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Arboricultural Survey (BS5837:2012) & Impact Assessment Report

Site details:

4 Keats Grove
London
NW3 2RT

Client details:

Richard Griffiths Architects
5 Maidstone Mews Buildings
72-76 Borough High Street
London
SE1 1GN

Date of Report:

26th January 2017

Report Prepared by:

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Contents

1. Introduction

1.1 This report has been commissioned by Rachel Farrer Bristow of Richard Griffiths Architects to survey, assess and provide arboricultural recommendations and an impact assessment for the mature Horse Chestnut tree within close proximity to the proposed development at 4 Keats Grove, London, NW3 2RT.

1.2 A site visit was conducted on Thursday 19th January 2017 to survey and assess the trees. The weather at the time of inspection was dry and overcast with cold temperatures.

1.3 A tree survey, report and recommendations have been compiled for 1 tree (T1) surveyed within the front garden of 4 Keats Grove, London, NW3 2RT in close proximity of the proposed development.

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

1.5 The tree located within the site and included in the survey is shown in the site plan, *Appendix B.1 - B.4*, 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 1 tree (tree T1) as shown in the survey, *Appendix A,* and also highlighted on the included site plans*, Appendix B.1 - B.4.*

2.2 The tree was surveyed from ground level from within the front garden of 4 Keats Grove, NW3 2RT and the adjacent public highway also. The diameter of the trunk has been measured using a Diameter at Breast Height (DBH) tape. The height of the trees have been estimated due to the site topography / urban nature of the site.

2.3 The following information was recorded for the 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 specimen 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 The tree has been surveyed in accordance with BS5837: 2012 'Recommendations for trees in relation to construction' (BS5837: 2012) and has 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.

N/A

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.

T1

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.

N/A

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.

N/A

3. Survey Limitations

3.1 No soil excavations have been carried out.

3.2 This report only considers the tree 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 / remaining vegetation within this property have not 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 is 1 tree located within close proximity of the proposed development to the rear of the property which incorporates extension works to the property including associated construction site activities. Tree T1 has been surveyed and numbered as is depicted within the site plan (*Appendix B.1 - B.3).* There are no other trees within close proximity of the property in neighbouring front gardens or the public highway which will be affected by either the development works or the associated construction site activities.

4.2 The tree surveyed is sited within the London Borough of Camden; the property is located within the Hampstead Conservation Area and the tree is protected by this status in addition to the tree being subject to a Tree Preservation Order (TPO) with reference: *TPO - Hampstead 12*.

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

- **Potential excavations required for construction works in close proximity to the tree have the potential to cause damage**
- **Compaction of the ground surrounding the tree during construction works**
- **The use of and storage of materials and chemicals on site during the construction process**
- **Damage to the canopy of the tree where close to development works and associated construction site activities.**

4.4 As the tree within this property is located within an urban location within very close proximity of the existing and proposed development this report will more closely address the the solution required in order for the implementation of the development whilst retaining amenity value within the area for the long term.

4.5 The tree has been surveyed taking into account the condition, general health and form. In addition it has 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.

4.6 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.

Tree Survey Notes in Relation to Proposed Development

General Site Aspect - T1

4.7 Tree T1 is a mature Horse Chestnut tree (*Aesculus hippocastanum*) which is sited within the front garden on the northern boundary of the property with the public highway. The following key site characteristics exist:

- To the north, the public highway is sited approximately 400mm beneath the level of the tree within the soft landscaped front garden

- To the east soft landscape ground leads to the historic garage / studio and relative recently developed light well (2003 - Planning Application Reference: PWX0202432/R1)

- To the south leading to the existing soft and hard landscape front garden and main property, No. 4 Keats Grove

- To the west leading to the existing soft and hard landscape front garden

4.8 The tree offers good amenity value being located within the front garden which is directly adjacent to the public highway, Keats Grove and has been managed to account for its proximity to buildings and the road / pavement within this urban environment. The tree is rated as a 'B.1' specimen (BS5837:2012) mainly due to the relative limited lifespan of the tree taking account of condition and reduced state.

Tree T1

4.9 The tree is generally structurally sound at the base with good root flare, particularly to the north where the tree compensates for the lean to the south. The main stem is in fair condition with good buttress roots leading to a single main stem; at 1.8m on east signs there are some early signs of bleeding canker. With a large low over-extended stem to the east and a canopy generally growing to the east and south the tree is slightly unbalanced with a previously existing large tree likely located to the west.

4.10 The ivy clad nature of the tree to 5-6m means the main union was not clear for inspection but works carried out within the past 6 months indicate the general structural integrity of the tree to be in fair condition. The recent selective crown reduction works have clearly been carried out to provide management for the tree in this urban location where issues of shading, and growth encroachment to buildings are pertinent.

Tree Protection Recommendations

4.11 The tree is sited within the front garden area as described above and is sited as follows from the property in relation to the proposed development:

- the closest point 2765mm from the building to the east. At this point there is a lower ground floor room within the property; however at 1527mm from the tree exists a light well which was constructed in addition to lowering of floor levels within the 2003 development as highlighted above.

- 3800mm from the outer point line (at its closest point) of the proposed development where excavations are required for the implementation of an extension at lower ground floor level for the power / plant room

4.12 The recommended Root Protection distance / radius (BS5837:2012) for this specimen is 13.6 metres for this tree and therefore the proposed development site does encroach within this protection area by up a significant distance on all sides of the root plate. However, it should be noted that due to the urban nature of the site, development has already occurred both historically and more recently in this southerly and easterly direction, and encroachment for this partial section of the root plate has already taken place within the recommended 13.6m distance.

4.13 In order to ensure that the health and / or structural integrity of the tree are not detrimentally affected during the construction process the following protective and precautionary measures are recommended:

- *4.13.1 Prior to the commencement of any construction site activities it is recommended that a HAND DUG trench is implemented on the closest point of the proposed extension to highlight any major / structural roots which may compromise the implementation of the proposed development*

- *4.13.2 As above, where excavations are required within the root protection area of tree T1 for the extension to the south of the tree, the upper 1000mm of excavations closest to the boundary line of development should be undertaken by hand or with similar care to ensure that there are no major roots are damaged - close adherence to Excavations and Root Severance Guidance as below should be applied*

- *4.13.3 Tree protection is provided in the form of basal shuttering to the main stem of tree T1 to specifications as outlined within an Arboricultural Method Statement providing adherence to the radius protection area as highlighted in BS5837:2012 to the greatest extent possible where working with site boundaries*

- *4.13.4 It should be noted that with the occurrence of major tree roots likely to be originating from tree T1 being encountered during excavations the Local Authority Tree Officer or Arboricultural Consultant should be contacted immediately. *

- *4.13.5 All other protective measures during the construction process should be outlined to corroborate with the Construction Method Statement within the Arboricultural Method Statement*

Tree Protection Specifications - Summary

4.14 For this tree, the tree protection guidance which requires implementation for works within the root protection area is required for the southern, eastern and western section of the root plate. Initially a trial trench is recommended as outlined within *Appendix B.4 - Tree Constrains Site Plan* which aims to determine root morphology to the south of tree T1 where excavations are proposed. The Trial trench Method Statement (*Appendix F*) outlines the methodology for undertaking these works which will highlight extent of root growth in this area

4.15 To ensure that the development process itself with all associated construction site activities does not detrimentally impact upon the retained tree T1 the following main points which should be outlined with detailed specifications in an **Arboricultural Method Statement (AMS)** must be implemented:

Excavations & Root Severance Guidance - Tree T1

4.16 When implementing the excavations for the development within the root protection area of tree T1, either for carrying out initial trial trench excavations and / or for the proposed development it should be noted that in the case of major roots being encountered the following points should be closely adhered to as to be outlined within the AMS:

- **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**.

- **Any excavations which for any reason are required within the recommended ROOT PROTECTION AREA must be firstly agreed in writing with the Local Authority Tree Officer and then be hand dug for the first 1m with close adherence to the specifications as highlighted below.**

Arboricultural Supervision

4.17 It is recommended that an Arboricultural Supervision Scheme is implemented to ensure that Tree Protection is implemented as specified within this report therefore avoiding significant tree root damage or compaction of tree roots. The following is recommended:

Before & During Land Preparation:
- Approval of any utility service routes approved that infringe within the RPA
- Approval of Site Storage Area
- Approval of Root Protection Areas (where fencing not implemented)
- Approval of Tree Protection Fencing positioning

Ongoing throughout development process:
- Monitoring of tree protection / condition
- Monitoring of land use
- Monitoring construction methods and storage areas in relation to trees

Post Development Management

4.18 It is recommended that the following is adhered to and undertaken to the soft landscape / garden area that is within the RPA of tree T1 prior to hard landscaping or garden works:

- No soil level changes should occur to garden level for landscaping works within the front garden

- Terraventing of all exposed ground should occur prior to any final landscaping works (injection of compressed air and nitrogen within soil to aid root regeneration and avoid continued compaction of ground

- Incorporation of Gutter Guards (or similar) within any additional guttering system on any proposed development to avoid excessive build up of vegetation during mid season leaf fall (May/June) and autumn.
- Implementation of a soft and hard landscape scheme as proposed and agreed in writing the Local Authority only should be adhered to to ensure no damage is caused to the tree root system during these works

Summary

4.19 Therefore close adherence to the above points and to the following is required:

- **Implementation of Trial Trench to determine tree root morphology in area of proposed excavations *carried out in accordance* with *Trial Trench Method Statement (Appendix F)* for protection of tree T1**

- **Implementation of *Arboricultural Method Statement* for protection of tree T1 during proposed development works**

- **Close adherence to tree protection specifications and excavation guidance as outlined within this report and the Arboricultural Method Statement also for protection of tree T1**

- **Implementation of Arboricultural Supervision Scheme**

- **Implementation of Post Development Management Scheme**

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 Tree Works Specification

T1 Horse Chestnut

No action required at present

6. Appendices

Appendix A

Tree survey (BS5837:2012)

4 Keats Grove
London
NW3 2RT

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

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

4 Keats Grove, London, NW3 2RT
BS 5837:2012 Tree Schedule – January 2017

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	Horse Chestnut	15	1130	N: 5 E: 9 S: 4 W:4	M	F	F	B.1	20 years +	Tree has significant buttress roots at base with good root flare. Mixed land surrounding including buildings, soft landscape front garden, public highway and hard landscape features including paving and retaining boundary wall (low) to the north. Tree is ivy clad to 5-6m with main union unable to fully inspect. Main stem has some signs of dieback but with compensatory growth, particularly to north at 1.6-2.0m. Some signs of bleeding canker (minor) on main stem. Low stem to north extends over public highway and generally tree growing to south and east. Tree pruned within pst 6-12 months. Upper crown has thinning canopy growth with sparse sections.	No action required at present	13.6

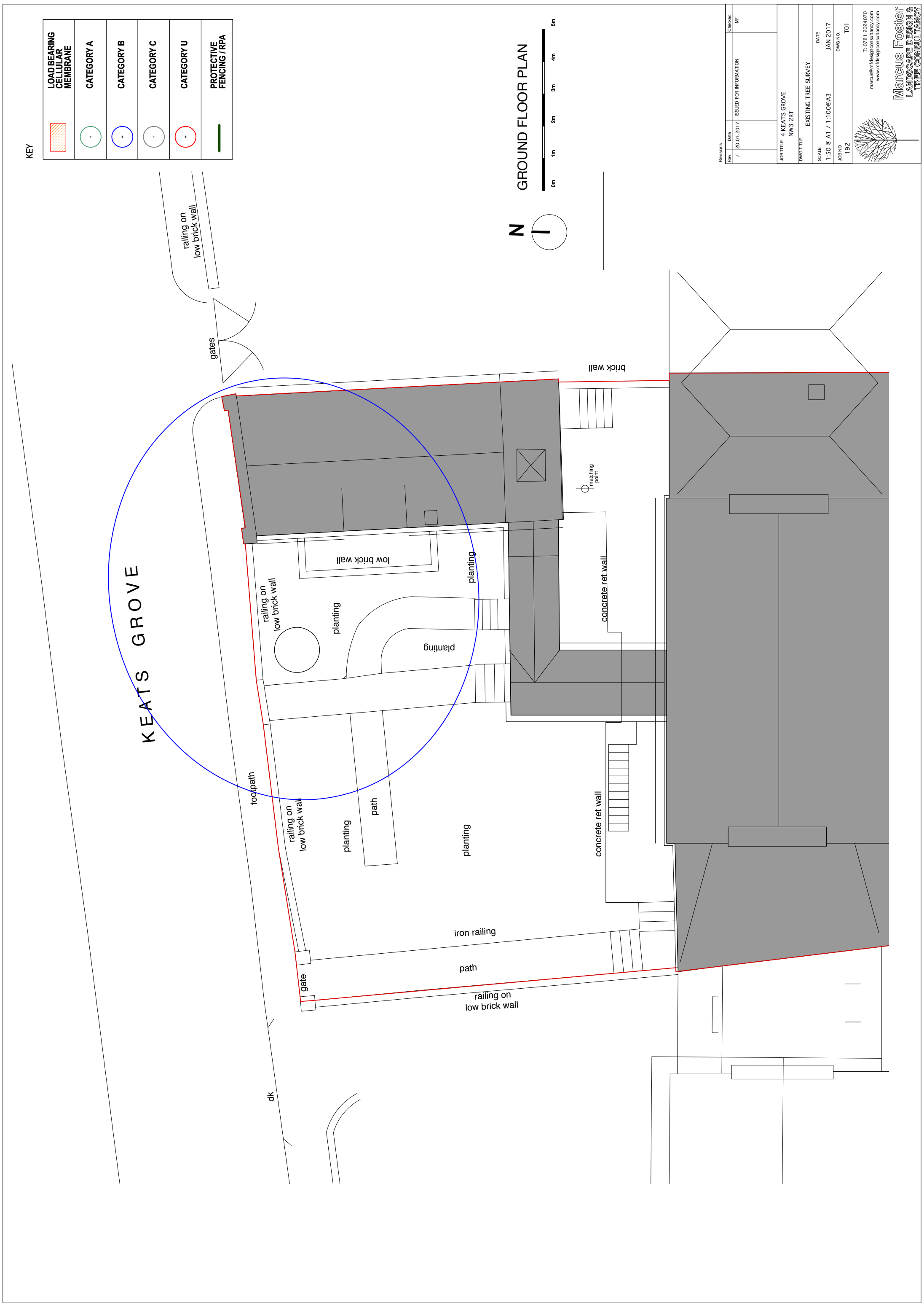
Appendix B

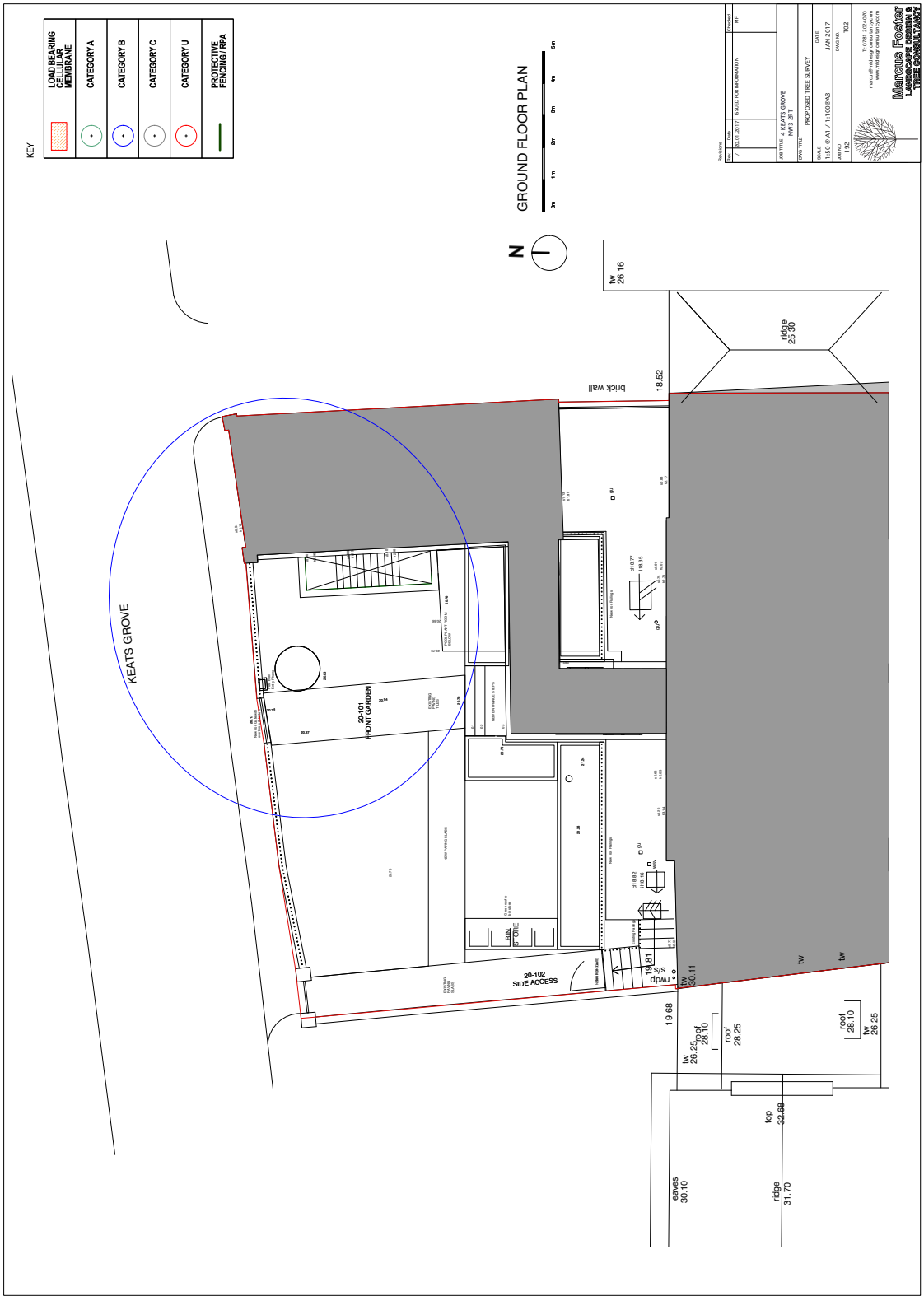
Existing & Proposed Site Plan including Tree Constraints Site Plan

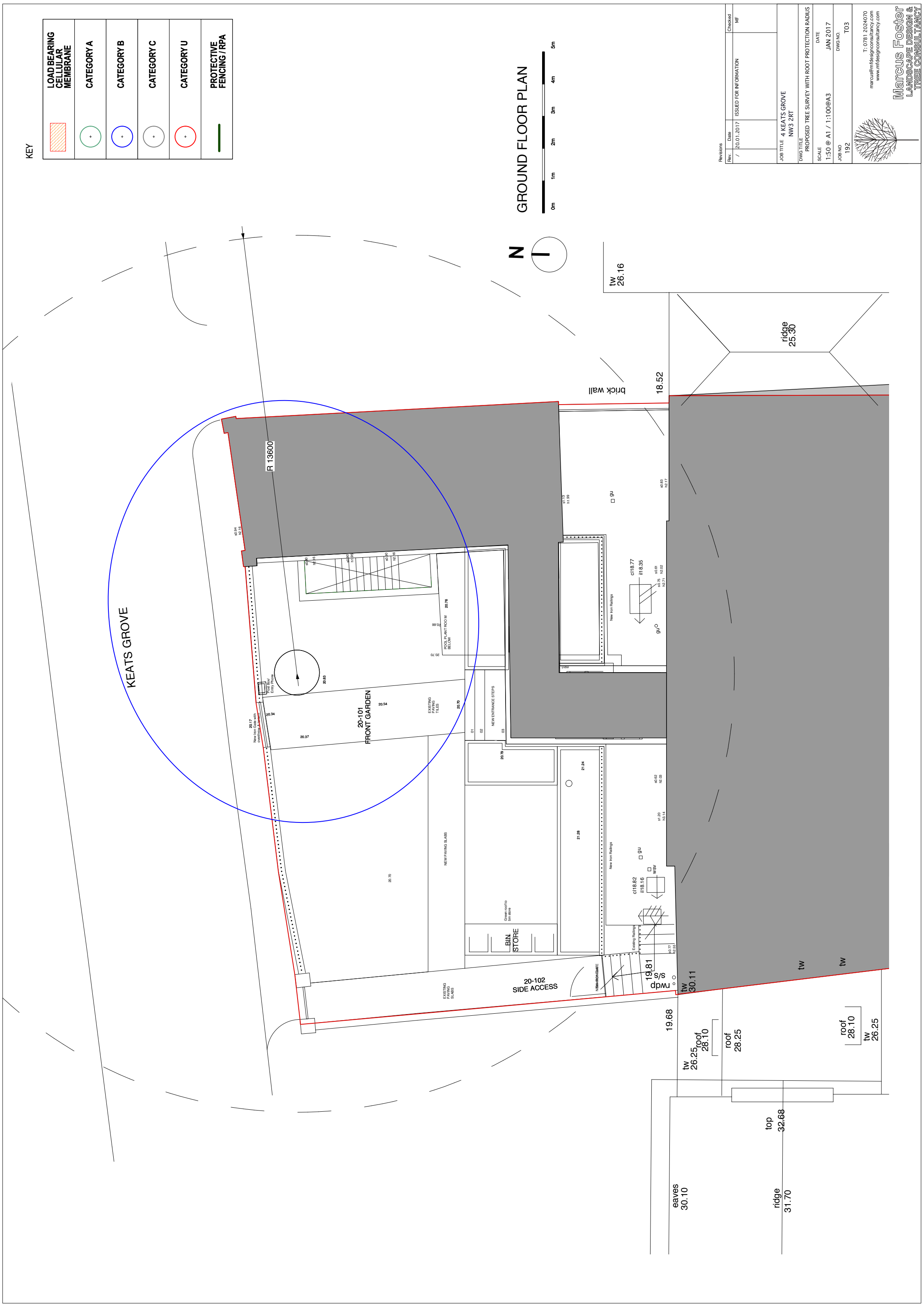
4 Keats Grove
London
NW3 2RT

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

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


KEY
LOAD BEARING CELLULAR MEMBRANE
CATEGORY A
CATEGORY B
CATEGORY C
CATEGORY U
PROTECTIVE FENCING / RPA
GROUND FLOOR PLAN
N
KEATS GROVE
railing on low brick wall
gates
brick wall
low brick wall
planting
path
footpath
concrete ret wall
iron railing
gate
railing on low brick wall
4 KEATS GROVE NW3 2RT
EXISTING TREE SURVEY
1:50 @ A1 / 1:100@A3
JAN 2017
T01
192
ISSUED FOR INFORMATION
Marcus Foster
LANDSCAPE DESIGN & TREE CONSULTANCY


KEY
LOAD BEARING CELLULAR MEMBRANE
CATEGORY A
CATEGORY B
CATEGORY C
CATEGORY U
PROTECTIVE FENCING/ RPA
GROUND FLOOR PLAN
0m 1m 2m 3m 4m 5m
N
Marcus Foster
LANDSCAPE DESIGN & TREE CONSULTANCY
4 KEATS GROVE NW3 2RT
PROPOSED TREE SURVEY
1:50 @ A1 / 1:100@A3
JAN 2017
T02
KEATS GROVE
20-101 FRONT GARDEN
20-102 SIDE ACCESS
BIN STORE
brick wall
18.52
tw 26.16
ridge 25.30
tw 30.11
19.68
roof 28.10
roof 28.25
tw 26.25
roof 28.10
tw 26.25
top 32.68
eaves 30.10
ridge 31.70


KEY
LOAD BEARING CELLULAR MEMBRANE
CATEGORY A
CATEGORY B
CATEGORY C
CATEGORY U
PROTECTIVE FENCING / RPA
GROUND FLOOR PLAN
0m
1m
2m
3m
4m
5m
N
KEATS GROVE
R 13600
20-101
FRONT GARDEN
20-102
SIDE ACCESS
BIN STORE
brick wall
18.52
tw
26.16
ridge
25.30
19.68
19.81
s/s
dpw
tw
30.11
roof
28.25
roof
28.10
tw
26.25
top
32.68
eaves
30.10
ridge
31.70
JOB TITLE 4 KEATS GROVE NW3 2RT
PROPOSED TREE SURVEY WITH ROOT PROTECTION RADIUS
JAN 2017
192
T03
Marcus Foster
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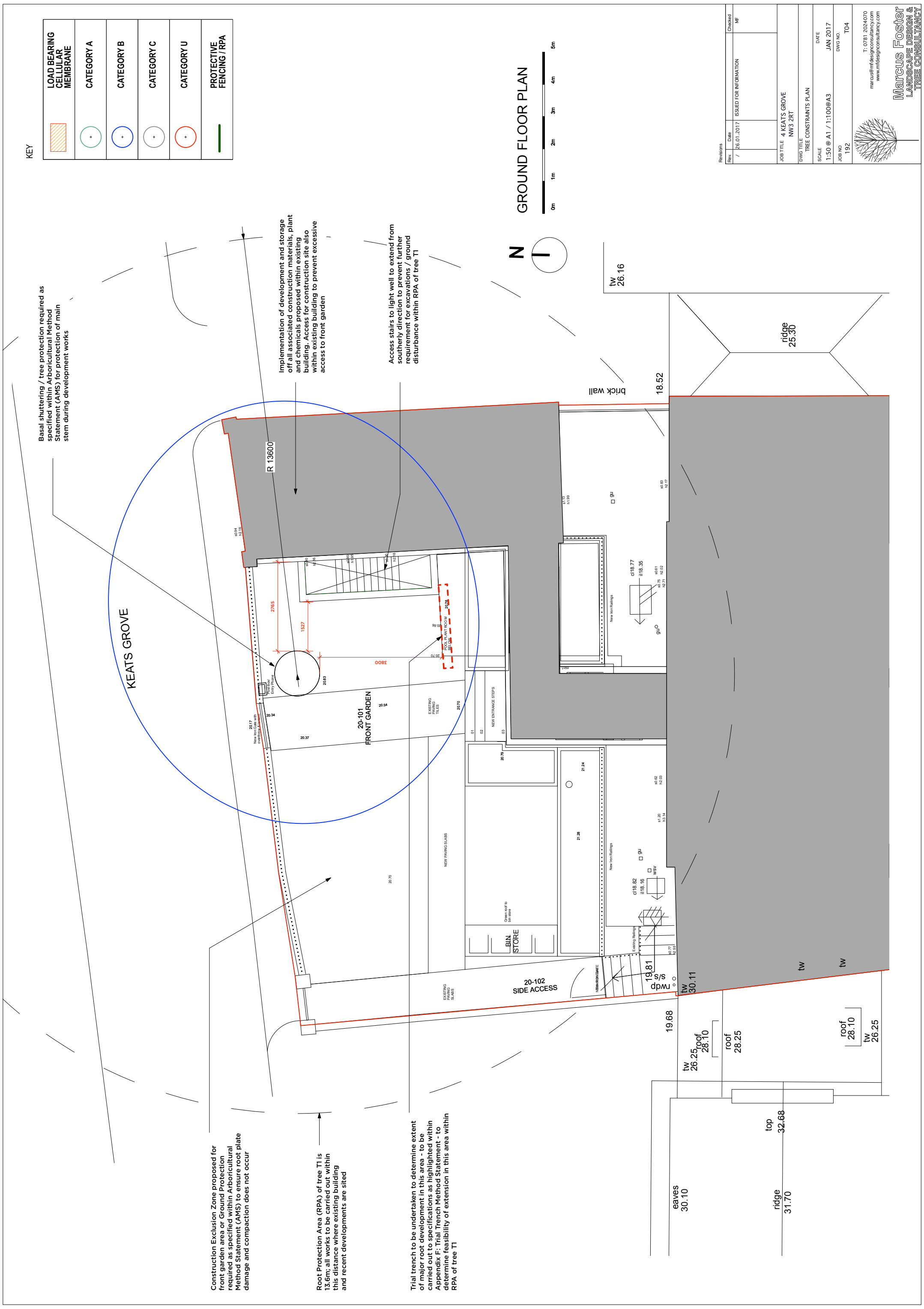
KEY
LOAD BEARING CELLULAR MEMBRANE
CATEGORY A
CATEGORY B
CATEGORY C
CATEGORY U
PROTECTIVE FENCING / RPA
GROUND FLOOR PLAN
N
0m 1m 2m 3m 4m 5m
KEATS GROVE
R 13600
20-101 FRONT GARDEN
20-102 SIDE ACCESS
BIN STORE
brick wall
Basal shuttering / tree protection required as specified within Arboricultural Method Statement (AMS) for protection of main stem during development works
Implementation of development and storage off all associated construction materials, plant and chemicals proposed within existing building. Access for construction site also within existing building to prevent excessive access to front garden
Access stairs to light well to extend from southerly direction to prevent further requirement for excavations / ground disturbance within RPA of tree T1
Construction Exclusion Zone proposed for front garden area or Ground Protection required as specified within Arboricultural Method Statement (AMS) to ensure root plate damage and compaction does not occur
Root Protection Area (RPA) of tree T1 is 13.6m; all works to be carried out within this distance where existing building and recent developments are sited
Trial trench to be undertaken to determine extent of major root development in this area - to be carried out to specifications as highlighted within Appendix F: Trial Trench Method Statement - to determine feasibility of extension in this area within RPA of tree T1
tw 26.16
18.52
ridge 25.30
19.68
19.81
tw 30.11
tw 26.25
roof 28.10
roof 28.25
eaves 30.10
top 32.68
ridge 31.70
roof 28.10
tw 26.25
tw
tw
Revisions
Rev Date Checked
/ 26.01.2017 ISSUED FOR INFORMATION MF
JOB TITLE 4 KEATS GROVE NW3 2RT
DWG TITLE TREE CONSTRAINTS PLAN
SCALE 1:50 @ A1 / 1:100@A3
DATE JAN 2017
JOB NO 192
DWG NO. T04
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Appendix C

Site Photographs for:

4 Keats Grove
London
NW3 2RT

**** Taken 19th January 2017***

C.1 Photograph of tree T1, 4 Keats Grove, London, NW3 2RT as viewed in a southerly direction

C.2 Photograph of main stem of T1, 4 Keats Grove, London, NW3 2RT as viewed in a south westerly direction

C.3 Photograph of tree T1, 4 Keats Grove, London, NW3 2RT as viewed in a westerly direction

C.4 Photograph of base of tree T1, 4 Keats Grove, London, NW3 2RT as viewed in a northerly direction

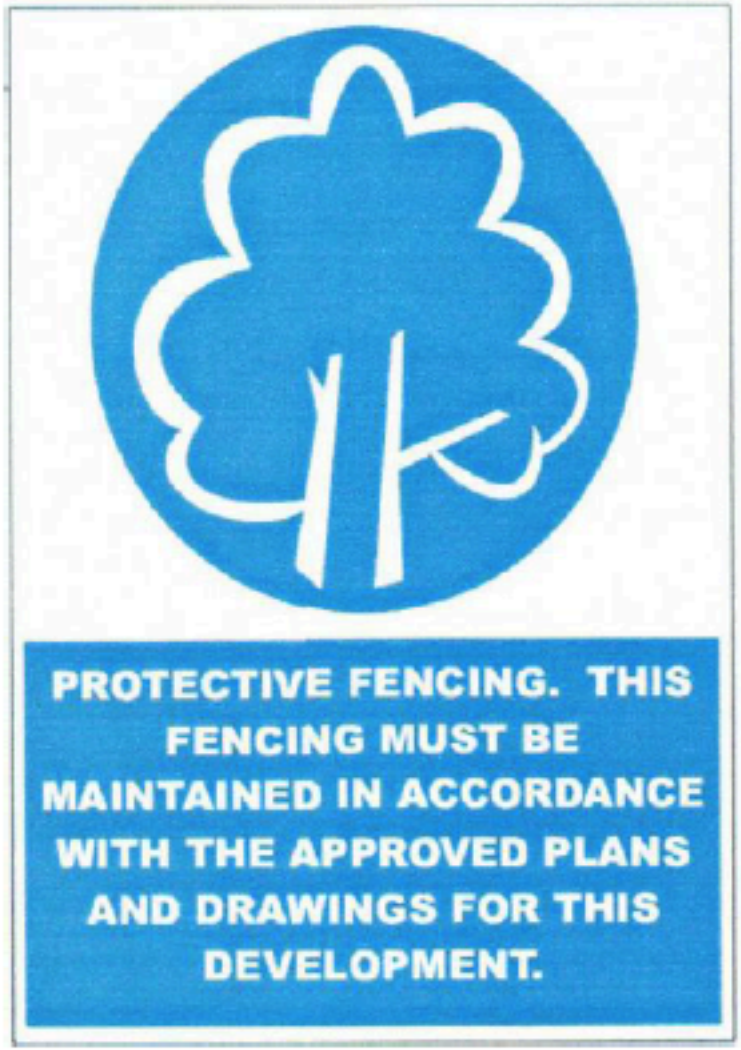
C.5 Photograph of tree T1, 4 Keats Grove, London, NW3 2RT as viewed in a easterly direction

Appendix D:
Generic Tree Protection Notice

Tree Protection Notice
(BS5837: 2012):

4 Keats Grove
London
NW3 2RT

Notice to be clearly shown on site
AT ALL TIMES
during any construction works within this site



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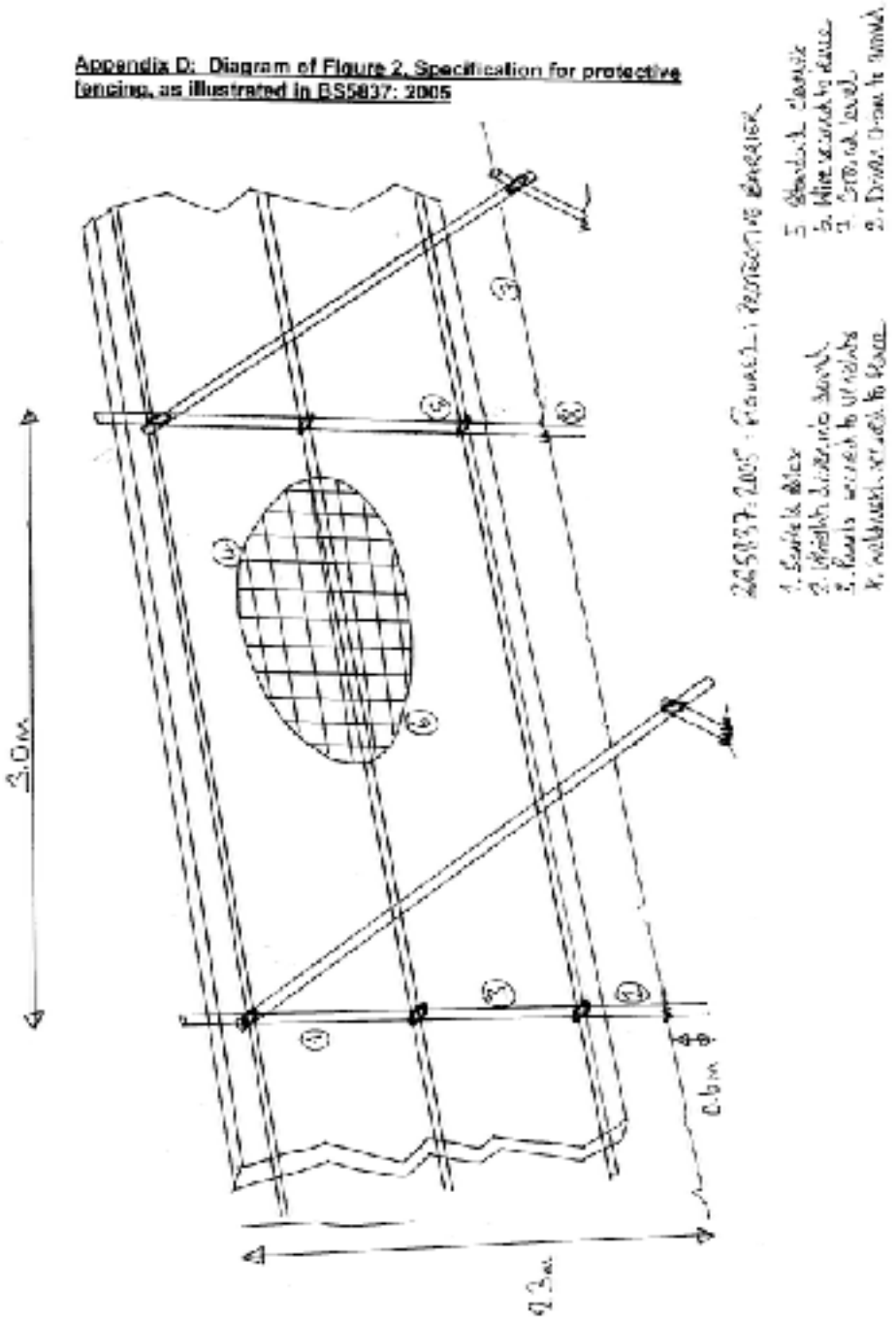
Appendix E: Tree Protection Fencing as outlined in BS5837 (2012) Specifications

Appendix D: Diagram of Figure 2, Specification for protective fencing, as illustrated in BS5837: 2005



Appendix F: Tree Root Trial Trench Method Statement

1. Scope of works:

1.1 A trench of the following dimensions is to be dug in the location as shown in the site plan overleaf:

1000mm depth x 500mm width

1.2 This is required to be hand dug using hand tools only where possible to determine the root morphology and root presence of the adjacent Horse Chestnut tree where proposed development works have the potential to cause damage

2. Reasons for works

2.1 The works are being carried out to determine the extent of larger tree roots which exist in this area growing from the tree in a southerly direction towards the building as exists. These hand dug excavations will enable the Local Authority and consulting arboriculturist to determine whether severance of tree roots would both:

a) be required in this area
b) be possible in order to facilitate implementation of a proposed plant room

3. Working Method:

3.1 The working method should be carried out as follows:

a) The 'breaking up' of any surface may be carried out by low impact pneumatic tools only or by hand where possible

b) Hand digging to be carried out WITHOUT severance of larger tree roots: 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.

c) 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.

d) The hand dug trench should aim to expose any larger tree roots exposed. The trench should not be infilled until both the Local Authority Tree Officer and Consulting Arboriculturist have been contacted and have visited to inspect / document:

Contact Details

Consulting Arboriculturist - Marcus Foster :
Tel: **0781 202 4070** Email: marcus@mfdesignconsultancy.com

Local Authority Tree Officer Department - Camden
Tel: 020 7974 5939

Appendix G: 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)

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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)