Marcus Foster
Arboricultural Design & Consultancy

BA (Hons) | NDArb | AATechcert (ArborA) | EGS.Dip

Arboricultural Survey (BS5837:2012) & Impact Assessment Report

Site details:

45 Flask Walk
London
NW3 5HH

Client details:

Maria Dolores Gregori Fuster
45 Flask Walk
London
NW3 5HH

Date of Report:

14th July 2015

Report Prepared by:

Marcus Foster
BA (Hons) NDArb. TechCert (ArborA) EGS.Dip

Marcus Foster
Arboricultural Design & Consultancy
Tel: + 44 (0) 7812 024 070
Email: marcus@mfdesignconsultancy.com
www.mfdesignconsultancy.com

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1. Introduction

1.1 This report has been commissioned by Allde - 68 Pilgrim's Lane, Hampstead, London, NW3 1SP to survey, assess and provide arboricultural recommendations and an impact assessment for the trees within and in close proximity to the proposed development at 45 Flask Walk, London, NW3 5HH.

1.2 A site visit was conducted on Friday 15th May 2015 to survey and assess the trees. The weather at the time of inspection was dry and sunny with cold temperatures.

1.3 A tree survey, report and recommendations have been compiled for 3 trees (T1-T3) surveyed within 45 Flask Walk, London, NW3 5HH (T1-T2) and the neighbouring property also, 46 Flask Walk, London, NW3 (T3).

1.4 The details of the subject trees are set out in the tree survey table in *Appendix A*. The trees were surveyed on the date and time shown above and the tree survey assessment information for the trees describing size, condition and surroundings are found within this appendix.

1.5 The trees located within the site and included in the survey are shown in the site plan, *Appendix B.1 - B.3*, and these correspond to the tree survey results table, *Appendix A*.

1.6 Photographs of the trees can also be found in *Appendix C*.

1.7 This report and the opinions within it have been produced by Marcus Foster, a qualified Arboriculturist holding a National Diploma in Arboriculture, and the Arboricultural Association's Technicians Certificate as well as a degree in History and Society. Work experience within the industry includes work as a Contracts Manager for an Arboricultural Association Approved Company, a Local Authority Tree Preservation Officer and an independent Arboricultural Consultant.

1.8 No additional documentation has been referred to relating to the tree or the building at this property for the compilation of this report.

2. Survey Details and Scope

2.1 The site survey included the 3 trees (trees T1-T3) as shown in the survey, *Appendix A,* and also highlighted on the included site plans*, Appendix B.1 - B.3.*

2.2 The trees were surveyed from ground level from within 45 Flask Walk, London, NW3 5HH. The diameter of the trunks have been measured using a Diameter at Breast Height tape. The height of the trees have been estimated due to the difficult topography of the site.

2.3 The following information was recorded for each tree and is shown in the Tree Schedule included in *Appendix A*:

- Number: an identity number which cross-references locations shown on the plan in Appendix A with the schedule in Appendix B.
- Species: listed by common names
- Tree Height: height in metres (m)
- Tree Spread: spread in metres (m)
- Stem diameter: measured in millimetres (mm) and taken at 1.5m above ground level
- Age Class: Y (young); EM (early-mature); M (mature); OM (over-mature)
- Vigour: G (good); F (fair); P (poor); D (dead)
- Physiological Condition: G (good); F (fair); P (poor); D (dead)
- Structural conditions: Specific comments relating to each tree
- Preliminary Management Recommendations
- Estimated Remaining Contribution (years)
- BS5837 Category Grading
- Protection Distance (if applicable – BS5827: 2012)

2.4 The information contained within the report reflects the condition of the specimens examined at the time of the inspection. As the inspection was only visual no guarantee can be given concerning the condition of the wood at present in any of the trees inspected and furthermore that no future problems or deficiencies may arise.

2.5 Information recorded in the tree survey, *Appendix A* is expanded in the report findings and recommendations have been made in *Section 5*.

Tree Survey Summary

2.6 All trees have been survey in accordance with BS5837: 2012 'Recommendations for trees in relation to construction' (BS5837: 2012) and have been rated as follows:

Category 'A' trees

Trees of high quality with an estimated remaining life expectancy of at least 40 years. Trees have been categorised as 'A' trees for one of the following reasons:

- Mainly arboricultural qualities
- Mainly landscape qualities
- Mainly cultural values including conservation

Within the Site Plan (Appendix B) those trees rated as 'A' category trees have a green outline as denoted within the site plan key.

Category 'B' trees

Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. Trees have been categorised as 'B' trees for one of the following reasons

- Mainly arboricultural qualities
- Mainly landscape qualities
- Mainly cultural values including conservation

Within the Site Plan (Appendix B) those trees rated as 'B' category trees have a blue outline as denoted within the site plan key.

Category 'C' trees

Trees of low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm. Trees have been categorised as 'C' trees for one of the following reasons

- Arboricultural qualities - unremarkable trees of very limited merit
- Mainly landscape qualities
- Trees with no material conservation or cultural value

Within the Site Plan (Appendix B) those trees rated as 'C' category trees have a grey outline as denoted within the site plan key.

Category 'U' trees

Trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

Within the Site Plan (Appendix B) those trees rated as 'U' category trees have a red outline as denoted within the site plan key.

3. Survey Limitations

3.1 No soil excavations have been carried out.

3.2 This report only considers the trees and conditions at the time of inspection.

3.3 No invasive tools were used during this site survey.

3.4 It should be noted that not all shrubs within this property have been included in the survey and report.

3.5 This report is preliminary and further investigations may be required in order to reach firm conclusions and/or further recommendations for action.

4. Findings and Discussion

Site Overview

4.1 There are 3 trees located within close proximity of the proposed construction works which incorporate development works to the entire property including construction site activities within the front garden. Trees T1 - T3 have been surveyed and numbered as is depicted within the site plan (*Appendix B.1 & B.2* - also within the Tree Protection Plan *Appendix B.3*).

4.2 The trees surveyed are located within the London Borough of Camden; they are also located within the Hampstead Conservation Area and are therefore protected by this status.

4.3 The proposed development has the potential to affect the trees in the following ways:

- **Potential excavations required for rear extension / development works in close proximity to the trees have the potential to cause damage**

- **Associated construction site activities which have the potential to cause long term damage to the trees and surrounding vegetation**

- **Compaction of the ground surrounding the trees during construction works**

- **The use of and storage of materials and chemicals on site during the construction process**

4.4 The trees have been surveyed taking into account the condition, general health and form. In addition they have been surveyed taking into account the amenity value that is offered in relation to both the landscape and surrounding buildings. This report outlines the impact that the proposed development will have on the treescape and landscape; it provides recommendations to ensure that long-term amenity value for the area is both retained and enhanced.

4.5 The report has been written with close reference to the British Standard Guidance, British Standard 5837: 2012 ‘Recommendations for trees in relation to construction’ (BS5837: 2012), which addresses the juxtaposition between trees and structures.

Development proposal in relation to trees within close proximity

4.6 The proposed development works are to incorporate the retention of 2 of the 3 trees (T1 and T3) that have been surveyed - both rated category 'C.1'. This report will outline the condition of the trees and necessary requirements during the construction process in order to ensure their long term health, and the retention of the amenity value they provide for the long term. The loss of one tree - T2, is recommended in light of limited amenity value and an improved rear garden layout being incorporated within the design proposal; this tree has been rated as a 'C.1' category tree and amenity value lost from its removal will be replaced for the long term within the proposed replacement plan.

4.7 The proposed construction works are to incorporate a rear extension and basement which will extend towards tree T3 within the neighbouring rear garden area to the west. The development is likely achievable without causing damage to the tree being retained providing precautionary and protection measures are adhered to within this report; a flexible approach to the construction method would be required at all times, also as outlined. Tree T1 will also remain protected during the development process due to the associated construction activities from the above works which have the potential to cause damage. By virtue of the location of tree T1 at the front of the property, the protection measures are important for the protection of this tree for the long term.

4.8 Therefore by implementing the proposed protection measures, damage from the following activities will be avoided during the construction process:

4.8.1 Potential damage to the root plate of trees within close proximity of construction site activities where excavations may occur, potentially causing damage to the health and/or structural integrity of the trees.

4.8.2 Potential damage from compaction of the root plates of all trees where construction activities will require working methods with heavy machinery and storage of materials.

4.8.3 Potential direct damage to the canopy of trees within the site from construction site activities.

4.9 The aim of this report is to address these issues and highlight the solutions required in order for the implementation of the development to be carried out without detrimentally affecting the structural integrity of the trees.

Tree Survey Notes - Trees T1 - T3 in relation to construction method

Tree T1

4.10 Tree T1 is a mature Hawthorn tree (*Crataegus monogyna*) which is generally structurally sound and offers good ornamental / amenity value at the front of the property. The tree is located within the raised front garden area, slightly suppressed beneath a mature Lime tree located within the public highway. The tree has good vigour with some deadwood throughout and congested form as is usual with this species. The tree is rated as 'C. 1' (BS5837:2012) taking into account the mainly ornamental value that is provided. This tree is sited within very close of potential construction site activities due to the compact nature of the proposed development site. In addition, the historic drainage system within the property may require modernisation and therefore significant excavations may be required in the front garden area close to tree T1.

4.11 The tree protection for tree T1 requires realistic implementation. The recommended Root Protection Area (RPA) as outlined with BS5837:2012 is a **3.4m radius** surrounding the main stem. This is not fully achievable to the north west of the main stem within the main front garden area extending between the tree and the house. However, at least 1.5m protection distance is recommended for the tree in this direction. Taking account of the fact that protective fencing can enclose the remainder of the root plate, which is retained within the raised area of land by virtue of the front garden landscape, the overall protection for this tree is deemed appropriate.

4.12 The tree requires management works in order to manage the tree in relation to its proximity to the building and streetscape and also to ensure that damage is not caused to the lower canopy in particular during the construction works. Recommended tree works are specified within *Section 5* which would require a Section 211 Notification to the Local Authority if carried out prior to the approval of planning permission.

Tree T2

4.13 Tree T2 is an ornamental Magnolia tree sited within the rear garden of 45 Flask Walk. The tree is rated as a C.1 category specimen and is generally structurally sound. The tree offers limited amenity value within the rear garden and will be problematic in the long term as ultimately this species (*Magnolia soulangeana)* offers too broad a canopy for the location and size of the garden.

4.14 Therefore the tree is recommended for removal within the proposed scheme with a replacement of a more suitable species to be incorporated within the re-landscaping of the rear garden. Examples of replacement trees are included within *Section 5*.

Tree T3

4.15 Tree T3 is a mature Hawthorn tree (*Crataegus laevigata* 'Paul's Scarlet') at the rear of the neighbouring property, 46 Flask Walk, which is adjacent to the eastern boundary fence of 45 Flask Walk, London, NW3. The tree is 7 metres in height with a spread of approximately 4-5 metres - canopy shape is relatively balanced and compact with the tree having been pruned within the past year (crown reduction and thinning works back to previous points - these works are clearly carried out on a cyclical basis); further works reducing encroachment within the rear garden of 45 Flask Walk have also been regularly undertaken. The tree is growing approximately 0.5m from the boundary between 45 and 46 Flask Walk with a wooden fence 1.2m height existing between the two rear gardens.

4.16 The tree is structurally sound at the base with significant root flare and an initially straight main stem, giving way to a relatively balanced and compact canopy shape. The epicormic growth which has resulted from recent pruning works show good vigour. With its location, age and species the tree offers some amenity value for the rear garden landscape area and is rated as 'C.1' (BS5837: 2012). The tree is therefore proposed for retention and should be protected during construction to the greatest extent possible.

4.17 For tree T3, the recommended root protection distances is set at a radius of **4.0 metres** (BS5837: 2012) distance. With the proposed development extending significantly within this distance to the west and north west of the main stem, it is recommended that trial pits are dug in this area in order to ascertain the extent and nature of the tree roots in this area. It should be noted that the tree root system may not be excessive due to the following factors:

- Relatively small/medium size of tree
- Reduced / cyclically managed state
- Sheltered site of tree since planting possibly forming a fibrous based root system
- Raised border area within 45 Flask Walk possibly containing overall root development for western root plate

4.18 However, the overall root morphology in the area within the Root Protection Area (RPA) requires further investigation as recommended above to provide firm conclusions. Due of the nature of tree roots generally growing within the upper 600mm of the soil level, and the damage that has been caused to the wall, it is very likely that major tree roots will be encountered. For all construction and soil removal activities, where larger tree roots, more than 25mm diameter are encountered, close adherence to the ***Excavations / Root Severance Guidance*** below should be made at all times.

4.19 It should be noted that in relation to protection measures for this tree that for the remainder of the root plate full protection will be provided by virtue of the tree's location within the neighbouring property - the entire northern, eastern and south eastern root plate.

Tree Protection Specifications

4.20 With the nature of development works and associated construction site activities potentially encroaching within the RPA of trees T1 and T3 it is important that the tree protection guidelines are adhered to in order to afford the full protection for the tree's surveyed. The implementation of the proposed development can be achieved whilst retaining all trees (with the exception of T2) within the area for the long term by taking into account all the above points within *Section 4* and in addition to the following which must be adhered to AT ALL TIMES:

- **The tree protection fencing / root protection area to be constructed as outlined with *Appendix B.3* of this report and to the specifications provided within *Appendix E***

- **All construction activities must adhere to the tree protection guidelines as explained throughout the report and as outlined below – these should remain for the entire construction process in order to provide comprehensive protection from the trees.**

- **No building materials or chemicals are stored within the Root Protection Areas - the boundaries of which will be clearly marked with the TREE PROTECTION NOTICES.**

- **There should be no mixing of concrete or chemicals within the tree protection areas during the construction process.**

4.21 The site notice as included in *Appendix D* summarising the above information should be visible at all times for employees working within the site.

Excavations / Root Severance Guidance

4.22 When implementing the development works It should be noted that in the case of major roots being encountered within the RPA of trees T1 and T3 where encroachment occurs, the following points must be closely adhered to:

- **All excavations within the Root Protection Area of tree T3 (western root plate area within 4.0m of main stem) must be hand dug for the upper 600mm of soil with close adherence to the specifications as highlighted below.**

- **The severance of any tree roots encountered larger than 25mm in diameter MUST NOT occur without prior consultation with the Local Authority Tree Officer or appointed Arboricultural Consultant.**

- **If at any point it is deemed not possible to continue with excavations without having to damage very significant tree roots, the Local Authority Tree Officer and / or the appointed Arboricultural Consultant must be contacted**.

Summary

4.23 With close adherence to the above points and to the following:

- **Further investigation in relation to tree root morphology of T3 in vicinity of proposed development for western root plate**
- **Preparation of an Arboricultural Method Statement (BS5837:2012) to outline working method in relation to proposed development**
- **Full implementation of Tree Protection Specifications**
- **Full adherence to Tree Protection Area**
- **Comprehensive use of the Tree Protection Notices**

all trees surveyed and proposed for retention, can remain protected from the construction process and can continue to provide amenity value in this area for the long term.

5. Recommended Tree Management Plan

5.1 Any tree work should be carried out to *BS 3998; 2010 'Tree Work – Recommendations*' and to standards set within the Arboricultural Association's 'Standard Form of Contract and Specifications for Tree Work' by a qualified arboriculturist.

5.2 In addition, any permissions for tree work should be sought prior to the commencement of works from the Local Authority, London Borough of Camden.

5.3 Tree Works Specification

T1 Hawthorn
Crown reduce height and spread 25% to give a balanced and compact shape
Crown thin 20%
Crown lift to 4m
Remove any remaining deadwood

T2 Magnolia
Fell to ground level and grind out stump

T3 Hawthorn (neighbouring property)
Crown reduce overhanging spread 20-25% to give a balanced and compact shape and reduce encroachment within garden / proposed development site
Crown lift overhanging growth to 3.5m

5.4 Recommended Replacement Tree Planting

Any tree planting work should be carried out to *BS 8545; 2012 'Trees: From Nursery to Independence in the Landscape*'

It is recommended that a deciduous tree is planted to the following specifications at the rear of the property to replace lost amenity value from the proposed removal of T2 (Magnolia):

Recommended Species List (not exhaustive):

Option 1: *Amelanchier arborea* Robin Hill
Option 2: *Cercis canadensis* Forest Pansy
Option 3: *Cornus controversa* Variegata
Option 4: *Cornus kousa* Norman Hadden
Option 5: *Prunus accolade*

- Single stemmed standard specimens, at least 10-12cm girth in size
- Any tree planting should take place during the planting season (November – March) with suitable ground preparation
- Irrigation pipes and suitable staking implemented as part of the scheme.

6. Appendices

Appendix A

Tree survey (BS5837:2012)

45 Flask Walk
London
NW3 5HH

Colour Key: BS5837: 2012 (see *Section 2.6*)

- Category A
- Category B
- Category C
- Category U

45 Flask Walk, London, NW3 5HH
BS 5837:2012 Tree Schedule – May 2015

Tree No	Species	Ht (m)	DBH (mm)	Sprd (m)	Age	Visual Cond	Vigour	BS5837 Cat. Rating (2012)	Remaining (years)	Comments / Structural Condition	Managem. Recomms	RPA (m)
T1	Hawthorn	7	260	N: 4 E: 3 S: 3 W:4	M	G	G	C.1	10-15 years	Structurally sound at the base with a slight lean to the west; kink at 1.2m with main union at 1.2-1.6m with some minor included bark. Originally pollarded at 3m approx 10 years ago; relatively balanced canopy has re-formed though dominates to the west. Tree overhangs to public highway	No action required at present	3.1
T2	Magnolia	7	90	N: 2 E: 4 S: 3 W:3	EM	F	G	C.1	10-15 years	Early mature ornamental tree; Structurally sound with average form, growing close to neighbouring building; relatively columnar form	Fell to ground level and grind out stump	N/A
T3	Hawthorn	7	330	N: 4 E: 3 S: 4 W:4	M	G	G	C.1	10-15 years	Tree is structurally sound at the base with even root flare and a straight stem; crown break at 1.3-1.4m with 5 main stems extending upwards to give a relatively balanced and rounded crown shape. Tree has been previously crown reduced, likely on a cyclical basis due to proximity to properties; likely last reduced within 2 years	Crown reduce overhanging spread 20-25% to give a balanced and compact shape and reduce encroachment within garden. Crown lift overhanging growth to 3.5m	4.0

Appendix B.2

Existing & Proposed Site Plan including Tree Protection Plan:

45 Flask Walk
London
NW3 5HH

Plans supplied by:

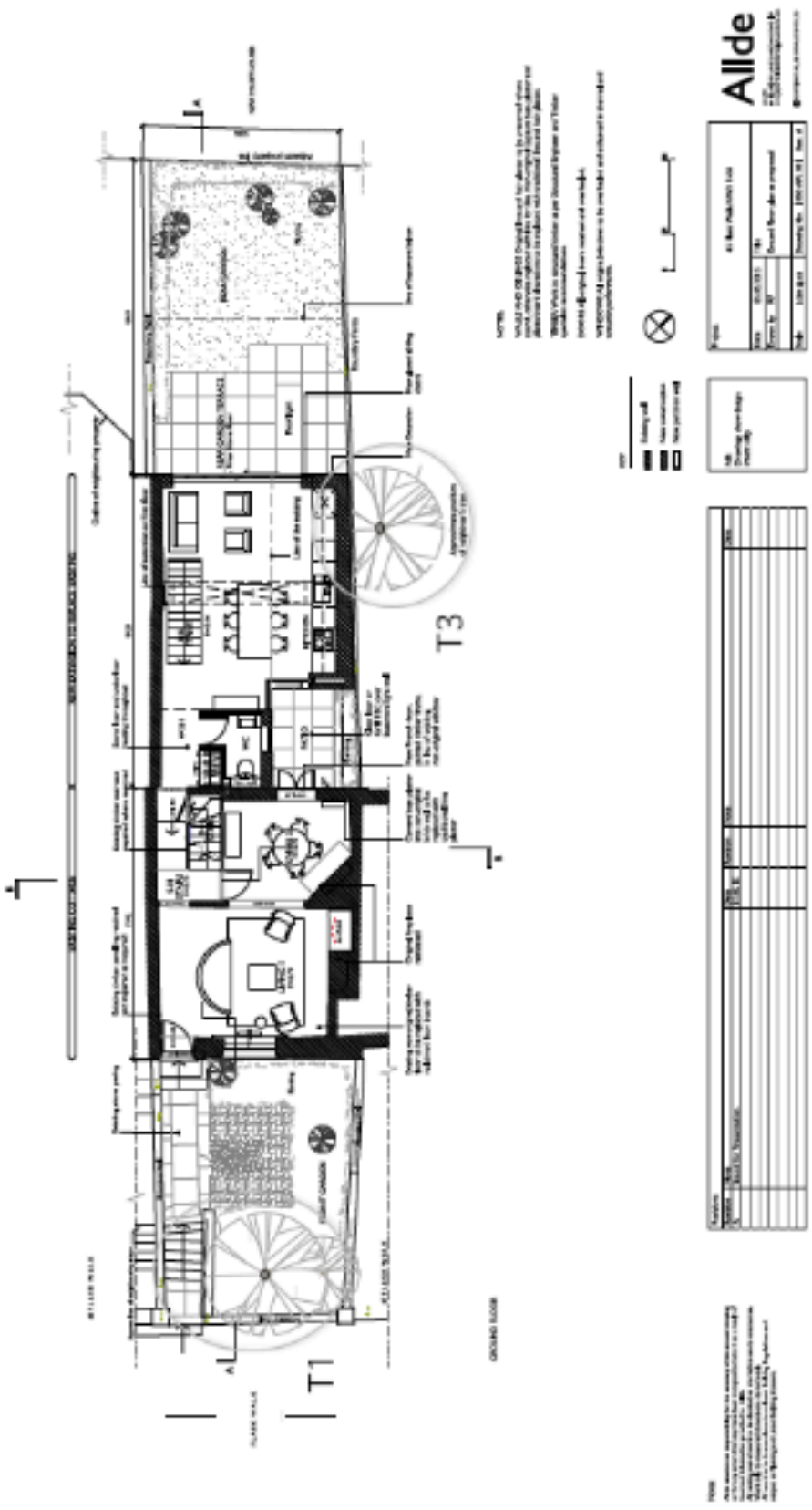
Tree Canopy Colour Key: BS5837: 2012 (see *Section 2.6*)

- **Category A**
- **Category B**
- **Category C**
- **Category U**

Appendix B.1 Existing Site Plan:
45 Flask Walk, London, NW3 5HH

Do not scale from this drawing

Appendix B.2 Proposed Site Plan:
45 Flask Walk, London, NW3 5HH



Do not scale from this drawing

Appendix B.3: Site Plan of Tree Protection:
45 Flask Walk, London, NW3 5HH

Do not scale from this drawing

Tree Protection Site Plan Notes / Key:

1. Red line denotes Tree Protection Fencing to offer protection to trees T1 & T3

Appendix C

Site Photographs for:

45 Flask Walk
London
NW3 5HH

**** Taken 15th May 2015***

C.1 Photograph of tree T1 proposed for retention at the front of the property and requiring protection - 45 Flask Walk, London, NW3 5HH; as viewed in a north easterly direction from public highway.

C.2 Photograph of tree T1 proposed for retention at the front of the property and requiring protection - 45 Flask Walk, London, NW3 5HH; as viewed in a westerly direction from the front garden.

C.3 Photograph of tree T2 proposed for removal at the rear of the property - 45 Flask Walk, London, NW3 5HH; as viewed in a northerly direction..

C.4 Photograph of tree T3 proposed for retention and requiring protection - within the neighbouring property to the east, 46 Flask Walk, London, NW3 5HH; as viewed in a northerly direction from the rear garden.

Appendix D:
Site Tree Protection Notice

Tree Protection Notice
(BS5837: 2012):

45 Flask Walk
London
NW3 5HH

Notice to be clearly shown on site
AT ALL TIMES ON PROTECTIVE FENCING

Guidance for ALL EMPLOYEES working on site in relation to the tree protection required at all times

Site: 45 Flask Walk, London, NW3 5HH

- There should be no storage of fuels, chemicals or cement based products within the root protection area of the proposed scheme where trees T1 and T3 are located.

- There should be no storage of materials or mixing of chemicals / concrete within this area at any time. There should also be no fires within the site

- . Notice boards, telephone cables etc should not be attached to any part of any of the trees.

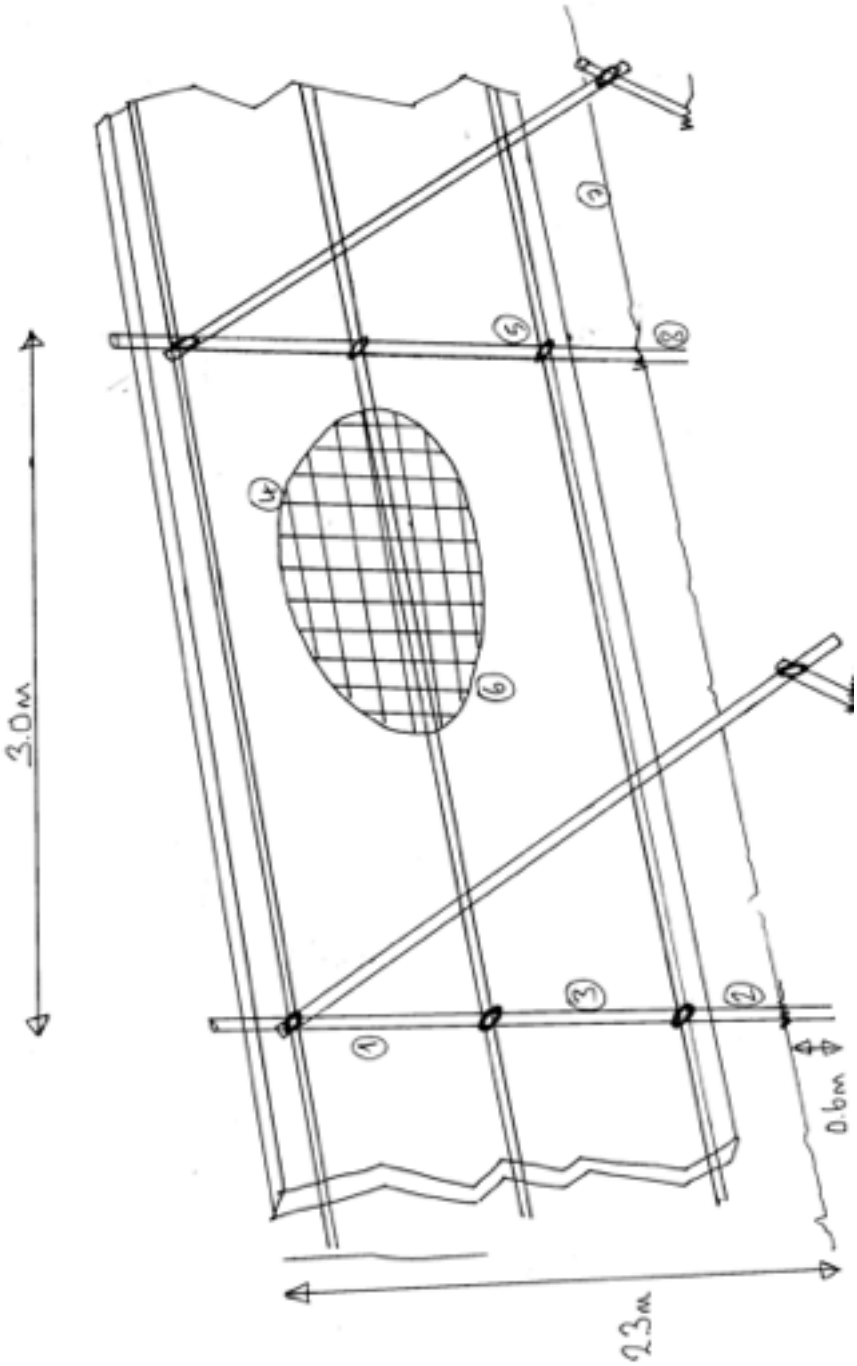
- The severance of any tree roots encountered larger than 2.5 cm in diameter MUST NOT occur without prior consultation with the Local Authority Tree Officer or appointed Arboricultural Consultant.

- If excavations do occur within the specified Root Protection Area where hand dug excavations are being undertaken, ANY tree roots encountered over 2.5cm in diameter should be retained where possible. Hand digging is to continue around any such tree roots.

If at any point it is deemed not possible to continue with excavations without having to damage significant tree roots, the Local Authority Tree Officer and / or Arboricultural Consultant must be contacted.

Marcus Foster (Arboricultural Consultant): 0781 202 4070
Local Authority Tree Officer (LB Camden): 020 7364 5009

Appendix E: Tree Protection Fencing as outlined in BS5837 (2012) Specifications



Tree Protection Specification Key:

1. Scaffold tubes
2. Uprights driven into ground
3. Panels secured to uprights
4. Weldmesh secured to fence
5. Standard clamps
6. Wire secured to fence
7. Ground level
8. Tubes driven 0.6m into ground

Appendix F: References

1. *BS5837: British Standard: Trees in relation to construction - Recommendations*, British Standard (2012)

2. *Principles of Tree Hazard Assessment and Management,* Lonsdale, D. (Department for Transport, Local Government and the Regions, 1999)

3. *The Body Language of Trees*, Mattheck, C. and Breloer, H. (HMSO, 1994)

4. *Trees in Britain,* Philips, R. (Pan Books, 1978).

5. *Diagnosis of Ill Health in Trees,* Strouts, R. and Winter, (TSO, 1994)

6. *NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Issue 2),* (November 2007)