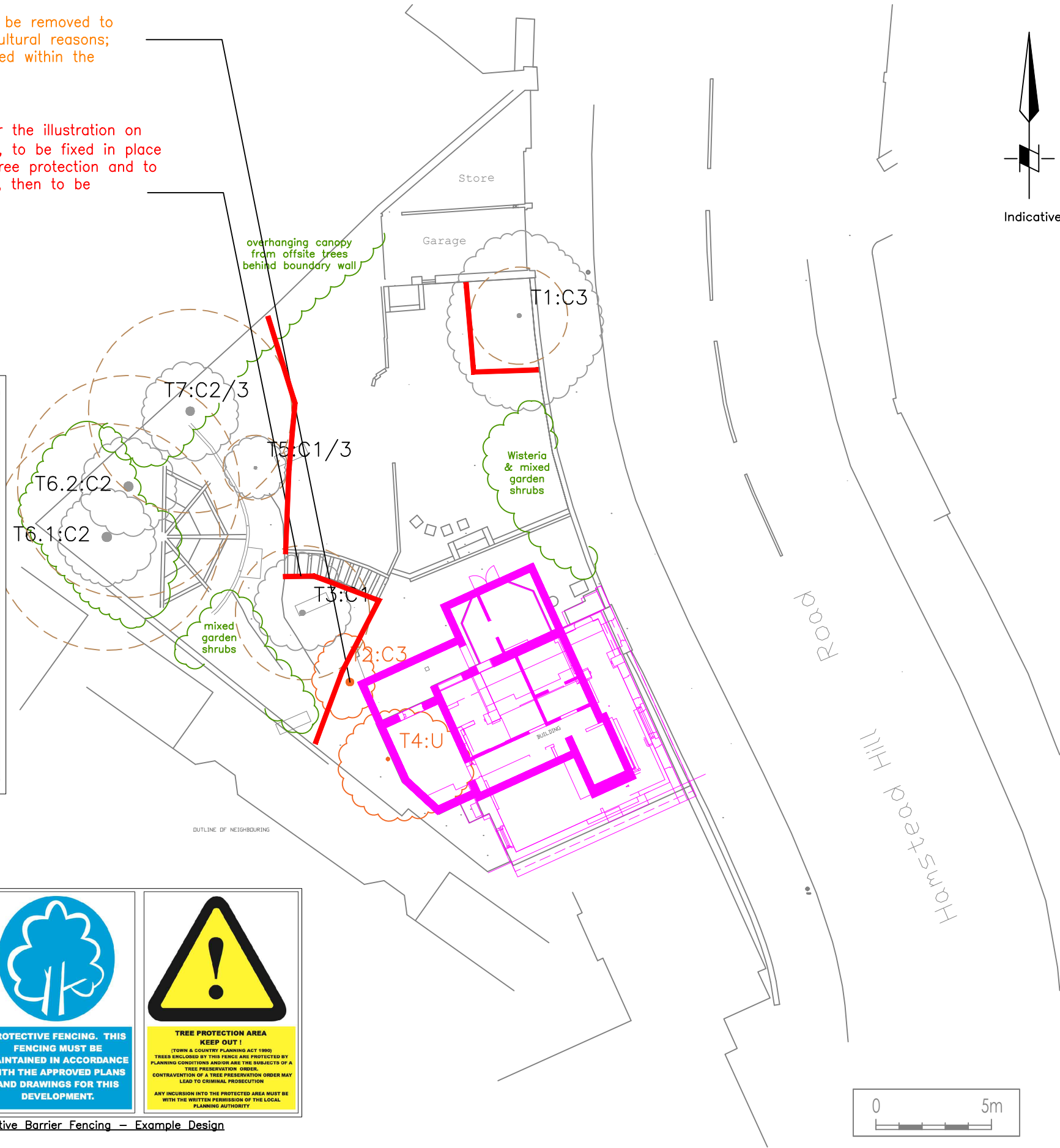
**Common causes of Tree Death**

(Source: Arboricultural Information Exchange website, 2005)

The use of properly positioned protective fencing can prevent tree deaths occurring.



Protective Barrier Fencing – Example Design



**KEY**

- Tree Crown Spread
- Root Protection Area (RPA)
- Tree Stem
- T1 Tree No.

**Tree Condition Category**

- A
- B
- C
- U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'

REV.	DESCRIPTION	DWN	CHK'D	DATE
------	-------------	-----	-------	------

CLIENT  
Mr Carmi Korine

PROJECT  
17089/A2  
1 Hampstead Hill Gardens,  
Hampstead, NW3 2PH

TITLE  
Tree protection Plan

DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RPHB	13/03/2019	AT	13/03/2019			1:200

(Mail) Second Floor, 1 Hunter's Walk, Canal Street, Chester, CH1 4EB  
Telephone: 0333 123 7080 [www.indigosurveys.co.uk](http://www.indigosurveys.co.uk)

Drawing Number  
17089/TPP/01

THIS DRAWING IS CONFIDENTIAL AND MUST NOT BE REPRODUCED WITHOUT THE CONSENT OF INDIGO SURVEYS LTD.

DO NOT SCALE FROM DRAWING

The original of this drawing was produced in colour – a monochrome copy should not be relied upon.