Arboricultural Development Report

UCL MAIN QUAD TEACHING FACILITY LONDON

Produced for:
UCL Estates

March 2017

tree : fabrik

Ref: TF/DR/1052revA
Prepared by: Alan Richardson
Issued: 09/03/17

CONTENTS

1.0 INTRODUCTION

1.1 This report is submitted on behalf of UCL Estates in support of a planning submission for the installation of a temporary two-storey teaching facility within land forming the main quadrangle at University College London, Gower Street, London, WC1E 6BT.

2.0 PURPOSE OF REPORT

2.1 This report presents an analysis of the potential impact of the proposals on existing trees, based on British Standards 5837 (2012) 'Trees in relation to design, demolition and construction', and precautionary and protection measures to be adopted in order to minimise the impact of development.

2.2 The impact assessment is informed by a Tree Survey dated August 2015 undertaken by *tree*:fabrik in accordance with BS 5837 (2012). The tree survey provided an informed approach to tree protection and foundation design as part of the feasibility and design process.

2.3 This enables a review by the Council in context of other material considerations submitted in support of a planning application and a basis for issuing planning permission.

3.0 SITE DESCRIPTION

3.1 The site is located to the east of Gower Street and formed by a lawn within the main Quad of the University College London building.

3.2 The site is bound to the north, east and south by buildings with basement and sunken areas extending into the quad beyond the building line to the east and south. To the west, within the Quad, a temporary event space is located within the soft ground area.

3.3 The site is flat with the main lawns separated by formal footpaths and areas of hard standing to the north. Within the eastern lawn, a small building is located to the northwest corner.

3.4 Within the local landscape, the site is enclosed from views directly from Gower by the existing building and the lawns provide a formal space to the building

4.0 STATUTORY DESIGNATIONS

4.1 At the time of the assessment, it is understood from enquiries with Camden Council that the site lies within Bloomsbury Conservation Area.

4.2 All tree works must be carried out by a competent person experienced in arboriculture and in accordance with British Standards 3998 (2010) Recommendations for tree work.

4.3 Attention is drawn to the responsibilities under the Wildlife & Countryside Act (1981) as amended by the Countryside and Rights of Way Act 2000. This may place additional constraints on trees above that considered within this report.

5.0 TREE STOCK

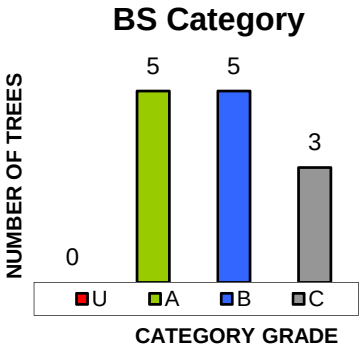
5.1 General

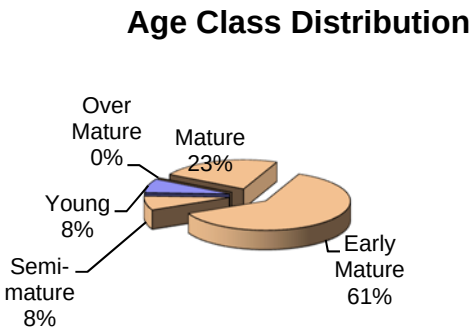
5.1.1 The assessment was carried out in accordance with the guidance and recommendations of British Standards 5837: (2012) 'Trees in relation to design, demolition and construction' and good arboricultural practice.

5.1.2 Trees identified within this assessment were visually inspected from ground level by a person qualified and experienced in arboriculture. The tree's common name and its dimensions are recorded within the tree survey schedule together with their age, physiological, structural condition and a category code.

5.2 Observations

5.2.1 A total of 13 individual trees were assessed within the survey schedule including 5 category 'A' trees, 5 category 'B' trees and 3 category 'C' trees in accordance with British Standards 5837 (2012) 'Trees in relation to design, demolition and construction'.





5.2.2 In general, trees within the site are of a mixed age range and are of fair health and condition. Species include an Indian Bean Tree (Catalpa bignonioides), Lime (Tilia sp) and Maidenhair Tree (Ginkgo biloba).

5.2.3 The principal arboricultural features are located to the entrance of the Quad (Lime T10 & T11) and a linear group of Lime (T1 to T6) located to the eastern side of the Quad. These trees are matched by a similar group of Lime located to the western side of the Quad.

5.2.4 The Lime trees appear to have been regularly maintained including removal of deadwood and clearance maintained to adjacent building elevations. The mature Lime (T3, T4 & T6) display previous crown reduction and crown lifting.

5.2.5 Whilst the three Maidenhair Trees (T8, T9 & T12), located either side of the main access to the Quad, accrue some visual amenity, they form an incongruous species in context of the symmetry of the Lime and formality of the Quad. Of these trees; the lateral branches of T8 have been significantly shortened due to its propensity to set fruit (female) which has impacted on the trees characteristic form and visual amenity; and T12 is twin-stemmed displaying a tight fork formation. As such, they have been downgraded and assessed as 'C' category within the tree survey schedule.

5.2.6 Elsewhere, the Indian Bean Tree, a memorial tree, and the Tulip Tree are both of fair health and are of domestic scale.

5.2.7 For detailed assessment of each individual tree please refer to the tree survey schedule and reference plan (Appendix 1). A photographic record forms Appendix 2.

6.0 IMPACT ASSESSMENT

6.1 General

6.1.1 The principal arboricultural features have been considered throughout the design process with regard given to guidance and recommendations within BS 5837 (2012) and in particular, *Section 5 (2012) – Proposals: conception and design.*

6.1.2 The teaching facility is temporary and formed of a modular structure enclosed by a decorative vinyl mesh wrap. Access to the facility is by a ramped access to the west of the modular system with an emergency access to the east.

6.1.3 The key design considerations and responses identified for installation of the two-storey teaching facility are discussed below;

6.2 Installation

6.2.1 The proposal retains all existing trees.

6.2.2 Tree Crowns – the proposed structure is located outside of the existing crown extents. The proposal would not therefore place additional pressure on trees for removal or inappropriate tree work due proximity, dominance or seasonal inconveniences.

6.2.3 Root Protection Area - To the east and south of the eastern Quad, a basement projects outwards from the main building line beneath the lawn of the Quad. As such, these structures have potential to influence the morphology and disposition of adjacent roots with a bias of tree roots to the soft ground areas. The preliminary RPA has therefore been adjusted to exclude these areas whilst maintaining the RPA m^2 in accordance with BS5837 (2012). The preliminary RPA and adjusted RPA are illustrated within the tree survey reference plan [TF1052/TS/100] Appendix 1. The location of the proposed modular structure and associated access ramp has been carefully positioned thereby minimising any impact on the adjusted RPA's.

6.2.4 The installations design seeks to minimise the impact on the trees' root environment. The foundation design has therefore been carefully considered to minimise disturbance within the RPA whilst maintaining moisture and gaseous exchange to the existing soil. Further, the build process has been simplified using a modular system that is suspended above ground level on a sub-frame supported by pad foundations.

6.2.5 With the exception of a single pad foundation, the pad foundations have been carefully positioned outside of the RPA's and a framework of canter-levered beams used to minimise encroachment or disturbance (see Appendix 3 for foundation pad and beam locations). Whilst localised excavation will be required to install the single foundation pad within the RPA of Lime (T5), the excavation is limited and located to the edge of the RPA, the encroachment is considered marginal. The species is tolerant of minor disturbance and existing soft ground contiguous to the RPA is maintained to the north, south and west of the RPA. Prior to pouring of the concrete pad, the hole will be lined with a non-porous textile to minimise leaching of wet concrete into the surrounding soil. Care will be taken to avoid splashing during the pouting process. All excavation will be made using hand tools, under supervision of the Project Arbroculturist. The proposed foundation would not have an adverse impact on the trees health or stability.

6.2.6 Vinyl Mesh Wrap – The vinyl mesh wrap will be supported by the suspended framework and tubular steel frame and would not impact on adjacent trees.

6.2.7 The ramped access to the west of the modular structure and steps to the east are located within the RPA of Lime (T5) and Gingko (T8 & T9). These structures will be installed following the guidance and recommendations contained within BS5837 (2012) and be of a 'no dig' construction methodology. Details of the ArborRaft System by Infra Green Ltd forms Appendix 4 for reference. The ArborRaft will be set above ground level on a 30mmm bed of sharp sand and terram separator layer and installed to form a platform above ground level in accordance with the manufacturers recommendation. The final flooring treatment will be of open decking. The temporary installation would therefore maintain the soft ground within the RPA and permeability for moisture and gaseous exchange to the root system whilst minimising compaction through load distribution.

6.2.8 Careful consideration has been given to minimising the impact of the temporary teaching facility through both design and construction methodology. Whilst the structure is temporary, the existing soft ground and integrity of the root environment is retained and can therefore be re-instated following expiry of the temporary teaching facility. Subject to precautionary measures during installation and dismantling, the proposal would not have an adverse impact on the adjacent trees.

6.3 Services

6.3.1 Surface drainage –the ramped access is permeable and therefore additional surface drainage is not required. Surface drainage from the modular structure will be distributed beneath the structure by above ground perforated pipes.

6.3.2 Foul drainage - Foul drainage is not required within the teaching facility.

6.3.3 Utilities - Utilities will be supplied by existing routes outside of the RPA.

6.3.4 Air conditioning units - Units will be positioned to the northeast corner of the temporary teaching facility. Whilst located within the RPA of Lime (T5) they are located on a suspended platform above ground level formed by the canter-levered sub-frame. The final surface will be of open decking maintaining permeability for moisture and gaseous exchange to the root system.

6.4 Tree Management and Pruning

6.4.1 Tree works are proposed to maintain the crown extents of existing trees in close proximity to existing buildings prior to installation of the proposed temporary building.

6.4.2 It is the intention of UCL to reduce the crown of the mature Lime (T3, T4 & T5) to their previous reduction points. Whilst the works would have a temporary impact on visual amenity, the tree works would be reasonably considered as part of tree management within an urban area regardless of the proposal. A copy of the Tree Works Schedule and Location plan [TF1052/TW/200] forms Appendix 5 for reference.

6.4.3 Whilst not directly required to facilitate installation of the teaching facility, the works will reduce accidental damage to branches during installation of the temporary structure and maintain clearance during the lifespan of the structure.

6.4.4 Lime (T1, T2 & T6) – these trees are early mature and located within a lawn area to the east of the Quad. The trees are located within a high public access area and the works are limited in scope to maintain access and reduce falling debris from the trees crown.

6.4.5 Lime (T3, T4 & T5) – these trees are mature and are located within a lawn area to the east of the Quad. A basement structure is located to the east of the trees within the root protection area with building elevations to listed buildings in close proximity to the east. The crowns have now regrown and epicormic growth is present on the trunks. To the west of the trees, and outside of the existing tree canopy, a temporary structure (5 years) is proposed under a separate planning application. The works are therefore required to maintain the crown extents, reduce accidental damage to branches during installation of the temporary structure and maintain clearance during the lifespan of the structure.

6.4.6 Indian Bean Tree (T7) – this tree is early mature and located within a lawn area to the east of the Quad. The tree is of fair health and condition. The works are limited in scope and required to reduce accidental damage to lateral branches during installation of the temporary structure and maintain clearance during the lifespan of the structure.

6.4.7 Subject to tree work being carried out in accordance with BS3998 ‘ Tree work – Recommendations’ (2010) by an experienced and qualified tree contractor the proposed tree works would not have an adverse impact on the trees health or visual amenity.

6.5 Tree Protection

6.5.1 Trees can be adequately protected in accordance with BS 5837 (2012) as discussed within this report.

6.5.2 A detailed Tree Protection Plan and Arboricultural Method Statement [TF1052/TPP/300] forms Appendix 6.

6.5.3 The primary purpose of the Tree Protection Plan and Arboricultural Method Statement is to aid the preservation of retained trees through setting out the appropriate working practices, construction methodology and tree protection measures that are to be adopted when installation is undertaken in close proximity to trees. The contents of this Method Statement are to be based upon documents submitted in respect of the plans and drawings pursuant to the planning permission, tree protection measures recommended in BS 5837 (2012) and current good practice.

6.5.4 During installation, the soft ground will be protected from compaction by vehicles by temporary ground protection and protection measures adopted to avoid contact with the tree crowns.

7.0 CONCLUSION

7.1 The site lies within a Conservation Area.

7.2 The principal arboricultural features are formed by the Lime and Gingko located within the lawn areas of the main quadrant. Trees are subject to regular maintenance as part of the existing estate management regime.

7.3 Careful consideration has been given to the design and installation of the teaching facility in order to minimise any adverse impacts on the health or amenity of the trees in the short and long term.

7.4 Subject to precautionary measures and recommendations discussed within this report and detailed within the Tree Protection Plan and Arboricultural Method Statement [TF1052/TPP/300], it is considered that existing trees can be adequately protected throughout the development process in accordance with British Standards 5837 (2012).

[BLANK]

APPENDIX 1

Tree Survey Schedule

& Reference Plan

[BLANK]

Limitations

Trees are living organisms whose health and condition can change rapidly. The validity of this report and conclusions or recommendations cease at the prescribed period of two years from the site inspection or if the site conditions change due to unspecified works or storm events that affect the subject tree(s) whichever is the sooner.

This tree survey assessment is a basic data collection exercise for the sole use of identifying site constraints in context of the planning process and a record of the trees condition at the time of assessment. This is not a vegetation assessment for NHBC guidance or a higher level inspection (full hazard or risk assessment) and no guarantee, either expressed or implied can therefore be given with regards to identification, safety, stability or internal condition.

All observations are confined to that which was visible from the site. Where dense ivy/ground vegetation hampered visual assessment of trees assessed its quality and condition was assessed from that which was visible from the point of inspection. This preliminary assessment may therefore be subject to amendment following additional detailed inspection.

Tree Assessment Methodology

The assessment was carried out in accordance with the recommendations of British Standards 5837: (2012) and good arboricultural practice.

Trees identified within this assessment were inspected from ground level by a person qualified and experienced in arboriculture using the Visual Tree Assessment Method (VTA). Visual assessment, in accordance with accepted arboricultural practice, was based on visual observation of vitality (leaf cover, extension growth), presence of deadwood and die back, fractured and detached limbs, structural form or external indications of stem and basal decay likely to affect the structural condition of the tree. No decay detection equipment either invasive or non-invasive was employed.

For the purpose of clarity, trees are identified by a reference number within the Tree Survey Schedule which corresponds with the tree no. recorded within the Tree Survey or Tree Protection Plan. The tree's common name and its dimensions are recorded within the tree survey schedule together with their age, physiological, structural condition and a category code in accordance with the guidelines set out in British Standard 5837: (2012) ''.

Where a tree's crown is heavily asymmetrical, the crown radius for each cardinal compass point is given. Together with the height, clearance between ground level and the crown, this provides a good guide to the size and outline form of the tree.

The estimated life expectancy in context of the species is provided as guidance only.

The quality and value of each tree is assessed, grading the tree to one of four categories. The purpose of the tree categorization method is to allow informed decisions to be made concerning which trees should be removed or retained should development occur.

Details of the preliminary root protection area (RPA) around each individual tree are provided within Appendix 2 and illustrated on the Tree Survey Reference Plan to assist in assessment of site layout and the likely impact of construction works proposed within the vicinity of trees to be retained.

Where the trees root morphology within the preliminary RPA may be influenced by existing site features, these areas of restrictive growth may be illustrated within the Tree Survey Reference Plan for higher grade trees ie category 'A' & 'B'. The preliminary root protection area may therefore require adjustment; this may change its shape but not reduce its area (m2) in accordance with BS 5837 (2012). It is recommended that tree:fabrik be consulted and additional detailed evaluation and guidance be considered within the emerging site layout.

Tree Survey Schedule

Tree No.	Species	Ht (m)	Stem Dia (mm)	Branch spread (m)				Height of crown clr (m)	First Significant Branch	Age Class	Phys. Condition	Structural Condition	Remaining contribution (est. years)	Category grading
				N	E	S	W							
T1	Lime	14	300	5	5	4.5	5	3		EM	N	Incompatible graft point at ground level, fair form, future potential to mature.	40+	A1
T2	Lime	16	300	4.5	4.5	3.5	5	3.5		EM	N	Incompatible graft point at ground level, twin-stemmed from 3.5m a.g.l., future potential to mature.	40+	B1
T3	Lime	21	700	3.5	11	5.5	7	3.5	9(W)	M	N	Uplighter located within RPA to W, extended lateral to E, previously subject to crown reduction.	40+	A1
T4	Lime	21	640	6.8	8	3.5	7.5	3.5	9(W)	M	N	Asymmetrical crown and swept mid-stem due to group pressure, nest located within upper crown, previously subject to crown reduction.	40+	A1
T5	Lime	21	830	4	10	6.5	9	3	8(S)	M	N	Extended lateral to E (reduced) forming dog-leg branch, individual extended lateral beyond natural crown (6m) at 10m a.g.l., previously subject to crown reduction.	40+	A1
T6	Lime	12	230	3	5	5.5	2.5	3		EM	N	Distorted trunk at 5m a.g.l., fair health and condition, future potential to mature.	40+	B1
T7	Indian Bean Tree	7	250	6	4.5	5.5	6	2		SM	N	Memorial tree. Radial surface roots to S & E extending 2m from trunk, crown break at 2m a.g.l., uniform shape, fair health and condition.	40+	A1
T8	Maidenhair Tree	14	370	6	5	4	5	4	4(E)	EM	N	Incongruous species with extended individual laterals typically characteristic of species but of fair health and condition. Low branches to N, E and W.	40+	B1
T9	Maidenhair Tree	11	450	1.5	2.5	1.5	1.5	5		EM	N	Crown reduced impacting on visual amenity.	20+	C1
T10	Lime	12	320	5	4	4.5	4.5	3.5		EM	N	Within tarmac area with unstable cast iron grill, minor bark damage on S side, located 5m from building, potential to mature.	40+	B1

Tree No.	Species	Ht (m)	Stem Dia (mm)	Branch spread (m)				Height of crown clr (m)	First Significant Branch	Age Class	Phys. Condition	Structural Condition	Remaining contribution (est. years)	Category grading
				N	E	S	W							
T11	Lime	12	340	4.5	4.5	5	4.5	4.5		EM	N	Within cobbled area, surface roots within previously constrained planting station, loose cast iron grill forming potential trip hazard, 5.5m from building, future potential to mature.	40+	B1
T12	Maidenhair Tree	14	390, 370*	4.5	7.5	5.5	5.5	5		EM	N	Basal area within raised decking, twin-stemmed from 1m a.g.l. forming tight fork formation, decking becoming occluded by tree.	20+	C1
T13	Tulip Tree	5	80	1	1	1	1	2.5		Y	N	Basal area within raised decking, fair health and condition.	20+	C1

Root Protection Area

Tree No.	Species	Stem Dia (mm)	Age Class	Remaining contribution (est. years)	Category grading	Root protection	
						Radius (m)	M^2
T1	Lime	300	EM	40+	A1	3.6	40.7
T2	Lime	300	EM	40+	B1	3.6	40.7
T3	Lime	700	M	40+	A1	8.4	221.7
T4	Lime	640	M	40+	A1	7.7	185.3
T5	Lime	830	M	40+	A1	10	311.7
T6	Lime	230	EM	40+	B1	2.8	23.9
T7	Indian Bean Tree	250	SM	40+	A1	3	28.3
T8	Maidenhair Tree	370	EM	40+	B1	4.4	61.9
T9	Maidenhair Tree	450	EM	20+	C1	5.4	91.6
T10	Lime	320	EM	40+	B1	3.8	46.3
T11	Lime	340	EM	40+	B1	4.1	52.3
T12	Maidenhair Tree	390, 370*	EM	20+	C1	6.45*	131*
T13	Tulip Tree	80	Y	20+	C1	1	2.9

North

T1 Lime

T2 Lime

T3 Lime

T7 Indian Bean Tree

T4 Lime

T5 Lime

T6 Lime

T13 Tulip Tree

T8 Maidenhair Tree

T12 Maidenhair Tree

T9 Maidenhair Tree

T11 Lime

T10 Lime

Note: Potential area of influence formed by basement structure.

NOTES

 This is a basic data collection exercise for the sole use of identifying site constraints in context of the planning process and a record of the trees condition at the time of surveying. This is not a vegetation assessment for NHBC guidance or a higher level inspection (full hazard or risk assessment) and no guarantee, either expressed or implied can therefore be given with regards to identification, safety, stability or internal condition.

General

This illustrative plan is intended to inform preliminary site layout & design and should be read in conjunction with the Tree Survey Schedule. Detailed assessment and site measurement may be required prior to final design. The assessment was carried out in accordance with the guidance and recommendations of British Standards 5837: (2012) 'Trees in relation to design, demolition and construction' and good arboricultural practice. Trees identified within this assessment were visually inspected from ground level by a person qualified and experienced in arboriculture. The tree's common name and its dimensions are recorded within the tree survey schedule together with their age, physiological, structural condition and a category code. All observations are confined to that which was visible from the site and areas of public access.

Boundary

Indicative site boundary

Tree Survey

1 — Tree No.

Ash — Common name

Statutory Designations (trees)

It is understood from enquiries with Camden Council that the site lies within the Bloomsbury Conservation Area. The status of trees may change and it is recommended that the Council be contacted prior to carrying out any works and the current statutory designation confirmed.

Quality & value of existing tree stock

The quality and value of each tree or group of trees assessed has been categorised in accordance with British Standards 5837 (2012) 'Trees in relation to construction'. This categorisation method allows informed decisions to be made concerning which trees should be removed or retained should development occur.

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

B Category tree
Trees of moderate quality and value

A Category tree
Trees of high quality and value

C Category tree
Trees of low quality and value

Above and Below Ground Constraints

In addition to the tree's quality and condition, consideration needs to be given to the above ground constraints (crown spread) and the below ground constraints (root protection area) the trees pose by virtue of their size and position.

Crown spread
(extent of current crown)

Preliminary root protection area
Illustrated as an area equivalent to a circle. The root protection area (RPA) is a design tool indicating the area surrounding a tree that contains sufficient roots and rooting volume to maintain the trees viability, and where the protection of the tree roots and soil structure is treated as a priority.

Preliminary root protection area (restricted root growth)
Area within preliminary RPA where root morphology is likely to have been influenced by existing site features thereby forming an area of restrictive root growth.

Root protection area (adjusted)
Preliminary RPA adjusted to reflect potential influence of restrictive root growth resulting in an asymmetrical rooting pattern and maintaining an RPA of equivalent area (m^2) in accordance with recommendations and guidance within BS5837 (2012)

tree: fabrik
Lenten House
16 Lenten Street
Alton, Hampshire
GU34 1HG
T : 01420 593250
F : 01420 544243
E : alan@treefabrik.com

Project
UCL SOUTH QUAD TEACHING FACILITY
LONDON

Drawing
TREE SURVEY REFERENCE PLAN

Scale	Date	Drawn
1:250	DEC '16	AR

Drawing No.	Revision
tf 1052/TS/100	A

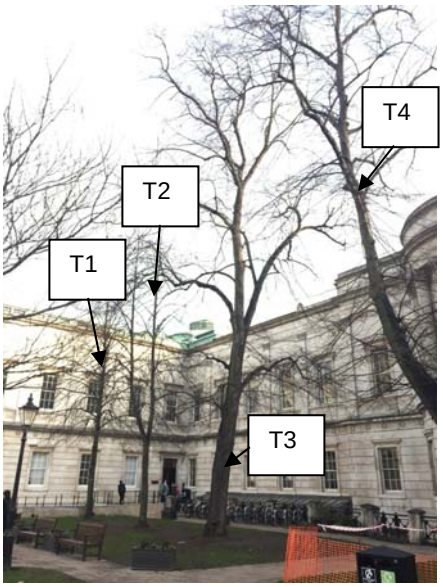
- ☐ Preliminary
- ☐ Issued for Planning Approval
- ☐ Issued for Construction
- ■ Issued for Design/Information
- ☐ Issued for Tender
- ☐ As Built

Drawing sheet size - A3

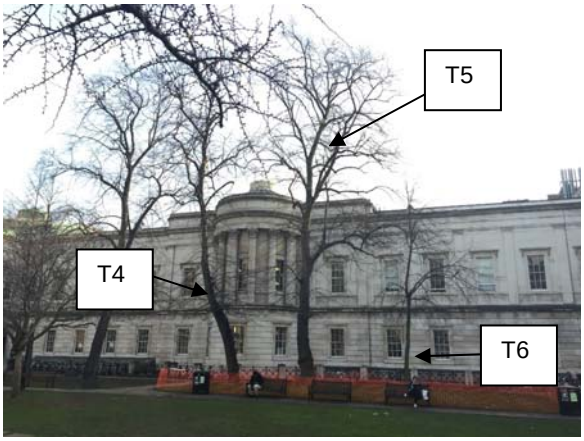
APPENDIX 2

Photographic Record

1. General view of Lime (T1, T2, T3 & T4).



2. General view of Lime (T5, T6 & T7).

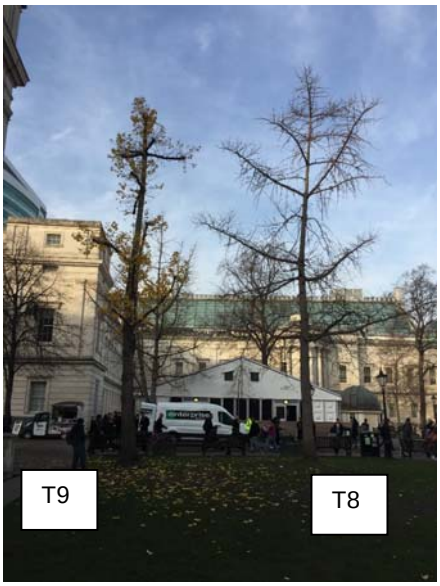


3. General view of existing crown extents of linear group of Lime (T4 to T6).

4. Detail view of distorted crown break of Lime (T6).

5. General view of Indian Bean Tree (T7).

6. General view of Maidenhair Trees (T8 & T9) with T9 displaying crown reduction.



7. General view of Lime (T10).

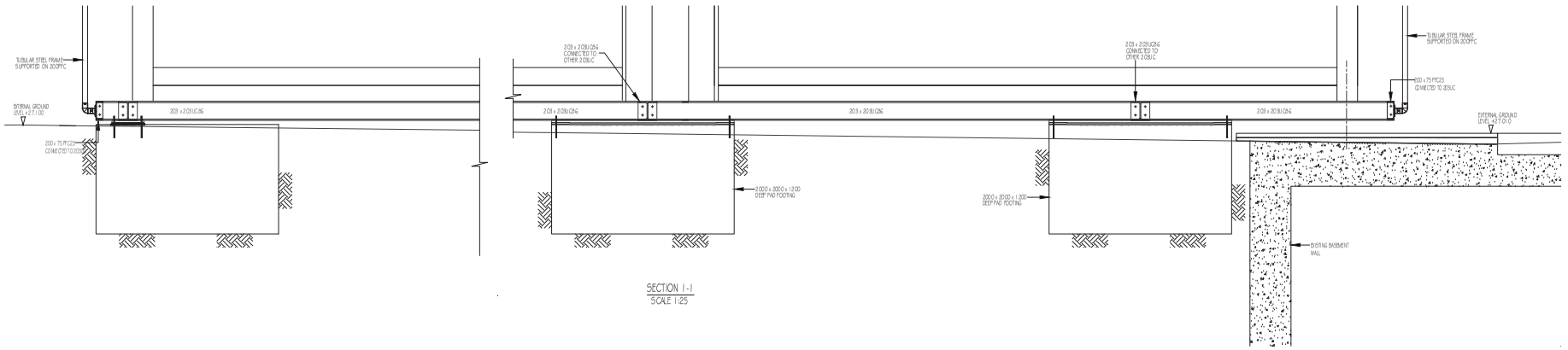
8. General view of Maidenhair Tree (T12) located within existing decked area and displaying a tight fork formation.

9. General view of young Tulip Tree (T13) within decked area.

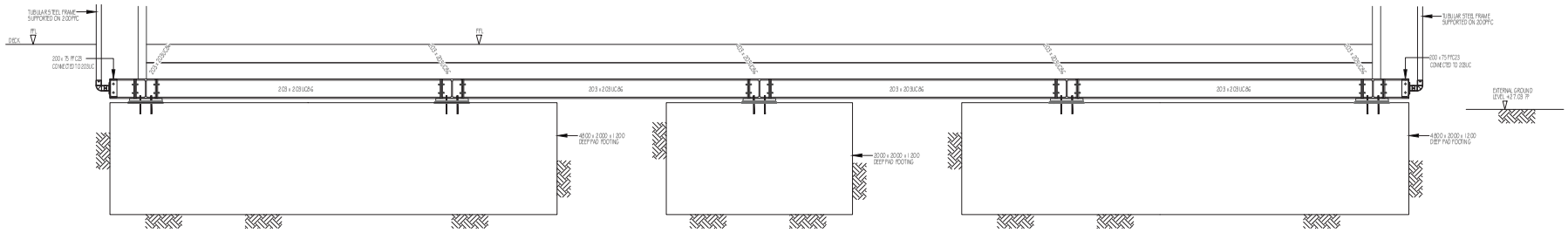
APPENDIX 3

Foundation Plan

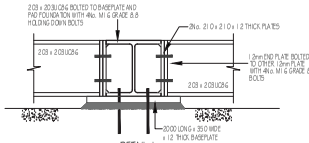
[BLANK]



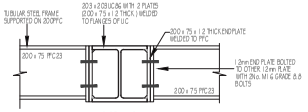
SECTION 1-1
SCALE 1:25



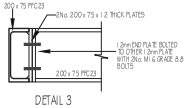
SECTION 2-2
SCALE 1:25



DETAIL 1
(TYPICAL)
SCALE 1:10



DETAIL 2
(TYPICAL)
SCALE 1:10



DETAIL 3
(TYPICAL)
SCALE 1:10

NOTES

1. This drawing is copyright. ©

2. The drawing shall be read in conjunction with all relevant drawings and the specifications.

3. The drawing shall not be scaled; use only figured dimensions. All dimensions are shown in millimetres and levels in metres.

4. Dimensions and conditions shall be verified on site. Any discrepancies between the drawing and site conditions shall be brought to the attention of the Engineer for resolution prior to placing orders or to construction.

5. All work shall comply with the Building regulations and the requirements of the local authority, current Codes of Practice and British Standards.

6. Wire brush to SA2.5 Standard and paint uncased steel with 2 coats HB zinc phosphate min 120 microns except as noted on drawings.

7. All steelwork to be in accordance with BS5950

8. Steelwork to be Grade S275 JO

FOR SECTION AND DETAIL LOCATIONS REFER TO DWG.S.01

PRELIMINARY

REV	DRN	CHK	DATE	DESCRIPTION
P1	ASP	TJS	03.02.17	UPDATED INCORPORATING ARCHITECTS COMMENTS

Wilde Carter-Clack
Consulting Civil & Structural Engineers
49 Romney Street
Westminster
London
SW1P 3RF
TEL : 0207 233 0308
FAX : 0207 233 0714
www.carterclack.co.uk
mail@carterclack.co.uk

Architect / Client
UCL

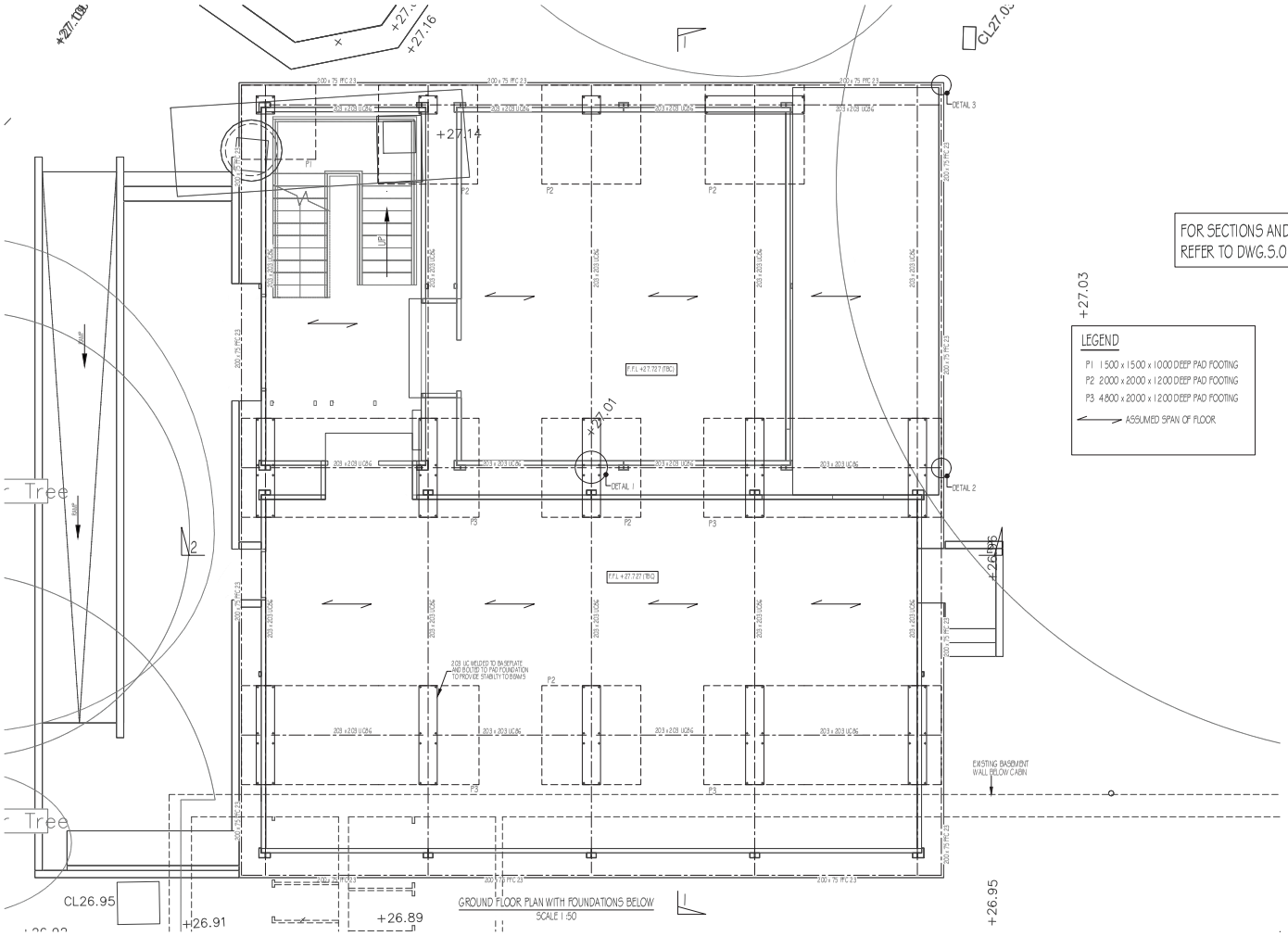
Job Title
UCL MAIN QUAD TEACHING FACILITY

Drawing Title
SECTIONS AND DETAILS

Scale	Drawn	Date	Chkd
1:25, 1:10 @ A1	ASP	JAN' 2017	TJS

Job No.	Drawing No.	Revision
4921	S.02	P1

Status	Sheet Size
	A1



GROUND FLOOR PLAN WITH FOUNDATIONS BELOW
SCALE 1:50

FOR SECTIONS AND DETAILS REFER TO DWG.S.02

LEGEND

P1 1500 x 1500 x 1000 DEEP PAD FOOTING
P2 2000 x 2000 x 1200 DEEP PAD FOOTING
P3 4800 x 2000 x 1200 DEEP PAD FOOTING
ASSUMED SPAN OF FLOOR.

200 x 75 PFC 23 TO SUPPORT FRAMING STRUCTURE ALL ROUND. DETAILS TO BE CONFIRMED BY SPECIALIST.

NOTE : PORTAKABIN LOADS TO BE CONFIRMED

NOTES

1. This drawing is copyright. ©
2. The drawing shall be read in conjunction with all relevant drawings and the specifications.
3. The drawing shall not be scaled; use only figured dimensions. All dimensions are shown in millimetres and levels in metres.
4. Dimensions and conditions shall be verified on site. Any discrepancies between the drawing and site conditions shall be brought to the attention of the Engineer for resolution prior to placing orders or to construction.
5. All work shall comply with the Building regulations and the requirements of the local authority, current Codes of Practice and British Standards.
6. Wire brush to SA2.5 Standard and paint uncased steel with 2 coats HB zinc phosphate min 120 microns except as noted on drawings.
7. All steelwork to be in accordance with BS5950
8. Steelwork to be Grade S275 JO
9. Bearing Pressure assumed to be 50kN/m^2
10. Roof Live load = 0.75kN/m^2
    Ground and First Floor Live Load = 4.0kN/m^2
    (Including 1.0kN/m^2 for partitions)

PRELIMINARY

REV	DRN	CHK	DATE	DESCRIPTION
P1	ASP	TJS	03.02.17	UPDATED INCORPORATING ARCHITECTS COMMENTS

Wilde Carter-Clack
Consulting Civil & Structural Engineers
49 Romney Street
Westminster
London
SW1P 3EF
TEL : 0207 233 0308
FAX : 0207 233 0714
www.carterclack.co.uk
mail@carterclack.co.uk

Architect / Client
UCL

Job Title
UCL MAIN QUAD TEACHING FACILITY

Drawing Title
FOUNDATION PLAN

Scale	Drawn	Date	Chkd
1:50 @ A1	ASP	JAN' 2017	TJS

Job No.	Drawing No.	Revision
4921	S.01	P1

Status

Sheet Size
A1

APPENDIX 4

ArborRaft (Case Study)

[BLANK]

Method Statement for the installation of ArborRaft Tree Root Protection System for building vehicular access paths above the RPA's of existing trees

Introduction

The ArborRaft Tree Root Protection System is a combination of a modular high strength load bearing void former and separation and filter geotextiles. This document should be read in conjunction with the appropriate section drawing for the specified system, to ensure the correct installation is achieved. ArborRaft conforms to the requirements of BS5837 (2012) and APN12.

The system is available in depths of 85mm for light or non vehicular traffic applications and 150mm deep for all vehicles loadings including HGV's and Fire Tenders.

The ArborRaft units are connected together using interlocking ties to create a load bearing structural raft. The units may be built up in layers using connector pins to join vertical layers together.

(see appendix 1)

Applications

- **Footpaths, Bridleways, Bund Construction-----85mm ArborRaft**
- **Car Parks, Access Roads, Service Roads, Working Platforms------150mm ArborRaft**

No Dig System

The ArborRaft is a no dig Tree Root Protection System, however, some preparation of the existing formation may be required prior to installation such as levelling out the formation with sharp sand to a depth of 30mm.

System Components

- **ArborRaft Units 85mm or 150mm deep**
- **Permatex 300 Separation Geotextile**

- **Surfacing Materials**

Ground Preparation

- Remove surface vegetation by hand or with suitable herbicide.
- Fill any hollows in the exposed ground and level using sharp sand.
- Place Permatex 300 Geotextile over the area to be protected ensuring laps are a minimum of 300mm

ArborRaft Tree Root Protection System

- Place the ArborRaft units side by side and connect using ties provided (See picture in appendix 1) No stone infill is required inside the ArborRaft units.
- Nutrient rich soil can be placed inside the units to improve existing soil conditions .

Surfacing Details

The ArborRaft TRP system can be surfaced with the materials listed below. Porous systems will be of greater benefit for the trees, however it is understood that this is not always possible.

Block Paving

- Place Permatex 300 Geotextile over the ArborRaft Units
- Lay sand / gravel bedding material as per manufacturer's recommendations.
- Place porous / standard blocks as per manufacturer's instructions.

Porous and Standard Asphalt

- Place Permatex 300 Geotextile over the ArborRaft units.
- Lay 30mm thick aggregate layer
- Place hot Asphalt as per manufacturer's instructions.

Resin Bound Gravels

- Place Permatex 300 Geotextile over the ArborRaft units.
- Lay Asphalt carpet and resin bound gravel to the required thickness and as per manufacturer's instructions.

SlimBlock Gravel Retention System

- Place Permatex 300 Geotextile over the ArborRaft units.
- Place 50mm bedding layer of sharp sand
- Place Permatex 300 Geotextile
- Lay Slimblock units and fill with a 10 to 14mm decorative gravel.

SlimBlock Grass Protection System

- Place Permatex 300 Geotextile over the ArborRaft units.
- Place 50mm of Rootzone (60% sand/40% soil) bedding layer and lightly tamp.
- Lay Slimblock units and fill with Rootzone mix and seed accordingly. (Please allow for 4 to 6 weeks for seed germination)

Tree Mulch

- Place Permatex 300 Geotextile over the ArborRaft units.
- Lay mulch to desired depth.

Concrete

- Place Permatex 300 Geotextile over the ArborRaft units.
- Cast the concrete slab over the geotextile.

If the system requires trafficking immediately after installation for construction purposes then a sacrificial depth of MOT Type 1 should be placed above the ArborRaft units. Depth of Type 1 is dependent on vehicle type and frequency of trafficking. For specific advice please contact our sales office.

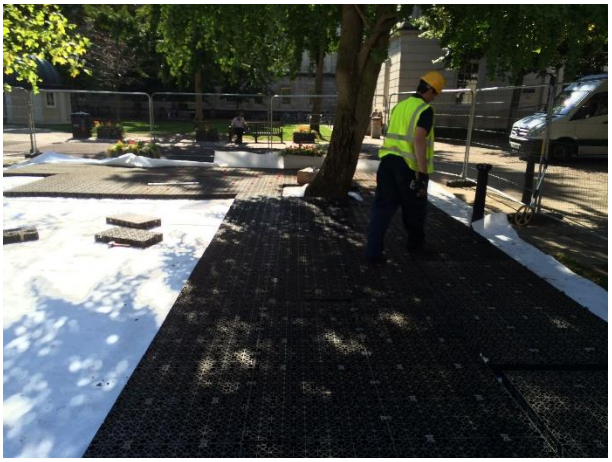
In temporary applications the system can be installed as above and simply removed and stored for re-use on future projects.

For further information or to arrange a site visit for design consultation or installation supervision, please contact Phil Tomlinson on 07712 883510 or e-mail phil@infragreen-solutions.com , alternatively contact our sales office on 01925 630976.

Appendix 1

Rolling Out The Geotextile

Laying Out The Arbor Raft



Installing Arbor Raft Two Units High

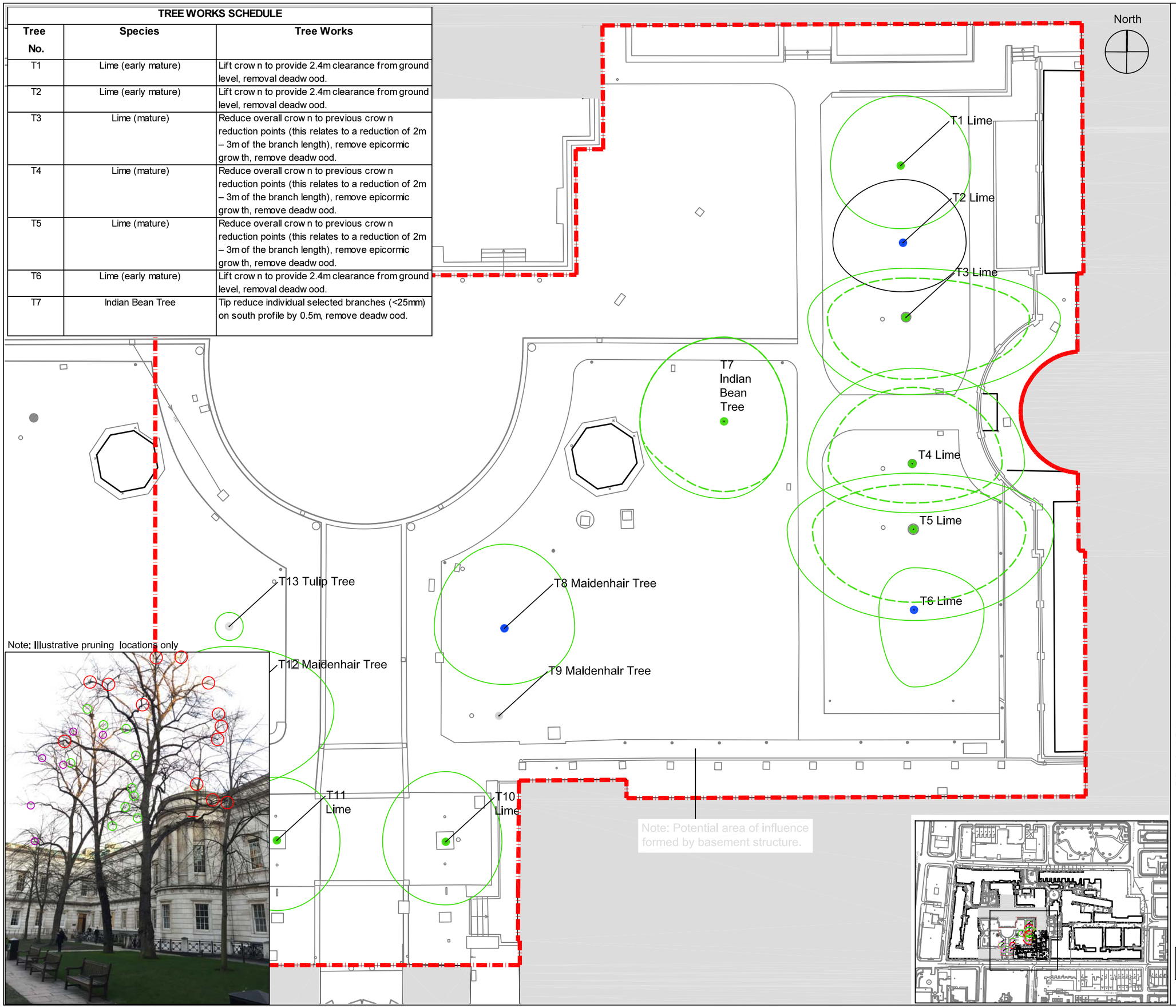
Section Of Arbor Raft Complete With Geotextile

APPENDIX 5
Tree Works Schedule and Location Plan

[BLANK]

TREE WORKS SCHEDULE

Tree No.	Species	Tree Works
T1	Lime (early mature)	Lift crown to provide 2.4m clearance from ground level, removal deadwood.
T2	Lime (early mature)	Lift crown to provide 2.4m clearance from ground level, removal deadwood.
T3	Lime (mature)	Reduce overall crown to previous crown reduction points (this relates to a reduction of 2m – 3m of the branch length), remove epicormic growth, remove deadwood.
T4	Lime (mature)	Reduce overall crown to previous crown reduction points (this relates to a reduction of 2m – 3m of the branch length), remove epicormic growth, remove deadwood.
T5	Lime (mature)	Reduce overall crown to previous crown reduction points (this relates to a reduction of 2m – 3m of the branch length), remove epicormic growth, remove deadwood.
T6	Lime (early mature)	Lift crown to provide 2.4m clearance from ground level, removal deadwood.
T7	Indian Bean Tree	Tip reduce individual selected branches (<25mm) on south profile by 0.5m, remove deadwood.



Note: Illustrative pruning locations only

NOTES
This drawing is the property of tree: fabrik ltd. It must not be copied or reproduced without written consent. This is a basic data collection exercise for the sole use of identifying site constraints in context of the planning process and a record of the trees condition at the time of surveying. This is not a vegetation assessment for NHBC guidance or a higher level inspection (full hazard or risk assessment) and no guarantee, either expressed or implied can therefore be given with regards to identification, safety, stability or internal condition.

Statutory Designations (trees)

It is understood from enquiries with Camden Council that the site lies within the Bloomsbury Conservation Area. The status of trees may change and it is recommended that the Council be contacted prior to carrying out any works and the current statutory designation confirmed.

Boundary

Indicative site boundary

Tree Survey

1 Tree No.

Ash Common name

OBJECTIVES - To maintain the crown extents of existing trees in close proximity to buildings prior to installation of temporary building located within land within the UCL Main Quad, Gower Street, London.

REASON FOR TREE WORKS - The tree works are limited in scope and perpetuate the crown reduction works previously carried out as part of cyclical maintenance. The works accord with BS3998 (2010) and would not have a detrimental impact on the trees health or visual amenity.

Lime (T1, T2 & T6) - these trees are early mature and located within a lawn area to the east of the Quad. The trees are located within a high public access area and the works are works are limited in scope to maintain access and reduce debris.

Lime (T3, T4 & T5) - these trees are mature and are located within a lawn area to the east of the Quad. A basement structure is located to the east of the trees within the root protection area with building elevations to listed buildings in close proximity to the east. The crowns have now regrown and epicormic growth is present on the trunks. To the west of the trees, and outside of the existing tree canopy, a temporary structure (5 years) is proposed under a separate planning application. The works are therefore required to maintain the crown extents, reduce accidental damage to branches during installation of the temporary structure and maintain clearance during the lifespan of the structure.

Indian Bean Tree (T7) - this tree is early mature and located within a lawn area to the east of the Quad. The tree is of fair health and condition. The works are limited in scope and required to reduce accidental damage to lateral branches during installation of the temporary structure and maintain clearance during the lifespan of the structure.

Phasing and Timing of works - No works are to take place within the bird nesting season (March to August) unless a survey undertaken by the Tree Contractor establishes that active nests are absent.

GENERAL WORK SPECIFICATION

All tree works will be carried out by a competent person experienced in arboriculture and in accordance with British Standards 3998 (2010) Tree Work - Recommendations.

Attention is drawn to the responsibilities under the Wildlife & Countryside Act (1981) as amended by the Countryside and Rights of Way Act 2000. This may place additional constraints on trees above that considered within this report.

All works to lift canopies or reduce branches must be carried out by pruning to secondary live growth.

All arisings are to be removed from site.

The following terms and definitions apply:

Lift Crown - pruning to achieve a desired vertical clearance above ground level (expressed in meters).

Reduce overall crown - overall reduction in height and/or spread of crown of a tree by means of general shortening of twigs or branches to the previous reduction points to encourage formation of a knuckle, whilst retaining the main framework of the crown. This is expressed as a length of the branch in meters.

Tip reduce - reduce selected branches by shortening twigs or branches.

Remove epicormic growth - removal of epicormic growth to trunk or scaffold branch. All cuts to be made with a hand pruning saw ensuring bark damage is avoided.

Arisings - parts of a tree, including stem roots, branches, bark, other woody material and foliage, derived from the tree during tree work operations.

tree: fabrik
Lenten House
16 Lenten Street
Alton, Hampshire
GU34 1HG
T : 01420 593250
F : 01420 544243
E : alan@treefabrik.com

Project
UCL SOUTH QUAD TEACHING FACILITY
LONDON

Drawing
TREE WORKS SCHEDULE & LOCATION PLAN

Scale	Date	Drawn
1:250	JAN '17	AR

Drawing No. tf 1052/TW/100 Revision A

- ☐ Preliminary
- ☐ Issued for Planning Approval
- ☐ Issued for Construction
- ■ Issued for Design/Information
- ☐ Issued for Tender
- ☐ As Built

Drawing sheet size - A3

APPENDIX 6

Tree Protection and Arboricultural Method Statement

[BLANK]

APPENDIX 7

Qualifications and Experience

[BLANK]

Brief qualifications and experience of Alan Richardson

Qualifications: I hold the National Diploma in Arboriculture and I am a Professional Member of the Arboricultural Association.

Career experience: I started my career at the grass roots of the industry working in Britain and West Germany, obtaining experience in all aspects of practical tree care. In 1989 I joined Westminster City Council as an Arboricultural Officer, dealing with municipal tree management. This provided me with a comprehensive insight into the social, safety and contract management issues of urban tree management.

In 1991 I joined English Heritage as the Trees and Woodlands Advisor providing specialist advice on all aspects of trees, woodlands and forestry within the historic environment. During the next nine years, I developed and established national policy and strategy for tree management on the 420 historic properties under guardianship including the co-ordination, inspection and monitoring of the annual H&S inspection programme, contracts and standards and represented English Heritage on policy matters relating to trees, including liaison with other government departments on joint projects such as the Veteran Tree Initiative and the Parklands & Wood Pasture Habitat Action Plan.

As a Director of ***tree* : fabrik**, I draw on the wide range of experience obtained and specialise in supplying bespoke arboricultural planning services to Local Planning Authorities and the private sector. This includes advising on a full range of tree issues within the planning environment, providing site surveys to BS5837 (2012), arboricultural impact reports, method statements and supervision, development control advice to Local Planning Authorities, successful enforcement and prosecution, appeal statements and attendance at hearings, liaison with and on behalf of Local Planning Authorities, developers, architects and town planners.

This comprehensive experience and current working knowledge of Local Authorities and the private sector encourages a pragmatic approach that has been found to be of benefit to all parties.

Continuing professional development**:** I keep current on arboricultural issues and best practice through membership of the Arboricultural Association and attendance at short courses.

tree : fabrik
Lenten House
16 Lenten Street
Alton, Hampshire
GU34 1HG

T : 01420 593250
F : 01420 544243
E : office@treefabrik.com