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Arboricultural Survey (BS5837:2012) & Impact Assessment Report

Site details:

Senior School
University College School
Frognal
London
NW3 6XH

Client details:

University College School
Frognal
London
NW3 XH

Date of Report:

10th June 2016

Report Prepared by:

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1. Introduction

1.1 This report has been commissioned by University College School to survey, assess and provide arboricultural recommendations and an impact assessment for the trees within and in close proximity to the proposed development at UCS Senior School Branch, Frognal, Hampstead, London, NW3 6XH.

1.2 A site visit was conducted on Tuesday 31st May 2016 to survey and assess the trees. The weather at the time of inspection was dry and overcast with mild temperatures.

1.3 A tree survey, report and recommendations have been compiled for 15 trees (T1-T15) surveyed within UCS Senior School Branch, 1 Frognal, Hampstead, London, NW3 6XH

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 site plans, *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 Reference has been made to the following document as prepared by Katy Staton Landscape Architecture: *UCS Senior School Frognal Boundary - Planning Preapplication Document* (Reference 077_P_L01A).

2. Survey Details and Scope

2.1 The site survey included the 15 trees (trees T1-T15) as shown in the survey, *Appendix A,* and also highlighted on the site plans*, Appendix B.1-B.3.*

2.2 The trees were surveyed from ground level from within the grounds of University College School Junior Branch. 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 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 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 15 trees located within the grounds of the school which are within close proximity of the proposed landscape works which incorporate development works to improve the front boundary of the school. Trees T1 - T15 have been surveyed and numbered as is depicted within the site plan (*Appendix B.1 - B.3* - also within the Tree Protection Plans *Appendix B.4*.

4.2 The trees surveyed are located within the London Borough of Camden; they are also located within the Redington / Frognal 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 development / landscape 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**
- **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**
- **The potential detrimental impact on the long term health of the trees**

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 all trees, T1-T15; this report will outline the condition of the trees and necessary requirements during the construction process in order to ensure where retained that their health is maintained, and the retention of the amenity value provided is protected for the long term.

4.7 The proposed construction works are to incorporate landscape works to the school frontage to improve access, site security and boundary appearance. The main works which have the potential to affect the tree

- The improvement / re-surfacing of the main vehicular and pedestrian access route which is within close proximity of all trees
- The improvement of car parking provision which currently exists beneath the trees on the boundary in front of the *South Block*
- The implementation of car parking spaces in boundary soft landscape in front of the *North Block*
- General landscaping and planting works close to trees

The development is achievable without causing damage to the trees being retained providing precautionary and protection measures are adhered to within this report, particularly as recommended tree protection distances (BS5837:2012) can be largely adhered to at all times.

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 - T15 in relation to proposed development works construction method

Tree T1

4.10 Tree T1 is a mature ornamental Cherry (*Prunus spp*) located within the land between the boundary line with Frognal and the detached property within the grounds. The tree is a reasonable specimen, single stem with a relatively balanced, although unruly, crown shape; it is currently heavily ivy clad but is offering high amenity value. The tree is therefore classified as a 'B.1' category tree (BS5837: 2012) as the location means that i is highly visible from both within the school grounds and the public highway also. Due to the extent of ivy it was not possible to fully inspect the base of the tree but it was in reasonable condition when last surveyed in 2014 (by *Marcus Foster Arboricultural Design & Consultancy*). The tree is not affected by the proposed works and therefore does not require consideration within any tree protection scheme.

Silver Maple Trees T2 -T14

4.11 Trees T2-T14 comprise a total of 13 trees in a formal planting of Silver Maple trees (*Acer saccharinum*) along the front western boundary with Frognal, NW3. These trees were planted approximately 12-14 years ago as a replacement planting scheme to restore lost amenity value from a previous avenue of trees (of unknown species). These trees have been classified as mature - the Silver Maple can ultimately attain a height of between 15-25m with the lower height being the more likely in this urban location where compaction of ground is historic and subsequent adventitious root growth inevitable. The ultimate spread of the trees is 11-15 metres and the relatively broad nature of the tree is becoming evident as the trees spread laterally over both public highway and towards the school buildings.

4.12 The trees have all been planted close to the boundary wall at approximately 1000mm distance and are planted evenly spaced where possible with a formal approach to suit the form and design of the buildings. There are four main areas where the trees are located. Trees T2-T5 are located within the upper front boundary area opposite North Block; trees T6-T8 are located within the central area of the front boundary opposite Central Block; trees T9 - T11 opposite Central Block where trees are currently sited within a gravel verge; the and finally trees T9-T14 are located within the front boundary opposite South Block.

4.13 All of the trees within this planting have clearly been recently managed - within the past 12 months - and it is clear that formative pruning works have been implemented from initial planting. The last works carried out include crown thinning, crown lifting, removal of deadwood and a selective crown reduction of lateral spread over the public highway. All works have been carried out to the British Standard (BS3998: 2010) and help retain a light crown density and reduce a sense of encroachment to the public highway.

Trees T2 -T5

4.14 Trees T2-T5 comprise the first 4 trees of a total of 13 trees in the formal planting to the north of the site and opposite both the detached residential property within the site and North Block. Tree T2 is sited within a small grass verge to the north of vehicular gates, whilst trees T3-T5 are sited within a wide grass verge opposite North Block. Tree T2 will not be affected by proposed works by virtue of this location and therefore protection measures will not require implementation in this area.

4.15 Trees T2-T5 are generally structurally sound and in good condition. As a species characteristics there are tight union with the main forks but this is not a significant structural defect for any of the trees. The trees offer balanced form with greater extended spread to the east and west by virtue of the aspect and the relative close proximity of each tree to one another. The trees are rated as 'B.1' category trees (BS5837: 2012) offering excellent amenity value and they are therefore proposed for retention.

4.16 The proposed development works in this area include the implementation of car parking spaces within the existing lawn area. Obviously this has the potential to impact on the root systems of the trees which have the following recommended Root Protection Area (RPA) radius' as calculated from BS5837:2012 and as highlighted within *Appendix B.3*.

- Tree T3 - 4.9 metre RPA radius
- Tree T4 - 4.4 metre RPA radius
- Tree T5 - 4.6 metre RPA radius

4.17 For these works in this area, it is only tree T5 which is likely to require a design construction solution to allow for minor encroachment of up to 1.0m within the eastern root plate of this tree. All of the trees in this area will require protection from the construction process in the form of tree protection fencing, with works within the RPA of T5 also requiring close adherence to the tree protection guidelines and an Arboricultural Method Statement (AMS).

Trees T6-T8

4.18 Trees T6-T8 comprise 3 Silver Maple trees also which are located on the front boundary opposite Central Block. The trees are generally structurally sound and as with the trees previously discussed, there is some evidence of included bark within main unions as is characteristic of species. The trees all have straight main stems, good buttress roots at the base within the soft landscaped surrounding ground and in this area offer a balanced set of trees, rated as 'B.1' category (BS5837: 2012) due to the good condition and excellent amenity value offered.

4.19 For this area, proposed works consist of soft landscape works only to enhance the landscape. The works should not result in significant level changes of soil as outlined within an AMS relevant to proposed works. It will be necessary to implement tree protection fencing as also outlined within an AMS to ensure that storage of materials, chemicals or heavy machinery does not occur in this area during the construction process.

4.20 For tree T8, the southern most tree in this grouping, the RPA extends within the driveway exit area as currently exists to Frognal. The RPA radius is as follows for this tree:

Tree T8 - 4.3 metre RPA radius

For any works within the above distance of this tree, the removal of existing hard landscape surfaces and level changes incorporating a revised driveway surface would require close adherence with an AMS and root severance / excavation guidance as outlined both within this report and a AMS also.

Trees T9-T11

4.20 Trees T9 - T11 are 3 further Silver Maple trees which are currently sited within an area which comprises compacted gravel / beach shingle at ground level on the western boundary with Frognal. All 3 trees are generally structurally sound and have minor defects only. The initial buttress and anchorage roots are however damaged by the parking of cars with little occluding growth occurring where damage has taken place likely due to the repeated action of this during term time. Clearly there is damage below ground level in the form of a compacted root system which is reflected in the slightly sparser crown density of trees in this area. The trees grow collaboratively both in this area and with the overall formal planting despite the dissection of this area with a hard landscape vehicular and pedestrian entrance / exit. Tree T9 is the broadest tree of the 13 specimens but still sits well within the grouping. These 3 trees are also rated as 'B.1' category (BS5837: 2012).

4.21 The works in this area will require for the implementation of a soft landscaped area beneath the trees and for a replacement driveway to the east of the trees, likely of a porous material created on a cellular membrane. The landscaped area beneath the tree will aid the trees in relation to their long term health as the current *ad hoc* car parking systems means that the root plates of these trees is being compacted on a regular basis as described above. In addition, the replacement driveway with a porous material will also prevent compaction of the root plate of these maturing trees. The protection distances applicable for these trees are:

- Tree T9 - 4.9 metre RPA radius
- Tree T10 - 4.7 metre RPA radius
- Tree T11 - 4.4 metre RPA radius

Therefore protective measures are required both directly beneath the trees in the verge area and to the east also for the driveway area.

4.22 For the driveway and soft landscape area, this will likely require the implementation of level changes and therefore close adherence to an AMS will be required to ensure that this will not detrimentally impact both the health and structural integrity of the trees. The main factors requiring design solutions are as follows:

- Removal of existing driveway without damaging tree roots
- De-compaction of exposed ground within the RPA of trees by process of *Terraventing*
- Implementation of a replacement driveway using a load bearing cellular membrane without affecting current levels
- Use of a porous infill aggregate allowing for filtration of water and oxygen into the soil
- Implementation of related landscape works without level changes of soil within RPA

4.23 With correct implementation the works can aid the long term health and ultimately enhance the potential lifespan of these trees by providing increased levels of oxygen and water to the soil. In addition, the amenity value of this area will be greatly improved and the trees further highlighted with a soft landscape visible beneath the trees instead of parked cars or bare gravel otherwise.

Trees T12-T15

4.24 Trees T12 - T14 are the southern most Silver Maple trees which similarly to trees T9 - T11 are currently sited within an area which comprises compacted gravel / beach shingle at ground level to provide an *ad hoc* car parking area surrounding the trees. All 3 trees are generally structurally sound but they do lack vigour in comparison to the remainder of the grouping and the girth size is notably less for tree T14 in particular. The initial buttress and anchorage roots are also damaged by the parking of cars with little occluding growth occurring where damage has taken place likely due to the repeated action of this during term time. As with trees T9 - T11 there is inevitably damage in the form of compaction to the root system below ground level. These 3 trees are also rated as ‘B.1’ category (BS5837: 2012).

4.25 Tree T15 is a mature Weeping Willow tree (*Salix babylonica*) which is growing at the southern point of this boundary line prior to the main access. The tree clearly has a significant history with storm damage points throughout as highlighted within the tree survey notes and a comprehensive pruning history. The tree leans heavily to the south over the main entrance area with the crown cyclically reduced to manage its over-extended form to the south. The tree does have a relatively limited lifespan taking account age, location and species, and should be monitored annually and/or after extreme weather circumstances. This tree is rated as a ‘B.1’ category (BS5837: 2012) specimen with its reduced stace limitin the amenity value and form of the tree.

4.25 The works in this area will require for the implementation of a combined car park area and soft landscaped area beneath the trees in addition to a replacement driveway to the east of the trees, as described above. The proposed scheme ensures that car parking is limited to 2 cars parked beneath these trees in designated bays as opposed to the likely 8-10 cars currently parked beneath the trees in an angular and space efficient form; currently there is no soft or hard landscape infrastructure to prevent car parking directly to the base of each tree. The protection distances applicable for these trees are:

- Tree T12 - 4.0 metre RPA radius
- Tree T13 - 4.7 metre RPA radius
- Tree T14 - 3.1 metre RPA radius
- Tree T15 - 10.7 metre RPA radius

Therefore protective measures are required both directly beneath the trees in the verge area and to the east also for the driveway area.

4.26 As applied for trees T9-T11 the same requirements will be necessary for trees T12-T15 also incorporating the parking spaces. This will likely require the implementation of level changes and therefore close adherence to an AMS will be required to ensure that this will not detrimentally impact both the health and structural integrity of the trees. The main factors requiring design solutions are as follows:

- Removal of existing driveway without damaging tree roots
- De-compaction of exposed ground within the RPA of trees by process of *Terraventing*
- Supplement of soil level where eroded within this area
- Implementation of a replacement driveway using a load bearing cellular membrane without affecting current levels
- Use of a porous infill aggregate allowing for filtration of water and oxygen into the soil
- Implementation of related landscape works without level changes of soil within RPA

4.27 For this area whilst providing some car parking is required for convenient visitor access the amenity value of this area will be greatly improved with the car parking softened by planting and the trees further highlighted by this also. It will be important for tree T15 in particular to reduce the extent of hard landscaping (where the moped parking area currently exists) and car parking beneath the tree and to provide a permeable and natural surface.

Tree Protection Specifications

4.28 With the nature of development and landscaping works and associated construction site activities potentially encroaching within the root protection areas of trees T3 -T15 it is important that guidelines regarding the working method are adhered to in order to afford the full protection for these trees. The implementation of the proposed works can be achieved whilst retaining all trees within the area for the long term by taking into account of the following :

- Preparation of Arboricultural Method Statement (AMS) outlining a Tree Protection Plan (TPP) and working method
- Full Implementation of Arboricultural Method Statement

4.29 As guidance the tree protection will recommend tree protection broadly as follows:

- **The tree protection fencing / root protection area to be constructed as outlined with *an Arboricultural Method Statement (AMS)***

- **All construction activities must adhere to the tree protection guidelines as explained throughout AMS – 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.**

- **There should be no fires within the site**

4.30 As outlined within the AMS works will also require that in the case of tree roots being encountered for trees T3 - T15 the following should apply:

- **Excavations should firstly be applied with close adherence to the *Excavations and Root Severance Guidanc*e below (Section 4.23)**

- **Any exposed tree roots which are left exposed for any period of time greater than 1 day (during the dormant season) / 1 hour (during the growing season) should be covered with hessian sacks and kept moist at all times to avoid dessication**

4.31 The site notice as included in *Appendix D* summarising the above information will be required to be visible at all times for employees working within the site.

Excavations & Root Severance Guidance

4.32 The implementation of the proposed scheme must take account of the following guidelines which must be closely adhered to at all times and which will be outlined within the AMS.

- Any excavations which are required within the recommended ROOT PROTECTION AREA must be hand dug for the first 600mm below the existing ground level / hard landscape level 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.

Arboricultural Supervision

4.33 It is recommended that an Arboricultural Supervision Scheme is implemented to ensure that significant tree root damage or compaction of tree roots does not occur. 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 construction methods and storage areas in relation to trees

Summary

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

- **Preparation of Arboricultural Method Statement detailing full construction / working method and tree protection**
- **Full implementation of Tree Protection Specifications**
- **Full adherence to Tree Protection Area**
- **Comprehensive use of the Tree Protection Notice**
- **Implementation of Arboricultural Supervision Programme**

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 which are required (as specified during the construction process) should be sought prior to the commencement of works from the Local Authority, London Borough of Camden.

5.3 Tree Works Specification

T1 Cherry
Remove ivy from entire tree to further inspect base of tree and main stem
Remove deadwood

T2 Maple
No action required at present

T3 Maple
No action required at present

T4 Maple
No action required at present

T5 Maple
No action required at present

T6 Maple
No action required at present

T7 Maple
No action required at present

T8 Maple
No action required at present

T9 Maple
No action required at present

T10 Maple
No action required at present

T11 Maple
No action required at present

T12 Maple
No action required at present

T13 Maple
No action required at present

T14 Maple
No action required at present

T15 Willow
Crown reduce to previous reduction points leaving some soft furnishing growth where possible to provide a natural shape
Remove any remaining deadwood
Crown thin 15%
Crown lift to 5m including removal of all epicormic growth to this point

6. Appendices

Appendix A

Tree survey (BS5837:2012)

University College School
Frognal
Hampstead
London
NW3 6XH

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

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

University College School - Senior Branch, NW3 6XH
BS 5837:2012 Tree Schedule – 31st May 2016

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	Cherry	7	380 (e)	N: 3 E: 2 S: 3 W:3	M	F	F	B.1	10-15 years	Tree is heavily ivy clad so difficult to fully assess base and main stem - minor deadwood and lower crown to west overhangs Frognal	Remove ivy to ground level and inspect base / main stem further	4.5
T2	Maple	15	390	N: 4 E: 5 S: 4 W:3	M	F	G	C.1	20 years +	Good root flare at base but does have damage at the base on the western side to a height of approximately 1.6m from ground level - has occluded well. Main union at 2m is tight but appears structurally sound. Minor deadwood	No action required at present	4.7
T3	Maple	14	410	N: 5 E: 4 S: 3 W:5	M	G	G	B.1	15-20 years	This tree is structurally sound with the single stem breaking into 3 main stems at a height of 3m from ground level. Structurally sound at the base. Slight lean to the north in the main stem. Good canopy form in open space / area of school.	No action required at present	4.9
T4	Maple	14	370	N: 4 E: 4 S: 4 W:4	M	G	G	B.1	20 years +	Tree is generally structurally sound with good buttress roots at the base and a straight main stem in good condition. At crown break (approximately 4m from ground level) 2 main stems break with some included bark; union appears sound. Canopy mid/upper becoming over-extended.	No action required at present	4.4
T5	Maple	14	380	N: 4 E: 4 S: 4 W:5	M	G	G	B.1	20 years +	This tree has good buttress roots at the base, with a straight main stem to approx. 6m where 2 main stems have developed. Mature and balanced canopy has formed which has even crown density throughout	No action required at present	4.6

T6	Maple	11	290	N: 4 E: 4 S: 3 W:4	M	G	F	B.1	20 years +	Tree has fair vigour only likely because of 1m proximity to busy pedestrian pathway resulting in compaction of ground. Tree is structurally sound but is a smaller specimen compared to the other trees in the avenue which have been planted at the same time lacking girth size, height and spread.	No action required at present	3.5
T7	Maple	14	360	N: 4 E: 4 S: 3 W:4	M	G	G	B.1	20 years +	Tree has excellent straight main stem to crown break at 3-4m - structurally sound with good buttress roots. However, the tree has some included bark in the main union at a height of 4m from ground level. Minor deadwood throughout.	No action required at present	4.3
T8	Maple	14	360	N: 4 E: 4 S: 5 W:4	M	G	G	B.1	20 years +	This tree is structurally sound with good root flare. Storm damage previously evident has occluded well with strong vigour. Tree has more unruly habitat in mid and upper canopy than those surrounding but in good condition.	No action required at present	4.3
T9	Maple	13	410	N: 5 E: 5 S: 4 W:5	M	G	G	B.1	20 years +	Tree is generally structurally sound. Main stem has some damage at 1.0m on western side. Main union for crown break at 3m. The base of the tree is currently surrounded by the gravel area for parking cars. Many roots within a 1.5m radius of the tree are exposed and damaged. Crown of tree is broad and spreading comparatively to others in avenue.	No action required at present	4.9
T10	Maple	15	390	N: 4 E: 4 S: 4 W:5	M	G	G	B.1	20 years +	Tree leans slightly to the south being slightly unbalanced in this direction. Main unions at 3-6m generally sound. The base of the tree is surrounded by a gravel area for parking cars w/ many roots within a 1.5m radius of the tree are exposed and have been damaged.	No action required at present	4.7

T11	Maple	14	370	N: 4 E: 5 S: 4 W:4	M	G	G	B.1	20 years +	Main stem generally straight to crown break at 3-4m where 4 main stems originate. The base of the tree is surrounded by a gravel area for parking cars with many roots within a 1.5m radius of the tree are exposed and have been damaged. There is damage to the bark from the base to a height of 0.6m from ground level which has occluded well.	No action required at present	4.4
T12	Maple	13	330	N: 5 E: 4 S: 4 W:4	M	G	F	B.1	20 years +	Tree has a good straight main stem with buttress roots in tact. Main union at 3m with 3 stems originating. Compact but balanced crown shape, smaller than specimens not surrounded by car parking and sparse foliage in upper crown. Many roots within a 1.5m radius of the tree are exposed and have been damaged.	No action required at present	4.0
T13	Maple	12	320	N: 4 E: 5 S: 5 W:4	M	F	F	B.1	20 years +	Tree is generally structurally sound with a straight main stem to 3-5m where multiple lateral and vertical stems originate. As with neighboring trees the base of the tree is surrounded by a gravel area for parking cars. Many roots within a 1.5m radius of the tree are exposed and have been damaged. There is some decay to the main stem from a height of 0.1m to 0.7m from ground level; possibly from impact damage and has occluded well. Tree does show early signs of dieback in upper crown with declining vigour in mid \ lower crown	No action required at present	3.8

T14	Maple	12	260	N: 4 E: 3 S: 3 W:4	M	G	F	B.1	20 years +	Tree is structurally sound but is a smaller specimen than those surrounding. The base of the tree is surrounded by a gravel area for parking cars with some root damage evident. This tree has low vigour due to the proximity to the adjacent Willow and likely compaction / root severance from the installation of moped parking area directly adjacent. The crown of tree is generally structurally sound. Tree has smallest stem of avenue.	No action required at present	3.1
T15	Willow	13	890	N: 4 E: 5 S: 8 W:5	M	F	G	B.1	15-20 years	Tree is generally structurally sound at the base although there is increased there are significant ground works surrounding. The tree has a significant lean to the south with good compensating buttress roots. There is one main stem with a 1st lateral branch at a height of 2m from ground level. At the main crown break at a height of 4m from ground level 2 main stems originate. The western stem was previously crown reduced at 9m to reduce end weighting within upper crown. The eastern stem was previously reduced at 9-11m. The tree was last reduced 2 years ago to previous reduction points.	Crown reduce to previous reduction points retaining some oft furnishing growth to balance. Crown thin 15% and remove any remaining deadwood. Crown lift & remove all epicormic growth to 5m	10.7

Appendix B

Existing & Proposed Site Plan including Tree Protection Area / Plan:

University College School
Senior School Branch
Frognal
Hampstead
London
NW3 6XH

Plans supplied:

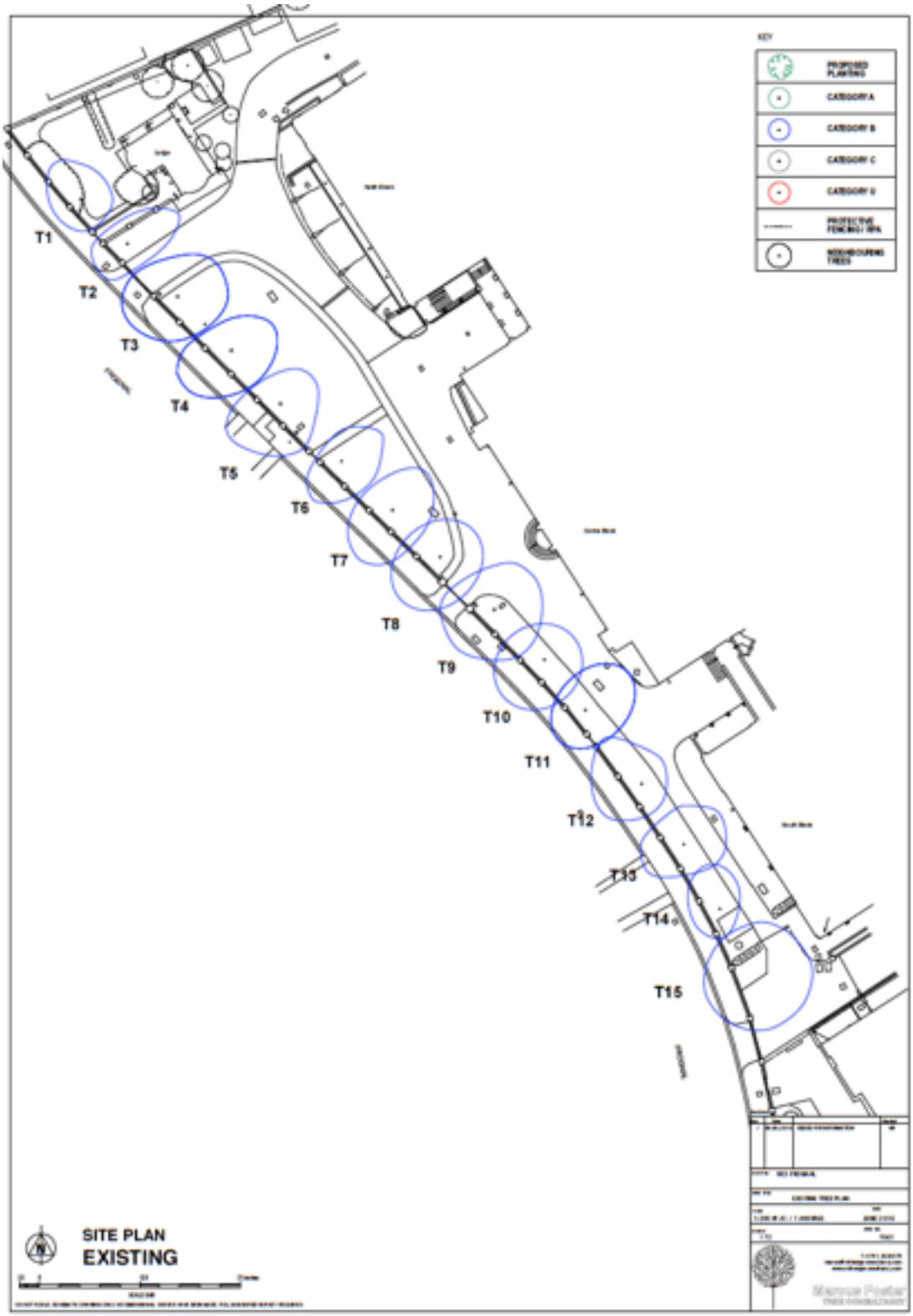
Drawing No:
Katy Staton Landscape Architecture

Date:
May 2015

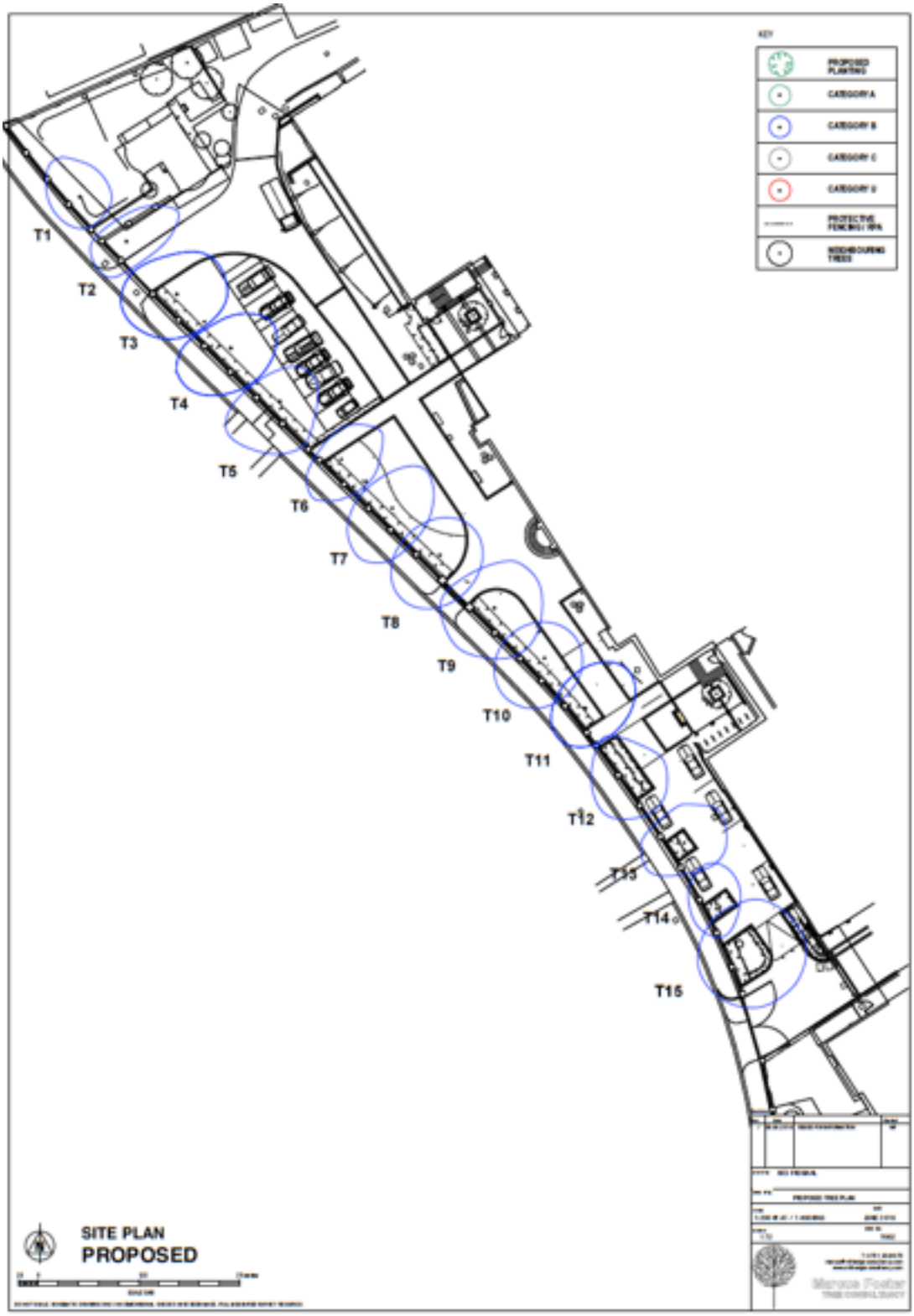
Tree Canopy Colour Key: BS5837: 2012 (see *Section 2.6*)

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

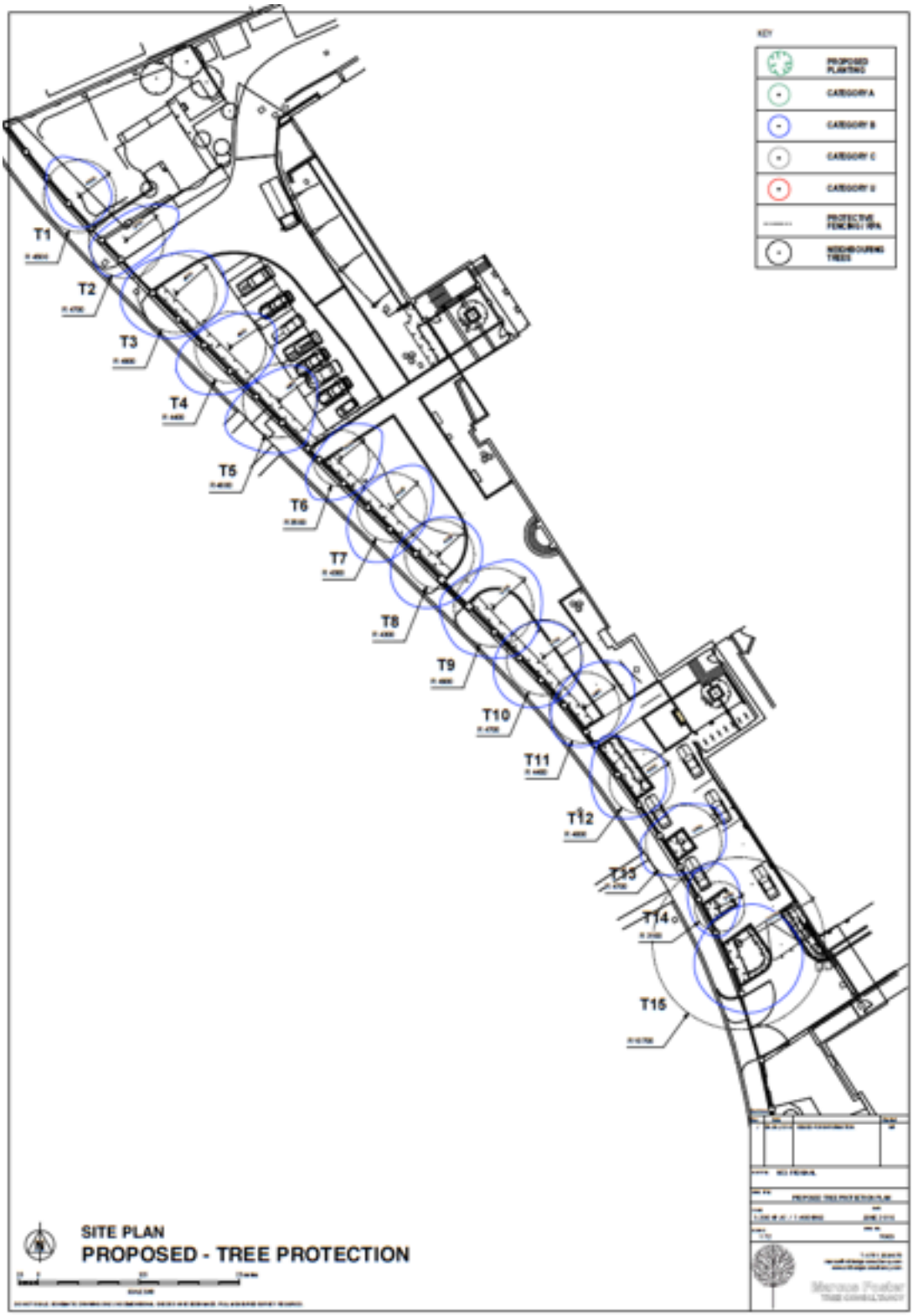
Appendix B.1: Existing Tree Survey Site Plan: Senior Branch, UCS



Appendix B.2: Proposed Tree Survey Site Plan: Senior Branch, UCS



Appendix B.3 Proposed Tree Survey Site Plan w/ Tree Protection Areas: Senior Branch, UCS



Appendix C

Site Photographs for:

University College School
Senior School Branch
Frognal
Hampstead
London
NW3 6XH

**** Taken 31st May 2016***

C.1 Photograph of trees T1 - T7, located on the boundary with Frognal, Senior Branch, University College School, as viewed in a north westerly direction

C.2 Photograph of trees T1 - T5, located on the boundary with Frognal, Senior Branch, University College School, as viewed in a north westerly direction

C.3 Photograph of trees T3 - T10, located on the boundary with Frognal, Senior Branch, University College School, as viewed in a southerly direction

C.4 Photograph of trees T6 & T7, located on the boundary with Frognal, Senior Branch, University College School, at existing vehicular exit gates, as viewed in a westerly direction

C.5 Photograph of trees T9 - T15, located on the boundary with Frognal, Senior Branch, University College School, as viewed in a southerly direction

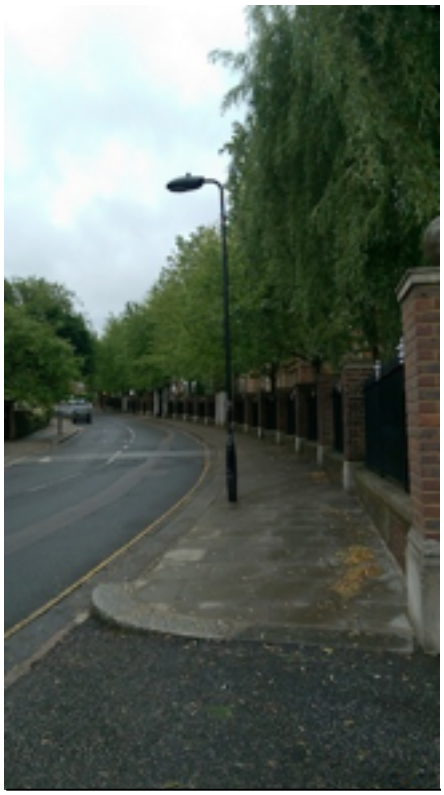
C.6 Photograph of trees T12 - T15, located on the boundary with Frognal, Senior Branch, University College School, as viewed in a southerly direction

C.7 Photograph of tree T9, located on the boundary with Frognal, Senior Branch, University College School, as viewed in a westerly direction

C.8 Photograph of trees T9 - T15, located on the boundary with Frognal, Senior Branch, University College School, as viewed in a northerly direction

C.9 Photograph of tree T15, as viewed in a westerly direction

C.10 Photograph of Frognal / UCS boundary streetscape, as viewed in a northerly direction from the public highwayy at pedestrian and vehicular entrance

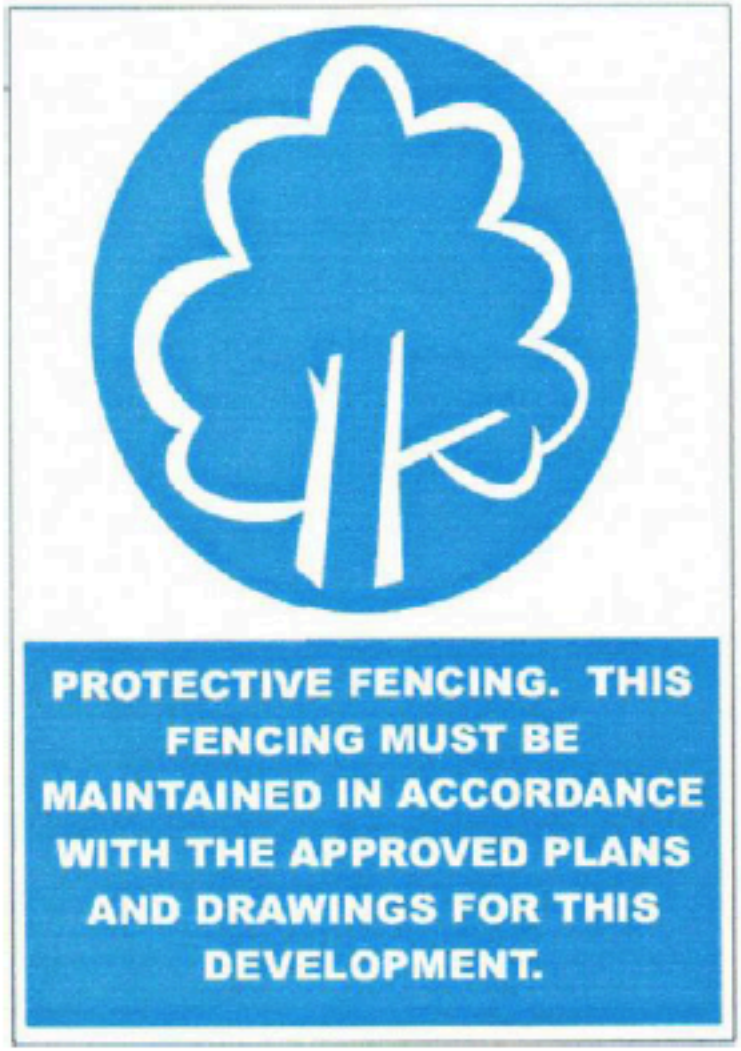


Appendix D:
Site Tree Protection Notice

Tree Protection Notice
(BS5837: 2012):

University College School
Senior School Branch
Frognal
Hampstead
London
NW3 6XH

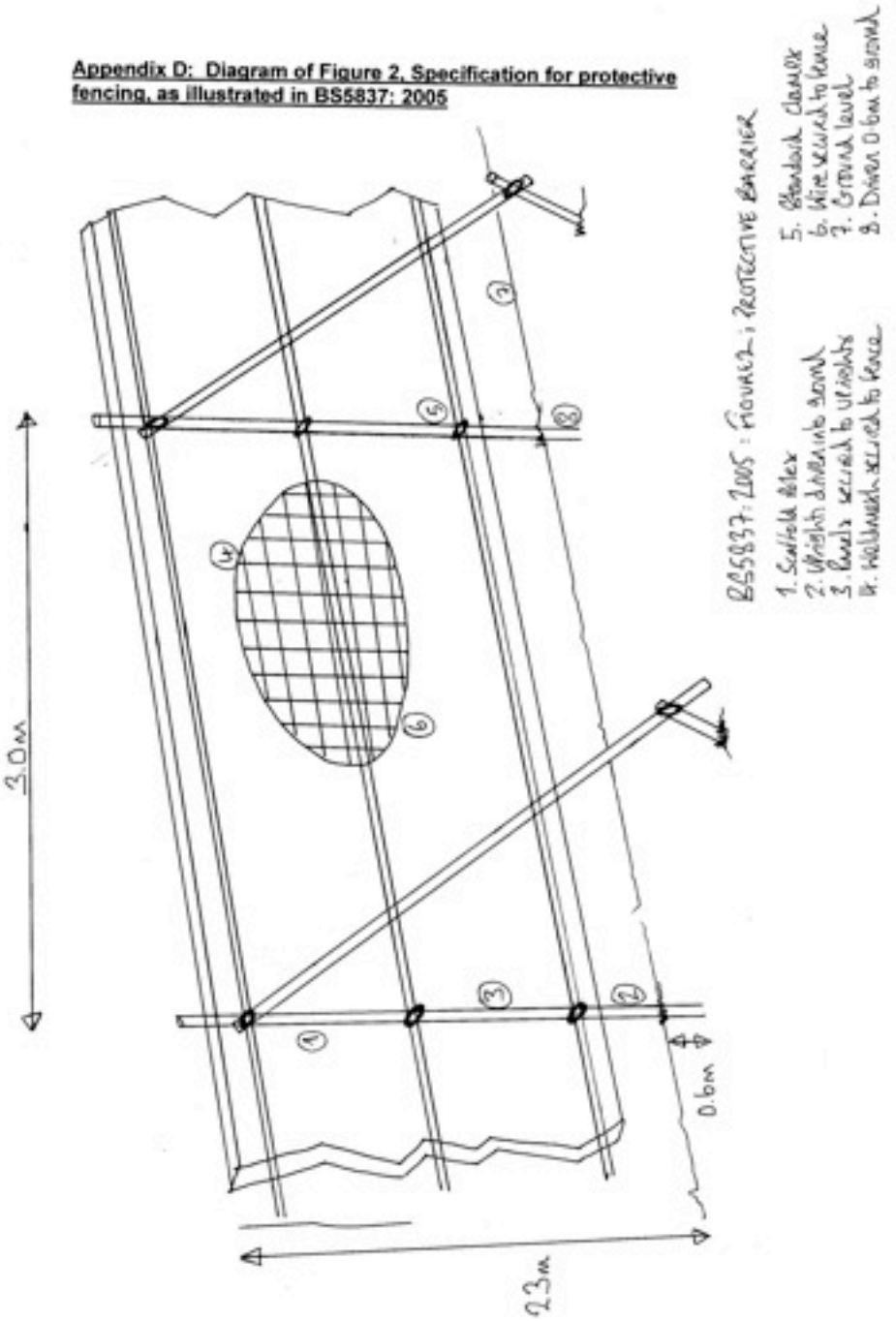
Notice to be clearly shown on site
AT ALL TIMES ON PROTECTIVE FENCING



Marcus Foster BA (Hons) NDArb. Tech.Cert (ArborA) EGS.Dip

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: 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)