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Arboricultural Method Statement (BS5837: 2012)

Site details:

Senior School
University College School
Frognal
London
NW3 6XH

Client details:

University College School
Frognal
London
NW3 XH

Date of Report:

11th July 2017

Report Prepared by:

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1. Introduction

1.1 This report has been commissioned by Katy Staton Landscape Architecture on behalf of University College School, Frognal, London, NW3 6XH, to provide an Arboricultutral Method Statement for the trees being retained as highlighted within the proposed development at Senior Branch, University College School, Frognal, London, NW3.

1.2 The Arboricultural Impact Assessment prepared for the proposed development at this site (*Marcus Foster Arboricultural Design & Consultancy,* June 2016) highlighted root protection areas and trees affected by any proposed development.

1.3 The tree survey, report and recommendations included 15 trees surveyed within the frontage of the site (T1-T15). The aim of this report is to ensure those trees retained are preserved; all 15 trees can be retained and comprehensively protected during the proposed redevelopment of the site by clearly setting out tree protection methods, construction techniques and working practices. This report provides this information; principles that are approved and enforced by the local planning authority.

1.4 It should be noted that this is a site specific Arboricultural Method Statement produced solely for the physical protection of those trees identified on the plan within the report and is not relevant to any other site or situation. The Arboricultural Method Statement (AMS) has been prepared for the 2 x phases for which the development will be undertaken:

Phase 1 Tree Protection Plan - T004
Phase 2 Tree Protection Plan - T005

1.5 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. 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.

1.6 The following documentation has been referred to relating to the trees and proposed development for the compilation of this report:

Katy Staton Landscape Architecture - L01/RevC/Jan17
- L035/RevB/Apr17

1.7 The Method Statement must be made available to all contractors and operatives on the site during the construction process so that they fully understand the importance of the measures set out for tree protection.

2. Summary

2.1 There are 15 trees located within this site (trees T1-T15), which currently comprises the school frontage and south western boundary of University College School, Frognal, London, NW3. The implementation of the proposed development can be achieved whilst retaining trees **T1 - T15** for the long term by taking into account all the above points and in addition to the following which must be adhered to at all times:

2.2 For the trees proposed for retention the document will give site specific instructions to protect these trees. The methods are set out in a logical and coherent sequence for ease of understanding and implementation. The operations that may be required in order to ensure comprehensive tree protection include for PHASE 1 and PHASE 2 of the development are summarised in respective *Section 5 & 6* and this report provides arboricultural solutions for these.

2.3 The Tree Protection Plan T004/5 will indicate retained trees, trees to be retained and precise locations of protective barriers and ground protection where applicable.

2.4 This document and the associated Tree Protection Plan will be endorsed by planning conditions, agreement or obligation as appropriate.

3. Sequence of Events

3.1 The following sequences are governed by operational constraints and are subject to change. The consulting arboriculturist must be noted of any changes to this schedule prior to implementation where trees / tree protection measures as exiting are likely to be affected. For Phase 1 which incorporates works highlighted in TPP (Tree Protection Plan) - T004 the following stages are relevant:

3.2 *Pre-development stage*

a) Pre Contract / Commencement site meeting between client and developers architect and Local Planning Authority (if deemed appropriate). The meeting should take place before any development activity begins to confirm the timing and implementation of the agreed tree works and tree protection measures including site storage and any pertinent time scheduled for site operators.

b) Implementation of tree works as specified - *Section 9*

c) Tree protection measures installed as specified - T004 / 5

d) Site to be inspected by consulting arboriculturist.

3.3 *Development Stage*

e) This stage is subject to site monitoring visits by the consulting arboriculturist at intervals as agreed at the pre-commencement site meeting. These visits are to ensure that the agreed protection measures are functional and correctly achieving their purpose.

f) Arboricultural supervision is to be carried out at all crucial stages throughout the development process to ensure detailed tasks are carried out as per the approved methodology and all objectives met.

g) The local authority arboriculturist will have free access to the site and forward any recommendations directly to the consulting arboriculturist.

3.4 *Final Development Stage*

h) For dismantling Tree Protection Fencing a minimum of seven days notice will be given to the Local Authority prior to the works.

i) All landscaping works once the protective fencing has been removed will avoid soil re-grading and disturbance within the original Tree Protection Area. No soil levels will be altered after the protection barriers have been removed.

4. Arboricultural Method Statement Summary

4.1 The following construction site activities and will require implementation within the recommended root protection areas of trees T1-T15

-Initial construction works including removal of existing surface
-Use of heavy plant machinery
-Use of light construction site machinery
-Storage of machinery and site materials
-General vehicular and pedestrian traffic within construction site
-Re-surfacing works incorporating hard and soft landscape amendments
-Final landscaping works

4.2 Therefore a solution is required to ensure that damage is not caused to the root plates or canopies of these trees which would result in a detrimental effect on both the health and structural integrity of the trees.

4.3 The protection measures are required for the 2 phases of the development which incorporate the following works as follows:

Phase 1 Landscape Works

- Installation of railing and gate to rear of site
- North Courtyard landscape works
- South Courtyard landscape works
- Widening of vehicle gates including adjustments to drainage and railings adjacent
- Sliding vehicular gate and pedestrian gate and associated planters

Phase 2 Landscape Works (applicable at a later date)

- General landscape Works to Frognal boundary / school frontage

4.4 For each phase a separate Tree Protection Plan is applicable as T004 (Phase 1) and T005 (Phase 2)

5. Tree Protection Specifications - PHASE 1 Works

5.1 The implementation of the proposed development can be achieved whilst retaining trees **T1 - T15** for the long term by taking into account all methods of protection as outlined below and within the Phase 1 Tree Protection Plan - see *Appendix B.2*

Tree Works

5.2 Tree works should be carried out to tree T15 (Willow) as specified within Tree Work Recommendations - *Section 8* to ensure damage does not occur to the lower canopy of this tree with access from construction site associated vehicles.

Tree Protection Fencing

5.3 Protection of the trees highlighted for retention should be implemented as explained below. These measures should remain for the entire construction process in order to provide a comprehensive barrier from the trees.

- The areas surrounding the trees should be surrounded by protective fencing as outlined in *TPP - T004* (*Appendix B.1)*

- The protective fencing used should be suitable for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree.

- This barrier should remain rigid and complete during the entire construction process. Protection is not required surrounding the whole tree as the remainder of the root plate will remain unaffected by virtue of being located within the neighbouring properties

- The type of fencing used should be that as described in the current British Standard 5837: 2012 ‘Recommendations for trees in relation to construction’. This consists of a scaffold framework as outlined in the British Standard, comprising a vertical and horizontal framework, well braced to resist impacts, with the vertical tubes spaced at a maximum of 3m. A weldmesh panel should be securely fixed with wire or scaffold clamps to the framework. The specifications of this fencing have been outlined in Appendix E along with an example of basel shuttering which would also be suitable for this location.

- Once this Exclusion Zone has been protected by fencing all weather notices as included in *Appendix E* should be put onto the barrier warning that the area is a construction exclusion zone.

- No heavy plant should come into contact with any part of the lower - mid – upper canopies of the trees.

- No building materials or chemicals are stored within the tree protection zone as indicated on the Tree Protection Plan.

- There should be no fires within this site.

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

Protection of ground during construction works within RPA - Tree T15 (and trees T12-T14 where applicable)

5.5 In order to implement works within Phase 1 there are works within within the RPA of tree T15 (in areas of existing hard landscaping) which require protective measures. For works in this area which incorporate the widening of vehicle gates including adjustments to drainage and railings adjacent all excavations should be hand dug and follow the guidelines as below:

5.5.1 Removal of existing hard & soft landscape within RPA

- All works undertaken within the exposed RPA should be carried out by hand where possible with close adherence to Excavations & Root Severance guidance below.

- For removal of soft landscape / grass layer this should be undertaken using hand tools only without amendments to level existing levels

- The 'breaking up' of any hard landscape surface may be carried out by low impact pneumatic tools only or by hand where possible - not breakers attached to diggers or JCB's, unless required due to the nature of the surface and if so, only when agreed with the consulting arboriculturist / LA Tree Officer. Removal of the surface must occur in 2 metre strips working from the undisturbed surface inwards within the hard landscaping. This will enable any roots exposed to be covered with a high quality fresh topsoil to avoid dessication and the ground to be 'made good' avoiding exposure of the root system and potential compaction from construction workers.

- Where practical, removal of debris should be carried out by hand. Should a mechanical means of removal be required due to the size of debris the stipulation is that a maximum 1.5 tonne digger may be used provided that when picking up the debris, no tines / teeth from the bucket will cause damage to the underlying soil surface. Once manageable sized debris has been achieved hand removal should be undertaken. It is important to note that where the digger is used for such a process within the specified Tree Protection Area, it should only travel / work from the undisturbed hard surface, clearing debris as it progresses outwards from the Tree Protection Area.

- The storage and disposal of all spoil / arisings must be carried out outside of the RPA of any trees within the site.

5.5.2 Excavations & Root Severance Guidance within RPA of T15

- The 'breaking up' of any surface may be carried out by low impact pneumatic tools only or by hand where possible - not breakers attached to diggers or JCB's, unless required due to the nature of the surface and if so, only when agreed with the consulting arboriculturist / LA Tree Officer

- 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.

5.6 Other than where excavations are required all existing tarmac is to be retained as a protection surface from both the machinery and associated construction site activities within the RPA of tree T15.

Storage of Construction site related materials, plant and spoil

5.7 The site storage required for the implementation of Phase 1 can be sited within any area which is located outside of the root protection area of all trees T1-T15; obviously with the large nature of the site, storage for Phase 1 is likely to also be undertaken within different areas of the site unaffected by the trees.

5.8 Any site storage outside of this area and within the RPA is not permitted and would require consent in writing from the Local Authority before being implemented.

Arboricultural Supervision

5.9 Marcus Foster (Arboricultural Design & Consultancy) has been appointed to carry out all arboricultural supervision for this scheme. In addition to attending site, *Site Meeting Notes* will be prepared to provide a summary of site conditions, therefore highlighting any potential problems or solutions required in order to ensure close adherence to the AMS is provided at all times.

5.10 It is recommended that this 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

5.11 In addition to the implementation of arboricultural supervision as above, the Local Authority Tree Officer will have open site access at any point during the development to undertake inspections as deemed appropriate

6. Tree Protection Specifications - PHASE 2

6.1 The implementation of the proposed development can be achieved whilst retaining trees **T1 - T15** for the long term by taking into account all methods of protection as outlined below and within the Phase 2 Tree Protection Plan - see *Appendix B.3.*

Tree Works

6.2 No tree works are recommended prior to the commencement of these works as comprehensive crown lifting and thinning works have been carried out within the past 2 years. However if the works for phase 2 have not commenced by March 2018 an updated tree work specification should be applied to the development.

Tree Protection Fencing

6.3 Protection of the trees highlighted for retention (all trees) should be implemented as explained below. These measures should remain for the entire construction process in order to provide a comprehensive barrier from the trees.

- The areas surrounding the trees should be surrounded by protective fencing as outlined in *TPP* - T005 (*Appendix B.2*)

- The protective fencing used should be suitable for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree.

- This barrier should remain rigid and complete during the entire construction process. Protection is not required surrounding the whole tree as the remainder of the root plate will remain unaffected by virtue of being located within the neighbouring properties

- The type of fencing used should be that as described in the current British Standard 5837: 2012 ‘Recommendations for trees in relation to construction’. This consists of a scaffold framework as outlined in the British Standard, comprising a vertical and horizontal framework, well braced to resist impacts, with the vertical tubes spaced at a maximum of 3m. A weldmesh panel should be securely fixed with wire or scaffold clamps to the framework. The specifications of this fencing have been outlined in Appendix E along with an example of basal shuttering which would also be suitable for this location where the above panels do not suit the dimensions required for implementation.

- Once this Exclusion Zone has been protected by fencing all weather notices as included in *Appendix E* should be put onto the barrier warning that the area is a construction exclusion zone.

- No heavy plant should come into contact with any part of the lower - mid – upper canopies of the trees.

- No building materials or chemicals are stored within the tree protection zone as indicated on the Tree Protection Plan.

- There should be no fires within this site.

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

6.5 If the area around the retained trees is to be left following the removal of any existing hard or soft landscape surface before a new surface is laid or soft landscaping implemented, then the line of protective fencing must be correctly re-established immediately after the necessary hard surface removal works have been completed.

Protection of ground during construction works - Trees T1 - T15

6.6 In order to implement works within Phase 2 there are works within the RPA of trees T1 - T15 (in areas of existing hard and soft landscaping) which require protective measures. For works in this area which incorporate the re-configuration and re-landscaping of the school frontage / western boundary with Frognal the following working methods will require protective measures in relation to the trees:

6.6.1 Removal of existing hard & soft landscape within RPA

- All works undertaken within the exposed RPA should be carried out by hand where possible with close adherence to Excavations & Root Severance guidance below.

- For removal of soft landscape / grass layer this should be undertaken using hand tools only without amendments to level existing levels

- The ‘breaking up’ of any hard landscape surface may be carried out by low impact pneumatic tools only or by hand where possible - not breakers attached to diggers or JCB’s, unless required due to the nature of the surface and if so, only when agreed with the consulting arboriculturist / LA Tree Officer. Removal of the surface must occur in 2 metre strips working from the undisturbed surface inwards within the hard landscaping. This will enable any roots exposed to be covered with a high quality fresh topsoil to avoid dessication and the ground to be ‘made good’ avoiding exposure of the root system and potential compaction from construction workers.

- Where practical, removal of debris should be carried out by hand. Should a mechanical means of removal be required due to the size of debris the stipulation is that a maximum 1.5 tonne digger may be used provided that when picking up the debris, no tines / teeth from the

bucket will cause damage to the underlying soil surface. Once manageable sized debris has been achieved hand removal should be undertaken. It is important to note that where the digger is used for such a process within the specified Tree Protection Area, it should only travel / work from the undisturbed hard surface, clearing debris as it progresses outwards from the Tree Protection Area.

- The storage and disposal of all spoil / arisings must be carried out outside of the RPA of any trees within the site.

6.6.2 Excavations & Root Severance Guidance within RPA of T1-T15

- 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.

6.6.3 Ground preparation works in close proximity / within RPA of trees T1-T15 for final landscaping

- The entire RPA of trees T1-T15 within the grounds where exposed for hard and soft landscape works should be subject to terraventing prior to the installation of the soft or hard landscape surface.

6.6.4 Implementation of hard landscape works within RPA of T1-T15

- All works carried out within the RPA of trees T1-T15 should closely adhere to specifications outlined by Katy Staton Landscape Architecture for no dig works combined with all tree protection guidelines highlighted within this report. These are as follows:

Installation of Cellular Membrane for even load spreading within RPA

For the area highlighted within the Tree Protection Plan (*Appendix B*) within the RPA of retained trees the following ground protection (or similar) should be installed where vehicular access is required on the final hard landscape surface:

Terram Geocell 22/20 – 200mm depth / 220mm cell diameter

This product should be installed to guidelines as highlighted within *Terram Cellular Confinement System – For the Protection of Tree Roots* guidelines as issued by the manufacturer and also as highlighted within *Arboricultural Practice Note 12: Driveways Close to Trees (APN12)* as provided by the Arboricultural Advisory and Information Service (2007)

The cellular membrane should be infilled with a granular infill with a hard wearing / coarse material finish provided to allow for plant / machinery to safely travel within the area. It is imperative that no storage of soil / chemicals or heavy plant should be carried out within this area and that the area should be used for the transition of vehicular and pedestrian traffic only. The material recommended is a Type 3 aggregate.

- By undertaking works to the above specifications no excavations / root severance and limited ground compaction will occur. Where installation of this system of ground protection a suitable no dig construction method must be installed to similar specifications or if otherwise to be agreed in writing with the Local Authority

6.6.5 Soft Landscape works within RPA of trees T1-T15

- The planting / soft landscape works must not result in significant level changes of soil surrounding the main stems of trees to ensure that site conditions in relation to the health of the trees is not adversely impacted.

- Soluble seaweed fertiliser feed should be applied prior to works and on completion if works are carried out within the growing season (April - October) to promote root growth

- Addition of a 2.5-5.0mm layer of fresh loam / sharp sand topsoil dressing with mycorrhizal fungi addition to aid root growth is permissable. With this application underlying soil may be levelled where required, assuming the natural soil level is not affected, by the addition of this topsoil to BS3882:1984 standard. Hand tools only will be used for any levelling works as this will ensure no direct damage is caused to exposed roots.

- For any of the above works, in addition to general planting works should roots over 25mm diameter have grown above the final soil level and become a hindrance to final surface installation their removal can only be carried out under supervision / as specified within Excavations & Root Severance guidance as highlighted within this report

- Any irrigation system installed to aid the establishment of the plants installed within the landscape scheme should be temporary (maximum 2 growing seasons) to ensure that an excessive watering programme will not impact detrimentally on the health of the trees

Storage of Construction site related materials, plant and spoil

6.7 A designated storage area has been highlighted within the TPP - Phase 2 (Appendix B.2) which is located outside of the root protection area of all trees T1-T15.

6.8 Any site storage outside of this area and within the RPA is not permitted and would require consent in writing from the Local Authority before being implemented.

Arboricultural Supervision

6.9 Marcus Foster (Arboricultural Design & Consultancy) has been appointed to carry out all arboricultural supervision for this scheme. In addition to attending site, *Site Meeting Notes* will be prepared to provide a summary of site conditions, therefore highlighting any potential problems or solutions required in order to ensure close adherence to the AMS is provided at all times.

6.10 It is recommended that this 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

6.11 In addition to the implementation of arboricultural supervision as above, the Local Authority Tree Officer will have open site access at any point during the development to undertake inspections as deemed appropriate

7. Installation of Utility Services

7.1 If for any reason installation of utility services within the Root Protection Area of trees T1 - T15 is required other than works specified within the proposed development, the consulting arboriculturist and Local Authority must be notified prior to any ground tree protection / fencing and barrier removal and the following details adhered to:

- Trenching for the installation of underground services severs any tree roots present and can have a detrimental impact on the structural integrity of affected trees. When services are required to pass through a Tree Protection Area, detailed plans showing proposed routes should be drawn up in conjunction with the consulting arboriculturist to avoid long term health and anchorage problems for related trees.

- The preferable method for trenching is to use a ‘Air Spade’ or similar to remove soil with compressed air, therefore minimising damage to roots in the process

7.2 Further reference can be made to National Joint Utilities Group (Volume 4, Issue 2) for guidance but any approach must be approved by both the consulting arboriculturist and Local Authority tree officer.

8. Communication, Monitoring and Compliance

8.1 In ensuring that all Tree Protections Specifications as highlighted within this method statement are closely adhered to at all times, it is important to set out for the long term of the development, communication details for key individuals and tasks that require monitoring.

8.2 The key individuals appointed for advising and complying with Tree Protection specifications must adhere to the following at all times:

- Relevant parties / key individuals must be advised of any changes in personnel or contractor during the development process.

- Relevant parties / key individuals must be responsible for relaying information regarding tree protection within work force where deemed applicable / relevant

8.3 Once the Tree Protection Fencing has been installed and for the remainder of the development until the final stage as highlighted in *Section 3: Sequence of Events* above, it must be considered as sacrosanct and should not be removed or altered without prior written consent from the Local Authority tree officer and/or consulting arboriculturist.

8.4 The local authority arboriculturist will have free access to the site and forward any concerns / recommendations directly to the consulting arboriculturist.

9. Tree Works Schedule

9.1 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.

9.2 The works specified below are recommended to be carried out prior to the commencement of development site works

PHASE 1

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% and Crown lift to 5m including removal of all epicormic growth to this point

PHASE 2

T1 Cherry
No action required at present

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

10. Appendices

Appendix A

Tree survey (BS5837: 2012):

Senior Branch
University College School
Frognal
Hampstead
London
NW3 6XH

Colour Key: BS5837: 2012

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

As included within *Arboricultural Survey & Impact Assessment – June 2016*
As prepared by
Marcus Foster – Arboricultural Design & Consultancy

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 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 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 damaged.	No action required at present	4
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 straight main stem to 3-5m where multiple lateral and vertical stems originate;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 damaged. There is some decay to the main stem from a height of 0.1m to 0.7m from ground level; possibly from impact 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

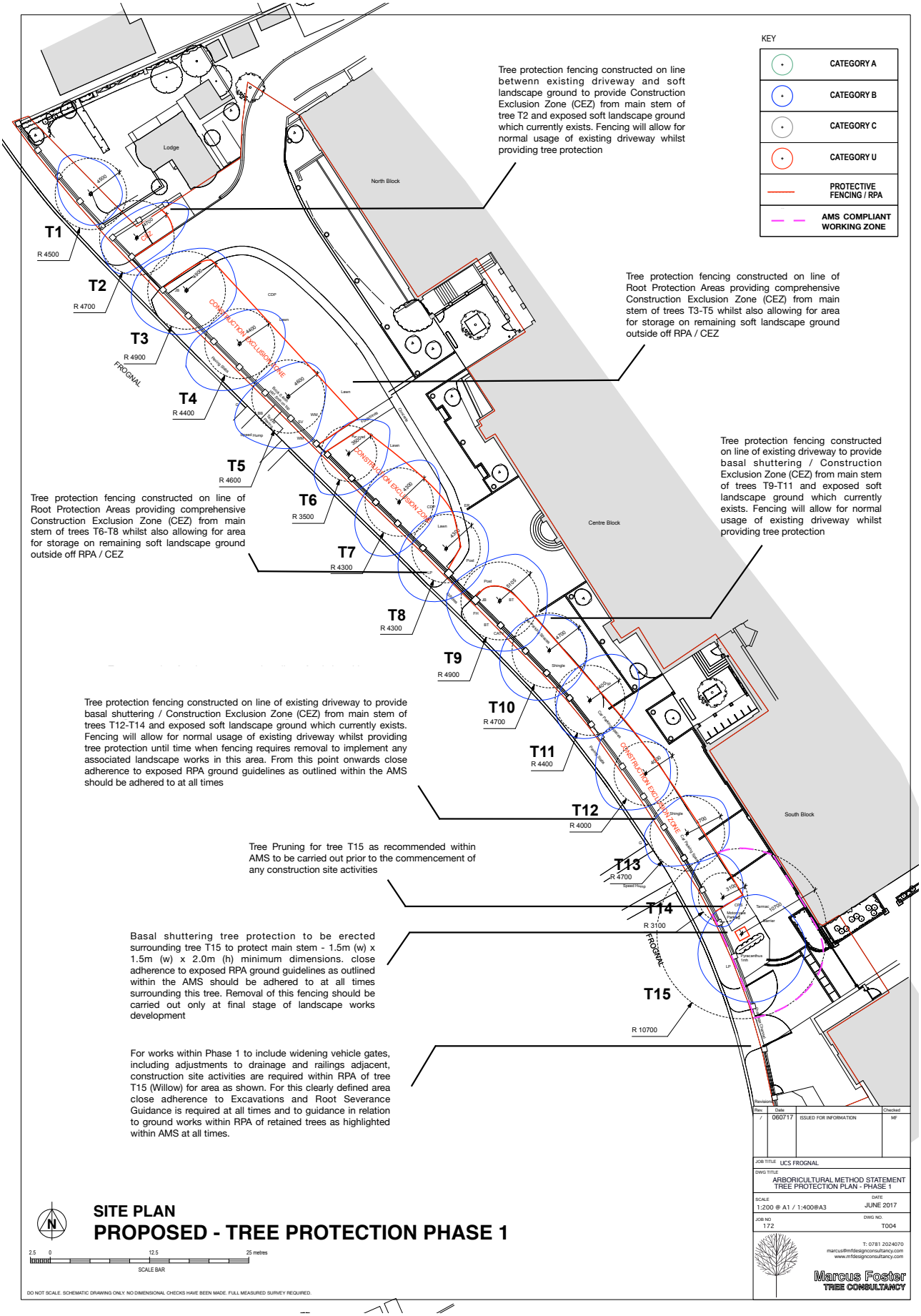
T004 & T005 - PHASE 1 & 2
TREE PROTECTION PLAN (TPP)

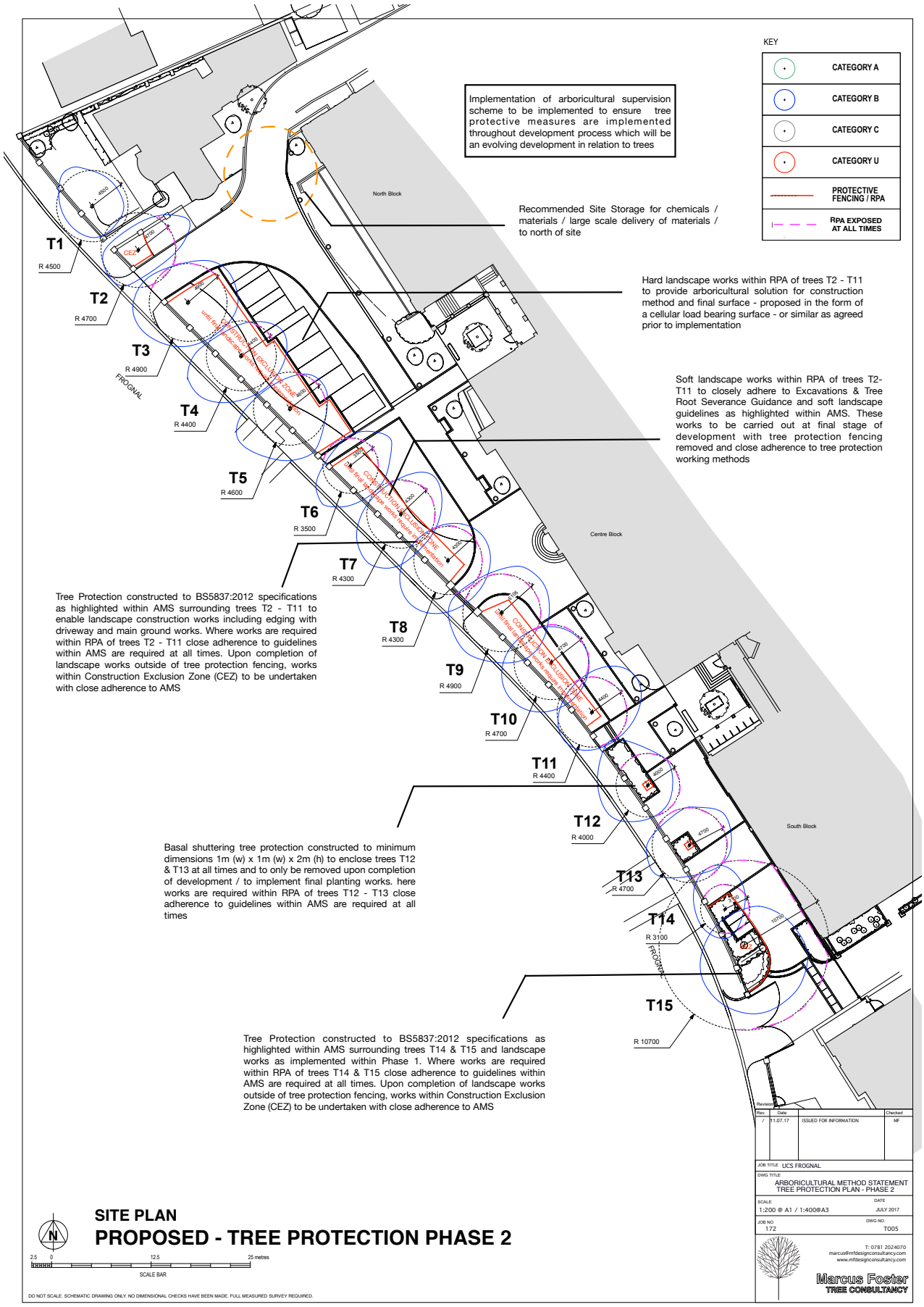
Senior Branch
University College School
Frognal
Hampstead
London
NW3 6XH

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

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

Note: Do not scale from drawings within this report - separate PDF provided


KEY
CATEGORY A
CATEGORY B
CATEGORY C
CATEGORY U
PROTECTIVE FENCING / RPA
AMS COMPLIANT WORKING ZONE
Tree protection fencing constructed on line betwenn existing driveway and soft landscape ground to provide Construction Exclusion Zone (CEZ) from main stem of tree T2 and exposed soft landscape ground which currently exists. Fencing will allow for normal usage of existing driveway whilst providing tree protection
Tree protection fencing constructed on line of Root Protection Areas providing comprehensive Construction Exclusion Zone (CEZ) from main stem of trees T3-T5 whilst also allowing for area for storage on remaining soft landscape ground outside off RPA / CEZ
Tree protection fencing constructed on line of existing driveway to provide basal shuttering / Construction Exclusion Zone (CEZ) from main stem of trees T9-T11 and exposed soft landscape ground which currently exists. Fencing will allow for normal usage of existing driveway whilst providing tree protection
Tree protection fencing constructed on line of Root Protection Areas providing comprehensive Construction Exclusion Zone (CEZ) from main stem of trees T6-T8 whilst also allowing for area for storage on remaining soft landscape ground outside off RPA / CEZ
Tree protection fencing constructed on line of existing driveway to provide basal shuttering / Construction Exclusion Zone (CEZ) from main stem of trees T12-T14 and exposed soft landscape ground which currently exists. Fencing will allow for normal usage of existing driveway whilst providing tree protection until time when fencing requires removal to implement any associated landscape works in this area. From this point onwards close adherence to exposed RPA ground guidelines as outlined within the AMS should be adhered to at all times
Tree Pruning for tree T15 as recommended within AMS to be carried out prior to the commencement of any construction site activities
Basal shuttering tree protection to be erected surrounding tree T15 to protect main stem - 1.5m (w) x 1.5m (w) x 2.0m (h) minimum dimensions. close adherence to exposed RPA ground guidelines as outlined within the AMS should be adhered to at all times surrounding this tree. Removal of this fencing should be carried out only at final stage of landscape works development
For works within Phase 1 to include widening vehicle gates, including adjustments to drainage and railings adjacent, construction site activities are required within RPA of tree T15 (Willow) for area as shown. For this clearly defined area close adherence to Excavations and Root Severance Guidance is required at all times and to guidance in relation to ground works within RPA of retained trees as highlighted within AMS at all times.
T1 R 4500
T2 R 4700
T3 R 4900
T4 R 4400
T5 R 4600
T6 R 3500
T7 R 4300
T8 R 4300
T9 R 4900
T10 R 4700
T11 R 4400
T12 R 4000
T13 R 4700
T14 R 3100
T15 R 10700
FROGNAL
CONSTRUCTION EXCLUSION ZONE
North Block
Centre Block
South Block
Lodge
SITE PLAN
PROPOSED - TREE PROTECTION PHASE 1
SCALE BAR
DO NOT SCALE. SCHEMATIC DRAWING ONLY. NO DIMENSIONAL CHECKS HAVE BEEN MADE. FULL MEASURED SURVEY REQUIRED.
Rev / Date 060717 / ISSUED FOR INFORMATION / Checked MF
JOB TITLE UCS FROGNAL
DWG TITLE ARBORICULTURAL METHOD STATEMENT TREE PROTECTION PLAN - PHASE 1
SCALE 1:200 @ A1 / 1:400@A3
DATE JUNE 2017
JOB NO 172
DWG NO. T004
T: 0781 2024070
marcus@mfdesignconsultancy.com
www.mfdesignconsultancy.com
Marcus Foster
TREE CONSULTANCY


KEY
CATEGORY A
CATEGORY B
CATEGORY C
CATEGORY U
PROTECTIVE FENCING / RPA
RPA EXPOSED AT ALL TIMES
Implementation of arboricultural supervision scheme to be implemented to ensure tree protective measures are implemented throughout development process which will be an evolving development in relation to trees
Recommended Site Storage for chemicals / materials / large scale delivery of materials / to north of site
Hard landscape works within RPA of trees T2 - T11 to provide arboricultural solution for construction method and final surface - proposed in the form of a cellular load bearing surface - or similar as agreed prior to implementation
Soft landscape works within RPA of trees T2-T11 to closely adhere to Excavations & Tree Root Severance Guidance and soft landscape guidelines as highlighted within AMS. These works to be carried out at final stage of development with tree protection fencing removed and close adherence to tree protection working methods
Tree Protection constructed to BS5837:2012 specifications as highlighted within AMS surrounding trees T2 - T11 to enable landscape construction works including edging with driveway and main ground works. Where works are required within RPA of trees T2 - T11 close adherence to guidelines within AMS are required at all times. Upon completion of landscape works outside of tree protection fencing, works within Construction Exclusion Zone (CEZ) to be undertaken with close adherence to AMS
Basal shuttering tree protection constructed to minimum dimensions 1m (w) x 1m (w) x 2m (h) to enclose trees T12 & T13 at all times and to only be removed upon completion of development / to implement final planting works. here works are required within RPA of trees T12 - T13 close adherence to guidelines within AMS are required at all times
Tree Protection constructed to BS5837:2012 specifications as highlighted within AMS surrounding trees T14 & T15 and landscape works as implemented within Phase 1. Where works are required within RPA of trees T14 & T15 close adherence to guidelines within AMS are required at all times. Upon completion of landscape works outside of tree protection fencing, works within Construction Exclusion Zone (CEZ) to be undertaken with close adherence to AMS
North Block
Centre Block
South Block
T1 R 4500
T2 R 4700
T3 R 4900
T4 R 4400
T5 R 4600
T6 R 3500
T7 R 4300
T8 R 4300
T9 R 4900
T10 R 4700
T11 R 4400
T12 R 4000
T13 R 4700
T14 R 3100
T15 R 10700
FROGNAL
SITE PLAN
PROPOSED - TREE PROTECTION PHASE 2
SCALE BAR
DO NOT SCALE. SCHEMATIC DRAWING ONLY. NO DIMENSIONAL CHECKS HAVE BEEN MADE. FULL MEASURED SURVEY REQUIRED.
Rev. / Date 11.07.17 ISSUED FOR INFORMATION Checked MF
JOB TITLE UCS FROGNAL
DWG TITLE ARBORICULTURAL METHOD STATEMENT TREE PROTECTION PLAN - PHASE 2
SCALE 1:200 @ A1 / 1:400@A3
DATE JULY 2017
JOB NO. 172
DWG NO. T005
T: 0781 2024070
marcus@mfdesignconsultancy.com
www.mfdesignconsultancy.com
Marcus Foster TREE CONSULTANCY

Appendix C.1:
Tree Protection Notice

SITE SPECIFIC
Tree Protection Notice
(BS5837: 2012):

Senior Branch
University College School
Frognal
Hampstead
London
NW3 6XH

Notice to be clearly shown on site
AT ALL TIMES

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

Site: UCS Senior Branch Frognal, London, NW3

- **There should be no storage of fuels, chemicals or cement based products within the Tree Protection Areas (where ground protection applies and within protective fencing)**

- **There should be no storage of materials or mixing of chemicals / concrete within the RPA of trees T1-T15 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 7974 5939

Appendix C.2:
Tree Protection Notice

Generic Tree Protection Notice (BS5837: 2012):

Senior Branch
University College School
Frognal
Hampstead
London
NW3 6XH

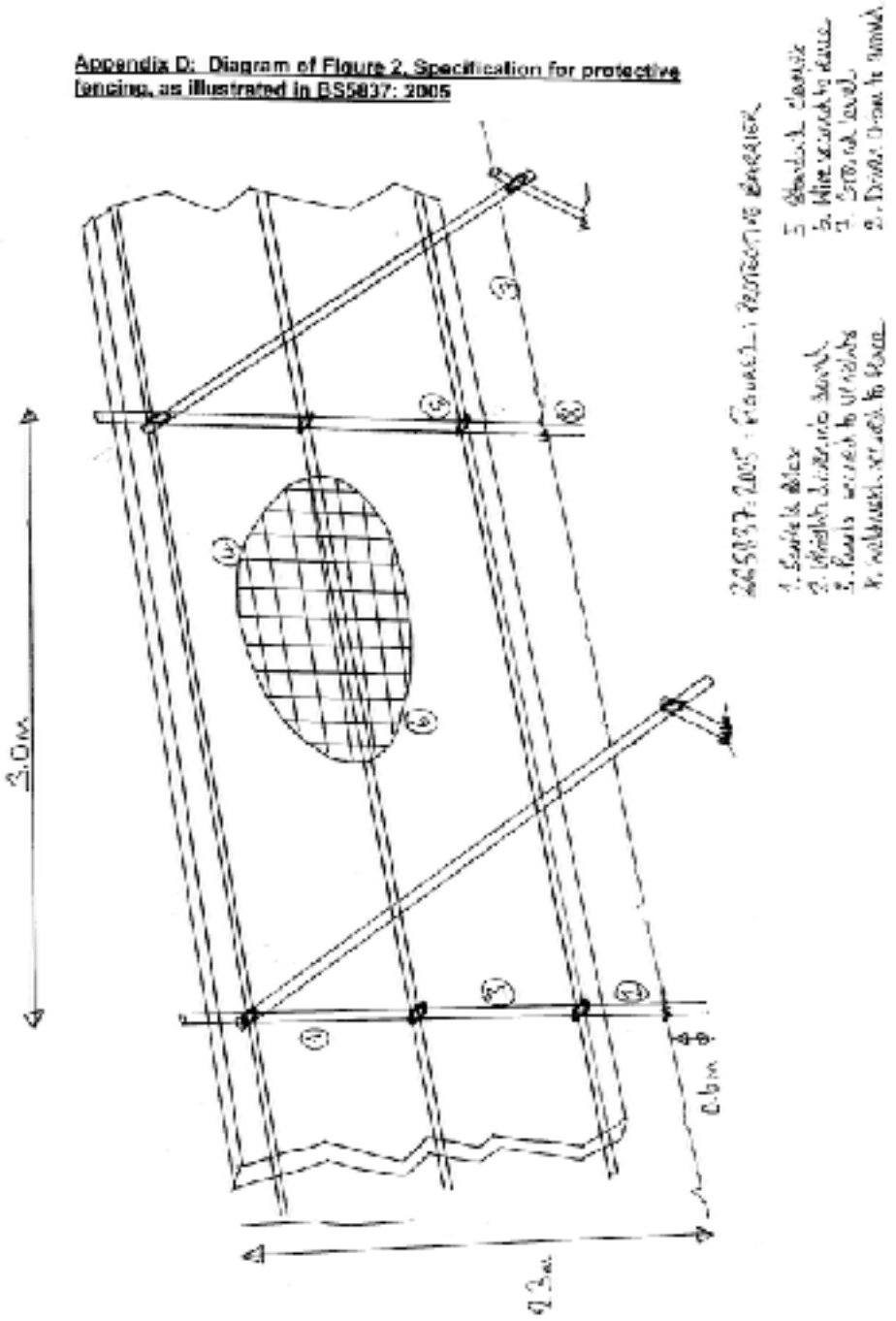
Notice to be clearly shown on site AT ALL TIMES

TREE PROTECTION AREA
KEEP OUT !
(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION
ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

PROTECTIVE FENCING. THIS FENCING MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.

Appendix D.1: 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 D.2: Example of Basal Shuttering

Basal shuttering offers immediate protection for the lower main stem and initial root plate of a tree where exposed with a porous surface. This method of tree protection does not offer protection to the root plate of a tree where surfaces are exposed / development works are being undertaken within the Root Protection Area of a tree. however, it does offer immediate protection to the main stem and provides vital clearance between the tree and construction site activities such as storage of materials, ad hoc toilet usage and compaction of exposed soft landscaped ground (in addition to many other additional construction site activities.

Photograph taken by Marcus Foster within City of Westminster, 2015

Appendix F: References

1. *Arboricultural Practice Note 12: Driveways Close to Trees (APN12)* as provided by the Arboricultural Advisory and Information Service (2007)

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

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

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

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

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

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