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Arboricultural Survey (BS5837:2012) & Impact Assessment Report

Site details:

Junior Branch
University College School
11 Holly Hill
London
NW3 6QN

Client details:

University College School
11 Holly Hill
London
NW3 6QN

Date of Report:

1st February 2016

Report Prepared by:

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1. Introduction

1.1 This report has been commissioned by Ed Toovey Architects on behalf of 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 Junior School Branch, 11 Holly Hill, Hampstead, London, NW3 6QN.

1.2 A site visit was conducted on Thursday 21st January 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 5 trees (T1-T5) surveyed within UCS Junior School Branch, 11 Holly Hill, Hampstead, London, NW3 6QN.

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 Ed Toovey Architects: *UCS Junior Branch 3 Projects - Landscape Design Access Statement* - December 2015.

2. Survey Details and Scope

2.1 The site survey included the 5 trees (trees T1-T5) 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 5 trees located within the grounds of the school which are within relative close proximity of the proposed construction works which incorporate development works to the school buildings. Trees T1 - T5 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 sub area 4 of the Hampstead Conservation Area and are therefore protected by this status.

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

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

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

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

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

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

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

Development proposal in relation to trees within close proximity

4.6 The proposed development works are to incorporate the retention of trees T2 - T5 that have been surveyed and also the removal of tree T1 in order to allow for the implementation of the development. 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 4 main developments which have the potential to affect the trees:

- The construction of the *East Balcony Deck*
- The *Mid Wall and Planter* alterations project
- The *Science Block and Cloister* alterations projects
- Playground alteration works / landscaping

With the exception of tree T1 (proposed for removal), 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 - T5 in relation to proposed development construction method

Tree T1

4.10 Tree T1 is a mature ornamental Tibetan Cherry (*Prunus serrula*) located within the strip of land between the main school building and the playground area. The tree is sited at the western end of the area adjacent to the Science Block and Cloister where alterations and development works are proposed. The tree is generally structurally sound and offers good ornamental value but limited amenity value due to its limited growth habit and likely compacted ground and growing conditions.

4.11 The tree is proposed for removal as its location is within the footprint of the development. The tree's loss will not affect the overall landscape of the school playground in this area and it is recommended that a tree of similar species is re-planted within the grounds to provide continued ornamental value for the long term.

Tree T2

4.10 Tree T2 is a mature Sycamore (*Acer pseudoplatanus*) located similarily to tree T1, between the main school building and the playground area. Located within a planting pit which has likely been constructed surrounding the tree a significant period after the actual establishment of the tree, the tree shows some signs of declining vigour in the upper crown.

4.11 The well balanced specimen is generally structurally sound and the deadwood within the crown is minor only. With a relatively light pruning history the tree has a balanced mid and upper canopy lightly encroaching towards the school building and also over the playground area. The tree is rated as a 'C.1' category tree (BS5837: 2012) offering reasonable amenity value and is therefore proposed for retention.

4.12 The proposed development works have the potential to affect this tree in the following ways:

- The science block and cloister alterations are a significant distance from the main stem of this tree outside of the 5.9m tree protection radius (BS5837:2012) and therefore the root plate and canopy will not be affected by these works. However the construction site activities associated with the science block and cloister alterations do have the potential to affect the tree as the main access route for development works will be past and within close proximity of this tree

- The implementation of alterations and improvements to the playground area surrounding this tree have the potential to cause damage to the main stem in particular

4.13 As a solution to tree protection it is recommended that basal shuttering, as shown in *Appendix B.4.1,* is installed surrounding the main stem of tree

T2 a minimum distance of 1.0m from the main stem - see *Appendix F* for example specification of this tree protection method. This will ensure that during the main part of the construction process, the main stem of tree T2 will not be affected by construction site activities. Close adherence should also be made to tree protection guidelines as highlighted below for works within the root protection area of this tree in order to implement the landscaping works.

Tree T3

4.14 Tree T3 is a mature Alder tree (*Alnus spp*) which is located on the southern boundary in the raised planter area / mid wall area directly adjacent to the access driveway. The tree provides good ornamental value with some amenity value to this area and is generally structurally sound. The tree is rated as 'C.1' (BS5837:2012) taking into account the above factors and limited visibility within the overall streetscape.

4.15 This tree is sited within close proximity of the proposed works which are minor and incorporate alterations to the mid wall only. The soft landscape area will remain in situ and therefore protection measures are not required for this tree. The recommended root protection distance is 4.3m (BS5837:2012) for this tree, and the boundary wall to the east where alterations will be taking place is 1.6m distance from the tree. However the retained tree roots within this raised area will remain unaffected. In addition the tree's main stem and canopy will not be affected by the development process and therefore protection measures are not proposed.

Tree T4

4.16 Tree T4 is a mature Horse Chestnut tree (*Aesculus hippocastanum*) which is located on the southern boundary adjacent to the Art Building. This is a large tree which is located within very close proximity of the adjacent building (0.5m at the closest point) and associated retaining walls. However, the relationship between tree and building is clearly long standing and relatively harmonious. The tree shows overall good form with good vigour shown in the growth since previous reduction works 4-5 years ago. There is some seepage of liquid from the main stem along with large pruning wounds which have occluded well and the tree is surrounded by hard landscaping. However the tree is generally structurally sound and cyclical crown reduction works have been recommended to be carried out taking account of the tree's urban location within a busy school playground area.

4.17 The tree is rated as 'B.1' (BS5837:2012) taking into account the prominent location and high amenity value provided. This tree is at its closest point is sited in excess of 21.0 metres from the proposed development - East Balcony Deck - and taking into account its recommended root protection distance of 13.0m, its comprehensive protection is fully achievable. It is recommended that the tree protection fencing is installed as recommended in *Appendix B.4.2* to provide protection mainly from any associated construction site activities which could overspill from the development site.

4.18 The tree protection fencing is recommended 7.0 metres from the main stem of tree T4 to allow for protection of the tree to the north within the playground area. Obviously to the south, east and west, this tree will remain fully protected by virtue of its location adjacent to the Art Building. To the north the encroachment of the fencing within the recommended 13.0m root protection radius (BS5837:2012) is possible due to the existing hard landscape which will remain in situ during the construction works. The fencing will allow for protection of the canopy, main stem and initial northern root plate whilst also providing sufficient space for construction site activities within the relatively limited space of this site.

Tree T5

4.19 Tree T5 is a mature Lime tree (*Tilia spp*) which is located on the eastern boundary adjacent to the boundary wall with Holly Hill. The tree is currently growing with a slight lean at the base to the east, sited 0.1m from the boundary wall at this point and growing directly against the wall at 1.6m height. After this point, the tree straightens to provide a balanced crown which is cyclically crown reduced to provide a compact and balanced tree; crown reduction works were last carried out approximately 4-5 years ago and these works have been recommended within this report. The tree is generally structurally sound and offers excellent amenity value being rated as a category 'B.1' (BS5837:2012) specimen.

4.20 The root protection area recommended for tree T5 is 8.2 metres and the development encroaches within the area. The closest point of ground works is proposed 5.2m from the main stem of tree T5 and this is the installation of a single steel post which will support the composite timber decking and painted steel structural framework above. This is the only significant excavation required within the protected root plate area of the tree and therefore this will require a careful hand dug approach as outlined within the *Tree Protection Specifications* below. This is particularly important due to the urban nature of this tree's location and the likely adventitious root system that has developed.

4.21 The re-landscaping works will allow for an extension of the soft landscape area by up to 1.1m to the south and west in a curved and informal planting border. This will in the long term benefit the tree as it will provide further permeable ground for water to access the root system. In order to provide protective fencing it is recommended that the tree protection fencing id installed on this proposed line as shown in *Appendix B.4.1,* to provide protection to both the main stem and the initial root plate during the construction process. This will allow for sufficient space for the implementation of the raised decking area whilst protecting the exposed ground surrounding the tree and main stem also. The remainder of the ground within the root protection area should remain as hard standing with the root plate protected beneath, with the exception of excavations for the supporting steel foundation where strict adherence to the tree protection guidelines as below should be applied. With additional hard landscape works within the root protection area of this tree (8.2m from the main stem) close adherence to the *Hard Landscaping Removal* guidelines below should be applied.

Tree Protection Specifications

4.22 With the nature of development works and associated construction site activities potentially encroaching within the root protection areas of trees T2 and T5 in particular, it is important that the tree protection guidelines are adhered to in order to afford the full protection for these trees. The implementation of the proposed development can be achieved whilst retaining all trees (with the exception of T1) within the area for the long term by taking into account all the above points within *Section 4* and in addition to the following which must be adhered to AT ALL TIMES:

- **The tree protection fencing / root protection area to be constructed as outlined with *Appendix B.4* of this report and to the specifications provided within *Appendix E* and *Appendix F***

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

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

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

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

4.23 In the case of tree roots being encountered for trees T2 and T5 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**

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

Excavations & Root Severance Guidance

4.25 When implementing the dismantling of hard and soft landscapes within the site in root protection areas of T2 - T5*,* it should be noted that in the case of major roots being encountered the following points should be closely adhered to:

- **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**.

Hard Landscaping Removal / Landscaping / Re-landscaping to implement development

4.26 It is imperative that the hard landscaping that currently exists remains *in situ* with ground protection provided as specified in the main access area and all areas of the RPA throughout the development process. If / where the hard landscape and tarmac surface is to be removed as part of a re-landscaping works post development, levels must be retained and adherence where relevant to the tree protection guidelines should be implemented.

4.27 No reduction in levels of the underlying soil surface will occur. The underlying soil may be levelled where required, assuming the natural soil level is not affected, by the addition of up to 100mm of fresh 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.

4.28 For any of the above 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 root severance guidance – *Section 4.25*.

Arboricultural Supervision

4.29 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

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

- **Full implementation of Tree Protection Specifications**
- **Full adherence to Tree Protection Area**
- **Comprehensive use of the Tree Protection Notice**

all trees surveyed and proposed for retention, will 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
Fell to ground level and grind out stump

T2 Sycamore
Remove deadwood

T3 Alder
Crown reduce to previous reduction points leaving some soft furnishing growth

T4 Horse Chestnut
Crown reduce to previous reduction points leaving some soft furnishing growth
Remove any remaining deadwood
Crown thin 15%
Crown lift to 5m

T5 Lime
Crown reduce to previous reduction points leaving some soft furnishing growth
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
11 Holly Hill
Hampstead
London
NW3 6QN

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

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

University College School - Junior Branch, NW3 6QN
BS 5837:2012 Tree Schedule – 21st January 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	5	150	N: 3 E: 2 S: 2 W:3	M	F	F	C.1	5-10 years	Specimen is generally structurally sound and offering ornamental value only. Some deadwood throughout and slightly suppressed growth habit	Fell to ground level	N/A
T2	Sycamore	12	190	N: 4 E: 5 S: 4 W:3	M	F	F	C.1	15-20 years	Tree is a good specimen growing within the playground area. tree has good buttress roots and a sound main stem. Some deadwood throughout and low vigour in upper canopy.	Remove deadwood	5.9
T3	Alder	8	360	N: 4 E: 3 S: 1 W:2	M	G	G	C.1	15-20 years	Tree is generally structurally sound - growing within raised border adjacent to entrance and close to boundary wall to south. Last reduced approximately 3 years ago	Crown reduce to previous reduction points leaving some soft furnishing growth	4.3
T4	Horse Chestnut	16	1080	N: 4 E: 7 S: 4 W:6	M	F	G	B.1	20 years +	Tree is located very close to building but has a long standing relationship with proximity to building. The tree is generally structurally sound at the base with large buttress roots. Main stem is generally sound with large branches having been removed - these have occluded well. Tree crown reduced on a cyclical basis - last works approximately 4-5 years ago	Crown reduce to previous reduction points leaving some soft furnishing growth. Crown thin 15%. Crown lift to 5m. remove any remaining deadwood	13.0
T5	Lime	18	680	N: 4 E: 4 S: 4 W:4	M	G	G	C.1	20 years +	Tree is a good specimen located on eastern boundary of the site overhanging Holly Hill. Tree last crown reduced approximately 4-5 years ago.Epicormic growth at base is regularly removed. Generally sound, with good buttress roots despite limited root plate area adjacent to boundary wall	Crown reduce to previous reduction points leaving some soft furnishing growth. Crown thin 15%. Crown lift to 5m - remove any epicormic growth to this point	8.2

Appendix B

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

University College School
11 Holly Hill
Hampstead
London
NW3 6QN

Plans supplied:

Drawing No:
Ed Toovey Architects: 1116 / GA / 001 - A
Date:
May 2015

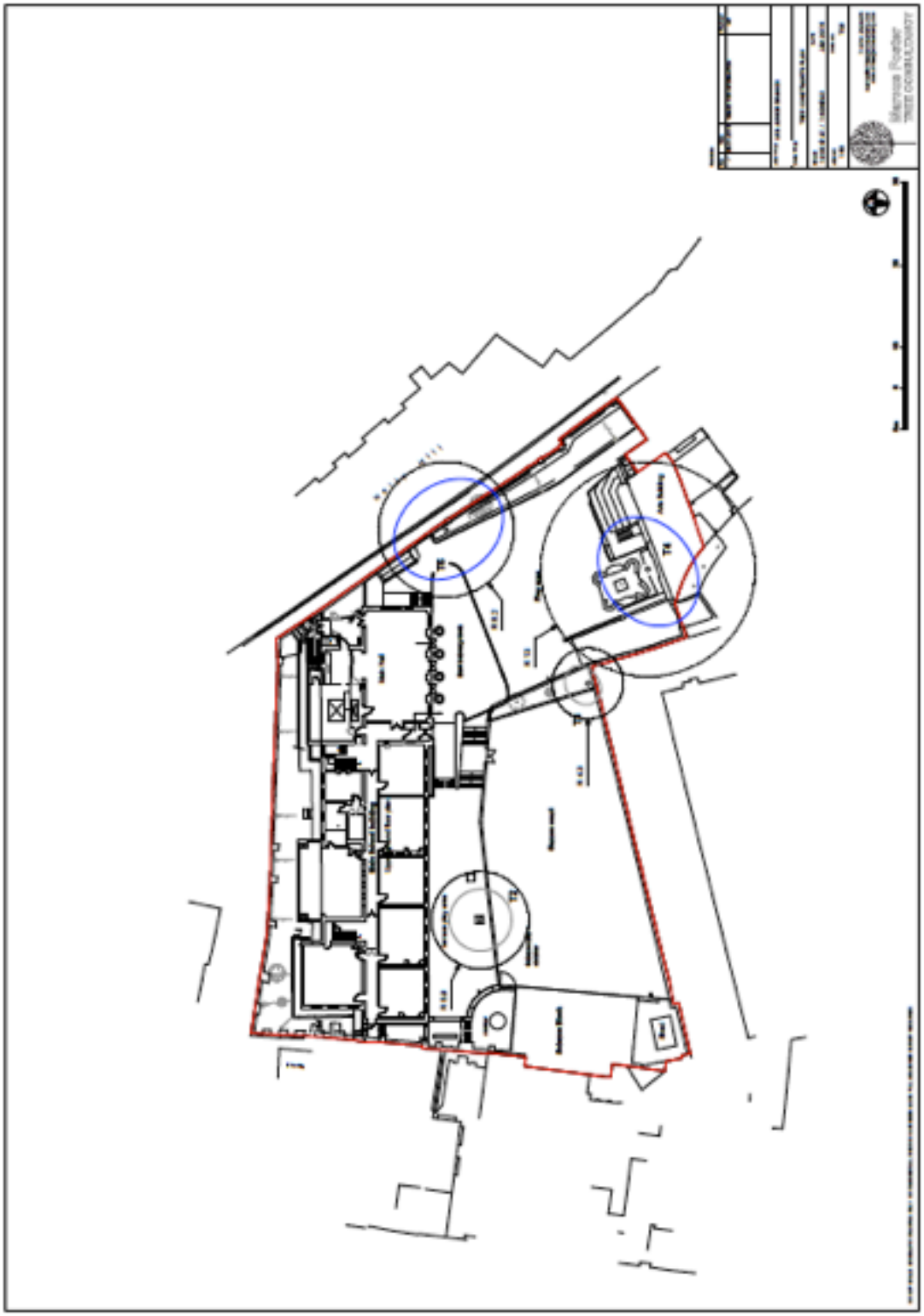
Tree Canopy Colour Key: BS5837: 2012 (see *Section 2.6*)

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

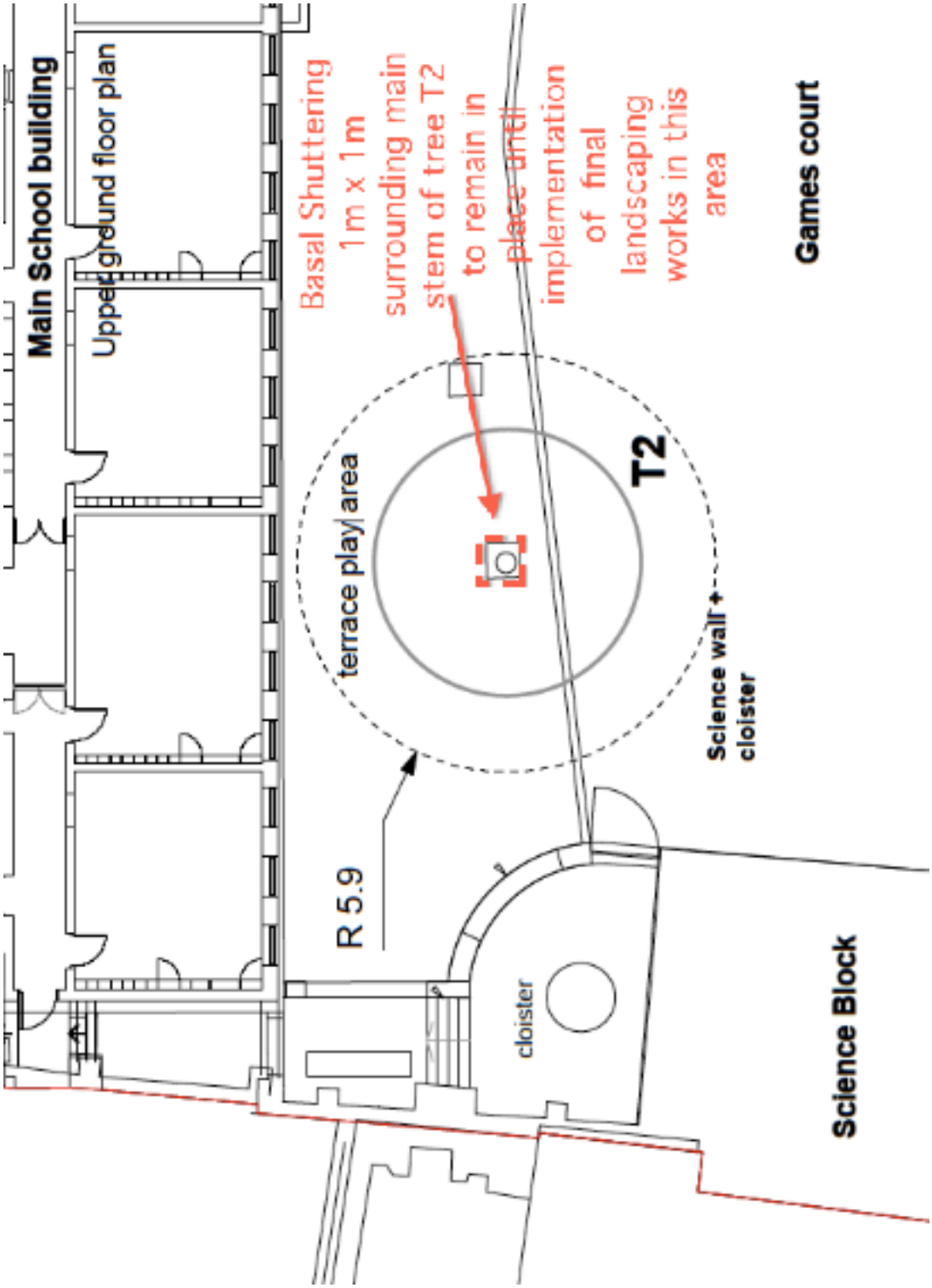
Appendix B.1 Existing Tree Survey Site Plan: Junior Branch, UCS

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

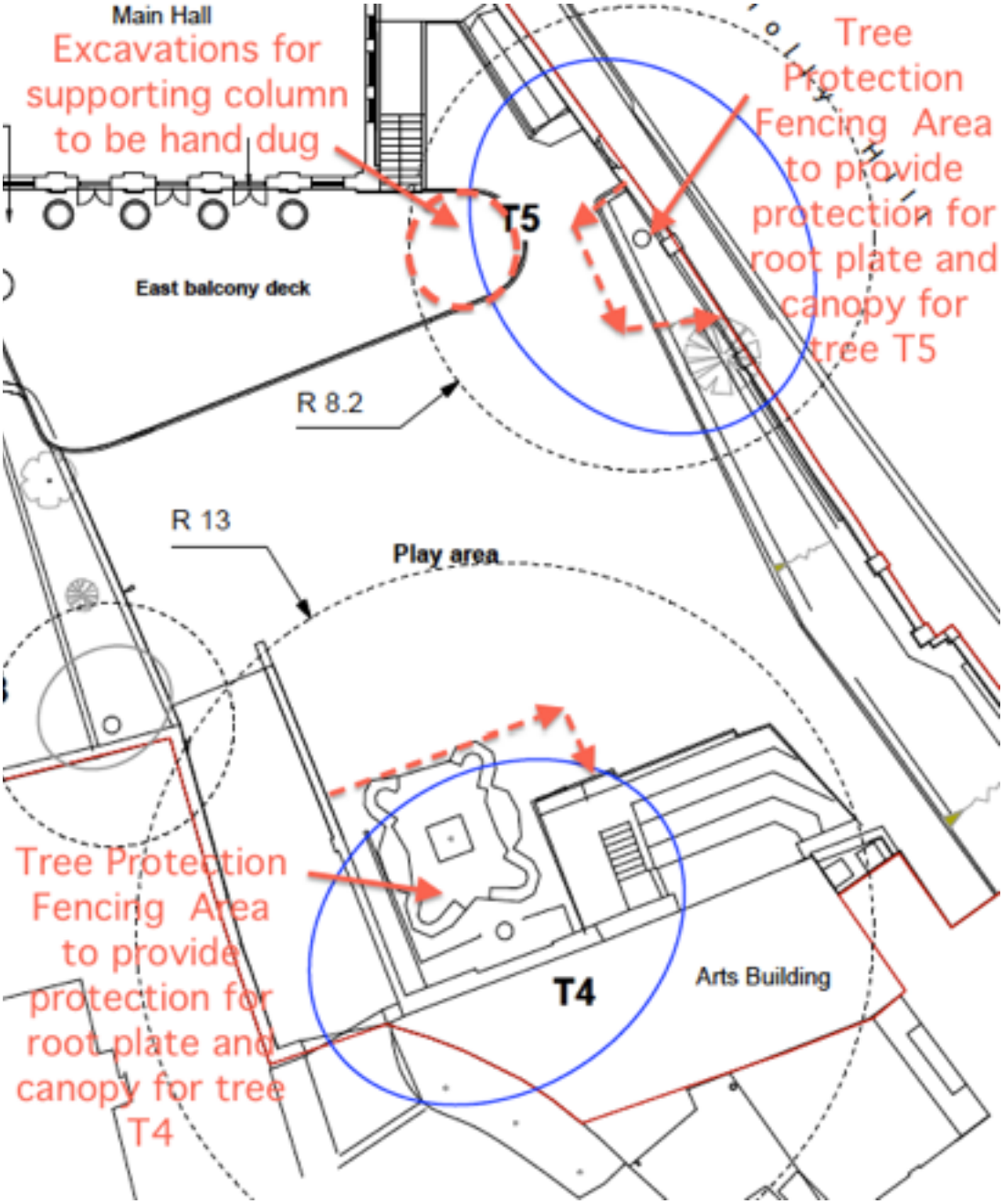
Appendix B.3 Proposed Tree Survey Site Plan w/ Tree Protection Areas: Junior Branch, UCS



Appendix B.4.1 Tree Protection Site Plan - Tree T1: Junior Branch, UCS



Appendix B.4.2 Tree Protection Site Plan - Trees T4 & T5:
Junior Branch, UCS



Appendix C

Site Photographs for:

University College School
11 Holly Hill
Hampstead
London
NW3 6QN

**** Taken 21st January 2016***

C.1 Photograph of trees T1 and T2, Junior Branch, University College School, 11 Holly Hill, London, NW3 as viewed in an easterly direction

C.2 Photograph of tree T3, Junior Branch, University College School, 11 Holly Hill, London, NW3 as viewed in a southerly direction

C.3 Photograph of tree T4, Junior Branch, University College School, 11 Holly Hill, London, NW3 as viewed in a southerly direction

C.4 Photograph of tree T5, Junior Branch, University College School, 11 Holly Hill, London, NW3 as viewed in an easterly direction

C.5 Photograph of tree T5, Junior Branch, University College School, 11 Holly Hill, London, NW3 as viewed in a north westerly direction from the adjacent public highway

Appendix D:
Site Tree Protection Notice

Tree Protection Notice
(BS5837: 2012):

University College School
11 Holly Hill
Hampstead
London
NW3 6QN

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

TREE PROTECTION NOTICE

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

Site: University College School
11 Holly Hill, Hampstead, London
NW3 6QN

- There should be no storage of fuels, chemicals or cement based products within Construction Exclusion Zone (CEZ) of the proposed scheme within close proximity of trees T2-T5

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

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

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

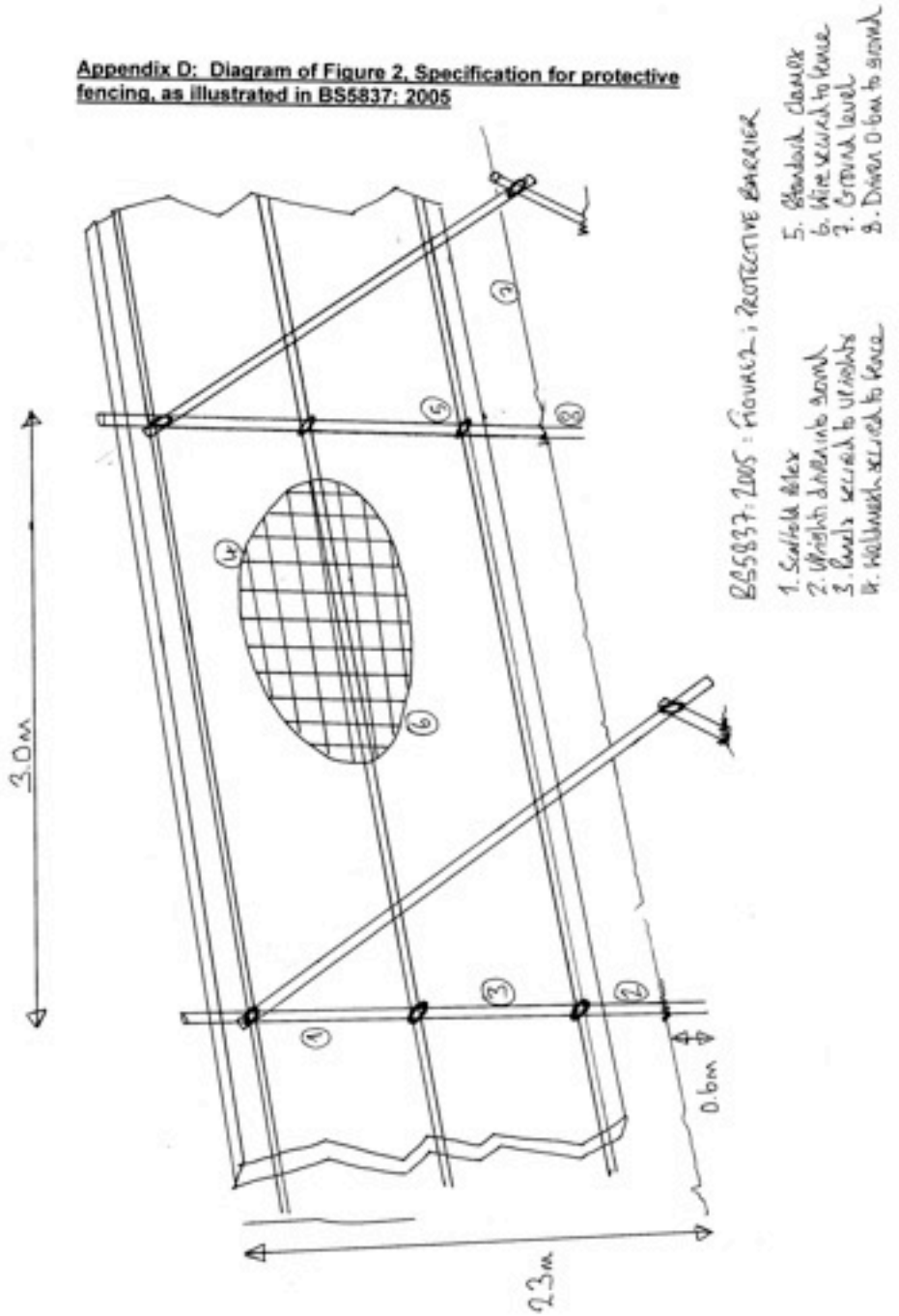
- If excavations do occur within the specified Root Protection Area where hand dug excavations are being undertaken, ANY tree roots encountered over 2.5cm in diameter should be retained where possible. Hand digging is to continue around any such tree roots.

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

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

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

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



Appendix F: 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 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)

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)